Version 4 Release 4

IBM IMS Performance Analyzer for z/OS
User's Guide
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About this information

IBM® IMS™ Performance Analyzer for z/OS® (also referred to as IMS Performance Analyzer) is a performance analysis and tuning aid for Information Management System Database (IMS DB) and Transaction Manager (IMS TM) systems.

IBM IMS Performance Analyzer for z/OS (also referred to as IMS Performance Analyzer, or by the abbreviation IMS PA) is a performance analysis and tuning aid for Information Management System Database (IMS DB) and Transaction Manager (IMS TM) systems.

These topics describe how to use the IMS Performance Analyzer dialog and batch commands to generate reports and extracts from IMS Log, Monitor, IMS Connect, and OMEGAMON® Transaction Reporting Facility (TRF) and Application Trace Facility (ATF) data. The report options are also described.

Related reading: For a detailed description of the report and extract output, see the IBM IMS Performance Analyzer for z/OS Report Reference, SC19-4366.

These topics are designed for managers, database administrators, system programmers, application programmers, and system operators responsible for monitoring and improving the performance of IMS systems.

To use these topics, you should have an understanding of basic IMS concepts and your installation's IMS systems, and a working knowledge of:

- The z/OS operating system
- ISPF
- IMS Database and Transaction Monitor systems
- IMS Connect and IMS Connect Extensions, if applicable

IMS Performance Analyzer is designed to support IMS Versions 12, 13, and 14. Where IMS Performance Analyzer functionality is IMS release-dependent, the following abbreviations may be used:

- **IMS V12**
  (IMS Version 12)

- **IMS V13**
  (IMS Version 13)

- **IMS V14**
  (IMS Version 14)

Always check the IMS Tools Product Documentation page for the most current version of this information:

http://www.ibm.com/software/data/db2imstools/imstools-library.html
Part 1. Introduction and product setup

This part provides you with an overview of the IMS Performance Analyzer product, its main concepts and components, and how to get started.

IBM IMS Performance Analyzer for z/OS (also referred to as IMS Performance Analyzer, or by the abbreviation IMS PA) is a performance analysis tool to help you monitor, maintain and tune your Information Management System Database (IMS DB) and Transaction Manager (IMS TM) systems.
Chapter 1. IMS Performance Analyzer overview

IBM IMS Performance Analyzer for z/OS (also referred to as IMS Performance Analyzer, or by the abbreviation IMS PA) is a performance analysis and tuning aid for DB and TM systems for IMS versions 12, 13, and 14.

Related reading: There are several IMS Redbooks® that provide additional performance and tuning information for your IMS systems. The IBM IMS Version 7 Performance Monitoring and Tuning Update (SG24-6404) is recommended because it contains additional information on how to interpret many of the IMS Performance Analyzer reports to help you make tuning decisions. This information, although not exhaustive, is generally applicable to later releases of IMS. Supplementary information is provided in IBM IMS Performance and Tuning Guide (SG24-7324).

What's new in IMS Performance Analyzer

This topic summarizes the technical changes in this edition.

New and changed information is indicated by a vertical bar (|) to the left of a change. Editorial changes that have no technical significance are not noted.

IBM IMS Performance Analyzer for z/OS Version 4 Release 4

This edition SC19-4365-00 includes the following new and changed features:

IMS Version 12, 13, and 14 support
Support for IMS Versions 12, 13, and 14.

Inflight transaction support for IMS Log reports
When the inflight option is used, IMS Performance Analyzer does not report incomplete transactions in the IMS log. Instead it writes their details to a holding data set called an outflight data set. This data set is then input into the next IMS Performance Analyzer job as the list of transactions pending completion. Transaction information that was previously incomplete due to a log switch is now complete.

The following reports are affected by this change:
- "Transaction Transit reports” on page 296
- "Transaction Transit reports (Form-based)” on page 314
- Chapter 19, “IMS Transaction Index,” on page 267
- "Internal Resource Usage reports” on page 336

Refer to “Log Global Options” on page 290 for further detail.

Region PST increased from 3 to 4 bytes
The Region PST field size has increased from 3 to 4 bytes due to an increase in the maximum partition specification table (MAXPST) limit to 4095. This change increases the LRECL by 1 byte on multiple reports:
- Log reports
  - LIST: Form-based Transaction Transit List report and extract using PSTID
  - SUMMARY: Form-based Transaction Transit Summary report and extract using PSTID
Monitor reports
- ESAF: External Subsystem report

Connect reports
- LIST: Form-based Transaction Transit List report and extract using PSTID
- SUMMARY: Form-based Transaction Transit Summary report and extract using PSTID

For other reports that include Region PST, the value has been accommodated within the existing column and there is no change to the LRECL of the report.

IMS Performance Analyzer automatically allocates new extract data sets with the correct record length. If appending to an existing data set, a CSV or for DB2, you will first need to redefine the DCB attributes to increase the LRECL by 1 byte and reload the data set.

For Log and IMS Connect form-based log reports when loading the extract data into an existing DB2 table with PSTID column of CHAR(3), the table definition must first be modified to support a PSTID of CHAR(4) and the field POSITION statements adjusted before reloading the table. For an example, see the “COMBLIST: Combined IMS and Connect List report” on page 238 sample form. For additional help contact your DB2 Administrator.

Form-based reporting enhancements

BMP treatment option
New option to report each BMP syncpoint interval as a single transaction, allowing you to analyze BMP activity in greater detail.

Refer to the following topics for further detail:
- ISPF: “Transaction Transit (Form-based) Options” on page 314
- Batch: “Transaction Transit (Form-based) Options” on page 422

Shared queues option
New option to only report transactions that were processed on subsystems who logs were input.

Refer to the following topics for further detail:
- ISPF: “Transaction Transit (Form-based) Options” on page 314
- Batch: “Transaction Transit (Form-based) Options” on page 422

Program switches option
New option to either report all transactions independently, or to group transactions associated with a program switch sequence.

Refer to the following topics for further detail:
- ISPF: “Transaction Transit (Form-based) Options” on page 314
- Batch: “Transaction Transit (Form-based) Options” on page 422

Additional reporting of CPU time as service units
The service unit normalizes the reporting of CPU time to allow for...
performance comparisons between, for example, an older processor and a newer processor in terms of CPU effort. Refer to "CPUSU" on page 758 for further detail.

**New value in QTYPE form field**

The form-field "QTYPE" on page 783 has a new value, LOCALE, to indicate that the shared queue transaction was processed 'local-first'.

**New region occupancy form field**

The new region occupancy form field "REGOCCUP" on page 784 reports the elapsed time that the transaction occupies in a message region, which can sometimes be longer than the usual application processing time due to an external system problem.

**Log report enhancements**

**FORMAT2 option for Database Update Activity reports**

Database Update Activity (DBUA) reports can be generated with the more concise FORMAT2 option.

Refer to the following topics for further detail:
- ISPF: "Database Update Activity report and extract" on page 342
- Batch: "DBUPDATE: Database Update Activity report and extract" on page 441

**LOGINFO operand for IMSPALOG command**

Log Information reports can now be generated using the IMSPALOG LOGINFO batch command without running a report set.

Refer to the following topics for further detail:
- Report content: "Log Information report" on page 394
- Batch: "LOGINFO: Log Information report" on page 466

**IMS Processing ID option**

New option to use the input log files to source the IMS Processing ID.

Refer to the following topics for further detail:
- ISPF: "Log Global Options" on page 290
- Batch: "Log Global Options" on page 410

**Ignore x'6D' surveillance records option in Log Gap Analysis report**

The Log Gap Analysis report has a new option to ignore type x'6D' surveillance records that can mask periods of system inactivity.

Refer to the following topics for further detail:
- ISPF: "Gap Analysis report" on page 350
- Batch: "GAP: Gap Analysis report" on page 448

**Fast Path (IFP) Region Occupancy report enhancement**

The "IFP Region Occupancy report" on page 365 exploits the new type x'5904' record to provide a clearer breakdown of occupied versus idle time.

**Internal Resource Usage report (IRUR) enhancements**

The Internal Resource Usage report (IRUR) is enhanced to support the new statistics provided by IMS versions 12, 13 and 14:
- x'4502' Queue Pool statistics provides high water marks for buffer usage.
Message Queue Utilization report enhancements
New option to report on record lengths instead of message lengths.

Monitor report enhancement
The Monitor report ALTSCHED global option is improved to count actual schedules only. This provides a more accurate picture of the transactions per schedule ratio in pseudo-WFI environments.

IMS Connect Gap Analysis report
The Gap Analysis report contains information on periods of time where log records are not being cut, potentially highlighting an external system event that may have caused IMS Connect to slow down.

MONITOR report option enhancements for OMEGAMON ATF Trace reports
OMEGAMON ATF Trace reports using the MONITOR option report additional transaction identification and performance characteristics, columns, and reporting detail for DB2® SQL and WebSphere® MQ events. Refer to “ATF Trace reports” on page 645 for further detail.

IMS Performance Analyzer Version 4 Release 3
The previous edition included the following changes. They are not marked in the body of the book.

IMS Version 10, 11 and 12 support
Exploits all the new features and instrumentation in the IMS log and monitor:
- IMS Version 10: Type 56FA transaction accounting record provides accurate transaction CPU time, DLI call, database I/O, and ESAF usage
- IMS Version 11: Synchronous call-out (ICAL) and Open Database
- IMS Version 12: Improved MSC statistics
In addition:
- Sysplex reporting supports changes in IMS version across log files, allowing you to seamlessly continue IMS PA reporting when migrating to a new version of IMS.
- The impact of synchronous call-out (ICAL) requests on overall transaction performance can be measured.

OMEGAMON for IMS Application Trace Facility (ATF)
Collects detailed information about every application call made by IMS and DBCTL transactions. DLI and DB2 call results are recorded in the ATF journal, including function code, SSA, KFBA and IO area. This provides the most in-depth analysis of transaction behavior available.

IMS Performance Analyzer provides management and reporting of ATF, including:

- x'4507' Logger statistics provides WADS and OLDS I/O time.

Refer to the following topics for further detail:
- ISPF: “Message Queue Utilization report” on page 341
- Batch: “MSGQ: Message Queue Utilization report” on page 440
• Archival of the online ATF journals to offline data sets for post-analysis. Filtering criteria allows you to archive problem transactions only, significantly reducing the volume of data kept and time to resolution.

• Three levels of reporting: from summarization of transaction activity and high level transaction detail, to in-depth traces that report every detail about each application DLI call.

• Statistics collection enhancements provided by APAR OA36278: Interim Feature 3 (IF3).

Improved CICS-DBCTL reporting

The CICS® transaction id and task number are now reported in DBCTL form-based reports. This allows you to match the CICS transaction as reported by CICS Performance Analyzer with the IMS thread reported by IMS Performance Analyzer to better understand the impact of IMS on CICS transaction performance.

In addition, form-based reporting provides a more granular breakdown of syncpoint processing including phase 1, phase 2 and OTHREAD elapsed times.

New specialized reporting: LOGINFO

The Log Information report provides a synopsis of the log record types in the IMS log, including record count, lengths, rate per second, and volume. Selected record types are broken down further to provide additional information about transaction arrival and processing rates.

Transaction Index

The index is improved to append diagnostic information from the IMS log when available, for example the deadlock diagnostic record. In addition, you can specify exception criteria to record problem transactions only.

Form-based reporting

Form-based reporting provides flexible user-customizable transaction performance analysis. Further enhancements provide improved specialized analysis:

• CICS-DBCTL, including scheduling delays
• Syncpoint time breakdown, including phases 1 and 2
• OTHREAD – how long did the (asynchronous) OTHREAD process take to update the Fast Path areas?
• Program switch sequences can be better tracked and summarized
• BMP syncpoint/checkpoint activity
• Individual database update activity: Which transactions update which databases?
• External subsystem activity: Which transactions use DB2, and for update or read-only?

• Column headings changed for the following fields:
  – ESAFCCON: Cmt Cont Complete is now ESAF CC End
  – ESAFCOMT: Commit Time is now ESAF SP Time
  – ESAFNAME: External Sub-Sys is now ESAF Name
  – ESAFPRE: Cmt Prep Start is now ESAF CP Start
  – EXITNAME: Readexit Name is now Connect Exit

IMS Connect Transaction Index

Contains a record for each IMS Connect transaction recorded in the IBM IMS Connect Extensions for z/OS journal, and includes all the cumulative information from the journal about that transaction.
IBM IMS Problem Investigator for z/OS uses the IMS Connect Transaction Index, either on its own or merged with the associated IMS Connect Extensions journals and IMS log files, to provide improved levels of problem detection. By tracking against the index record for a transaction, you can see all the associated Connect events.

**Application Groups**
Allow you to group transactions that belong to the same business or application unit for reporting purposes, allowing you to analyze performance based on business unit rather than individual transaction code.

**Internal resource usage enhancements**
The Internal Resource Usage report (IRUR) is enhanced to support the new statistics provided by IMS Version 12:
- Logical Logger
- 4517 User Exit Statistics

**IMS Tools Knowledge Base**
IMS log reporting can now write reports directly to the IMS Tools Knowledge Base repository for historical collection and viewing from the IMS Tools KB dialog. IMS Tools Knowledge Base is a component of IBM Tools Base for z/OS, V1.5 (5655-V93).

**Non-message driven BMP changes**
A non-message driven BMP is now reported as a single transaction, and statistics for each syncpoint are accumulated and reported at BMP end, or end of IMS log. Prior to IMS Performance Analyzer V4.3, every BMP syncpoint was treated as a single transaction. As a result of this change, transaction counts contained within "Transaction Transit reports (Form-based)" on page 314 may increase, and other values are recalculated accordingly. Select a Transaction Mix of 5 (batch: TRANMIX(5)) to exclude BMPs (including JBPs) from reporting if you do not want batch jobs to distort performance-related statistical analysis of online transactions.

See also "Log Information report" on page 394.

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**What does IMS Performance Analyzer do?**
IMS Performance Analyzer provides a comprehensive suite of reports to help you manage the performance and resource utilization of your IMS systems.

IMS Performance Analyzer processes IMS Log, Monitor, IMS Connect event data, and OMEGAMON TRF and ATF data to provide comprehensive reports for use by IMS specialists to tune their IMS systems, and managers to verify service levels and predict trends.

IMS Performance Analyzer provides an ISPF-based dialog for you to use to create and maintain your report and extract requests, and generate the JCL to run them using your specified systems and data files. The IMS PA Control Data Sets are used to store your report and extract requests.
From IMS Log data, IMS PA provides comprehensive information about transit times (actual system performance time), and IMS resource usage and availability. IMS PA can process logs from a single IMS system, or from multiple IMS subsystems running in a sysplex and using shared queues. You can specify log files explicitly or let IMS PA use DBRC Log Selection and the IMS RECONS data sets to automatically locate the files for your required reporting interval. User-defined...
performance thresholds allow you to set goals and report exceptions. A history of transaction performance can be maintained in Transaction History Files.

Extracts of transit time by time interval data can be created from log files then graphed or exported (with transfer to PC) using IMS PA facilities. Extracts of total transaction traffic or exception transactions (MSGQ or Fast Path), CPU usage and database update activity can also be created for direct import by external programs such as DB2 or PC-based reporting tools.

Report Forms can be used to tailor transit summary and list reports to include only the data fields of interest. Form-based extracts can be created then directly loaded into DB2 tables.

From Monitor1 data, IMS PA creates summary and analysis reports for regions, resources, programs, transactions, databases, and the total system, to analyze your IMS system environment. IMS PA provides comprehensive reporting for the IMS Fast Path Monitor, including DEDB, BALG/EMH, FP Buffer, OTHREAD and VSO. External Subsystem call activity can be incorporated in applicable reports. Alternative sequencing of reports by Occupancy, Calls or Delay can be requested to highlight bad performance.

IMS PA provides comprehensive reporting from the IMS Connect performance and accounting data collected by IBM IMS Connect Extensions for z/OS (5655-S56). You can specify Connect data sets explicitly or let IMS PA use Connect Journal File Selection and the IMS Connect Extensions Definitions Data Set to locate the Journal data sets for your required reporting interval. Summary and detailed reports analyze IMS Connect transaction internal and external transit times and latencies, highlighting critical events for message processing. They also provide information about significant processing events with the potential to impact performance, including resource availability and session errors.

You can obtain a complete end-to-end picture of transaction transit performance by using Form-based reporting and combined IMS and Connect data.

IMS PA provides comprehensive reporting of IMS transaction performance and resource utilization statistics collected by the Transaction Reporting Facility (TRF) for OMEGAMON XE for IMS (5698-A34). The TRF data includes transaction response time breakdown, CPU time, and other resource usage statistics, Full Function and Fast Path database DL/I call count and elapsed time, and DB2 database call count and elapsed time.

OMEGAMON XE for IMS Application Trace Facility (ATF) complements TRF reporting.

**IMS Performance Analyzer features and benefits**

IMS PA helps you to analyze many different types of performance issues.

Highlights of IMS PA reporting from log data include the following:

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1. In this book, the term *monitor* applies to both the IMS Monitor used in the IMS TM (formerly DC) environment and the IMS DB Monitor used in the IMS DB environment. In cases where information applies to only one of the monitors, the term *IMS Monitor* or *DB Monitor* is used.
IMS PA produces a comprehensive set of reports, organized by IMS resource type, to give multiple views of transit time, resource usage, and resource availability.

The following reporting is supported:
- Message Queue Transaction and Full Function Database
- Fast Path EMH Transaction and DEDB/MSDB Database

IMS PA supports shared queues in an IMS sysplex; multi-subsystem log input is merged by time stamp sequence to produce either composite reports or reports by subsystem.

System balance is determined in management exception reports, one for message queue transactions, and another for Fast Path EMH transactions.

Each transaction is dissected into parts (local or shared input queue, program execution, output queue, output shared queue, output local queue, and program switch time) for analysis of these times to pinpoint response bottlenecks.

Extract files of transit times by time period can be produced for comparative analysis using IMS PA graphing facilities, exporting for manipulation by external programs, or downloading to a PC.

Reports on transit time can be ordered by any or several of the following to create multiple views of system response:
- Logical terminal or User ID
- Transaction code
- Transaction code within logical terminal or User ID
- Line or VTAM® node
- Message class
- Time of day

Reports can illustrate:
- Region use and scheduling efficiency
- Database update activity
- Message queue utilization efficiency
- Buffer pool statistics
- Availability of resources (regions, transactions, programs, lines, VTAM nodes, databases)

Trace reports can help with detailed analysis of the log data.

Multiple reports (all activated reports in a Report Set) are produced from a single pass of the IMS log without requiring sorting of the log data.

User-written programs that process IMS log records can be included under IMS PA.

List and summary reports and extracts can be constructed using Report Forms, ensuring they are specific and tailored to suit your varied reporting requirements.

Report Forms provide the following advantages:
- Customizable reporting or extract to data set. Field selection allows you to request only the information you need to see.
- Both IMS log and IMS Connect Extensions transit reporting is supported.
- Comprehensive OMEGAMON TRF reporting is supported.
- IMS log and IMS Connect Extensions event data can be merged into a single report, providing end-to-end reporting for IMS Connect transactions.
- More than 160 IMS and 40 IMS Connect transaction information fields are available for selection in reports, providing an improved level of detail for
measuring transaction processing and resource usage. For a comprehensive list of these fields, refer to Chapter 41, "Glossary of Report Form field names," on page 753.

- IMS log reporting provides improved accuracy, additional log record types are used to provide a clearer picture of transaction transit activity.
- Wide reports ease the restriction of the 132 column page width. Additional fields can be requested in the report and IMS PA will automatically adjust the page width.
- Extract data sets can be used as an alternative to reporting, where report data is written to CSV files for importing into DB2 or a PC spreadsheet. For more information, refer to “Exporting form-based CSV extracts to DB2” on page 256.
- Precision of elapsed and CPU times is customizable, from millisecond (0.001) to microsecond (0.000001). For example use Forms to report input queue, processing elapsed and CPU times with microsecond precision.
- Summary reporting allows up to 8 grouping or key fields.
- Statistical functions (average, minimum, maximum, standard deviation, peak percentile, total, count, range) can be requested at the field level.

Examples of ways in which IMS PA log reports can be used:
- Identify transactions involved in slow responses and identify the cause of the slow response.
- Trace certain problems back to their source. For example, an IMS 0801 abend code indicates a database problem. The SMU (Space Management Utilities) feature of DB Tools can be run to find the type of problem (a bad pointer, for example). IMS PA can then analyze the log to determine who caused the problem, and when.
- Detect poor choices in pool sizes and other specifications using the formatted information on pool use in log record 45xx. The transactions affected by these choices can also be identified. Statistics can be reported on a per transaction basis.
- Present statistics on region occupancy to reveal inefficient region scheduling and availability.
- Produce graphic summaries of region use using a histogram.
- Compare performance of different IMS subsystems.

Highlights of IMS PA reporting from monitor data include the following:
- IMS PA produces a comprehensive set of reports (from management summaries to detailed program traces), organized by level of detail and area of analysis, to meet a broad range of IMS system analysis objectives, such as the following:
  - System performance evaluation. IMS PA features help you monitor and evaluate IMS system performance on a daily basis. Management level summary reports express key values in terms of rates, ratios, and percentages. These reports help you use IMS PA for trend analysis and comparative analysis of systems, and for evaluation of a system against installation standards.
  - System tuning. Reports that help you enhance IMS system performance through system tuning are a key feature of IMS PA. Monitor output is summarized and categorized to help you rapidly identify problem areas. Detail analysis reports help you investigate and evaluate these problem areas and also the effect of changes to the system.
  - Application and program evaluation. IMS PA reports program activity in message processing or batch regions. IMS PA can be a valuable tool for
evaluating existing applications and programs, and for validating whether new applications and programs conform to installation standards. Program activity reports and program traces add greatly to system documentation.

- IMS PA produces alphanumerically collated report items in terms of ratios, rates, and percentages to facilitate comparison of results without additional computations.
- External subsystem statistics can be incorporated into Region and Program reports.
- IMS PA provides alternative sequencing of reports by Occupancy, Calls or Delay with the option to limit reporting to the worst performers.
- Schedules in progress, including wait-for-input (WFI), IMS Fast Path (IFP), and BMPs, are reported.
- Reports on IMS batch programs are provided.

IMS PA provides a comprehensive set of reports from the IMS Connect event data collected by IMS Connect Extensions for z/OS. With the combined Connect and IMS log reports, you can trace the entire life of an IMS Connect transaction.

IMS PA is a tool for management as well as for system programmers and technical support personnel. It produces management-oriented reports, and it produces summary and detailed information for those directly involved in improving system performance. When used on a regular basis, IMS PA can help you:
- Improve system performance
- Improve transaction transit time
- Manage your IMS Connect Internet communications more efficiently
- Use IMS regions and message queues more efficiently
- Reduce virtual and real storage requirements in buffer pools
- Increase the availability of IMS resources
- Evaluate applications and programs against system standards before installation
- Do ongoing system measurement and management reporting
- Debug IMS applications
- Increase the productivity of analysts and programmers
- Determine future system requirements
- Enhance system and program documentation
- Reduce the need to run IMS utilities
- Reduce the requirement to run the monitor reports supplied with IMS
- Provide auditors with valuable data for a number of potential audit tasks

**Performance management solutions**

IBM solutions help IT organizations maximize their investment in DB2 and IMS databases while staying on top of some of today’s toughest IT challenges. Performance Management solutions can help maximize the productivity and profitability of your DB2 and IMS databases.

IMS Performance Analyzer is one of several IMS Tools products that help maximize database performance to support service level agreements (SLA), drive higher transaction rates, and ultimately increase profitability.

The following additional IMS Tools products also provide Performance Management solutions:
- IBM IMS Problem Investigator for z/OS
- IMS Buffer Pool Analyzer for z/OS
- IMS Network Compression Facility
Tivoli® OMEGAMON XE for IMS on z/OS

IMS Performance Analyzer provides an enhanced level of problem determination services for IMS Transaction Manager (IMS TM) and IMS Database Manager (IMS DB) systems.

IMS Performance Analyzer complements IBM IMS Problem Investigator for z/OS and IBM IMS Connect Extensions for z/OS making the end-to-end analysis of IMS related performance and resource utilization quicker and easier than ever before. The result is improved productivity for problem analysts, more efficient IMS application performance, improved IMS resource utilization, and higher system availability.

Hardware, software, and storage prerequisites

IMS Performance Analyzer is installed by using SMP/E and standard RECEIVE, APPLY, and ACCEPT processing.

Complete information about installation requirements, prerequisites, and procedures for IMS Performance Analyzer is located in the Program Directory for IMS Performance Analyzer.

Hardware

IBM IMS Performance Analyzer for z/OS, V4.4 operates on any IBM eServer™ zSeries machine on which a required operating system and other required software are installed and running. If your z/OS operating system, IMS, and IBM IMS Connect Extensions for z/OS were installed in compliance with their documented minimum hardware requirements, you have only the following additional requirements to consider in installing IMS PA:

- DASD storage required for the IMS PA product. For information on DASD requirements, refer to the Program Directory that is shipped with IMS PA.
- DASD storage for extracts, Transaction History files, and the Transaction Index.
- Optionally:
  - Printer for printing reports and graphs
  - Display device that supports GDDM graphs
  - PC for downloading export data

Software

Before installing and configuring IMS PA, ensure that the following software requirements are fulfilled:

Installation requirements and operating system

- z/OS, V1.11 (5694-A01) or later

Mandatory operational requirements

IMS PA V4.4 is designed to operate with any of the following IMS versions:

- IMS V12.1 (5635-A03)
- IMS V13.1 (5635-A04)
- IMS V14.1 (5635-A05)

Conditional operational requirements

To analyze IMS Connect event data, IMS PA requires event information collected by:
To analyze OMEGAMON TRF data, IMS PA requires statistics collected by:
- IBM Tivoli OMEGAMON XE for IMS on z/OS, V4.2 (5698-A34) or later

To analyze OMEGAMON ATF data, IMS PA requires statistics collected by:
- IBM Tivoli OMEGAMON XE for IMS on z/OS, V4.2 (5698-A34) or later

- OMEGAMON ATF statistics collection enhancements APAR OA36278: Interim Feature 3 (IF3)

For sharing system and group definitions with IBM IMS Problem Investigator for z/OS:
- IBM IMS Problem Investigator for z/OS, V2.3 (5655-R02) or later

For graphing Extract by Interval transit data using the IMS PA dialog:
- GDDM Base: GDDM/MVS V3.2 (5695-167) or later
- GDDM Presentation Graphics Facility: GDDM-PGF V2.1 (5668-812) or later

For offloading IMS Log reports to the IMS Tools Knowledge Base report repository:
- IBM Tools Base for z/OS, V1.5 (5655-V93)

Storage

IMS PA executes in a virtual storage region. Region size will vary based on your specific report requirements and the amount of log, monitor and other data file input.

Allow at least 256 MB, which includes storage for:
- IMS PA programs
- Access methods and buffers
- Report queues (most are located above the 16 MB line)

Installations with large numbers of programs and databases may experience greater resource requirements.

Operating system and GDDM requirements are additional.

The primary factors affecting the base amount of storage and CPU time required by an IMS PA monitor report run are the number of PSBs, PCBs, and ddnames that are active during the monitor trace interval.

IMS Performance Analyzer operation

IMS PA produces comprehensive sets of reports and extracts from IMS Log, Monitor, IMS Connect Extensions, and OMEGAMON TRF and ATF data sets. The ISPF-based dialog is used to create and maintain your report and extract requests in Report Sets of type LOG, MON, CEX, TRF, or ATF and generates the JCL to run them using your specified systems and data files.

System and report interval options can be specified at run time. Graphs and export files can be produced from log extracts by time interval. Extracts of total transaction traffic or exception transactions (MSGQ or Fast Path), CPU usage and database update activity can also be created for direct import by external programs.
such as DB2 or PC-based reporting tools. Report Forms can be used to tailor transit summary and list reports to include only the data fields of interest. Form-based extracts can be created then directly loaded into DB2 tables.

Report Sets

A Report Set defines a selection of reports and extracts and their associated options.

There are five types of Report Set: LOG, MON, CEX, TRF, ATF. The type of Report Set corresponds to the type of input data it is designed to process: from the IMS Log, Monitor, IMS Connect (IMS Connect Extensions), OMEGAMON TRF and ATF.

Any number of Report Sets can be defined, but a separate batch job is required for each type of Report Set. One batch job runs one Report Set or runs a selection of reports and extracts from one type of Report Set. The reports and extracts in a Report Set, including multiple program traces, are produced as a group from one pass of the input data sets, without sorting. For shared queue reporting, IMS PA merges the logs from multiple IMS subsystems.

A Report Set can be run on a one-off basis, or run repeatedly against different input each time. Changes are made to Report Sets via the dialog, and immediately affect the next run of the Report Set.

Optionally, a Log Report Set includes the specification of extract files, transaction index, and user-written record processors. These are executed concurrently with IMS PA reports in the same pass of the log data set.

The data to be analyzed by a Report Set can be restricted by date and time. Then for each report, further filtering of the data can be defined by a date-time range or time slot, and by Selection Criteria to restrict reporting to only the objects that you are interested in (such as particular programs, databases, user IDs, LTERMs, and IMS subsystem IDs).

Running Report Sets

The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set. This prompts you to check or change your run-time options, such as System Selection or Report Interval, before generating the JCL.

Alternatives to the RUN command are SUB, JCL and JCM, and run-time options are displayed on request:
- The SUBMIT or SUB command directly submits the Report Set for execution.
- The JCL command builds the JCL to execute the Report Set and allows you to edit the job before you submit it.
- The JCLCMD or JCM command builds the JCL, converts the Report Set to a command stream and allows you to edit the job before you submit it.

Object Lists

Selection Criteria for reports and extracts can be specified as a single value or a list of values. Lists of values are specified in Object Lists.

Each Object List is a particular type (for example, Database, Program, Transaction Code). IMS PA verifies that the Object List content and context (for example, numeric or character, maximum value or length) are appropriate to the type.
Object Lists can be defined hierarchically, eliminating duplication, and thereby reducing list maintenance effort and improving the integrity of lists. For example, to define the production databases Object List DBPROD, you could specify the Object List as containing only the names of three other Object Lists PAYROLL, FINANCE and SALES. These three Object Lists could then contain the actual database names for those applications. This can be done for all types of Object Lists and to any depth of hierarchy.

**Distributions**

IMS PA can produce a large variety of graphs from log and monitor data, showing the distribution of performance measures (such as IWAITs per Call). The graphs can be customized using parameter members called Distributions that specify the limit values and titles for the vertical axis. The graphs are all produced in the same pass of the input data.

**Expectations and Averages**

Expectation Sets and Averages data sets can optionally be specified for use by the Management Exception report to list log records that are beyond expected limits and calculate accumulated averages. Limits can be defined as absolute values, or defined relative to accumulated averages.

Expectation Sets can optionally be specified for use by the Transaction (MSGQ) Exception and Fast Path (EMH) Transaction Exception reports to identify transactions that perform outside user-defined expectations.

The Expectations and Averages data are presented by the dialog in spreadsheet style for viewing, maintenance, and adjustment.

The following figure shows the components that comprise the Management Exception report. The report processes Log data that can be filtered by specifying Selection Criteria. Object Lists help you specify Selection Criteria more efficiently. The report can highlight performance outside thresholds that you define in Expectation Sets. It can also calculate averages and save them in Averages Data Sets.
Defining systems, groups, and data files

Use dialog options 1 System Definitions and 2 Groups to define the systems, groups, and files that contain the data for reporting.

IMS PA supports IMS systems with Log, Monitor, TRF, and ATF files, Connect systems with active or archive journal data sets, and groups of these systems. For log reporting on shared queues or data sharing, you can specify groups of IMS subsystems. For combined IMS and Connect reporting, you can specify groups of IMS subsystems and Connect systems.

When you submit a Report Set for batch processing, you specify the system or group to be used for that run. IMS PA builds the JCL using the eligible data sets for that system or group ("excluded" data sets are ignored). For log reporting, you can use the more convenient method of DBRC Log Selection which automatically selects the log files for the specified report interval. Similarly, for IMS Connect reporting, you can use IMS Connect Extensions Automated File Selection to automatically select the journal data sets for the specified report interval. For combined IMS and IMS Connect reporting, automated file selection employs both these utilities.

Shared Queue reporting

An IMS PA Report Set produces reports and extracts from one or more input data sets. For log reporting, these data sets can be from a group of IMS subsystems running in a sysplex environment and using shared queues managed by a Common Queue Server (CQS).

IMS PA merges the multi-subsystem log input by time stamp sequence to produce either composite reports or reports by subsystem.
Specifying IMS Connect systems and event data

To report on IMS Connect event data, you must first identify the IMS Connect systems to IMS PA.

To specify the name of the default IMS Connect Extensions Definitions Data Set, use dialog option 0.5 IMS Connect Extensions Definitions Data Set. This is the usual data set that defines the IMS Connect systems and event data that you want to report on. If a Connect system is maintained in a different repository, it can be specified on the Connect System Definition panel. You can then submit your report requests in either of two ways:

- Run a CEX Report Set, specifying the IMS Connect system at run time.
- Select an IMS Connect system or archive data set for reporting, specifying the CEX Report Set at run time.

System definitions in the IMS Connect Extensions Definitions Data Set are defined by IMS Connect Extensions, not IMS PA. However, IMS PA provides facilities to maintain IMS Connect system definitions and groups. The IMS PA definitions remain “local” to IMS PA and do not affect the IMS Connect Extensions Definitions Data Set.

Processing extract and history data sets

IMS PA can produce extract data sets in the form of delimited text files for processing by external programs such as DB2 or PC tools such as IBM Lotus® Symphony® Spreadsheets or Microsoft Excel.

The following reports have extract capability:

- Transaction Exception (MSGQ)
- Fast Path Transaction Exception
- CPU Usage
- Database Update Activity
- Connect Transit Extract (suitable for DB2, not PC tools)
- All Form-based reports

The Transaction History File is used to collect historical performance data, useful for long-term trend analysis and capacity planning.

Complementary IBM products

IMS Performance Analyzer complements the following IBM products in the investigation of transaction performance related problems.

IBM Transaction Analysis Workbench for z/OS

Transaction Analysis Workbench is a tool for analyzing problems with the performance or behavior of z/OS-based transactions. Transaction Analysis Workbench provides a platform for investigating logs and other historical data collected during transaction processing and system operations. Transaction processing is often complex. Modern applications frequently interact with external subsystems and use system services. Pinpointing the cause of a problem can be difficult. Transaction Analysis Workbench extends the scope of traditional transaction analysis techniques, enabling you to more easily identify problems caused by external events. You can use Transaction Analysis Workbench with the following IBM tools:

- IMS Performance Analyzer - to look outside of IMS for the cause of problems, in particular DB2 and WebSphere MQ
• CICS Performance Analyzer - to bridge the gap between CICS and IMS for CICS-DBCTL

**IBM Tivoli OMEGAMON XE for IMS on z/OS (5698-A34)**

IBM Tivoli OMEGAMON XE for IMS on z/OS (5698-A34)

IMS Performance Analyzer provides reporting on transaction activity data collected by the following components of OMEGAMON XE for IMS:

• OMEGAMON Transaction Reporting Facility (TRF) collects performance and resource utilization data for every IMS transaction. The TRF transaction accounting statistics are written to the IMS log and later extracted by the TRF Extractor utility. IMS Performance Analyzer provides a suite of reports in **TRF Report Sets** to interpret and summarize the transaction accounting statistics in specified TRF Extractor output data sets. TRF data includes CPU time, virtual storage usage, and response time of a transaction.

• OMEGAMON Application Trace Facility (ATF) collects data on external subsystem events (DB2, MQ), BMP and MPP scheduling and termination events, the region where a transaction is executed, occurrence of DLI DB, IMS TM, and message queue calls. The ATF application-level accounting statistics are written to the active ATF journal (VSAM KSDS). IMS Performance Analyzer provides a suite of reports and extracts in **ATF Report Sets**.

**IBM IMS Connect Extensions for z/OS (5655-S56)**

IBM IMS Connect Extensions for z/OS (5655-S56)

IMS Connect Extensions provides instrumentation for IMS Connect. The tool continuously records IMS Connect events, which you can analyze with IMS Performance Analyzer using the suite of reports provided in **CEX Report Sets**. The input data for reporting is provided by explicitly specifying IMS Connect Extensions journal data sets, or by requesting the IMS Performance Analyzer automated file selection utility to automatically select the journal data sets for your specified systems and report period.

**IBM IMS Problem Investigator for z/OS (5655-R02)**

IBM IMS Problem Investigator for z/OS (5655-R02)

IMS Problem Investigator (IMS PI) allows you to interactively investigate IMS and related logs. It helps you pinpoint the cause of problems highlighted by IMS Performance Analyzer. Transaction tracking is facilitated by using the IMS Transaction Index (X'CA01' record) and IMS Connect Transaction Index (X'CA20' record) created by IMS Performance Analyzer. To make the two products easier to use together, they share definitions for systems and groups: you only need to maintain the definitions in one of the tools.

The following diagram illustrates the cooperation between IMS Performance Analyzer, IMS Problem Investigator, and IMS Connect Extensions. When IMS Connect event details in IMS Connect Extensions journals are merged with IMS (and related) logs, IMS Performance Analyzer and IMS Problem Investigator can provide a comprehensive insight into the lifecycle of IMS transactions.
IMS Problem Investigator provides interactive facilities for the presentation, navigation and interrogation of log data of different types and across systems. IMS Problem Investigator knows about log records and their contents, and allows you to drill down from file to record to field to determine the essence of a problem.

Figure 3. IMS PI, IMS PA, and IMS Connect Extensions cooperation

IMS Connect Extensions records how much time a transaction spends in IMS Connect, and where IMS Connect Extensions journal
IMS log
IMS Problem Investigator (PI)
IMS Performance Analyzer (PA)
End-to-end tracking (PI) and reporting (PA)
Pre-OTMA ➔ OTMA ➔ Post-OTMA
IMS Connect
Pre-OTMA processing
OTMA processing
IMS application
User message exit
Read from socket
Write to socket
IMS Connect Extensions
Sockets
User message exit
XMIT exit function
IMS application
IMS Connect Extensions
IMS Connect Extensions
IMS Connect Extensions journal
IMS log
IMS Problem Investigator (PI)
IMS Performance Analyzer (PA)
End-to-end tracking (PI) and reporting (PA)
Pre-OTMA ➔ OTMA ➔ Post-OTMA
IMS Connect
Pre-OTMA processing
OTMA processing
IMS application
User message exit
Read from socket
Write to socket
IMS Connect Extensions
Sockets
User message exit
XMIT exit function
IMS application
IMS Connect Extensions
IMS Connect Extensions journal
IMS log
IMS Problem Investigator (PI)
IMS Performance Analyzer (PA)
End-to-end tracking (PI) and reporting (PA)
Pre-OTMA ➔ OTMA ➔ Post-OTMA
IMS Performance Analyzer can highlight problem transactions which can then be investigated in detail using IMS Problem Investigator.
Because IMS processes large workloads, records from the same transaction can be separated by thousands of records from other transactions, making it difficult to trace the flow of only one of those transactions. Moreover, different record types have different fields that relate them to a transaction, making them inaccessible using conventional filtering and searching techniques. With the IMS Problem Investigator tracking facility, you can find a record from the relevant transaction, and then display just the records from that transaction. IMS Problem Investigator tracks all transaction records, finding the related IMS log and monitor, CQS, IMS Connect, OMEGAMON TRF, ATF, DB2, MQ, and SMF records, hiding others that are not part of the transaction.
Service updates and support information

Service updates and support information for this product, including software fix packs, PTFs, frequently asked questions (FAQs), technical notes, troubleshooting information, and downloads, are available from the web.

To find service updates and support information, see the following website:


Product documentation and updates

IMS Tools information is available at multiple places on the web. You can receive updates to IMS Tools information automatically by registering with the IBM My Notifications service.

Information on the web

The IMS Tools Product Documentation web page provides current product documentation that you can view, print, and download. To locate publications with the most up-to-date information, refer to the following web page:

http://www.ibm.com/software/data/db2imstools/imstools-library.html

You can also access documentation for many IMS Tools from IBM Knowledge Center:

http://www.ibm.com/support/knowledgecenter

IBM Redbooks publications that cover IMS Tools are available from the following web page:

http://www.redbooks.ibm.com

The Data Management Tools Solutions website shows how IBM solutions can help IT organizations maximize their investment in IMS databases while staying ahead of today's top data management challenges:


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4. Click **Continue** to specify the types of updates that you want to receive.
5. Click **Submit** to save your profile.

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**Accessibility features**

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use a software product successfully.

The major accessibility features in this product enable users to perform the following activities:

- Use assistive technologies such as screen readers and screen magnifier software. Consult the assistive technology documentation for specific information when using it to access z/OS interfaces.
- Customize display attributes such as color, contrast, and font size.
- Operate specific or equivalent features by using only the keyboard. See the following publications for information about accessing ISPF interfaces:
  - z/OS ISPF User’s Guide, Volume 1
  - z/OS TSO/E Primer
  - z/OS TSO/E User’s Guide

These guides describe how to use the ISPF interface, including the use of keyboard shortcuts or function keys (PF keys), include the default settings for the PF keys, and explain how to modify their functions.
Chapter 2. Overview of the reports

IMS Performance Analyzer provides a comprehensive suite of reports to help you manage transaction performance and to monitor resource utilization in IMS and DB systems.

Reports and extracts can be produced from IMS Logs, Monitor files, IMS Connect Extensions journals, and OMEGAMON TRF files and ATF journals. Standard reports are available, or you can request tailored Form-based reports.

Log reports

Log reports process IMS Log data. IMS PA has a variety of log reports available on request. The many reports are intended for people with different interests in IMS system performance monitoring and tuning.

Log reports can be categorized in a number of ways. Here, the reports are categorized by the type of log data they process:

- Message Queue Transaction and Full Function Database reports
- Fast Path EMH Transaction and Fast Path Database reports

However, elsewhere in this documentation, the reports are described according to the IMS PA dialog, which presents the reports in functional categories.

Message Queue transaction and Full Function database reports

The MSGQ transaction and Full Function database reports are grouped by intended audience into Management reports, Analysis reports, and Detail reports.

Form-based Transaction Transit reports can be constructed to suit many purposes.

Management reports

Management reports let managers know whether IMS is working within expected limits. The management reports are:

Dashboard

The "Dashboard report" on page 326 provides a quick overview of critical system performance indicators, including transaction throughput and IMS system resources. It can highlight potential performance problems quickly, providing a springboard to other reports that provide more detailed information.

Management Exception

The "Management Exception report" on page 327 shows whether critical values are within specified limits, and it gives summary values of certain indicative information. Typically, you will look at this report first to see if any of the values are an exception to what you expected or what is typical. When there is a problem, you can go to other IMS PA reports for additional, more detailed information.
Transaction Transit Graphic Summary

The "Transaction Transit Graphic Summary report" on page 306 consists of four graphs, summarizing daily transaction processing for:

- Mean transit time
- User-specified percentile transit time
- Transaction response count
- Responses per second

The graphs can help you determine at a glance whether abnormal transit times exist and whether the input queue, processing, output queue, or program switching is a likely bottleneck.

Transaction Transit Extract by Interval and Graphs

The "Transaction Transit Extract by Interval and Graphs" on page 306 allows creation of extract files of transaction transit time by time interval data. You can then use this data to get pictures of system performance using IMS PA graphing facilities, or by exporting for manipulation by external programs or downloading to a PC.

Transaction Exception

The "Transaction Exception report and extract" on page 309 shows transaction performance information that affects response time. The report can be ordered by Transaction Code, User ID, Message Class, or Time of Input, optionally with a breakdown by transaction code. Optionally, two extract files can be produced containing detail records of all transaction activity, or exception transactions only.

Analysis reports

Analysis reports are intended for administrators and analysts who want operating information in easy-to-read, summary format. The analysis reports are:

Transaction Transit Analysis

The "Transaction Transit Analysis report" on page 301 shows the times for the components of transaction transit time:

- Input queue time (local or CQS)
- Processing time
- Output queue time
- Output shared queue (CQS) time
- Output local queue time
- Program switch time

This report can be ordered by:

- Transaction code
- LTERM
- Transaction code within LTERM
- Message Class
- Line or VTAM node
- Time of day

The display of transit time by time period helps you identify periods of poor response.

Transaction Transit Statistics

The "Transaction Transit Statistics report" on page 304 consists of statistical distribution graphs of the transit time components listed in the preceding report.
Transaction Resource Usage
The “Transaction Resource Usage report” on page 331 provides a comprehensive overview of transaction resource usage, including:

- Scheduling statistics, including WFI
- CPU usage
- DL/I call statistics
- Enqueue statistics
- DBCTL DB and I/O usage

Resource Availability
The “Resource Availability report” on page 332 provides a breakdown of active, idle and unavailable time for regions, lines, programs, transactions, and databases. The time that WFI and pseudo-WFI regions spent waiting for input is also shown.

CPU Usage
The “CPU Usage report and extract” on page 334 give statistics on CPU time and elapsed time for:
- Regions
- Transactions
- Programs

This report can help you determine such things as who is using too much CPU time or, conversely, what programs or transactions, in which regions, are in a wait state for too long.

Internal Resource Usage
The “Internal Resource Usage reports” on page 336 provides statistics on the use of various IMS resources and pools. The statistics help you determine how resources and pools are being used and where inefficiencies exist.

MSC Link Statistics
The “MSC Link Statistics report” on page 339 provides summary information on the overall usage of MSC links and a detailed breakdown of Send and Receive data for each MSC link.

Message Queue Utilization
The “Message Queue Utilization report” on page 341 contains information on the use of message queues. This information can help you:
- Balance the I/O between long and short message data sets
- Adjust record and buffer sizes for the most efficient use of these two data sets

Thus this report helps you reduce storage and minimize I/O.

Database Update Activity
The “Database Update Activity report and extract” on page 342 can help you determine the cost of database calls. They show the number of blocks updated and how many updates of each type were made for each database.

OSAM Sequential Buffering
The “OSAM Sequential Buffering report” on page 345 provides detailed I/O and buffer-usage statistics that allow you to assess the benefit of OSAM sequential buffering.

Deadlock
The “Deadlock report” on page 346 provides a comprehensive analysis of
deadlock events. The report provides a list of all deadlock events in the log, similar to DFSERA30. In addition the report summarizes deadlock activity to show at a glance:
• the frequency of each losing transaction/database combination
• the associated winning transaction/database combinations
The information provided is a useful aid for tuning applications and adjusting scheduling parameters to avoid this expensive overhead. Deadlocks involving DB2 are also reported.

System Checkpoint
The “System Checkpoint report” on page 347 provides a detailed analysis of IMS internal checkpoint activity. The report provides details of your IMS resources, including:
• Databases, with system definition information
• Transactions, with system definition information and basic usage indicators
• Terminals, with system definition information and basic usage indicators
The report also provides a summary of checkpoint activity, including:
• Breakdown of checkpoint records by type
• Frequency and overhead of internal checkpoint processing

BMP Checkpoint
The “BMP Checkpoint report” on page 348 provides an analysis of BMP checkpoint frequency that can affect online performance and system restartability. The detailed List report provides a breakdown of individual BMP checkpoint activity. The Summary report provides an overview of each BMP program.

Log Gap Analysis
The “Gap Analysis report” on page 350 shows periods of time where log records are not being cut, potentially highlighting an external system event that may have caused IMS to slow down.

Cold Start Analysis
The “Cold Start Analysis report” on page 351 provide a snapshot of in-train activity in the event of a cold start to determine what transactions were lost from the IMS message queue, what were the incomplete units of work, what database changes were made and not backed-out, and what external subsystem activity was left in doubt.

ESAF Trace
The “ESAF Trace report” on page 375 lists each connect and disconnect of an external subsystem.

Detail reports
Detail reports help analysts and programmers solve problems. The detail reports are:

Transaction Transit Log
The “Transaction Transit Log report” on page 305 shows the transit activity of each message originating from a logical terminal or program switch. It can help you diagnose problem areas. This report is similar to the one produced by DFSILTA0, but provides shared queue reporting for multiple IMS subsystems.
Region Histogram

The "Region Histogram report" on page 344 is a graphic display of region activity. It shows the times a region is active or idle, and the patterns of transaction scheduling in each region.

DC Queue Manager Trace

The "DC Queue Manager Trace report" on page 370 shows a time-sequenced list of each TM event, such as input, message enqueue, get unique, output, and free DRRN (disk relative record number). This report also shows the content of each input message. You can request the DC UOW Tracker report. This enables you to trace transaction message flow using the IMS Tracking UOW.

Database Trace

The "Database Trace report" on page 372 shows the before and after versions of each changed segment and, for each change, identifies the application program, transaction, region, and time.

Transaction History File

The "Transaction History File" on page 312 is used to collect historical performance data, useful for long-term trend analysis and capacity planning. Information is summarized for each transaction code over a short time interval, including transaction transit, response and CPU times, as well as DLI call statistics. Data is provided in a format suitable for loading directly into DB2, from where you can run queries or produce reports.

Fast Path EMH transaction and Fast Path database reports

The Fast Path EMH transaction and Fast Path database reports are grouped by intended audience into Management reports, Analysis reports, and Detail reports.

Management reports

Management reports let managers know whether IMS is working within expected limits. The management reports are:

Fast Path Transit Extract by Interval and Graphs

The "Fast Path Transit Extract by Interval" on page 357 allows creation of extract files of Fast Path transit data by time interval. You can then use this data to get pictures of system performance using IMS PA graphing facilities, or by exporting for manipulation by external programs or downloading to a PC.

Analysis reports

Analysis reports are intended for administrators and analysts who want operating information in easy-to-read, summary format. The analysis reports are:

Fast Path Transit Analysis

The "Fast Path Transit Analysis report" on page 355 shows the times for the components of transaction transit time:

- Input queue time
- Processing Time
- Output queue time
- Global input and output queue times

This report can be ordered by:

- Transaction Code
The display of transit time by time period is useful in isolating periods of high response time during the day.

Fast Path Resource Usage and Contention
The “Fast Path Resource Usage and Contention report” on page 362 provides statistics on the use of various Fast Path resources, including:
- DEDB databases and areas
- VSO
- Buffers
- Locks
- Logging
- Transaction throughput

Fast Path Database Call Statistics
The “Fast Path Database Call Statistics report” on page 364 shows DEDB and MSDB DL/I call statistics, broken down by transaction code.

IFP Region Occupancy
The “IFP Region Occupancy report” on page 365 provides approximate region occupancy rates for IFP regions.

EMH Message Statistics
The “EMH Message Statistics report” on page 366 contains information on the number and length of EMH messages that are processed by balancing groups and shared EMH queues.

DEDB Update Activity
The “DEDB Update Activity report” on page 367 provides information on the update activity against your DEDB databases.

VSO Statistics
The “VSO Statistics report” on page 369 provides detailed statistics on VSO resource usage, including:
- SHARELVL 0/1 Data spaces
- SHARELVL 2/3 Coupling Facility structures
- SHARELVL 2/3 Lookaside buffers
- DEDB Area data set I/O

Detail reports
Detail reports help analysts and programmers solve problems. The detail reports are:

Fast Path Transit Log
The “Fast Path Transit Log report” on page 356 shows the transit activity of each EMH transaction processed by an IFP region. It can help you isolate and diagnose problem transactions.

Fast Path Transaction Exception
The “Fast Path Transaction Exception report and extract” on page 360 series of reports provide detailed and summary information about IFP transactions, as well as message queue transactions that use Fast Path databases. Optionally, two extract files can be produced containing detail records of all IFP transaction activity, or exception transactions only. The content of these reports and extracts is similar to that produced by the Fast Path Log Analysis Utility DBFULTA0.
**DEDB Update Trace**

The “DEDB Update Trace report” on page 373 provides a record of all DEDB changes, identifying application program, user ID, region and time.

**DBCTL log reports**

DBCTL has neither transactions nor terminal end users in the traditional IMS sense. It does, however, work on behalf of transactions entered by CCTL terminal users. DBCTL generates log data when a CCTL transaction schedules a program to access DBCTL databases.

The log reports that apply to DBCTL are:
- “Transaction Resource Usage report” on page 331
- “Resource Availability report” on page 332
- “CPU Usage report and extract” on page 334
- “Internal Resource Usage reports” on page 336
- “Database Update Activity report and extract” on page 342
- “Fast Path Resource Usage and Contention report” on page 362
- “Fast Path Database Call Statistics report” on page 364
- “DEDB Update Activity report” on page 367
- “VSO Statistics report” on page 369
- “Database Trace report” on page 372 (Full Function)
- “DEDB Update Trace report” on page 373

Form-based Transit reports using, for example, the following sample report forms:
- “DBCTLIST: DBCTL List report” on page 240
  List of DBCTL Transactions
- “DBCTSUMM: DBCTL Summary report” on page 240
  Summary of DBCTL Transactions

**Monitor reports**

The IMS PA monitor reports are organized by level of detail and area of analysis into categories.

The categories are:
- Region Activity Summary
- Region Activity Analysis
- System Analysis
- Resource Usage
- Fast Path Analysis
- Monitor Data Analysis

All reports are optional and can be selected as required to satisfy the various analysis requirements of management, analysts, and programmers.

Reporting options let you tailor reports to your needs. They include:
- ESAF Integration. External Subsystem calls are integrated into all Region and Program/Trancode reports. When activated, ESAF call statistics are reported for each subsystem and contribute to the total call and IWAIT counts for regions and program/trancodes.
- Alternate Sequencing. Summarized monitor reports can be ordered in an alternate sequence. By default, the reports are ordered by name, such as Region ID, Program name, Transaction Code and Database name. Alternatively, you can request that the reports be ordered (in descending sequence) by any one of the following:
- Occupancy. The elapsed time that the resource is scheduled or in use. For example, the busiest regions or programs.
- Calls. The time spent by the resource performing DL/I or other types of calls. For example, transactions with the most DL/I call activity.
- Delay. The time spent by the resource waiting for IWAIT events to complete. For example, the databases which had to wait the longest for I/O to complete.

When Alternate Sequencing is requested, a limit can also be specified to restrict the number of resources reported. You can specify a fixed number, for example the 10 worst performing databases, or you can specify a percentage, for example the top 10% busiest regions.

- Report Interval. Time ranges let you select a specific part of the monitor trace data. You can specify a time range which applies globally to all IMS PA monitor reports, and to restrict this time period further, you can specify a time range individually for the Transaction by Time Period, Region Histogram, and Program Trace reports.
- Time Interval. Reports can be printed for each minute of trace, for each trace, or for the cumulative activity of multiple traces.
- Reporting of VSAM IWAITs. VSAM IWAITs with an elapsed time that is less than a specified value are not reported as I/O IWAIT activity. This lets you exclude VSAM IWAITs that do not result in actual I/O activity.
- Distributions. Optionally, distribution graphs can be produced by applicable reports. Distribution titles and intervals can be modified as required.
- Application and DDgroup Selection. Sets of PSB names can be reported separately as application groups. Likewise, sets of DDnames can be reported as DDgroups; for example, DDnames could be grouped by data set type (VSAM or OSAM) or data set placement (VOLSER), or application.
- Program and I/O Performance Thresholds. Thresholds can be set for monitoring three important program and I/O performance indicators: number of IWAITs per call, DL/I call elapsed time, and I/O IWAIT elapsed time. An Exception Listing report is printed each time a threshold value is exceeded.
- Defaults are provided to satisfy typical reporting requirements.

**Region Activity Summary reports**

The Region Activity Summary reports summarize and correlate region, program, transaction, and database activity for the IMS system.

These reports provide an overview of system activity and a means of identifying problem areas for further investigation with system and program level reports. Use of these reports for trend analysis and day-to-day monitoring of the system is facilitated because reporting is in terms of rates, ratios, percentages, and elapsed times per event.

The Region Activity Summary reports are:

- “Schedule/Transaction Summary report” on page 491
- “Region Summary report” on page 491
- “Program Summary report” on page 491
- “Database IWAIT Summary report” on page 491
- “Transactions by Time Period Options” on page 485
**Region Activity Analysis reports**

Detail reports analyze program activity for each active MPP, IFP, or BMP region and for specified application and data set groups. A Database IWAIT Analysis report gives details of program related IWAIT activity. Exception Listing report entries are provided when certain performance monitoring thresholds are exceeded. An Enqueue/Dequeue Trace report identifies program isolation bottlenecks. The Region Histogram report graphically presents the interrelationship of region activity.

 Optionally, distributions are used extensively throughout the reports.

The Region Activity Analysis reports are:

- “Region Analysis report” on page 492 (with Region Detail)
- “Application Detail report” on page 492
- “Database IWAIT Analysis report” on page 493
- DDgroup via “DDname Grouping Options” on page 488
- “Performance Exception reports” on page 494 (with Exception Listing)
- “Enqueue/Dequeue Trace report” on page 496
- “Region Histogram report” on page 497

**System Analysis reports**

The System Analysis (Total System IWAIT) reports provide a summary and detailed account of the IWAIT activity of the entire IMS system.

These IWAIT events include the following:

- System data sets
- Databases (Full Function and Fast Path)
- ACBLIB Block loading
- Message Format services
- Scheduler
- Checkpoints
- Line/VTAM node
- Storage Pools
- MSC

The System Analysis reports are:

- “Total System IWAIT reports” on page 499 (Summary and Detail)

**Program Analysis reports**

The Program Analysis reports provide detailed information on all aspects of application processing.

- Detailed analysis and documentation of the database activity of each MPP, IFP, or BMP, and the program activity against each database and data set
- Detailed trace of specified program schedules
- Detailed breakdown of VSAM activity for IMS batch jobs

The Program Analysis reports are:

- “Program Activity Detail reports” on page 500
- “Program Trace report” on page 502
- “Batch VSAM Statistics report” on page 503
Resource Usage reports

The options for Resource Usage reports are described here.

The Resource Usage reports provide a detailed analysis of the usage of IMS resources, including the following:
- Buffer Pools; including Message Queue, OSAM, VSAM, and Message Formatting
- Latches
- Communication
- Multiple Systems Coupling
- External Subsystems
- Synchronous Callouts

The Resource Usage reports are:
- “Buffer Pool and Latch Statistics reports” on page 504
- “Communication reports” on page 505
- “MSC reports” on page 507
- “ESAF report” on page 508
- “Synchronous Callout report” on page 508

Fast Path Analysis reports

The Fast Path analysis reports provide an analysis of all Fast Path resources and functions, including Fast Path buffers, BALG and shared EMHQ, OTHREADs, DEDB IWAITs, DEDB resource contention, and VSO. The reports are not available from DB Monitor data.

The Fast Path analysis reports are:
- “DEDB Resource Contention report” on page 509
- “Fast Path Buffer Statistics report” on page 510
- “BALG/Shared EMHQ Analysis report” on page 511
- “OThread Analysis report” on page 512
- “VSO Summary report” on page 513

Monitor Data Analysis report

The Monitor Data Analysis report contains the Monitor Record Trace report.

The “Monitor Record Trace report” on page 514 formats the records from the monitor input file into a chronological listing.

Batch Program reports

Although the entire collection of IMS PA monitor reports could conceivably be obtained from processing a DB Monitor trace, only a subset of the reports are meaningful for DB analysis. The rest of the reports are TM related and would provide little or no relevant information about DB.

Of the preceding reports, the following subset is available for analysis of DB Monitor data:

Region Summary and Detail (Region 1)
Statistics and distributions for database calls and IWAITs. Most of this information is also available with the Program Activity Detail reports, however Calls/sec and IWTs/sec are unique values in this report.
Database IWAIT Summary (Region 1)
A summary of IWAIT activity for each data set and specified DDgroup.

Database IWAIT Analysis with distributions
A report of IWAIT activity by DDname. This report can be used in place of, or in addition to, the Total System IWAIT reports.

DDgroup with distributions
A report of IWAIT activity by DDname for each user-defined DDgroup.

Exception Listing
A listing of performance threshold violations. The other reports included in the suite of Performance Exception reports are applicable only to TM.

Total System IWAIT Summary and Detail with distributions
A complete accounting of IWAIT activity by data set type (OSAM, VSAM, DEDB, MSDB) and DDname.

Program Activity Detail
A comprehensive collection of reports for database call analysis, plus a detailed trace of batch program IWAIT and CALL events for analysis of program design problems.

Program Trace
A detailed trace of the events associated with a program schedule.

Batch VSAM Statistics
A detailed breakdown of VSAM activity for IMS batch jobs.

Buffer Pool and Latch Statistics
A report on the access status of IMS buffers and the contents of the IMS latch counters.

ESAF
A summary of the external subsystem activity of IMS programs.

Monitor Record Trace
The monitor input records are formatted and reported chronologically.

You should decide which reports best suit your requirements. The following reports are often the most useful:
• Database IWAIT Analysis and distributions.
• DDgroup Detail and distributions.
• Program Analysis reports (either PSB Details or PSB-Transaction Code Analysis provide the same information). Note that CPU time is not collected for DB Monitor so CPU shows as 0.000 (zero) in Program Analysis reports.
• If a program or database problem requires more detail, you can do a separate run to obtain the Program Trace report. Use the From and To date and time report options to control the duration of the Program Trace.

DBCTL monitor reports
DBCTL has neither transactions nor terminal end users in the traditional IMS sense. It does, however, work on behalf of transactions entered by CCTL terminal users. DBCTL monitoring provides data about the processing that occurs when a CCTL transaction accesses DBCTL databases.

The Monitor reports that apply to DBCTL are:
• "Region Activity Summary reports" on page 34
• "Region Activity Analysis reports" on page 35
• "Total System IWAIT reports" on page 499 (Summary and Detail)
• "Program Activity Detail reports" on page 500
IMS Connect reports

The IMS PA reports that analyze IMS Connect event data are organized by level of detail and area of analysis into categories.

The categories are:
- Transaction Transit
- Transaction Transit (Form-based)
- Resource Usage
- Trace

Form-based Transaction Transit reports can be constructed to suit many purposes.

All reports are optional and can be selected as required to satisfy the various analysis requirements of managers, analysts, and programmers.

Reporting options let you tailor reports to your needs. They include:
- Time Interval. Some reports can be summarized by time interval.
- Selection Criteria. You can filter the data based on field values thereby focusing your reports on the information that you are interested in.
- Report Interval. Time ranges let you select a specific part of the IMS Connect data. At run-time, you can specify a time range which applies to all the IMS Connect reports.
- Defaults are provided to satisfy typical reporting requirements.

Transaction Transit reports

These reports provide performance statistics to measure the performance of your IMS Connect transactions. Transaction Transit (response) time is broken down into its components; Input, Processing (by OTMA), Acknowledgement from the client and Output. They can help identify any bottlenecks in transaction flow, and are used for monitoring system performance, gathering diagnostic information, and tuning IMS.

The IMS Connect transaction transit reports are:
- "Connect Transit Analysis report" on page 557
- "Connect Transit Log report" on page 559
- "Connect Transit Extract" on page 560

Resource Usage reports

These reports contain detailed and summary information on the use and availability of various IMS Connect resources including TCP/IP Ports and Tpipes.

The IMS Connect resource usage reports are:
- "Connect Port Usage report" on page 572
- "Connect Resume Tpipe report" on page 573
- "Connect ACK/NAK report" on page 575
- "Connect Exception Events report" on page 576
- "Connect Gap Analysis report" on page 578
Trace report

These reports provide detailed analyses of individual IMS Connect transit event records. Trace reports are typically used to investigate point in time performance problems because they provide all available information. To focus on the desired problem area or to minimize the size of the report, narrow the report interval and/or specify Selection Criteria.

The IMS Connect Trace reports are:
- “Connect Transit Event Trace report” on page 579

Form-based Transaction Transit reports

Report Forms allow you to personalize the format and content of Transaction Transit reports and extracts to include only the information that interests you.

Report Form features include:
- You can select fields from all the IMS and Connect fields available to IMS Performance Analyzer. For a list of IMS Performance Analyzer field names used in Form-based reporting, see Chapter 41, “Glossary of Report Form field names,” on page 753.
- List and Summary Form-based reporting is available from both Log and Connect Report Sets.
- Sample report forms are supplied with IMS Performance Analyzer to provide a broad selection of functional reports:
  - For Log reporting, see “Sample forms for Log reporting” on page 236.
  - For Connect and Combined reporting, see “Sample forms for Connect and Combined reporting” on page 237.
- You can use IMS Performance Analyzer to load Form-based extracts into DB2 tables.
- Combined IMS and Connect reporting is available from Connect Report Sets using Report Forms that specify both IMS and Connect fields. By reporting against a Group of IMS and Connect systems, you can get a complete end-to-end transit picture of IMS Connect transactions.

OMEGAMON TRF reports

Transaction performance and resource utilization statistics are collected by OMEGAMON subsystems with the Transaction Reporting Facility (TRF) Trace running. TRF data can be written to an SMF data set or the IMS Log. IMS Performance Analyzer processes TRF records extracted from the IMS Log by the TRF post-processor.

IMS Performance Analyzer provides a set of reports in the TRF Report Set to process the TRF Extractor records. The dialog presents the TRF reports grouped by functional category to allow you to request reports individually or by category. The categories are:
- Database Usage reports
- Message Queue reports
- Trace reports

Database Usage reports

These reports provide performance statistics to measure IMS and DB2 database activity.
Message Queue reports (Form-based)

Form-based reports give you flexibility in message queue reporting. By using Report Forms, you can tailor the format and content of your reports. You can request just the fields of interest, and control the presentation order and format. You can create Form-based extracts and load them into DB2 tables.

The Message Queue reports provide performance detail about every transaction traced by OMEGAMON TRF.

- “Form-based Message Queue List report and extract” on page 617
- “Form-based Message Queue Summary report and extract” on page 621

Trace reports

The Record Trace reports format the TRF Extractor records for ease of analysis. The trace provides a list of transactions, each with detailed information about every event in the life of that transaction. At a glance, you can see when a transaction starts, followed by all the events associated with the transaction in the order they occurred.

- “TRF Record Trace report” on page 626

OMEGAMON ATF reports

OMEGAMON Application Trace Facility (ATF) provides application-level accounting statistics of DLI, DB2, and MQ calls, call times, and CPU utilization.

The analysis of the data collected by ATF can be used to:

- Identify transaction response-time components
- Fine-tune applications
- Understand how application programs operate

IMS Performance Analyzer provides a set of reports in the ATF Report Set to process ATF journals. The dialog presents the reports grouped by functional category. You can request reports individually or by category. The categories are:

- Transaction Transit reports
- Trace reports
- Extracts

Transaction Transit reports

These reports provide application-level accounting.

- “ATF Transit List report” on page 642
- “ATF Transit Summary report” on page 643

Trace reports

The Record Trace reports provide three levels of detail for application-level analysis of DLI and external subsystem (DB2 SQL and MQ adapter) calls.

- “ATF Record Trace report” on page 645
Exception Transaction Extract

The "ATF Exception Transaction extract" on page 646 is an ATF data reduction process creating a data set of transactions that generated an exception (ABEND or long response time).

There are two types of data set. You can choose to extract to either or both types:
- ATF Journal, a pre-allocated KSDS
- REPRO file, a sequential data set for archival purposes which you can later load into an empty ATF journal for reporting

Report command format

IMS PA provides both a dialog and batch interface. The IMS PA commands are used to request reports and extracts. The dialog generates the JCL and commands when you run (submit) a Report Set.

The standard command format for producing reports and extracts is:

```
NAME

NAME The name field labels the command statement. It contains 1 to 8 alphanumeric characters and must start in column 1. The name is only used by the DISTRIBUTION command, and it enables the Distribution to be used by its associated report.

COMMAND The command is required and is one of the following:

IMSPALOG Requests Log reporting.

IMSPAMON Requests Monitor reporting.

IMSPACEX Requests IMS Connect reporting or combined IMS and IMS Connect Form-based reporting.

IMSPATRF Requests OMEGAMON TRF reporting.

IMSPAATF Requests OMEGAMON ATF reporting.

DISTRIBUTION Defines a Distribution for use by monitor or log reporting. Distributions must appear at the end of command input, after the EXECUTE statement.

COPY Reads precoded commands from the CMDLIB DD command library.

IMSPALOG, IMSPAMON, IMSPACEX, IMSPATRF, and IMSPAATF commands cannot coexist; they must be specified in separate jobs.
```
OPERANDS
Operands request specific reports or processing by IMS PA, and one or more operands are required for most commands. Operands must start on the same line as the command. Operands for the one command must be separated by commas, and may be continued across several lines. When operands have values, they can be specified in parentheses or with an equate sign. For example: DDNAME(RPTOUT) or DDNAME=RPTOUT

Most operands can be abbreviated by using the first few characters of the operand name. For example: DD for DDNAME

Some operands are common to many reports and have common characteristics. For example:

FROM(date,time),TO(date,time) or START(date,time),STOP(date,time)
The report period. Date is in the format yyyy/mn/dd. Time is in the format hh:mm:ss:th.

DDNAME(ddname)
The DDname of the report output file. For some reports, the DDname is individually specified, whereas others use a global specification. The DDname will always default if not specified. To segregate report output, the DDnames should be unique within the job. For report output and extract data sets, avoid using DDnames starting with L or CEX as they are reserved for input file DDnames.

INCLUDE(list)|EXCLUDE(list)
The list of values to include in or exclude from the report. The format of the list is:
(value1,value2,...),(from,to),...

where value1,value2,... represent specific values or masks (using * for generic positions), and (from,to),... represents a range of values.

comments
Text trailing the last operand on the line, separated by at least one space, is treated as a comment. Also, lines with an asterisk * in column 1 are treated as comments.

Columns 72 to 80 are ignored.

Related concepts:
“TRF Report Set” on page 606
IMS PA reports for the OMEGAMON Transaction Reporting Facility (TRF) are specified in a Report Set of type TRF.
“ATF Report Set” on page 638
ATF reports are specified in a Report Set of type ATF.

Related tasks:
“Run Log Report Set” on page 287
The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category or individual reports.
“Run Monitor Report Set” on page 475
The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category, or individual reports.
“Run Connect Report Set” on page 551
The IMS PA dialog generates the JCL for batch report processing. Enter the RUN
command to run your Report Set, Report Category, or individual reports.
Chapter 3. Processing extract data sets

IMS PA can create various types of extract data set for further processing and analysis by applications.

IMS PA reports can create four types of extract data sets:

**Extract data sets**

Delimited text files that can be created by the following reports for input to external programs such as DB2 or PC spreadsheet tools such as IBM Lotus Symphony Spreadsheets or Microsoft Excel:

**Log extracts**
- Transaction Exception (MSGQ)
- Fast Path Transaction Exception
- CPU Usage
- Database Update Activity
- Form-based Transit List and Summary

**Connect (CEX) extracts**
- Connect Transit – for export to DB2
- Form-based Transit List and Summary

**TRF extracts**
- Form-based Message Queue List and Summary

**ATF extracts**
- Exception Transaction

For information on how to directly load form-based extracts into DB2 tables or import into a PC spreadsheet and charting application, see Chapter 18, “Processing form-based extracts (CSV files),” on page 255.

**IMS Log extract by interval data sets**

Proprietary format for input to option 8 Graphing & Export of the IMS PA primary option menu can be created by the following reports in Log Report Sets:
- Transit Extract by Interval (MSGQ)
- Fast Path Transit Extract by Interval

For more information on processing Log extract by interval data, see "Extract by Interval graphing and export” on page 378.

**Transaction index data sets**

The IMS Transaction Index contains an X’CA01’ record for each transaction in the IMS log, accumulating all the information in the log about the transaction. The index is used to improve reporting efficiency in IMS Performance Analyzer and to streamline problem diagnosis in IMS Problem Investigator and Transaction Analysis Workbench. For further details, see Chapter 19, “IMS Transaction Index,” on page 267.

The IMS Connect Transaction Index contains an X’CA20’ record for each transaction in an IMS Connect Extensions journal, accumulating all the information in the journal about the transaction. The index is not used by IMS Performance Analyzer but in IMS Problem Investigator, by merging the index and journal, you can track against the index and see all the Connect events for that transaction.
ATF Exception Transaction extracts
Created in either of two formats: a VSAM KSDS journal or a sequential data set for later IDCAMS REPRO into a journal data set. The extract journal can be processed subsequently by IMS PA in a similar but more efficient way to the original ATF journals.
Chapter 4. Installation and setup

These topics describe the supplied component libraries, how to get started using the IMS Performance Analyzer dialog, what to consider if upgrading from a previous product release, and the recommended ISPF settings.

IMS Performance Analyzer libraries

The components of the IMS Performance Analyzer dialog are delivered in these libraries.

- **SIPIEXEC**
  - REXX EXECs
- **SIPLINK**
  - Link/Load modules
- **SIPMENU**
  - ISPF messages
- **SIPIPENU**
  - ISPF panels
- **SIPISENU**
  - ISPF skeletons
- **SIPIPENU**
  - ISPF input tables

where ENU is for U.S. English.

In addition, sample JCL for running batch reports and extracts is supplied in the **SIPISAMP** library.

Starting IMS Performance Analyzer with IPIOREXX

To start the IMS PA dialog, you run the IPIOREXX REXX exec supplied in the SIPIEXEC library.

About this task

The IMS Performance Analyzer initialization module IPIOREXX accepts four parameters:

- **qual**
  - The data set high level qualifier for IMS PA data sets. For example, IMSPA.V4R4M0. **NODYNAM** specifies that IMS PA is to use the existing allocation settings.

- **lang**
  - Identifies the national language. The default is **ENU** (U.S. English). Currently, IMS PA only supports U.S. English.

- **PASSAPPL**
  - Optional. Overrides the enforcement of the default IMS PA application **NEWAPPL(IPIO)**. IMS PA uses the invoking application’s APPL specification. See “Overriding the default application” on page 49.

- **low level qualifiers**
  - Optional. Overrides the default low level qualifiers for the six IMS PA data
sets. All six qualifiers must be specified in the correct order, enclosed in brackets and separated by commas. For example:

(EXEC,LINKLIB,MSG,PNL,SKL,TBL). See "Overriding the data set low level qualifiers" on page 49.

You can either install the IMS PA libraries statically within your ISPF library setup, or allow them to be set up dynamically when the IMS PA dialog is used. Then you can optionally add IMS PA to an ISPF menu.

The two installation methods are described in the following topics. Dynamic setup is the simplest and quickest approach.

**Dynamic setup**

The simplest way to start the IMS PA dialog is to allow the startup REXX exec, IPIOREXX, to dynamically allocate the IMS PA libraries. This is known as dynamic setup.

To enable the IMS PA libraries to be dynamically set up when the IMS PA dialog is used, do the following:

1. On the TSO command processor panel, enter:
   
   \begin{verbatim}
   EX 'qual.SIPIEXEC(IPIOREXX)' 'qual lang'
   \end{verbatim}

2. To add IMS PA to an ISPF menu, set &ZSEL to:
   
   \begin{verbatim}
   CMD(EX ''qual.SIPIEXEC(IPIOREXX)'' ''qual lang'') NOCHECK
   \end{verbatim}

   NOCHECK is specified to support entry of concatenated commands via the direct option (trail). Also specify on the calling panel:
   
   \begin{verbatim}
   &ZTRAIL=.TRAIL
   \end{verbatim}

   Note: Dynamic setup requires that the supplied library names are retained.

**Static setup**

If you prefer not to have the IMS PA libraries dynamically allocated each time you start the dialog, you can instead add the libraries to the appropriate ISPF concatenations in your TSO logon procedure. This is known as static setup.

To install the IMS PA libraries statically within your ISPF library setup, do the following:

1. Include the library qual.SIPIEXEC in your SYSEXEC or SYSPROC concatenation. This library contains the required EXECs.

2. Add the remaining libraries to your ISPF library setup:
   - Include the link/load module library qual.SIPLINK in the ISPLLIB concatenation.
   - Include the message library qual.SIPIMxxx in the ISPMLIB concatenation.
   - Include the panel library qual.SIPIPxxx in the ISPLLIB concatenation.
   - Include the skeleton library qual.SIPISxxx in the ISPSLIB concatenation.
   - Include the table library qual.SIPTTxxx in the ISPTLIB concatenation.

3. On the TSO command processor panel, enter:
   
   \begin{verbatim}
   %IPIOREXX 'NODYNAM lang'
   \end{verbatim}

4. To add IMS PA to an ISPF menu, set &ZSEL to:
   
   \begin{verbatim}
   CMD(%IPIOREXX ''NODYNAM lang'') NOCHECK
   \end{verbatim}
Overriding the default application

To override the default IMS PA application, use the PASSAPPL parameter in the ISPF menu &ZSEL setting.

**Example**

If you enter the following command, IMS PA will use IMSA as the application, rather than the default of IPIO.

```cmd
CMD(Ex 'qual.SIPIEXEC(IPIOREXX)' 'qual long PASSAPPL') NOCHECK NEWAPPL(IMSA)
```

Overriding the data set low level qualifiers

To override the default IMS PA data set low level qualifiers, specify the six data set low level qualifiers as the last parameter in the ISPF menu &ZSEL setting.

**Example**

```cmd
CMD(Ex 'qual.SIPIEXEC(IPIOREXX)' 'qual long (EXEC, LNK, MSG, PNL, SKL, TBL)')
```

where IMS PA will use:

- `'qual.EXEC' as the REXX EXEC library
- `'qual.LNK' as the Link/Load library
- `'qual.MSG' as the ISPF messages library
- `'qual.PNL' as the ISPF panels library
- `'qual.SKL' as the ISPF skeletons library
- `'qual.TBL' as the ISPF input tables library

Other setup options

The IMS PA dialog requires no special customization or setup. Reporting can commence immediately. However, there are some setup considerations for allocating data sets, tape devices for shared queue processing, and GDDM graphing.

You may choose to bypass these setup options if:

- You are satisfied with IMS PA automatically allocating data sets with default characteristics as needed.
- Tape devices for shared queue processing and GDDM graphing are not relevant to the way you intend to work with IMS PA.

Setting up IMS PA data sets (optional)

IMS PA uses various data sets to store information. When it requires them, IMS PA can allocate the data sets using default characteristics. Therefore you can bypass this section entirely. However, if you want to do the set up yourself, read on.

About this task

The IMS PA dialog uses the following data sets:

- Control Data Sets for Report Sets, Expectation Sets, Object Lists, Distributions, and Report Forms
- Averages
- History Files
- Extracts
- Export Files
- Trace Statistics
To specify the default allocation settings for these data sets, use option 0.2 **Reporting Allocation Settings** from the IMS PA primary option menu or from **Options** in the action bar. The IMS PA dialog uses ISPF tables to store some user data, such as the specification of the IMS subsystems, groups, and input log and monitor data sets. Allocate and catalog the data set to be used for this purpose, or use the default data set allocated by IMS PA. It must be a partitioned data set (PDS or PDSE) with fixed-block 80 record format. As it contains user-specific data, it should be setup for exclusive update by that user. See "IMS PA Settings" on page 67 for specification of the Permanent ISPF Table Library.

**Procedure**

Setting up the data sets involves the following steps:

1. For the Report Sets, Expectation Sets, Object Lists, Distributions, and Report Forms:
   a. Decide on whether they will be contained in the one data set or separate data sets. It is recommended that a separate data set be used for each type, mainly to avoid conflict with member names.
   b. Allocate and catalog the desired number of data sets. They must be partitioned data sets (PDS or PDSE) with fixed-block 80 record format. Standard facilities such as ISPF option 3.2 Data Set Utility can be used to do this.
   c. Define the data sets to the dialog. If not previously allocated and cataloged, they may be created dynamically by the dialog using default allocation attributes. See "Specifying IMS PA control data sets" on page 75.

2. Allocate and catalog the Averages Data Sets, and define default allocation details for the output Averages Data Sets. The input and output Averages Data Sets are optional requirements for the Management Exception report. See Chapter 9, "Averages Data Sets," on page 143 for a description of how the dialog is used to maintain these data sets, and "Transaction Averages data sets specification" on page 330 for specification of the data sets to the Management Exception report.

3. Allocate and catalog the Extract Data Sets, and define default allocation details for the output Extract Data Sets.
   - For Extract by Interval processing, an input data set is optional, and an output data set is mandatory. See "Transaction Transit Extract by Interval" on page 306 and "Fast Path Transit Extract by Interval" on page 357.
   - The Transaction (MSGQ/FP) Exception reports optionally produce up to two extract data sets, one for all transaction traffic and one for exceptions. See "Transaction Exception report and extract" on page 309 and "Fast Path Transaction Exception report and extract" on page 360.
   - For the Transaction History File, you need to specify an output data set that will hold the historical records. See "Transaction History File" on page 312.
   - The Database Update Activity report optionally produces an extract data set. See "Database Update Activity report and extract" on page 342.
   - The Connect Transit Extract requires an output data set. See "Connect Transit Extract" on page 560.

4. Allocate and catalog Export Data Sets if export processing of Extract by Interval data is required. The allocation attributes of the Export Data Sets should be compatible with the Extract Data Sets from where the data is being exported.
5. Allocate and catalog the Monitor Trace Data Sets, and define default allocation details. The Trace Data Set is optional. It is used to capture statistics from the monitor trace for later processing by the IMS print utilities DFSUTR20 and DFSUTR30. See “Monitor Global Options” on page 479 for specification of the Trace Data Set to the dialog.

Setting up for shared queue processing

For IMS shared queue processing, if there is a restriction on tape devices for log file merging, specify the number of tape devices available to the IMS PA batch report processors and the data set allocation attributes for the Merge Work Files.

About this task

For details, see “Shared Queue Settings” on page 73.

Setting up for GDDM graphing

IMS PA requires GDDM-PGF for displaying and printing graphs of Extract by Interval data.

Procedure

To use this optional facility:

Include the library containing the GDDM and PGF executable modules in the system LNKLST, or as follows:

- In the ISPLLIB concatenation for online execution under ISPF.
- In the STEPLIB concatenation of the IMS PA job for batch processing. See “IMS PA Settings” on page 67 for specification of the GDDM-PGF Load Library.

Alternatively, IMS PA provides an optional export and download facility for Extract by Interval data to enable graphs to be produced by external programs or PC applications such as IBM Lotus Symphony Spreadsheets or Microsoft Excel. IMS PA has no dependency on these products; they are installed and operated independently. For further information on setting up for Extract by Interval export, see “Export settings” on page 58.

To use PC tools to produce graphs from IMS PA data, use your normal process, specifying as input an IMS PA Extract by Interval export file or other IMS PA extract data set such as Traffic, CPU Usage, Database Update Activity, or Form-based extract.

Upgrading to IMS Performance Analyzer V4R4

All objects created in previous releases of IMS PA are upwardly compatible with IMS PA V4R4 and automatically converted, where required, by the dialog. Reverting to previous releases with objects created or modified using a later release, is not supported.

About this task

System, Group and File specifications are automatically converted, when required, to V4R4 when the System Definitions or Groups panel is first accessed through the dialog after migration.
Report Sets are automatically upgraded when the Report Set Edit panel is first accessed via the dialog after migration. This allows you to take advantage of the new reports and options.

Report Sets created prior to IMS PA V4R4 are still supported by the batch report processing, no new features will be active.

The contents of Object Lists are retained unchanged.

Averages and Expectations are retained unchanged.

Distributions are retained unchanged.

Extract by Interval files from earlier releases of IMS PA are supported by V4R4. If an old extract by interval file, created before shared queues were supported, is used from the dialog (for either exporting or graphing), it is treated as a new V4R4 extract file with the new queue times set to zero. The old extract files can coexist with V4R4 extract files. They can be used as input or output to the Transaction (MSGQ or FP) Transit Extract by Interval processes.

**Procedure**

When upgrading to IMS PA V4R4:

1. Before commencing the installation of the new release of IMS PA, it is recommended that you take a backup of your current IMS PA Load Library, and the following libraries for each user:
   - Permanent ISPF Table Library as specified on the IMS PA Settings panel. This data set holds the definitions of the IMS Subsystems, Sysplex Groups, and associated Log, Monitor, and OMEGAMON TRF and ATF input files IMS Connect systems, groups and files. When installing the new release, users may elect to specify a new data set name for this library, but in this case, no system details and input file specifications would be carried forward.
   - IMS PA Control data sets:
     - Report Sets
     - Report Forms
     - Expectation Sets
     - Object Lists
     - Distributions

2. Install IMS PA V4R4 as described in the Program Directory. To complete installation of the IMS PA dialog, follow the installation and setup instructions.

3. Ensure the correct IMS PA Load Library for V4R4 is specified on the IMS PA Settings panel (dialog option 0.1 **IMS PA Settings**).

**ISPF dialog features**

IMS PA has been designed to follow CUA conventions, while also accommodating established ISPF conventions. The dialog contains these features for enhanced usability.

**Prompt (F4)**

Some entry fields have a Prompt action that allows you to fill in the field by selecting a value from a pop-up list of valid values.
Prompt fields are indicated by a + (plus sign) to the right of the field or column heading. To display the pop-up list, move the cursor to the field and press the Prompt (F4) key. A list of available values is displayed from which you can select one or more depending on the circumstance.

Prompt fields are “automatically completed” if you enter enough characters to make the value unique. For example, a field with allowed values YES, NO, NEVER, is automatically completed if you enter Y, NO, NE.

**Action bar**

An action bar is available at the top of panels to assist with navigation and function. To select an option in the action bar, position the cursor on it and press Enter. A pull-down menu of choices is displayed. To choose one, either position the cursor on it or type the number of your choice, then press Enter.

The standard action bar options in IMS PA are:

- **File**
  - Allows new, save, saveas, cancel, or exit. Not all choices are available on all panels.

- **Options**
  - Change your IMS PA Profile Options without having to return to the Primary Menu.

- **Edit/View**
  - Manipulate the way items are displayed on the panel. Allows reset, refresh, sort, locate. Not all choices are available on all panels.

- **Sysdefs**
  - Change your system and group definitions without having to return to the Primary Menu.

- **Samples**
  - Populate the Report Forms data set with sample forms.

- **Help**
  - Displays product help information, described in “Online help” on page 54.

**Function keys**

IMS PA uses function keys extensively and displays the settings at the bottom of each panel.

To display function key labels, enter the ISPF command PFSHOW ON. To hide labels, enter PFSHOW OFF.

It is recommended that you set PFSHOW ON until you are familiar with using IMS PA.

**Function keys in dialog panels**

The default function key assignments for IMS PA dialog panels are:

- **Help (F1)**
  - Help for field or panel depending on cursor position.

- **Split (F2)**
  - Split the screen at the cursor position.

- **Exit (F3)**
  - Leave the panel and save changes if applicable.
Prompt (F4)  
List all available choices for the entry field.

Rfind (F5)  
Repeat FIND to locate next occurrence of search string.

Resize (F6)  
Remove or restore window border.

Backward (F7)  
Scroll backwards.

Forward (F8)  
Scroll forwards.

Swap (F9)  
Switch active screen in split screen mode.

Left (F10)  
Scroll left for more information when More: < > is displayed.

Actions (F10)  
Switch cursor between action bar and body of panel.

Right (F11)  
Scroll right for more information when More: < > is displayed.

Cancel (F12)  
Leave the panel and do not save changes.

Return (F16)  
Return to the underlying panel.

Cretriev (F24)  
Retrieve the last command.

Function keys in help panels

The default function key assignments for IMS PA help panels are:

Help for help (F1)  
How to navigate help.

Exit (F3)  
Leave help and return to the dialog panel.

Resize (F4)  
Remove or restore window border.

Keys help (F6)  
List the function key assignments.

PrvPage (F7)  
Scroll backwards to previous page when More: - is displayed.

NxtPage (F8)  
Scroll forwards to next page when More: + is displayed.

Cancel (F12)  
Remove the help panel and return to the underlying (help) panel.

Online help

IMS PA help is context-sensitive, that is, the information displayed is appropriate to the position of the cursor when you request help.
F1 function key

Function key F1 is the default key to request Help.

Extended Help is available from the command line of every panel. Position the cursor in the command line and press F1 or enter the HELP command. The line actions and primary commands that apply to the current panel are always listed in the Extended Help.

Field Help is available on every input field and some output fields. Position the cursor in the field and press F1.

Message Help is available. When a short message is displayed at the top right, press F1 to see the long message in a pop-up window. This occurs if, in ISPF Settings, you have selected Long message in pop-up.

Reference phrases are used to indicate that more information is available on a topic. You can use the ISPF command SETTINGS to change the attributes of reference phrases to ensure that they are easily distinguished from the surrounding text. When a help window is displayed, press the Tab key to position the cursor on a reference phrase (typically white) then press F1. A pop-up window displays additional information on the topic.

Action bar help

Help in the action bar provides the following types of information to help you use IMS PA:

Extended Help
The help information for the currently displayed panel. This describes what you can do from the panel and the fields that appear on the panel.

Commands Help
The commands available on this panel.

Keys Help
The function keys available on this panel. The list shows the default function key assignments, but you can reassign them using the ISPF KEYS and KEYLIST commands.

Tutorial
Invoke the online tutorial.

Online tutorial

The online tutorial is available from anywhere in the dialog. To invoke the tutorial, select Help > Tutorial from any action bar.

The tutorial is also available from the Primary Option Menu when you press F1 or enter HELP in the command line, or select Help > Extended Help from the action bar.

Recommended ISPF setup

The IMS PA dialog is an ISPF application following CUA conventions. You might wish to set up your ISPF environment so that you can use the IMS PA dialog efficiently.
Panel size and scrolling

IMS PA panels are optimized for 32 lines, but accommodate 24 lines using scrolling with the Backward (F7) and Forward (F8) function keys. Help windows have a maximum size of 24 lines.

CUA attribute settings

The dialog is designed to use the default CUA attributes. It is recommended that the following panel element default settings are honored. Use the CUAATTR command to check these:

1. Data entry fields (Choice Entry, List Entry, and Normal Entry) have the USCORE (underscore) Highlight attribute set. This will allow you to easily identify the input fields on each panel.
2. Data entry fields, List Items, and Normal and Descriptive Text fields have their attributes set differently. This will allow you to easily distinguish between input and output data fields and instructions.
3. Normal Text, Emphasized Text and Reference Phrase have their color and intensity attributes set differently. To easily distinguish Reference Phrases is particularly relevant for the online Help and Tutorial. See “Online help” on page 54.

Point-and-Shoot fields

Point-and-shoot fields perform an action when you select them. For example, when you select a column heading in a list of system definitions, IMS PA sorts the list by that column.

Tabbing to point-and-shoot fields

To make it easier to select point-and-shoot fields, you can include them in the tabbing order when you press the Tab key to skip between fields:

1. Enter the ISPF SETTINGS command to display the ISPF Settings panel.
2. Select Tab to point-and-shoot fields as shown in Figure 6 on page 57.

Highlighting point-and-shoot fields

The dialog is designed to use the default CUA attributes. However, we recommend that you set the color of point-and-shoot fields to distinguish them from other fields:

1. Enter the ISPF CUAATTR command.
2. Scroll to the Point-and-Shoot panel element, and then enter a color name (for example, YELLOW).
   To make these fields even more distinct, you could also set their highlight attribute to REVERSE (reverse video).
Using your mouse as a lightpen

The IMS PA Report Set panel is a tree structure of report categories and reports. The report categories act as folders that can expand (to show) and collapse (to hide) the reports contained within them. If your terminal emulation permits, configure your Mouse Options to activate the lightpen function. You can then use the left-button of your mouse to click on the + to expand and - to collapse the report categories. This is an alternative to entering line action S. Use of your mouse as a lightpen may vary depending on your terminal emulation software.

Displaying long messages

IMS PA uses both long and short messages. ISPF displays short messages display at the top right of a panel, next to the panel title. ISPF usually displays long messages in a pop-up window. However, if a long message is less than the screen width, then, by default, ISPF displays it just below or above the command line.

1. Enter the ISPF SETTINGS command to display the ISPF Settings panel.
2. Ensure Long message in pop-up is selected.

To move messages displayed in a window to another location:

1. Position the cursor on the top or bottom border of the message window, and press Enter.
2. Position the cursor at the location on the panel to which you wish to move the message, then press Enter.

### Export settings

IMS PA provides a facility for exporting extracts to your PC or workstation. You can then import the extracts into various workstation tools to create graphs.

To successfully transfer extracts to your workstation, the ISPF workstation connection must be active. To activate the workstation connection, you must have the `wsa.exe` file installed. If you don’t, download it from the mainframe:

1. Type the ISPF command SETTINGS on the command line.
2. Select the **Workstation** menu item from the action bar.
3. Select option 4 *Download ISPF C/S component*.
4. Specify **Manual** for Download method and ‘**ISP.SISPGUI**’ for the Data set to copy file from.

![Client/Server Component Download](image)

5. Press Enter and note the name of the member to be copied (ISPGUINX), the data set where the file resides (ISPSISPGUI), and the name of the file to be created on the workstation (ispfinst.exe). This workstation file is the Workstation Agent Install Program you will need to run.
6. Transfer the member from the host to your workstation using your preferred method of file transfer. For example, using the in-built file transfer function in your terminal emulator.

7. On your workstation, run the `ispfinst.exe` (Workstation Agent Install Program).

8. When installation has finished, notice that the `wsa.exe` file has been added to your workstation. If you want to export data from your mainframe to your workstation using the IMS PA facility, you will need to run this program.

**GDDM graphing**

IMS PA provides optional graphing capability using GDDM-PGF. To display or print graphs of extract by interval transit data, this facility must be available to the dialog.
Part 2. Using the dialog

This part describes how to use the IMS PA dialog to request reports and extracts and submit them for batch processing.
Chapter 5. Getting started

The IMS PA dialog provides a menu-driven facility to generate reports, graphs and extracts from IMS Log, Monitor, IMS Connect, and OMEGAMON TRF and ATF data to aid in analyzing and tuning the performance of your IMS Database and Transaction Monitor systems. IMS PA validates your requests and automatically creates the JCL to produce the reports and extracts in batch.

For instructions on how to install the IMS PA dialog, see "Starting IMS Performance Analyzer with IPIOREXX" on page 47. Dynamic setup is the simplest and quickest approach.

To invoke IMS PA from the ISPF option 6 command line, enter:

```
EX 'IPI.V4R4M0.SIPIEXEC(IPIOREXX)' 'IPI.V4R4M0 ENU'
```

If the qualifier for your IMS PA installation data sets is not IPI.V4R4M0, then alter the command accordingly.

The IMS PA dialog requires no special customization or setup. Reporting can commence immediately.

If you are new to IMS PA, you will find the following helpful:

1. "Recommended ISPF setup" on page 55 gives the ISPF settings that help you use the IMS PA dialog more efficiently.
2. "How to use the dialog" on page 64 outlines the steps required to produce reports and extracts.
3. Take the Chapter 6, "Guided tour," on page 79. This walks you through the main functions to help you become familiar with using the IMS PA dialog.

IMS PA primary option menu

The primary option menu is the panel that is displayed when you start the IMS PA dialog.
The IMS PA dialog allows you to:
- Specify reports and extracts and tailor them to suit your requirements.
- Specify your IMS subsystems and log and monitor data sets that you want to use for reporting.
- Specify Groups of IMS subsystems for shared queue reporting.
- Specify runtime options to control the report period and input data used.
- Edit the JCL and commands generated by IMS PA to run your reports and extracts.
- Submit your report and extract requests.
- Access the Averages data produced by log exception reporting.
- Specify Expectations to qualify log exception reporting.
- Specify Distributions to define the attributes of distribution graphs.
- Extract transaction transit by time interval data for graphing or export.
- View your list of IMS Connect systems and archive data sets and submit report requests.
- Create Report Forms for tailored IMS Log and IMS Connect reporting.

How to use the dialog
These steps describe briefly how to use the dialog to start reporting.

Navigating
Navigating the ISPF dialog involves a combination of actions. At any point, you can find out what actions are available to you.

To navigate the ISPF dialog, you perform a combination of these actions:
- Select menu options
- Enter line actions (one- to three-letter commands) next to items in lists
- Enter primary commands on the command line
- Press function keys
- Select an option from the action bar menu

To find out what actions are available to you at any point:
• To display a popup menu of available line actions, enter / (a forward slash) next to a list item.
• To get help on the available commands, open the Help menu, and then select Command Help.
• To get help on the available function keys, open the Help menu, and then select Keys Help.

Shortcut navigation to the primary IMS PA functions is available. For example, to invoke Report Sets where you define your report and extract requests, you can select option 3 from the IMS PA primary option menu, or enter =3 from any IMS PA command line.

Initial setup (defaults apply)
This is applicable when using IMS PA for the first time. Initial setup is optional. IMS PA uses default settings and prompts you to allocate data sets (with default allocation attributes) as they are required.

Procedure
1. Check your ISPF environment settings. See “Recommended ISPF setup” on page 55.
2. Specify the IMS PA settings. This allows some customization of the dialog and JCL used for generating reports. See “IMS PA Settings” on page 67.
3. Allocate the data sets that will contain the Report Sets, Expectation Sets, Object Lists, and Distributions, and specify them to the dialog. See “Specifying IMS PA control data sets” on page 75.
   • The Averages data set is used by the Management Exception (log) report.
   • The Transit Extract by Interval data set is used to extract transaction (MSGQ or FP) transit log data by time interval for graphing or export.
   • The Transaction Extract data sets are used to extract all transaction (MSGQ or FP) log records or exception records only.
   • The Summary Extract data sets are created by the CPU Usage and Database Update Activity reports.
   • The Trace data set is used to output monitor statistics records.
   See “Reporting Allocation Settings” on page 71.
5. For shared queue processing, if there is a restriction on tape devices for log file merging, specify the number of tape devices available to the IMS PA batch report processors and the data set allocation attributes for the merge work files. See “Shared Queue Settings” on page 73.
6. For reporting on IMS Connect event data, specify the IMS Connect Extensions Definitions Data Set in Profile Options. See “Specifying the IMS Connect Extensions definitions data set” on page 76.

Everyday operation
After initial setup, this is the normal procedure to request and generate reports.
1. Define a Report Set:
   • Create a new Report Set. See “Creating new Report Sets” on page 126.
   • Specify any options applicable to the reports you wish to include in the Report Set. The Global Options apply to all reports within the Report Set.
Select and tailor the reports that you require. Modified reports will automatically be activated within the Report Set. For details of all report options, see:

- [Chapter 20, “Requesting Log reports,” on page 283](#)
- [Chapter 22, “Requesting Monitor reports,” on page 471](#)
- [Chapter 24, “Requesting IMS Connect reports,” on page 547](#)
- [Chapter 26, “Requesting OMEGAMON TRF reports,” on page 605](#)
- [Chapter 28, “Requesting OMEGAMON ATF reports,” on page 637](#)

If requesting the Management Exception (log) report, then you will need to consider defining Expectation Sets and Averages Data Sets. You may also use Expectation Sets for the Transaction (MSGQ or FP) Exception reports and extracts.

If requesting an Extract by Interval of transaction transit data for subsequent graphing or export, you will need to consider defining the extract and export data sets. See “Transaction Transit Extract by Interval” on page 306.

If requesting the Transaction (MSGQ or FP) Exception, CPU Usage or Database Activity reports, then you will need to consider defining extract data sets, although IMS PA can allocate them for you at the time they are required.

2. Define any Object Lists needed to support record selection or report grouping.
3. Define new Distributions if you wish to customize the distribution graphs produced by some reports. Sample Distributions are provided for all distribution graphs.
4. Specify the name of the IMS subsystems and log and monitor files containing the data for reporting. For log data, you can specify the RECON or MDA data sets for DBRC Log Selection, instead of defining log files explicitly. For shared queue sysplex reporting, you can define groups of IMS subsystems. See [Chapter 12, “Systems and Files,” on page 167](#) and “DBRC Settings for an IMS Subsystem” on page 172.
5. Run the Report Set to generate the reports and extracts. Use the RUN command to prompt you for runtime options including system selection, report interval and the execution mode. Alternatively, you can use the SUBMIT (SUB), JCL and JCLCMD (JCM) commands to set the execution mode and optionally bypass the runtime prompt. SUB and JCL execute the Report Set whereas JCM executes a command deck. SUB submits the job directly whereas JCL and JCM allow you to edit the JCL before you submit it. Optionally, the JCL can be stored in an external library to edit and submit independently of the IMS PA dialog. See “Running Report Sets” on page 127.
6. An alternative way to run IMS Connect reports is to view the IMS Connect systems and archive data sets, then use the RUN command to select one for reporting.
7. View or print the report output using your usual method, such as SDSF or ISPF option 3.8 Outlist Utility.
8. Use the IMS PA dialog to view or print GDDM graphs of the Extract by Interval data, export the data for use by external programs such as DB2, or transfer the exported data to a PC workstation.
9. Process the extract data from the Transaction (MSGQ/FP) Traffic, CPU Usage and Database Update Activity reports using external programs or PC tools in your usual way.
IMS PA Profile Options

This facility allows you to customize your IMS PA user profile. Defaults are set initially so you can start using IMS PA, but you can change these at any time to suit the particular way you want to interact with the IMS PA dialog. Typically you would set the profile options just once.

To display the IMS PA Profile Options Menu, select option 0 IMS PA Profile from the IMS PA primary option menu, or from any IMS PA panel, select Options from the action bar.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IMS PA Settings. Customize aspects of the IMS PA dialog and the job card it uses when generating Report Set JCL.</td>
</tr>
<tr>
<td>2</td>
<td>Reporting Allocation Settings. Specify the allocation attributes of data sets that may need to be created during Report Set processing. The IMS PA dialog uses these when generating the Report Set JCL.</td>
</tr>
<tr>
<td>3</td>
<td>Shared Queue Settings. Specify options that affect the generation of JCL to merge log files for processing IMS shared queue log data from multiple IMS subsystems.</td>
</tr>
<tr>
<td>4</td>
<td>IMS PA Control Data Sets. Tell the IMS PA dialog which data sets to use for: Report Sets, Report Forms, Expectation Sets, Object Lists, Distributions</td>
</tr>
<tr>
<td>5</td>
<td>IMS Connect Extensions Definitions Data Set. Tell the IMS PA dialog the name of the data set that contains the IMS Connect Extensions System Definitions.</td>
</tr>
<tr>
<td>X</td>
<td>Exit</td>
</tr>
</tbody>
</table>

IMS PA Settings

This facility allows you to specify settings to customize the IMS PA dialog and batch JCL for running Report Sets.

To display the IMS PA Settings panel, select dialog option 0.1 IMS PA Settings.

Specify settings to customize the IMS PA dialog and batch JCL for running reports and extracts.
All options have initial settings so you can start using IMS PA immediately. You can change the settings at any time to suit the way you use IMS PA.

**DASD Work File Unit Name** can be left blank to take the system default. The Load Libraries for IMS PA, GDDM-PGF and User Programs need not be specified if they are included in the system LNKLST concatenation. Values are expected for all other options.

The options are:

**Delete Confirmation**
Initial Setting: YES

This option applies *only* to requests to delete IMS PA “primary objects” (Report Sets, Report Forms, Expectation Sets, Object Lists, and Distributions).

Specify YES to request IMS PA to prompt you for confirmation of a Delete request.

Specify NO to have IMS PA action Delete requests immediately without prompting for confirmation.

**Warning Confirmation**
Initial Setting: NO

The IMS PA dialog may issue a warning if you specify a field value which is acceptable at the time of input but may later cause an error or unexpected result if further action is not taken to resolve the cause of the warning. For example, Data Set not cataloged.
Specify YES to display a confirmation window if you attempt to Save or Exit when a warning is outstanding. This is to ensure that you are aware that a field has been set to a value that has caused a warning.

Specify NO for no confirmation of warnings.

**Automatic Save on Exit**
Initial Setting: YES

This option applies only to IMS PA “primary objects” (Report Sets, Report Forms, Expectation Sets, Averages, Object Lists, and Distributions) when changes during an edit session have been made. It applies only on panels at the top level of the function hierarchy, that is, panels where the SAVE command is available.

Specify YES to automatically save changes on Exit.
Specify NO to automatically cancel changes on Exit.
Specify PROMPT to display a confirmation pop-up on Exit that allows you to choose whether to save changes or discard changes on that occasion.

**Reports in Upper Case**
Initial Setting: NO

Specify NO to receive reports in upper and lower case characters.
Specify YES to translate all reports to upper case characters only. This is particularly for printers which cannot handle mixed case.

**Preferred Date Format**
Initial Setting: 1 (YYYY/MM/DD)

The IMS PA dialog can accept and present dates in the following formats:
1. YYYY/MM/DD
2. MM/DD/YYYY
3. DD/MM/YYYY

Enter either 1, 2 or 3 for the date format you prefer.

**Note:** This option does not apply to the format of dates presented on batch reports. Further, there are exceptions within the dialog where the functionality dictates the date format. For example, the Changed time stamp field of component lists (Report Sets, Report Forms, Expectation Sets, Object Lists, Distributions) always presents as YYYY/MM/DD HH:MM to allow the lists to be sorted on this field.

**DASD Work File Unit Name**
Initial Setting: Blank (for System Default)

Specify the device type or group name to be used by the IMS PA batch interface to allocate temporary data sets as required by facilities such as DBRC Log Selection.

The name must represent a device that is defined as DASD in the Eligible Device Table of the current processor. For example, SYSDA, SYSALLDA, 3390.

If not specified, the system default is used.

**Permanent ISPF Table Library**
Initial Setting: IPITABL, which translates to ‘xxx.IPITABL’, where xxx is determined by your TSO prefix and userid.
The IMS PA dialog uses the Permanent ISPF Table Library to save your System Definitions and Groups. Specify the name of the data set to be used for this purpose.

If the specified data set does not exist, IMS PA allocates it for you when it is required.

**IMS PA Load Library**

Initial Setting: 'xxxx.SIPILINK', where xxxx is the qualifier for your IMS PA installation data sets. For example: 'IPLV4R4M0.SIPILINK' or if not specified for dynamic setup, the default is 'IMSPA.SIPILINK'.

Specify the name of the library that contains the IMS PA link/load modules. This is used by the IMS PA dialog when generating the JCL for executing Report Sets. It need not be specified if the modules reside in the system LNKLST.

**GDDM-PGF Load Library**

Initial Setting: None.

Specify the name of the library that contains the load modules for GDDM and GDDM-PGF. This is substituted into the JCL built by the dialog to process graphing requests in batch. It is only required for producing graphs in batch mode, and only if the library is not included in the system LNKLST concatenation.

**ITKB Load Library**

Initial Setting: None.

Specify the name of the library that contains the IMS Tools Knowledge Base (ITKB) executable load modules. The specified library data set name is substituted into Report Set JCL generated by the IMS PA dialog. The ITKB modules are not referenced unless the IMS PA report output is to be written to the IMS Tools Knowledge Base repository.

**User Program Load Library**

Initial Setting: None.

Specify the name of the library that contains the load modules of the user-written record processors that you wish to run under IMS PA. This is substituted into the JCL built by the IMS PA dialog for executing Report Sets. It is only required if User-Written Reports is activated in the Log Report Set being submitted, and only if the library is not included in the system LNKLST concatenation.

**Job Statement Information**

Specify the JOB card to be used by the IMS PA dialog when building the JCL for executing Report Sets. Multiple cards can be provided and are taken as is. Embedded and trailing null cards are ignored.

Initial Setting: //userid JOB (ACCOUNT), 'NAME' from the ISPF Log and List JCL job statement information. To review this, use the SETTINGS command to display the ISPF Settings panel, then select Log/List > JCL from the action bar.

**JES2 Control Statements**

Specify one or more JES2 Control Statements for your DBRC Log Selection requests. IMS PA accepts any control statement, but performs special processing for /*XEQ, /*JOBPARM, and /*ROUTE.

Initial Setting:
The statement will always be inserted into the JCL. If the System or Group has Node and/or SYSAFF specified, then it will be substituted, overriding your default.

**Reporting Allocation Settings**

To display the Reporting Allocation Settings panel, select dialog option 0.2

Reporting Allocation Settings

```
Command ===>

Specify data set allocation settings:

Management Exception Averages:
  ===>
  // UNIT=SYSDA,SPACE=(TRK,(5,5),RLSE),
  // DCB=(DSORG=PS,RECFM=VB,LRECL=4092,BLKSIZE=4096)

Transit Extract by Interval:
  ===>
  // UNIT=SYSDA,SPACE=(TRK,(5,5),RLSE),
  // DCB=(DSORG=PS,RECFM=VB,LRECL=4092,BLKSIZE=4096)

Transaction (MSGQ/FP/Connect) Transit Total Traffic:
  ===>
  // UNIT=SYSDA,SPACE=(CYL,(5,5),RLSE)

Transaction (MSGQ/FP) Transit Exception Traffic:
  ===>
  // UNIT=SYSDA,SPACE=(CYL,(5,5),RLSE)

Summary (CPU Usage, Database Update Activity and Connect) Extracts
  ===>
  // UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE)

Monitor Trace:
  ===>
  // UNIT=SYSDA,SPACE=(TRK,(15,15),RLSE),
  // DCB=(DSORG=PS,RECFM=VB,LRECL=2044,BLKSIZE=2048)
```

**Figure 13. Reporting Allocation Settings**

This facility is used to specify the allocation details for the output data sets that may need to be created during batch processing of Report Sets. IMS PA provides default settings for the data sets which you see when you first invoke this panel or when you clear a setting. Figure 13 shows the default allocation settings.

When the IMS PA dialog builds the Report Set JCL for a new output data set, the corresponding allocation details are appended to a statement of the form:

```
//DDname DD DSN=Dsname,DISP=(NEW,CATLG),
```

The data set characteristics, **DDname**, and **Dsname** are as follows:
Management Exception Averages
Sequential data set, VB record format, LRECL of 4092 with an appropriate
BLKSIZE of 4096 or higher. Optionally created by the Management
Exception report. DDname is IPIAVGO. Dsname is the Output Data Set
name on the Transaction Averages Data Sets subpanel.

Transit Extract by Interval
Sequential data set, VB record format, LRECL of 4092 with an appropriate
BLKSIZE of 4096 or higher. Used to extract Transaction (MSGQ) or Fast
Path (EMH) Transit details by time interval from the log files for
subsequent graphing or export. DDname is IPIXTRTO (MSGQ) or
IPIFPXTO (FP). Dsname is the Output Extract Data Set name on the
Transaction Transit or Fast Path Transit Extract by Interval panels.

Also used for the Transaction History File which contains summarized
history data for loading into DB2. DDname is IPITHIST. Dsname is the
Transaction History DSN on the Transaction History File panel.

Transaction Transit Total Traffic
Sequential data set, FB record format. IMS PA will set the DCB attributes at
Extract run time.

MSGQ
LRECL of 263 or less. Optionally created by the Transaction
Exception report to contain detail records for all MSGQ
transactions. DDname is IPITXUT1. Dsname is the Total Traffic
Extract Data Set name on the Transaction Exception panel.

FP
LRECL of 143. Optionally created by the Fast Path Transaction
Exception report to contain detail records for all FP transactions.
DDname is IPIFXUT1. Dsname is the Total Traffic Extract Data Set
name on the Fast Path Transaction Exception panel.

Connect
LRECL of 177. Created when the List Transit Extract is requested to
contain detail records of all IMS Connect transactions. DDname is
IPICTRLS. Dsname is the List Extract DSN on the IMS Connect
Transaction Transit Extract panel.

Transaction (MSGQ/FP) Transit Exception Traffic
Sequential data set, FB record format, LRECL of 263 or less (MSGQ), or 252
(FP); IMS PA will set the DCB attributes at Extract run time. See "Traffic
data set allocation settings" on page 73. Optionally created by the
Transaction Exception or Fast Path Transaction Exception reports to contain
a record for each MSGQ or FP exception transaction. DDname is IPITXUT2
(MSGQ) or IPIFXUT2 (FP). Dsname is the Exception Traffic Extract Data Set
name on the Transaction Exception or Fast Path Transaction Exception
panels.

Summary Extracts
Sequential data set, FB record format. IMS PA will set the DCB attributes at
Extract run time. Appropriate for summary extracts such as those
optionally created by:

CPU Usage report
See Figure 181 on page 334. LRECL of 132. DDname is CPURXTRO.
Dsname is the Extract Data Set name on the CPU Usage panel.
Database Update Activity report
See Figure 185 on page 342. LRECL of 132. DDname is DBUAXTRO. Dsname is the Extract Data Set name on the Database Update Activity panel.

Connect Transit Extract
LRECL of 228. Created when a Summary Transit Extract is requested to contain details of all IMS Connect transactions summarized by time interval. DDname is IPICTRSU. Dsname is the Summary Extract DSN on the IMS Connect Transaction Transit Extract panel.

Monitor Trace
Sequential data set, VB record format, recommended LRECL of 2044 with an appropriate BLKSIZE of 2048 or higher. Optionally used during Monitor Report Set processing to output records from the monitor trace for subsequent processing by the IMS Monitor or DB Monitor Report Print programs DFSUTR20 and DFSUTR30. DDname is IPISTOUT. Dsname is the Trace Data Set name on the Monitor Global Options panel.

Traffic data set allocation settings
The Transaction (MSGQ) Transit Total and Exception Traffic Extract Data Sets have the same DCB requirements, being sequential data sets, with FB record format, and a maximum LRECL of 263. IMS PA will honor an LRECL less than 263 by truncating the extract records. For example, you may set the record length to 164 if shared queue elapsed times and the queue time stamps are not required. Refer to the assembler macro IPITRDR in the SIPIMAC library for the layout of these extract records.

The Fast Path Transit Total and Exception Traffic Extract Data Sets are sequential data sets, with FB record format, and LRECL of 143 and 252 respectively. The record layout is defined by the assembler macro IPIFPDR in the SIPIMAC library and is consistent with DBFULTA0:

- The Total Traffic record is the first 143 bytes of the FPTDR.
- The Exception Traffic record is the entire 252 bytes of the FPTDR.

On the Reporting Allocation Settings panel, you may omit specifying DCB attributes for the extract data sets as IMS PA sets the appropriate DCB at Extract run time. However, if you specify the DCB, IMS PA sets an appropriate BLKSIZE as follows:

- If you omit the BLKSIZE or specify a BLKSIZE less than the LRECL, then IMS PA sets the BLKSIZE to LRECL*10
- If you specify a BLKSIZE that is a multiple of the LRECL, the BLKSIZE is unchanged
- If you specify a BLKSIZE that is not a multiple of the LRECL, then the BLKSIZE is rounded down. For example, if you specify LRECL=263 and BLKSIZE=27998, then IMS PA sets BLKSIZE=27878

Shared Queue Settings
To display the Shared Queue Settings panel, select dialog option 0.3 Shared Queue Settings.
The following figure shows the initial settings when you invoke the panel for the first time.

![Figure 14. Shared Queue Settings](image)

This panel supports fields that affect the way the IMS PA dialog generates JCL to run log Report Sets against IMS shared queue log input.

If a group of IMS subsystems is specified, the Report Set JCL generation process assumes that the subsystems run in a sysplex using shared queues. The IMS PA batch processing then merges the log input from the specified IMS subsystems. See “Shared Queue merge processing” on page 401 for a description of three styles of merge processing for the three different types of IMS PA reports.

When such IMS subsystems log to direct access devices, or when there are sufficient tape units available to concurrently allocate a unit for each IMS subsystem which has logged to tape, IMS PA batch processing merges directly from the input logs. Otherwise, it first copies some log input information to Shared Queue Merge Work Files which are then included in the merge processing.

The dialog builds JCL that minimizes the use of Shared Queue Merge Work Files. This JCL build process is dynamic, based on the Log Input specification and the maximum number of tape units that can be allocated to an IMS PA job for log input. See “Pre-Merge Copy Processing” on page 403 for further details of this process.

The fields are:

**Maximum Tape Units Available for Shared Queue Merge**
Initial Setting: Blank; unlimited.

Specify the maximum number of tape units available to log Report Set batch processing when shared queue merge processing is required. This value is applied at the time the Report Set JCL is built to determine if the number of log input data sets on tape exceeds the number of tape units available. If no maximum is specified, then the JCL generation process assumes there are sufficient tape units and no Shared Queue Merge Work Files are used.

**Shared Queue Merge Work Files Allocation Details**
Initial Setting: // UNIT=SYSDA, SPACE=(CYL, (100, 20), RLSE)

Specify the data set allocation details for the Shared Queue Merge Work File temporary data sets. They must be single volume sequential DASD data sets.

The specified details are substituted directly into the Report Set JCL at the time it is built, appended to a DD statement of the form:
//DDname DD DISP=(NEW,DELETE,DELETE),

where DDname is generated by the dialog.

Multiple DD statements for Shared Queue Merge Work Files may be required. These will be generated with the same allocation details, but each with a unique DDname.

### Specifying IMS PA control data sets

To work with any of the IMS PA components (Report Sets, Report Forms, Expectation Sets, Object Lists, Distributions), you must first specify the names of the data sets containing them.

#### About this task

These data sets must be cataloged, partitioned data sets (PDS or PDSE) with RECFM=FB and LRECL=80. Standard facilities, such as ISPF option 3.2 Data Set Utility, can be used to create and catalog the data sets. Alternatively, you can let IMS PA allocate the data sets for you using the default attributes of LRECL=80, BLKSIZE=6160, SPACE=(CYL,(1,1,50)).

You can use the same data set for all components. However, it is recommended that each type of component is stored in a separate data set to avoid conflict with member names.

#### Procedure

To specify the data set names:

1. Select dialog option 0.4 **IMS PA Control Data Sets**.
   The IMS PA Control Data Sets panel is displayed.

   ![IMS PA Control Data Sets Panel](image.png)

   **Figure 15. IMS PA Control Data Sets**

   2. Enter the required data set names for:
      - Report Sets
      - Report Forms
      - Expectation Sets
      - Object Lists
      - Distributions

      Standard TSO conventions apply. For example, if the TSO option PROFILE PREFIX is in effect, the userid will be appended as the high-level qualifier unless the data set name is enclosed in quotes.
3. For any data sets that are not allocated, you can choose to let IMS PA allocate them now or allocate them at the time that you try to perform functions that require them. For example, when you choose option 3 Report Sets from the Primary Option Menu, the Report Sets data set can be allocated at that time.

4. If you choose to allocate now and press Enter, for each data set in turn that is not cataloged, a Confirm Create popup is displayed to give you the opportunity to let IMS PA create the data set for you using default allocation attributes.

Note: The IMS PA Control Data Sets are partitioned data sets. The directory is used to save status information. You can use the operating system utility IEHMOVE and data set utility IEBCOPY for maintenance purposes.

However, IMS PA creates members in these data sets in a special format. Members must not be created or modified using facilities other than IMS PA as this may cause them to become unusable by IMS PA. Should this occur, IMS PA displays a message when it attempts to access those members. For example, if accessing the Report Sets data set, you might see the following message, where xxxxxxxx is the name of the first offending member encountered.

Only Report Set members in the data set are included in the list.
At least one member has been excluded - xxxxxxxx

Ensure that you specified the correct data set name. If correct, you can use ISPF to determine the offending member or members. For example, use ISPF option 3.1 to display the list of members in the Report Sets data set. Members created by IMS PA will display with no modification details, whereas those edited using ISPF will show their modification details. Then to correct the situation, either:
- Use ISPF to remove (move or delete) the offending members from the data set.
- Use IMS PA facilities. When the Report Sets panel is displayed, choose File > Select from the action bar, or enter SELECT in the command line, and specify the name of the offending member. If the contents of the member are valid Report Set details, they will display on the EDIT Report Set panel. Save the Report Set and the member will appear in the list of Report Sets in the specified sort order. If it is not a valid Report Set, an error message is displayed.

Specifying the IMS Connect Extensions definitions data set

To specify the IMS Connect Extensions Definitions Data Set, select dialog option 0.5 IMS Connect Extensions Definitions Data Set.

About this task

The following figure shows the window where you can enter the data set name.

![Figure 16. IMS Connect Extensions Definitions Data Set](image)
Specify the name of the data set that contains the IMS Connect Extensions definitions that you want IMS PA to work with.

The data set defines IMS Connect Systems that are required for running IMS PA Connect (CEX) Report Sets.

When you specify the name of the data set, normal ISPF data set conventions apply. Fully qualified data set names must be enclosed in quotes unless PROFILE NOPREFIX is set.
Chapter 6. Guided tour

This guided tour is for both experienced and first-time users of IMS Performance Analyzer. It leads you step-by-step through many of the features of the ISPF dialog and highlights the major features new to this version.

Summary

The tour is split into five sessions: each session is designed to be completed in a single sitting in under 20 minutes. Subsequent parts assume that you have completed the previous parts.

Throughout the tour, you will need to view report output using SDSF or other program of choice. For instructions on how to use SDSF, see “Viewing or printing report output” on page 131.

Here is a summary of the tour:

**Session 1: Setting up your environment**

During this session, you will:
- ”Configure your IMS PA profile” on page 80
- ”Define IMS subsystems to be reported” on page 81
- ”Assign subsystems to a Group for shared queues reporting” on page 86

**Session 2: Requesting log reports** on page 88

During this session, you will:
- ”Run individual reports” on page 88
- ”Management Exception report: expectations and averages” on page 92
- ”Obtain extracts and create graphs” on page 95
- ”Create and run Report Sets” on page 99

**Session 3: Creating Monitor reports** on page 102

During this session, you will:
- ”Specify a distribution and build a graph for communication reporting” on page 103
- ”Investigate contention issues” on page 105

**Session 4: Creating IMS Connect reports** on page 106

This session requires that you have IMS Connect Extensions for z/OS installed. During this session, you will:
- ”Define an Object List for transit reporting” on page 106
- ”Investigate IMS Connect resource usage” on page 108

**Session 5: Using Report Forms** on page 109

Parts of this session require that you have IMS Connect Extensions installed. During this session, you will:
- ”Create List and Summary Report Forms” on page 109
- ”Create a Report Set that uses List and Summary Report Forms” on page 116

Session 1: Setting up your environment

This session shows you how to set up your IMS PA environment.
Configure your IMS PA profile

To use IMS Performance Analyzer, you must first set up your IMS PA dialog profile.

Procedure

1. Start the IMS Performance Analyzer ISPF dialog.

   Upon entry to the IMS PA dialog, you will be presented with the IMS PA primary option menu.

   ![IMS PA Primary Option Menu](figure17.png)

   **Figure 17. Primary Option Menu**

   2. On the IMS PA primary option menu, select option 0 **IMS PA Profile** to display the IMS PA Profile Options Menu.

   ![IMS PA Profile Options Menu](figure18.png)

   **Figure 18. Profile Options Menu**

   If you don’t review and complete the profile settings yourself, then IMS PA will allocate new data sets on your behalf when it needs them to save your report requests.

3. Select option 1 **IMS PA Settings** (you could also select option 0.1 from the Primary Menu). Ensure that your IMS PA load library correctly specifies the name of the library that contains the IMS PA link/load modules. Also customize your Job Statement Information so you can easily find your report output.
4. If you want to run IMS Connect reports, select option 0.5 IMS Connect Extensions Definitions Data Set. Specify the name of your IMS Connect Extensions Definitions Data Set to identify your IMS Connect systems to IMS PA. There is no default DSN.

**Prerequisite:** To run IMS Connect reports, you must have IMS Connect Extensions for z/OS installed. This is required for "Session 4: Creating IMS Connect reports" on page 106 and part of Chapter 17, "Designing Report Forms," on page 229 of this tour.

5. Press Exit (F3) and return to the IMS PA primary option menu.

**Define IMS subsystems to be reported**

Before requesting IMS PA reports, you must first define your IMS subsystems, group them for shared queues reporting purposes, and specify their associated Log and Monitor Files.

**About this task**

If you are migrating from a previous release of IMS PA, your existing Log and Monitor File specifications will be converted to System Definitions automatically, and you can skip the following procedure.

**Procedure**

1. From the IMS PA primary option menu, select option 1 System Definitions.
To start reporting, you only need to specify the IMS Subsystem ID. However for completeness, we will enter the entire definition of this system.
3. Let's define an IMS V12 system called PR01, which is a production system. In the top section of the panel, enter your IMS Subsystem ID, IMS version, description, and RESLIB data set.

4. In the bottom section of the panel, specify DBRC settings for the IMS subsystem. The MDA Data Set specification is used by DBRC Log Selection to dynamically allocate the RECON data sets. Alternatively, you can specify the RECON data set names.

5. Specify **required view** option 2 or scroll right to switch to your Log Files specification.

The Log Files data sets contain the data required for your current Log reporting requirements. At Log report run time, you choose whether to use these Log Files or DBRC Log Selection.

From the Log Files View, we have specified two Log File data set names. The data sets must be specified in time sequence, as this is the order in which IMS PA will process them.

**Note:** Notice that we have excluded the first file. At Log report run time, IMS PA will ignore excluded data sets and generate DD statements only for the included Log File data sets.
6. Specify required view option 3 or scroll right again to switch to your Monitor Files specification. From the Monitor Files View, we have specified a Monitor file data set name. At Monitor report run time, IMS PA will generate a DD statement for this Monitor File data set.

---

**Figure 22. IMS Subsystem: Log Files**

---

7. Specify Required View option 4 or scroll right again to switch to the Groups specification. Groups is a facility that enables you to group IMS subsystems together for reporting purposes. From the Groups View, specify a meaningful name to describe your group of systems. For example, here we have specified that this system belongs to a Group called PRODFLEX.
At report run time, select either an individual system or a Group to be reported. In the next part of this session, we will discuss how to maintain our Group definitions.

8. Now that we have completed our definition of this IMS subsystem, press **Exit** (F3) to save your specifications and return to the System Definitions list.

If you wish, define a second IMS subsystem called PR02 by inserting a new row and repeating steps 3 on page 83 to 7 on page 84. Alternatively if system PR02 is similar to PR01, use line action **R** to repeat PR01, then select PR02 to update it.

Notice the **Files** indicators located to the right of each IMS system. Since we completed all aspects of system definition, all reporting options are available:

- DBRC value of “Yes” indicates that DBRC Log Selection is available for the subsystem.
- Log value of “Yes” indicates that Log file data set names are specified and eligible for inclusion in the Log report JCL when this system is selected.
- Monitor value of “Yes” indicates that Monitor file data set names are specified and eligible for inclusion in the Monitor report JCL when this system is selected.
- TRF value of “Yes” indicates that OMEGAMON TRF extractor file data set names are specified and eligible for inclusion in the TRF report JCL when this system is selected.

---

**Figure 24. IMS Subsystem: Groups**

At report run time, select either an individual system or a Group to be reported. In the next part of this session, we will discuss how to maintain our Group definitions.

---

**Figure 25. System Definitions: IMS Subsystem**

Notice the **Files** indicators located to the right of each IMS system. Since we completed all aspects of system definition, all reporting options are available:

- DBRC value of “Yes” indicates that DBRC Log Selection is available for the subsystem.
- Log value of “Yes” indicates that Log file data set names are specified and eligible for inclusion in the Log report JCL when this system is selected.
- Monitor value of “Yes” indicates that Monitor file data set names are specified and eligible for inclusion in the Monitor report JCL when this system is selected.
- TRF value of “Yes” indicates that OMEGAMON TRF extractor file data set names are specified and eligible for inclusion in the TRF report JCL when this system is selected.
ATF value of “Yes” indicates that OMEGAMON ATF journal data set names are specified and eligible for inclusion in the ATF report JCL when this system is selected.

9. Press Exit (F3) to save your specifications and return to the IMS PA primary option menu.

Assign subsystems to a Group for shared queues reporting

In this section, we will assign subsystems to a Group for shared queues (sysplex) reporting.

Procedure

1. First, let’s review our Group definitions. From the IMS PA primary option menu, select option 2 Groups.
   This is where you maintain your Group definitions.

   Notice that our Production Sysplex Group PRODPLEX is already defined. When we defined our IMS system PR01 we assigned it to this Group. IMS PA recognized PRODPLEX as a new Group and automatically registered it for us. Group PRODPLEX has two IMS subsystems that belong to it.

   The Files indicators have special significance for Groups:
   • DBRC value of “Yes” indicates that all IMS subsystems in the Group are eligible for DBRC Log Selection.
   • Log value of “Yes” indicates all IMS subsystems in the Group have Log Files specified.

   Tip: Use DBRC Log Selection for Group reporting to ensure that the Log Files for all subsystems in the Group contain data for the required reporting time interval.

2. Enter NEW on the command line to define a new Group.
3. Enter a name for the Group, for example, TESTPLEX, and a description for it.

4. Press Exit (F3) to save the group and return to the list. Notice the new group
   has been added, but has no IMS or IMS Connect systems defined to it.

5. To add IMS or IMS Connect systems to a Group, or edit your Group definition,
   enter line action S to select the Group and display the list of systems that
   belong to it.

   You can maintain your Group definition from here by adding or removing IMS
   or IMS Connect systems.

6. To add a new IMS or IMS Connect system, insert a new line by entering line
   action I next to any system.

7. On the empty line, tab to the System field and press Prompt (F4). A pick list
   displays, containing all IMS and IMS Connect systems you have defined to IMS
   PA. Select a system from this list and press Exit (F3) to save your selection.

8. To replace a system in your Group, you can enter line action S next to it. A
   pick list appears for you to make your selection.

9. When you have finished, press Exit (F3) and return to the IMS PA primary
   option menu.

   This is the end of the first session of the tour.
Session 2: Requesting log reports

This session shows you how to request reports to run against IMS Log data for the defined systems. You will run individual log reports, create and run sets of log reports, and view report output.

Run individual reports

In this session, we will submit report requests to run in batch and view the report output.

Procedure

1. Select option 3 Report Sets from the IMS PA primary option menu.

   The first time you enter, you will be prompted to create your Report Sets data set. This is where IMS PA will save your report requests. Press Enter to create the data set using default settings.

   You can change the Report Sets data set name using option 0.4 IMS PA Control Data Sets from the IMS PA primary option menu.

   Report Sets

   Report Sets reside as members in the Report Sets data set, as defined in option 0.4 IMS PA Control Data Sets. When the Report Sets data set is empty, IMS PA automatically inserts two sample Report Sets: SAMPLOG for Log reporting and SAMPMON for Monitor reporting. These Report Sets request some of the more common IMS PA reports and can be used as a model when creating new Report Sets. Later in this session, we will look at how Report Sets can be used.

   You can run reports individually or you can run a series of reports as a Report Set. Let’s run some individual log reports using the sample Report Set.

2. Enter line action S next to the SAMPLOG Report Set.

   The SAMPLOG Report Set is displayed, showing a list of all available reports in a tree structure format.

   3. Use line action S next to a report category to expand or contract the selection.

      Expand the Resource Usage & Availability Reports category.

      In the next few steps, we will run two log reports from this category.

   **Figure 29. Report Sets**

   The SAMPLOG Report Set is displayed, showing a list of all available reports in a tree structure format.
4. Enter **RUN** in the line action field next to **Dashboard**.

Prior to the generation of Report Set JCL, the Run Report Set panel is displayed. This panel prompts you to check or change your runtime options before IMS PA generates the JCL to run your report.
**Report Interval** specifies the time period that you wish to report against. Notice the use of relative dates. Specify 0 for today, -1 for yesterday, and so on.

**System Selection** specifies the IMS system or Group you wish to report against. You can type in the system name directly, for example PR01, or you can press **Prompt (F4)** to select a system from a prompt list.

Additional runtime options include:

- **Log Selection Options** to request that IMS PA use our specified Log file data sets in preference to DBRC Log Selection.
- **Execution Mode** to request that IMS PA generate JCL with command input.
- To redirect output to the IMS Tools Knowledge Base, select **Write to the ITKB repository** and specify the ITKB server name.

5. Press Enter to generate the Report Set JCL. If required, the JCL can be edited prior to submission.
6. Enter \texttt{SUB} on the command line to submit the JCL.

IMS PA automatically assigns each report a unique DDname. This allows you to view the reports separately in SDSF by using the \texttt{?} action character in the \texttt{NP} column.

The Dashboard report provides a quick overview of critical system performance indicators. View your report and consider this question:

Do any critical system performance indicators suggest a potential performance problem?

For further information on interpreting report output, see “Dashboard Report” in the IMS Performance Analyzer Report Reference.

7. Press \texttt{Exit (F3)} to return to the Report Set list.

8. Enter line action \texttt{S} next to \textbf{Message Queue Utilization}.

The report options for the Message Queue Utilization report are displayed.
Here you can specify options to tailor the report according to criteria you specify. If you do not specify any options here, all report data is included.

### Report Options and Selection Criteria

Report Options and Selection Criteria are available for most reports.

Use Report Options to specify report output DDnames, report intervals, selection criteria, and other options specific to the type of report.

Selection Criteria allows you to filter your report. For example, you may wish to restrict reporting to specific IMS subsystems.

9. To run the report:
   a. Type RUN on the command line and press Enter.
   b. When the Run Report Set dialog appears, check your runtime options and then press Enter.
   c. Review your JCL, then type SUB on the command line and press Enter.

10. Press Exit (F3) and return to the IMS PA primary option menu.

The Message Queue Utilization report contains information on the use of message queues. View your report and consider this question:

Are the message queue lengths evenly distributed?

To answer this question, seek out the 50% line in the report. For further information on interpreting report output, see “Message Queue Utilization Report” in the IMS Performance Analyzer Report Reference.

### Management Exception report: expectations and averages

In this session we will define an Expectation Set and run a Management Exception report.

**Procedure**

1. From the IMS PA primary option menu, select option 4 **Expectation Sets**.
2. Type NEW on the command line and press Enter.
3. Specify the name for a new default expectation set. For example, Quarter1. Press Enter to create the Expectation Set.

4. Enter some values for the Expectation Set. Press Help (F1) on each field to see the values you can enter.

5. Type SAVE on the command line to save your values, then Exit (F3) and return to the IMS PA primary option menu.

   Before we run the Management Exception report, let's consider the Averages data set. If you are upgrading from a previous version, you probably already have one defined. You can use this for the tour, or if you prefer, you can create a new averages data set and call it AVERAGES.

   To create an Averages data set, use ISPF option 3.2 to allocate and catalog a sequential data set with VB format, a logical record length of 4092, and a PS data set name type.

   Let's now run our Management Exception report.

6. From the IMS PA primary option menu, select option 3 Report Sets, and then select the SAMPLOG Report Set.

7. Tab to the Resource Usage & Availability Reports category and enter line action S next to Management Exception.

8. Enter S next to all the options for Reports Required.

---

**Figure 34. Expectation Set**

<table>
<thead>
<tr>
<th>TranCode</th>
<th>% Total</th>
<th>Input</th>
<th>Proc</th>
<th>Outpt</th>
<th>Calls</th>
<th>Calls</th>
<th>Waits</th>
<th>Time</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>121</td>
<td>5</td>
<td>50</td>
<td>2.1</td>
<td>2</td>
<td>20</td>
<td>0.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>99</td>
<td>120</td>
<td>111</td>
<td>30.1</td>
<td>5</td>
<td>2</td>
<td>50</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>IMS PA Expectation Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSI Averages</td>
<td></td>
</tr>
</tbody>
</table>
9. Tab to **Expectation Set** and press **Prompt (F4)** and select an Expectation Set from the list.

10. Enter **S** next to **Averages Data Sets Specification** and press Enter.

11. Specify an **Input Data Set** and an **Output Data Set**. You can use the same data set for both.

12. Press **Exit (F3)** to return to the Management Exception options.

13. Under **Report Options**, select option 2 **Print Averages Data Set**.

14. Run the report and submit your JCL.

15. Press **Exit (F3)** and return to the IMS PA primary option menu.

The Management Exception report shows which operands are outside the boundaries specified in Expectation Sets. View your report and consider these questions:

- Which performance indicators are outside specified boundaries?
- Did any transactions or programs abend in a deadlock?
- Which other reports would you use to investigate these problems?

For further information on interpreting the report output, see “Management Exception Report” in the IMS Performance Analyzer Report Reference.
Obtain extracts and create graphs

In this session we will obtain a log extract, export it to our PC, and create a graph using Microsoft Excel.

Before you begin

The following procedure assumes that your PC has Microsoft Windows and Microsoft Office installed. If you have a different operating system or spreadsheet tool, modify the following steps to suit your environment.

Procedure

1. Select option 3 Report Sets from the IMS PA primary option menu.
2. Enter line action S next to the SAMPLLOG Report Set.
3. Enter line action S next to the Options category, and then enter line action S next to the Log Global option.
   Log Global Options affect the data that is included in all reports and extracts.
4. Check the options and change them where appropriate. Enter / next to Use Comma as Delimiter Character. To simplify this example, deselect the Activate inflight processing option.
5. Press Exit (F3) to return to the Report Set. Let's do the extract.
6. Enter line action S next to Transaction Exception in the Transaction Transit Reports category.

Figure 37. Log Global Options
7. To produce an extract, you must enter the name for the **Total Traffic** Extract Data Set. For example, 'IMSPA.EXTRACT.TRANEXC'. We will later transfer to this data set to our PC for building our graph.

**Note:** If the data set has not already been cataloged, IMS PA will automatically catalog it for you.

8. Repeat step 9 on page 92 to run the report, then press **Exit (F3)** until you have returned to the IMS PA primary option menu.

We will now export the extract to a plain text file on our PC, and graph the data using Microsoft Excel.

9. Use your terminal emulator to transfer the extract file, 'IMSPA.EXTRACT.TRANEXC', to your PC. Call it tranexc.txt.

10. On your PC, start Microsoft Excel.

11. Select **File > Open** from the menu bar.

12. Locate the workstation file containing the exported data and open it. The Text Import Wizard is displayed.

13. Select **Fixed width** as the file type that best describes the data and click **Next**.

14. Select General as the column data format, check the data columns have been properly defined, and click Finish. The data spreadsheet is displayed.

15. Hold down the Ctrl key and click the column headers to highlight the columns of data you wish to graph.

16. Select **Insert > Chart** from the menu bar to open the Chart Wizard.
17. Step through the Wizard to select the required type and format for your graph.

The Transaction Exception Extract contains detail of all transaction activity. View your graph and consider this question:

Are there any momentary surges in transaction input?

For further information on interpreting report output, see “Transaction Exception Report” in the IMS Performance Analyzer Report Reference.

**Obtain extracts and query with DB2**

In this session we will obtain a log extract and use it as the basis for a DB2 query.

**Procedure**

1. Select option 3 **Report Sets** from the IMS PA primary option menu.
2. Enter line action S next to the SAMPLOG Report Set.
3. Tab to the Transaction Transit Reports category, and enter line action S next to **Transit Options**.

   Transit Options affect the data that is included in the Transaction Transit reports and extracts. Check the options and change them where appropriate. For example, you may want to change Processing Limits to 60 seconds, and Time Interval to 15 minutes. Also select your required report options.

   ```
   File Options Help
   Command ===> SAMPLOG - Transaction Transit Options
   
   Specify Transit options.
   
   Processing Options:
   Peak Transaction Time Percentage 75 (50-100%)
   
   Report Options:
   Include MSC Transactions
   Include BMP Transactions
   Include APPC/OTMA Transactions
   Include Message Switches
   Report All Transactions
   
   Processing Limits:
   Input Queue Time (INMAX) ....... 60 Seconds
   Output Queue Time (OUTMAX) ....... 60 Seconds
   Transaction Set Size ......... 32767 (1-32767)
   
   Interval Options:
   Time Interval ......... 15 Minutes
   Align Time Interval to Even Hour YES (Yes or No)
   
   Selection Criteria:
   Object Type Inc/Exc Object + List Validation Warning
   Transaction Code
   
   Note: INMAX/OUTMAX is ignored if BMPs or Message Switches are included.
   
   Figure 39. Transaction Transit Options
   ```

   Let's do the extract.
4. Press **Exit (F3)** to return to the Report Set.

5. Enter line action **S** next to Transaction History File in the Transaction Transit Reports category.

| Command == > _________________________________________________________________ |
| Specify extract options. |
| Interval Options: | Report Interval |
| Time Interval 00:15:00 (hh:mm:ss) | YYYY/MM/DD HH:MM:SS:TH |
| From | To |
| Recap Report Ddname | TRANHIST |

**Transaction History DSN:**

Data Set Name . . . 'IMSPA.EXTRACT.TRANHIST'

**Selection Criteria:**

Object Type Inc/Exc Object + List Validation Warning

Transaction Code ___ ________ _

**Figure 40. Transaction History File**

To produce an extract, you must enter the name for the **Transaction History DSN**. For example, 'IMSPA.EXTRACT.TRANHIST'. We will later query this extract using DB2.

**Note:** If the data set has not already been cataloged, IMS PA will automatically catalog it for you.

6. Run the report, then press **Exit (F3)** until you have returned to the IMS PA primary option menu.

We will now query the extract in DB2 using QMF™.

7. From the SIPISAMP library supplied with IMS PA, copy the following members to your working library:
   - IPITHDDL
   - IPITHLOD
   - IPITHQM2

8. Run the IPITHDDL and IPITHLOD jobs using the settings described in "Understanding the Transaction History File" on page 735.

9. From ISPF, invoke QMF.

10. Press F6 to commence an SQL query.

11. Copy and paste the SQL in IPITHQM2 into your QMF screen and press F2 to run the query.

The Transaction History File is used to collect historical performance data. View the results of your query and consider how you might use this to assist with long term capacity planning.

For further information on interpreting report output, see "Transaction History File" in the IMS Performance Analyzer Report Reference.
Create and run Report Sets

A Report Set contains a series of report requests. When you submit a Report Set for batch processing, IMS PA generates a one-step JCL deck to run the report requests.

About this task

In the following procedures we create a Report Set that enables us to analyze transit patterns. We will include the following reports: Graphic Summary, Transit Analysis, Transit Statistics, and Region Histogram.

Procedure

1. From the IMS PA primary option menu, select option 3 Report Sets. A list of Report Sets stored in the Report Sets Data Set is displayed.
2. Enter NEW on the command line to create a new Report Set.
3. Create a Report Set named PATTERNS and request that it analyze Log data. Press Enter to create the new Report Set. The Report Set edit panel is displayed.

Figure 41. New Report Set

3. Create a Report Set named PATTERNS and request that it analyze Log data. Press Enter to create the new Report Set. The Report Set edit panel is displayed.
Notice the column heading **Active**. When you create a new report, they are all initially set to **No**. To include a report in a Report Set, you need to activate it.

4. Use line action **A** to activate the following reports: **Analysis**, **Statistics**, and **Graphic Summary** in the **Transaction Transit Reports** category; and **Region Histogram** in the **Resource Usage & Availability Reports** category.

**Note:** When you activate a report, any relevant options are also activated, such as **Log Global** and **Transit Options**. Log Global options apply to every report and the Transit Options apply to reports in the Transaction Transit category only.

5. Use line action **S** to review and edit the report options for the Transaction Transit Analysis report.

This report summarizes end-user response time by various criteria, such as by Transaction Code or User ID. You can change the initial default report settings to meet your requirements. For example, you may wish to restrict reporting to transaction codes whose name starts with TR.
6. After completing your review of the options, press **Exit (F3)** to return to the Report Set.

7. Use line action **S** to review and edit the report options for the Transaction Transit Statistics report.
   
   This report is a graphical representation of the information in the Transaction Transit Analysis report. You can produce graphic representations of transit time statistics based on Transaction Code, Logical Terminal, User ID, Transaction Code within Logical Terminal or User ID, Line or VTAM Node, Message Class, and Time of Input.
After completing your review of the options, press Exit (F3) and return to the Report Set.

8. Save the Report Set using the SAVE command.

9. Run the Report Set using the RUN command. Only the active reports (in active report categories) will be included.

10. If required, the JCL can be edited prior to submission. Submit the JCL using the SUB command.

11. Press Exit (F3) and return to the Primary Option Menu.

The Transaction Transit reports are stored in the DDname you specified in the Transit Options. The default is RPTOUT. The Region Histogram is stored, by default, in HISTDD. View your reports and consider these questions:

- Are there any spikes in transit times?
- Why did these spikes occur?
- Is there a pattern between different times?
- What is the pattern of transaction scheduling in each region?


This is the end of the second session of the tour.

**Session 3: Creating Monitor reports**

This session shows you how to create distributions from which you can build customized graphical reports, and examines monitor reporting.
Specify a distribution and build a graph for communication reporting

This session describes how to create a distribution we can use to customize our graphical reports.

About this task

For a list of reports that can produce distribution graphs, see "Distribution and Report cross-reference" on page 161. The table also lists applicable sample distributions supplied with IMS PA. We will use our Distribution to create a Communication report.

Procedure

1. Select option 7 Distributions from the IMS PA primary option menu. The Distributions panel is displayed.

IMS PA supplies 24 sample distributions in the default Distributions data set.

<table>
<thead>
<tr>
<th>Distributions Data Set . . : USR.IMSPA.DIST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command ==&gt;</td>
</tr>
<tr>
<td>-------------</td>
</tr>
<tr>
<td>/</td>
</tr>
<tr>
<td>-</td>
</tr>
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<td>-</td>
</tr>
</tbody>
</table>

Figure 45. Distributions: samples

2. Type NEW on the command line to create a new Distribution. Let's model this Distribution on one of the samples.

3. On the New Distribution panel enter a name for the new Distribution. Let's call it WAITANA and let's model it on the DDIWELAP sample Distribution.

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4. Press Enter to create the Distribution. The Edit Distribution panel is displayed with all of the fields set to the values specified in the Distribution we used as a model.

Set the limit values from 1 through 10 and set the multiplier to 10. This will allow us to explore the distribution at the low end of the range.

5. Type SAVE on the command line to save your Distribution, and press Exit (F3) to return to the IMS PA primary option menu.

6. Select option 3 Report Sets and enter line action S next to SAMPMON. This is the sample Monitor Report Set supplied with IMS PA.

7. Tab to the Region Activity Analysis Reports category and enter line action S next to the Database IWAIT Analysis report to select it.

8. Select the Print Distributions option, and specify WAITANA as the distribution for the Elapsed Time per IWAIT graph.
9. Run the report and submit the JCL.
10. Press Exit (F3) and return to the IMS PA primary option menu.

The Database IWAIT Analysis report produces IWAIT distribution graphs and IWAIT activity analysis by DDname and DDname Group for each dependent region. Scroll to the bottom of the report to view your graphs and consider this:

Can you identify any inefficient seek patterns? Hint: look for widely dispersed times and long elapsed times accompanied by a large standard deviation.

For further information on interpreting the report output, see “Database IWAIT Analysis report” in the IMS Performance Analyzer Report Reference.

**Investigate contention issues**

In this section we will construct a new Monitor Report Set that is designed to investigate contention issues.

**Procedure**

1. Select option 3 Report Sets from the IMS PA primary option menu. The Report Sets panel is displayed.
2. Type NEW on the command line and press Enter. The New Report Set panel is displayed.
3. Enter the name for your new Report Set. Let’s call it CONTENTM.
4. Select Type 2 to create a Monitor Report Set and press Enter.
5. Enter a suitable description for the Report Set, such as “Contention Monitor reports”.
6. Tab to the Options category and enter line action S next to Monitor Global. This is where you can establish some general options for the reports in this Report Set. Select Include Distributions in Reports because we want all of our reports to include the distributions we have specified. Note the report output DDnames; you will need to refer to these later to read your reports. When you have finished, press Exit (F3) to return to the Report Set.
7. Select the Alternate Sequencing option. Here we can specify a different ordering for some of our reports. For the Required Sequence, specify option 4 Delay. This orders the columns by time spent by the resource waiting for IWAIT events to complete. For example, the databases which had to wait the longest for I/O to complete. Press Exit (F3) to return to the Report Set.

Let’s now activate our reports.
8. Enter line action **A** next to the following reports: Region Summary, Performance Exceptions, Enqueue/Dequeue Trace, and DEDB Resource Contention.

**Note**: The Alternate Sequencing option specified in step 7 on page 105 applies only to the Region Summary report and the DEDB Resource Contention report.

9. Next, you may wish to specify some report options. Enter line action **S** next to the activated reports to select any specific options you wish to set. Note that the Region Summary report does not contain any options.

10. When you have finished specifying your report options, return to the Report Set and type SAVE on the command line to save your settings.

11. Type RUN on the command line to run your reports. The Run Report Set options panel displays.

12. Enter the name of your IMS system that contains monitor files. You can use **Prompt (F4)** to select from a pick list.

13. For **Execution Mode**, you can select option 1 to simply submit your job without viewing the JCL, or if you wish you can edit the JCL before you submit the job.

14. When you have submitted your Report Set, press **Exit (F3)** and return to the Primary Option Menu.

Our Report Set generates four reports:
- **SUMMRPT** contains the Region Summary and Region Detail reports and the Region Distributions.
- **EXCPTRPT** contains the Exception Listing.
- **ENQDD** contains the Enqueue-Dequeue Summary.
- **FPRSCONT** contains the Fast Path DEDB Resource Contention Summary and the Fast Path DEDB Lock Analysis.

View the reports and consider these questions: Is there any I/O data set contention? Which storage pools failed, how many times did they fail, and how much storage did they need? Were there any enqueue conflicts? Which area had the longest average DEDB lock wait time?


This is the end of the third session of the tour.

---

**Session 4: Creating IMS Connect reports**

This session shows you how to define an Object List and run IMS Connect reports.

**About this task**

**Prerequisite**: To complete this session, you must have specified your IMS Connect Extensions definitions data set in “Session 1: Setting up your environment” on page 79.

**Define an Object List for transit reporting**

An Object List is a reusable set or range of values that you can use as selection criteria for transit reporting.
**Procedure**

1. From the IMS PA primary option menu, select option 6 Object Lists.
2. Type NEW on the command line to create a new Object List.
   The New Object List panel is displayed.

   ![New Object List Panel](image)

   **New Object List**

   Specify the name of the new Object List and the type or model.

   **Name** . . . TCP3000

   **List Type or MODEL**

   1. Application Group
   2. Block ID
   3. Class
   4. Database
   5. DDname
   6. DDname Group
   7. DEDB Area
   8. External SSID
   9. IMS Subsystem ID
   10. Key
   11. Line
   12. Line/Terminal
   13. LTERM
   14. Message ID
   15. Program Name
   16. Record Code
   17. Region ID by PST
   18. Region Jobname
   19. Routing Code
   20. Transaction Code
   21. User ID
   22. User-Defined
   23. VTAM Node
   24. Connect Client ID
   25. TCP/IP Port
   26. Tpipe
   27. MODEL (see below)

   **Model** . . .

   Press Enter to create the Object List, Exit or Cancel to leave.

   ![Figure 49: New Object List](image)

   Let’s define an Object List to specify only port numbers ranging from 3000 to 3999.

3. In the New Object List panel, type the name for your Object List. For example, TCP3000.

4. Specify Type 25 (TCP/IP Port), and then press Enter.
   The Edit Object List panel is displayed.

   ![Edit Object List Panel](image)

   **File Edit Options Help**

   Command ===> SAVE Row 1 to 1 of 1
   Scroll ===> PAGE

   **EDIT PORT Object List - TCP3000**

   Specify the TCP/IP Port values.

   **Description** . . . TCP/IP Ports 3000-3999

   Enter "/" to select action.

   - Range (or sublist) -
     Sublist From: 3000 To: 3999
     Validation Warning

   ![Figure 50: Edit Object List](image)

5. Enter a description for this object. For example, “TCP/IP Ports 3000–3999”.

6. Enter 3000 in the **Range From** field and enter 3999 in the **Range To** field.

7. Type SAVE on the command line to save the list. Press Exit (F3) and return to
   the IMS PA primary option menu.
8. Select option 3 Report Sets.
9. On the command line, enter NEW SAMPCEX.
10. Select IMS Connect in the Type field.
11. Press Enter to create the report set.
12. In the Transaction Transit Reports category, enter line action S next to the Log report. The Transit Log report is displayed.
13. In the Selection Criteria for Transaction Code, exclude the object PART. This excludes all transaction codes named “PART”.

```
  Command ==> SAMPCEX - Transit Log

Specify report options.
Report Options:  Report Output DDname LOG
  / Additional identification

Selection Criteria:
  Object Type  Inc/Exc  Object + List  Validation Warning
  Transaction Code  EXC  PART      
  User ID  
  Datastore (IMS ID)  
  Client ID  
  TCP/IP Port Number  INC  TCP3000  
```

**Figure 51. Communication report**

14. In the TCP/IP Port Number Selection Criteria, include the Object List TCP3000. You can do this by positioning the cursor on the Object field and pressing Prompt (F4). Select the Object List from the pick list and press Enter. Using the Prompt key automatically fills in the rest of the columns.
15. Type RUN on the command line, specify your Connect system, and enter an appropriate report interval. Press Enter and submit your JCL.
16. Press Exit (F3) and return to the IMS PA primary option menu.

The IMS Connect Transit Log provides performance details about every transaction processed by IMS Connect. View the report and consider this question:

What are the performance details of transactions processed through port 3000?

For further information on interpreting the report output, see “Connect Transit Log Report” in the IMS Performance Analyzer Report Reference.

**Investigate IMS Connect resource usage**

This session shows you how to create a Report Set that is designed to investigate IMS Connect resource usage.

**Procedure**

1. From the IMS PA primary option menu, select option 3 Report Sets.
2. Type NEW on the command line. Create a new Report Set named CONRESRC of type IMS Connect and press Enter.
3. Enter an appropriate description for the Report Set, such as “Connect resource tracking”.
4. Use line action A to activate the following reports: Port Usage, ACK/NAK, and Transit Event Trace.

5. If you wish, specify some report options by entering line action S next to the active reports.

6. Type SAVE on the command line to save the Report Set.

   You can run the Report Set in the typical manner from the Report Sets list, but let's try a different method this time.

7. Press Exit (F3) and return to the IMS PA primary option menu.

8. Select option 9 IMS Connect. The IMS Connect System Definition panel is displayed, listing all your systems in the IMS Connect Extensions data set you specified in session 1 using option 0.5 IMS Connect Extensions Definitions Data Set.

9. Type line action RUN next to any system in your list. The Run Connect Report Set panel is displayed.


11. Submit your JCL and press Exit (F3) to return to the IMS PA primary option menu.

The IMS Connect Port Usage Report provides a summary of the TCP/IP ports used by the IMS Connect system. The IMS Connect ACK/NAK Report provides a summary of acknowledgement activity for transactions that use Sync Level=CONFIRM. The IMS Connect Trace provides a list of detailed information about every event in the life of a transaction.

View the reports and consider these questions:
- What TCP/IP ports were used by the IMS Connect system?
- What acknowledgement activity occurred for each transaction?
- What other events occurred during the life of a particular transaction?

For further information on interpreting the report output, see “Port Usage Report”, “Connect ACK/NAK Report”, and “Connect Trace Report” in the IMS Performance Analyzer Report Reference.

This is the end of the fourth session of the tour.

---

**Session 5: Using Report Forms**

This session shows you how to create Report Forms and run sets of IMS Connect reports.

**About this task**

**Prerequisite:** To complete this session, you must have specified your IMS Connect Extensions definitions data set in “Session 1: Setting up your environment” on page 79.

**Create List and Summary Report Forms**

In this part of the tour, we will create a List Report Form that contains only IMS Connect fields, a Summary Report Form that contains only IMS fields, and a Summary Report Form that contains both IMS and IMS Connect fields. These Report Forms will be defined in a new Report Set that we will create later in the tour.
**Procedure**

1. Select option 10 **Report Forms** from the IMS PA primary option menu. The Report Forms panel is displayed.

   ![Report Forms Panel](image)

2. Type NEW on the command line and press Enter to create a new Report Form.

   The New Report Form panel is displayed.

   The first Report Form that we define will be a List form that will contain only IMS Connect fields.

3. Let's give the new Report Form a **Name** of LISTCONN.

4. Specify a form **Type** of 1 (List).

5. Enter / next to **Include Connect fields** for the List or Summary options.

   ![New Report Form Panel](image)

6. Press Enter to display the default List Report Form containing only IMS Connect fields.
<table>
<thead>
<tr>
<th>Field</th>
<th>Name</th>
<th>Func</th>
<th>Len</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>STARTCON</td>
<td>TIME</td>
<td>12</td>
<td>Connect transaction start time</td>
</tr>
<tr>
<td></td>
<td>TRancode</td>
<td>8</td>
<td></td>
<td>Transaction Code</td>
</tr>
<tr>
<td></td>
<td>Targds</td>
<td>8</td>
<td></td>
<td>Target datastore</td>
</tr>
<tr>
<td></td>
<td>Port</td>
<td>5</td>
<td></td>
<td>TCP/IP Port number</td>
</tr>
<tr>
<td></td>
<td>Respon</td>
<td>8</td>
<td></td>
<td>Connect response time</td>
</tr>
<tr>
<td></td>
<td>Preotma</td>
<td>8</td>
<td></td>
<td>Total pre-OTMA input time</td>
</tr>
<tr>
<td></td>
<td>Inread</td>
<td>8</td>
<td></td>
<td>Input read Socket time</td>
</tr>
<tr>
<td></td>
<td>Readexit</td>
<td>8</td>
<td></td>
<td>Read message Exit time</td>
</tr>
<tr>
<td></td>
<td>Safetime</td>
<td>8</td>
<td></td>
<td>SAF security call time</td>
</tr>
<tr>
<td></td>
<td>Prootma</td>
<td>8</td>
<td></td>
<td>OTMA processing time</td>
</tr>
<tr>
<td></td>
<td>Confirm</td>
<td>8</td>
<td></td>
<td>Client Confirm time</td>
</tr>
<tr>
<td></td>
<td>Postotma</td>
<td>8</td>
<td></td>
<td>Total post-OTMA output time</td>
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<td>Xmitexit</td>
<td>8</td>
<td></td>
<td>Transmit message Exit time</td>
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<td></td>
<td>Failed</td>
<td>8</td>
<td></td>
<td>Transaction failure indicator</td>
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<td>Ackread</td>
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<td></td>
<td>Acknowledgement read socket time</td>
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<td></td>
<td>Cliack</td>
<td>4</td>
<td></td>
<td>Client acknowledgement indicator</td>
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<td>Client ID</td>
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<td>Complmad</td>
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<td></td>
<td>Commit mode</td>
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<td>Complvlc</td>
<td>5</td>
<td></td>
<td>Connect Completion Level</td>
</tr>
<tr>
<td></td>
<td>Confirm</td>
<td>8</td>
<td></td>
<td>Client Confirm time</td>
</tr>
<tr>
<td></td>
<td>Confootma</td>
<td>8</td>
<td></td>
<td>OTMA ACK processing time</td>
</tr>
<tr>
<td></td>
<td>Connltok</td>
<td>16</td>
<td></td>
<td>Connect Logon token</td>
</tr>
<tr>
<td></td>
<td>Connotok</td>
<td>16</td>
<td></td>
<td>Connect Resume-Tpipe Orig Message logon token</td>
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<tr>
<td></td>
<td>Delayotma</td>
<td>8</td>
<td></td>
<td>OTMA delay time</td>
</tr>
<tr>
<td></td>
<td>Exitname</td>
<td>8</td>
<td></td>
<td>Connect user message exit name</td>
</tr>
<tr>
<td></td>
<td>Failed</td>
<td>8</td>
<td></td>
<td>Transaction failure indicator</td>
</tr>
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<td>Hstiu</td>
<td>8</td>
<td></td>
<td>Connect system name</td>
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<tr>
<td></td>
<td>IMSack</td>
<td>3</td>
<td></td>
<td>IMS acknowledgement indicator</td>
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<tr>
<td></td>
<td>Inread</td>
<td>8</td>
<td></td>
<td>Input read Socket time</td>
</tr>
<tr>
<td></td>
<td>IPPaddr</td>
<td>5</td>
<td></td>
<td>IP Address</td>
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<td>Ltermokv</td>
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<td></td>
<td>Override LTERM</td>
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<td></td>
<td>Origos</td>
<td>8</td>
<td></td>
<td>Original datastore</td>
</tr>
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<td></td>
<td>Outrtcon</td>
<td>8</td>
<td></td>
<td>Connect Resume-Tpipe time</td>
</tr>
<tr>
<td></td>
<td>Port</td>
<td>5</td>
<td></td>
<td>TCP/IP Port number</td>
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<td></td>
<td>Portdep</td>
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<td></td>
<td>Port depth</td>
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<tr>
<td></td>
<td>Porttype</td>
<td>4</td>
<td></td>
<td>Port type</td>
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<tr>
<td></td>
<td>Postotma</td>
<td>8</td>
<td></td>
<td>Total post-OTMA output time</td>
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<tr>
<td></td>
<td>Preotma</td>
<td>8</td>
<td></td>
<td>Total pre-OTMA input time</td>
</tr>
<tr>
<td></td>
<td>Prootma</td>
<td>8</td>
<td></td>
<td>OTMA processing time</td>
</tr>
<tr>
<td></td>
<td>Readexit</td>
<td>8</td>
<td></td>
<td>Read message Exit time</td>
</tr>
<tr>
<td></td>
<td>Rejct</td>
<td>3</td>
<td></td>
<td>Transaction rejected indicator</td>
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<td>8</td>
<td></td>
<td>Connect Reroute name</td>
</tr>
<tr>
<td></td>
<td>Responce</td>
<td>8</td>
<td></td>
<td>Connect response time</td>
</tr>
<tr>
<td></td>
<td>Resumetp</td>
<td>5</td>
<td></td>
<td>Resume Tpipe indicator</td>
</tr>
<tr>
<td></td>
<td>Xmexit</td>
<td>8</td>
<td></td>
<td>XML Adapter message Exit time</td>
</tr>
<tr>
<td></td>
<td>Safetime</td>
<td>8</td>
<td></td>
<td>SAF security call time</td>
</tr>
<tr>
<td></td>
<td>Socket</td>
<td>5</td>
<td></td>
<td>Socket number</td>
</tr>
<tr>
<td></td>
<td>Startcon</td>
<td>12</td>
<td></td>
<td>Connect transaction start time</td>
</tr>
<tr>
<td></td>
<td>Synclev</td>
<td>7</td>
<td></td>
<td>Synchronization level</td>
</tr>
<tr>
<td></td>
<td>Targds</td>
<td>8</td>
<td></td>
<td>Target datastore</td>
</tr>
</tbody>
</table>

Figure 54. List Report Form (Connect fields)
7. Press **Exit (F3)** to save the default list form and return to the Report Forms selection panel.

   The second Report Form that we are going to define will be a Summary form that will contain only IMS fields.

8. On the command line of the Report Forms panel type **NEW** and press Enter to create a new Report Form.

9. Let's give this Report Form a **Name** of **SUMMIMS**.

10. Specify a form **Type** of **2 (Summary)**.

11. Enter `/` next to **Include IMS fields** for the List or Summary options. Ensure that the other options are not selected.

12. Press Enter to display the default Summary Report Form containing only IMS fields.
### Summary Report Form (IMS fields)

<table>
<thead>
<tr>
<th>Field</th>
<th>Sort</th>
<th>Name</th>
<th>Func</th>
<th>Len</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRANCODE</td>
<td>K</td>
<td>K</td>
<td>A</td>
<td>8</td>
<td>Transaction Code</td>
</tr>
<tr>
<td>TRANCNT</td>
<td>T</td>
<td>T</td>
<td></td>
<td>8</td>
<td>Transaction count</td>
</tr>
<tr>
<td>INPUTQ</td>
<td>T</td>
<td>A</td>
<td>AVE</td>
<td>8</td>
<td>Input queue time</td>
</tr>
<tr>
<td>PROCESS</td>
<td>T</td>
<td>T</td>
<td>AVE</td>
<td>8</td>
<td>Processing time</td>
</tr>
<tr>
<td>OUTPUTQ</td>
<td>T</td>
<td>T</td>
<td>AVE</td>
<td>8</td>
<td>Output queue time</td>
</tr>
<tr>
<td>TOTALTM</td>
<td>T</td>
<td>T</td>
<td>AVE</td>
<td>8</td>
<td>Total transaction elapsed time</td>
</tr>
<tr>
<td>INPUTQ</td>
<td>T</td>
<td>90</td>
<td></td>
<td>8</td>
<td>Input queue time</td>
</tr>
<tr>
<td>PROCESS</td>
<td>T</td>
<td>90</td>
<td></td>
<td>8</td>
<td>Processing time</td>
</tr>
<tr>
<td>OUTPUTQ</td>
<td>T</td>
<td>90</td>
<td></td>
<td>8</td>
<td>Output queue time</td>
</tr>
<tr>
<td>TOTALTM</td>
<td>T</td>
<td>90</td>
<td></td>
<td>8</td>
<td>Total transaction elapsed time</td>
</tr>
<tr>
<td>CPUTIME</td>
<td>T</td>
<td>AVE</td>
<td></td>
<td>8</td>
<td>CPU time</td>
</tr>
<tr>
<td>DBCALLS</td>
<td>T</td>
<td>AVE</td>
<td></td>
<td>8</td>
<td>DB call count</td>
</tr>
<tr>
<td>DBWAITS</td>
<td>T</td>
<td>AVE</td>
<td></td>
<td>8</td>
<td>DB wait count</td>
</tr>
<tr>
<td>DCALLS</td>
<td>T</td>
<td>AVE</td>
<td></td>
<td>8</td>
<td>DC call count</td>
</tr>
<tr>
<td>CMDELAY</td>
<td>T</td>
<td>8</td>
<td>CM0</td>
<td>8</td>
<td>OTMA CM0 (Commit-Then-Send) client ack time</td>
</tr>
<tr>
<td>CMIDELAY</td>
<td>T</td>
<td>8</td>
<td>CM1</td>
<td>8</td>
<td>OTMA CM1 (Send-Then-Commit) delay time</td>
</tr>
<tr>
<td>COMMITMD</td>
<td>T</td>
<td>8</td>
<td></td>
<td>6</td>
<td>Commit mode</td>
</tr>
<tr>
<td>COMPCODE</td>
<td>T</td>
<td>8</td>
<td></td>
<td></td>
<td>Completion Code</td>
</tr>
<tr>
<td>COMPLVL</td>
<td>T</td>
<td>5</td>
<td></td>
<td></td>
<td>IMS Completion Level</td>
</tr>
<tr>
<td>CONVERS</td>
<td>T</td>
<td>4</td>
<td></td>
<td></td>
<td>4 Conversational transaction indicator</td>
</tr>
<tr>
<td>CPUSU</td>
<td>T</td>
<td>8</td>
<td></td>
<td></td>
<td>CPU Service Units</td>
</tr>
<tr>
<td>CPUTIME</td>
<td>T</td>
<td>8</td>
<td></td>
<td></td>
<td>CPU time</td>
</tr>
<tr>
<td>CPUZAAP</td>
<td>T</td>
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<td></td>
<td></td>
<td>zAAP/zIIP execution time</td>
</tr>
<tr>
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</tr>
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<td>T</td>
<td>8</td>
<td></td>
<td></td>
<td>4 Database Access Method</td>
</tr>
<tr>
<td>DBBLKDEL</td>
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<td>8</td>
<td></td>
<td></td>
<td>8 Database block deletes</td>
</tr>
<tr>
<td>DBBLKINS</td>
<td>T</td>
<td>8</td>
<td></td>
<td></td>
<td>8 Database block inserts</td>
</tr>
<tr>
<td>DBBLKREP</td>
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<td>8</td>
<td></td>
<td></td>
<td>8 Database block replaces</td>
</tr>
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<td>DBBLKUPD</td>
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<td>8</td>
<td></td>
<td></td>
<td>8 Database block updates</td>
</tr>
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<td>8</td>
<td></td>
<td></td>
<td>8 DB call count</td>
</tr>
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<td>8</td>
<td></td>
<td></td>
<td>DBCTL Delay</td>
</tr>
<tr>
<td>DBDLET</td>
<td>T</td>
<td>8</td>
<td></td>
<td></td>
<td>DB DLET call count</td>
</tr>
<tr>
<td>DBGETS</td>
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<td>8</td>
<td></td>
<td></td>
<td>DB get call count</td>
</tr>
<tr>
<td>DBGHN</td>
<td>T</td>
<td>8</td>
<td></td>
<td></td>
<td>DB GHN call count</td>
</tr>
<tr>
<td>DBGHNP</td>
<td>T</td>
<td>8</td>
<td></td>
<td></td>
<td>DB GHNP call count</td>
</tr>
<tr>
<td>DBGHU</td>
<td>T</td>
<td>8</td>
<td></td>
<td></td>
<td>DB GHU call count</td>
</tr>
<tr>
<td>DBGPN</td>
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<td></td>
<td></td>
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<tr>
<td>DBGNPN</td>
<td>T</td>
<td>8</td>
<td></td>
<td></td>
<td>DB GNP call count</td>
</tr>
<tr>
<td>DBGNS</td>
<td>T</td>
<td>8</td>
<td></td>
<td></td>
<td>DB GN + GNP + GHN + GHNP call count</td>
</tr>
<tr>
<td>DBGU</td>
<td>T</td>
<td>8</td>
<td></td>
<td></td>
<td>DB GU call count</td>
</tr>
<tr>
<td>DGGUFS</td>
<td>T</td>
<td>8</td>
<td></td>
<td></td>
<td>DB GUX call count</td>
</tr>
<tr>
<td>DBIOCALL</td>
<td>T</td>
<td>8</td>
<td></td>
<td></td>
<td>8 Total OSAM and VSAM database I0 count</td>
</tr>
<tr>
<td>DBIOTIME</td>
<td>T</td>
<td>8</td>
<td></td>
<td></td>
<td>8 Database I0 elapsed time</td>
</tr>
</tbody>
</table>

Figure 55. Summary Report Form (IMS fields)
13. Press **Exit (F3)** to save the default summary form and return to the Report Forms selection panel.

   The final Report Form that we are going to define will be a Summary form that will contain both IMS and IMS Connect fields.

14. On the command line of the Report Forms panel type **NEW** and press Enter to create a new Report Form.

15. Let's give this Report Form a **Name** of **SUMMCOMB**.

16. Specify a form **Type** of 2 (**Summary**).

17. Enter / next to both **Include IMS fields** and **Include Connect fields** for the List or Summary options.

18. Press Enter to display the default Summary Report Form containing both IMS and IMS Connect fields.
<table>
<thead>
<tr>
<th>Field</th>
<th>Sort</th>
<th>Name</th>
<th>Width</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRANCODE</td>
<td>K A</td>
<td>Transaction Code</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STARTCON</td>
<td>K A</td>
<td>Transaction start time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRANCNT</td>
<td>A</td>
<td>Transaction count</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>RESPLON</td>
<td>AVE</td>
<td>Connect response time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PREDOMA</td>
<td>AVE</td>
<td>Total pre-OTMA input time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRNLAD</td>
<td>AVE</td>
<td>Input read socket time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>READEXIT</td>
<td>AVE</td>
<td>Read message Exit time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DASFTIM</td>
<td>AVE</td>
<td>SAF security call time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROCOTMA</td>
<td>AVE</td>
<td>OTMA processing time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONFIRM</td>
<td>AVE</td>
<td>Client Confirm time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POSTOMA</td>
<td>AVE</td>
<td>Total post-OTMA output time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>XMITEXIT</td>
<td>AVE</td>
<td>Transmit message Exit time</td>
<td></td>
<td></td>
</tr>
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<td>EOR</td>
<td></td>
<td>8</td>
<td>End of Report</td>
<td></td>
</tr>
<tr>
<td>EOX</td>
<td></td>
<td>8</td>
<td>End of Extract</td>
<td></td>
</tr>
<tr>
<td>ABENDCNT</td>
<td>8</td>
<td>Abend Count</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACKREAD</td>
<td>8</td>
<td>Acknowledgement read socket time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APPPC</td>
<td>K * 4</td>
<td>APPC Indicator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APPPLNME</td>
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<td>Application grouping name</td>
<td></td>
<td></td>
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<td>BMPCHKPT</td>
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<td>BMP Checkpoint count</td>
<td></td>
<td></td>
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<td>-</td>
<td>BMP Syncpoint count</td>
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<td>Client acknowledgement indicator</td>
<td></td>
<td></td>
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<tr>
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<td>K * 8</td>
<td>Client ID</td>
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<tr>
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<td>OTMA CMDC (Commit-Then-Send) client ack time</td>
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</tr>
<tr>
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<td>K * 8</td>
<td>OTMA CMDC (Send-Then-Commit) delay time</td>
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<td></td>
</tr>
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<td>K * 6</td>
<td>Commit mode</td>
<td></td>
<td></td>
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<td>IMS Completion Level</td>
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<td></td>
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<tr>
<td>COMPLVLC</td>
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<td>Connect Completion Level</td>
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<td></td>
</tr>
<tr>
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<td>Client Confirm time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONFOMA</td>
<td>-</td>
<td>OTMA ACK processing time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONVERS</td>
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<td>CPU Service Units</td>
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<td></td>
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<tr>
<td>CPUSU</td>
<td>8</td>
<td>CPU time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPUSZAAP</td>
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<td>zAAP/zIIP execution time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DATABASE</td>
<td>K 8</td>
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<td></td>
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<tr>
<td>DBACMMTH</td>
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<td>Database block inserts</td>
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<td>Database block replaces</td>
<td></td>
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<td>Database block updates</td>
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<td></td>
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<tr>
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<td>DB call count</td>
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</tr>
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<td>DBCTL Delay</td>
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<td></td>
</tr>
<tr>
<td>DBDLET</td>
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<td>DB DLET call count</td>
<td></td>
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</tr>
<tr>
<td>DBGETS</td>
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<td>DB get call count</td>
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<td></td>
<td></td>
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<tr>
<td>DBGNP</td>
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<td>DB GNP call count</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBGNS</td>
<td>8</td>
<td>DB GN + GNP + GHN + GHNP call count</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 56. Summary Report Form (IMS and IMS Connect fields)
Create a Report Set that uses List and Summary Report Forms

Let's use the Report Forms we have just created to define a new Report Set.

Procedure

1. Select option 3 Report Sets from the IMS PA primary option menu. The Report Sets panel is displayed.

2. Enter NEW on the command line to define a new Report Set. The New Report Set window appears.

   We will use the Report Set we are about to create to report both IMS and IMS Connect fields.

3. Give the new Report Set a Name of IMSCONN.

4. Specify a Type of 3 (IMS Connect).

5. Press Enter to create the Report Set. Note that the New Report Set window can be bypassed by entering the NEW command with the desired name and type parameters in the Report Sets panel (e.g. NEW IMSCONN CEX).
6. The Report Set edit panel appears. Enter line action **S** next to **List** in the **Transaction Transit Reports (Form-based)** category.

   **Figure 59. Combined Report Set**

7. Tab to line 1 in the **Reports Required** section. In the **Form** field press **Prompt** (**F4**) and select **LISTCONN**.
8. Press Exit (F3) to save the Transit List definition.
9. Enter line action S next to Summary in the Transaction Transit Reports (Form-based) category.
10. Tab to line 1 in the Reports Required section. In the Form field press Prompt (F4) and select SUMMIMS.
11. On the second line of the Report Required section, type EXTRACT in the Type field and press Enter. In the Form field press Prompt (F4) and select SUMMCOMB.

12. In the Extract Data Set Name field, enter the name for the extract data set (for example, 'IMSPA.SUMMARY.EXTRACT'). In the Disp (disposition) field, type OLD.

Note: If the data set has not already been cataloged, IMS PA automatically catalogs it for you.
13. Press Exit (F3) to save the changes to the Report Set and return to the Report Set panel.

Notice the column heading Active. When you create a new Report Set, the status of all reports is initially set to No. Because the report options for the Transaction Transit List and Summary reports have been changed, they now have an Active status of Yes.

14. Press Exit (F3) to return to the Report Sets selection panel.

We will now run the Report Set to produce the List and Summary report and the Summary Extract file.

15. Enter line action RUN next to the IMS_CONN Report Set in the Reports Sets panel.

16. Prior to the generation of the Report Set JCL, the Run Connect Report Set panel appears (unless you choose to bypass it). This panel prompts you to check or change your runtime options before IMS PA generates the JCL to run your report.

**System Selection** specifies the IMS Connect System or Group you wish to report against. You can type in the system name directly, for example PR01, or you can press Prompt (F4) to select a system from a prompt list.

**Report Interval** specifies the time period that you wish to report against.
Additional runtime options include:

- **File Selection Options** to request that IMS PA uses automated file selection to locate the relevant data sets for the specified System and Report Interval.

- **Execution Mode** to request that IMS PA generate JCL with command input.

Enter your desired run options and press Enter to generate the Report Set JCL. If required the JCL can be edited prior to submission.

17. Type SUB on the command line to submit the JCL.

The reports are stored in the DDname you specified in the IMSCONN Report Set.

The Connect Transit Log list report will be stored in LIST0001 and the IMS Transaction Resource Usage summary report will be stored in SUMM0001.

To display the contents of the Connect Analysis by TranCode combined summary extract, use the Data Set List utility. The extract data set name specified in the IMSCONN Report Set for the guided tour was 'IMSPA.SUMMARY.EXTRACT'.

This is the end of the tour.
Chapter 7. Report Sets

A Report Set contains a series of report requests. You can choose to run any number and combination of IMS PA reports in a single Report Set in a single job and single pass of the input data files.

Log reports that process IMS Log data run in a Log Report Set (type LOG), separate from monitor reports that process IMS Monitor or DB Monitor data which run in a Monitor Report Set (type MON). Likewise, Connect reports that process IMS Connect data, optionally combined with IMS Log data, run in a separate Connect Report Set (type CEX), while reports that process OMEGAMON TRF run in a fourth type of Report Set (type TRF), and OMEGAMON ATF in a fifth (type ATF). The different types of Report Set (LOG, MON, CEX, TRF, ATF) can coexist in the same Report Sets data set, but are specified and run separately.

When you submit a Report Set for batch processing, IMS PA generates a one-step JCL deck to run the report requests.

To invoke the Report Sets facility, select option 3 Report Sets from the IMS PA primary option menu.

For detailed information on requesting reports and specifying report options, see:
- Chapter 20, “Requesting Log reports,” on page 283
- Chapter 22, “Requesting Monitor reports,” on page 471
- Chapter 24, “Requesting IMS Connect reports,” on page 547
- Chapter 26, “Requesting OMEGAMON TRF reports,” on page 605
- Chapter 28, “Requesting OMEGAMON ATF reports,” on page 637

How to use the Report Sets dialog

If this is the first time you have invoked Report Sets in IMS PA V4R4, you may be prompted with an upgrade message to alert you to the structure of the Report Set menu and the recommended way to operate the dialog.

Report Set menu tree

The report Tree Structure is a hierarchical representation of report categories and reports; similar to the way some PC tools display folders and their contents.

Report categories act as folders that can expand (to show) and collapse (to hide) the reports contained within them. The + or - character to the left of each report category shows its current display status, expanded (+) or collapsed (+). This allows you to view only the reports that you are currently interested in.

Use your mouse or line action S against a report category to toggle the expand/collapse status of the category.

You can also enter line action S at the top of the Reports tree. This will expand all categories that are not already expanded. If all categories are expanded, then it will collapse all categories.
The example in Figure 65 shows the Resource Usage & Availability Reports category expanded and all other categories collapsed.

Activating reports

An Active status indicator is displayed to the right of each report category and report. Simply change the Active status to Yes to ensure the report is run.

About this task

Report categories also have an Active status indicator. When set to Yes, reports in the category with an Active status of Yes will run. When set to No, no reports in the category will run, regardless of their Active status. Note that some Report Options have their Active status set to Yes automatically if there are active reports. This is because the options must always be used. You cannot deactivate them. IMS PA will deactivate them only when all reports are deactivated.

You can use line action A to activate a report or a report category and you can use line action D to deactivate.

You can use line action AA against a report category to activate all reports in the report category and the category itself. Line action DD will similarly deactivate all. These line actions entered at the top of the Reports tree will activate or deactivate all reports and options in the Report Set.
Maintaining Report Sets

To maintain (create, edit, delete) Report Sets, select option 3 Report Sets from the IMS PA primary option menu.

About this task

Option 3 Report Sets on the IMS PA primary option menu displays the Report Sets panel, which lists the Report Sets in the nominated Report Sets data set.

If you have not specified a Report Sets data set, IMS PA will allocate a data set for you with default characteristics. To change the Report Sets data set, you can use Options > IMS PA Control Data Sets in the action bar or option 0.4 IMS PA Control Data Sets from the IMS PA primary option menu.

If the data set contains no user-defined Report Sets, IMS PA will provide two sample Report Sets, one log and one monitor, in which a popular choice of reports has been activated. See Figure 66. From here you can select Report Sets to review, update, or submit for batch processing, or you can create new Report Sets.

The Report Sets are listed with the following user-defined attributes:

Name  1–8 character name in ISPF member name format, used to uniquely identify the Report Set within the Report Sets data set.

Type  A Report Set is one of the following types according to the type of input data it can process:

LOG  Contains the specification of log reports to be generated from specified IMS log data input. See Chapter 20, “Requesting Log reports,” on page 283.

MON  Contains the specification of monitor reports to be generated from specified IMS Monitor or DB Monitor data input. See Chapter 22, “Requesting Monitor reports,” on page 471.

CEX  Contains the specification of Connect reports to be generated from IMS Connect Extensions event data input. See Chapter 24, “Requesting IMS Connect reports,” on page 547.

TRF  Contains the specification of TRF reports to be generated from OMEGAMON TRF extractor file input. See Chapter 26, “Requesting OMEGAMON TRF reports,” on page 605.

ATF  Contains the specification of ATF reports to be generated from
Description
Free format text up to 32 characters, used to clarify the contents and purpose of the Report Set.

In addition, the Report Sets are listed with the following system-generated attributes:

Changed
Date and time when last updated.

ID
The userid that last updated the Report Set.

Line actions:
The following line actions can be performed against Report Sets:

   / Display the menu of line actions
   E Edit the Report Set
   S Select the Report Set (same as Edit)
   V View the Report Set (Edit without Save)
   R Rename the Report Set
   SUB Submit the Report Set
   JCL Build JCL to run the Report Set via the Report Set member
   JCM Build JCL to run the Report Set via command input
   RUN Run the Report Set with prompt for runtime options
   D Delete the Report Set

Primary commands:
From the View menu on the action bar, or by direct entry on the command line, two panel-level actions are available:

   Refresh (REFR)
   To repopulate the list of Report Sets by re-accessing the Report Sets data set.

   Sort
   To sort the list on any one, or a combination of columns. The default sort field is Name. The sort sequence disregards upper and lower case, and can be ascending (ASC) or descending (DESC), with ascending the default for all but the Changed column. The sort order is retained only until Exit or another SORT command is issued.

   The LOCATE (L or LOC) command, also available from the File menu on the action bar, allows you to locate an entry in the list based on the primary sort field.

Creating new Report Sets

To run one or more reports in a single job and single pass of the input data files, you need to create a Report Set.

Procedure

To create a new Report Set:
1. Select option 3 Report Sets from the IMS PA primary option menu.
2. Do either of the following:
   • In the command line, enter NEW followed by the name of the new Report Set and initialization details using the following syntax:
NEW newname LOG|MON|CEX|TRF|ATF

or

NEW newname MODEL modelname|datasetname(modelname)

- Select File > New from the action bar. A pop-up dialog window is displayed. Enter the name of the new Report Set, and select the method of initialization as one of the following:
  b. New Monitor Report Set.
  e. New OMEGAMON ATF Report Set.
  f. Reports modelled from an existing Report Set. Specify the name of the model Report Set, and the data set name if not the current data set.

The following figure shows an example of the dialog window where you can specify the name and type of the new Report Set.

```
New Report Set

Specify the name of the new Report Set and the type or model.

Name . . LRS00002

Type . . 1 1. Log
       2. Monitor
       3. IMS Connect (includes combined)
       4. OMEGAMON TRF
       5. OMEGAMON ATF
       6. MODEL (specified below)

Model 'IMSPA.RSET(LRS00001)'__________________________________________

Press Enter to create the Report Set.
Enter Exit or Cancel to cancel the request.
```

Figure 67. Specifying a new Report Set

Press Enter when all fields have been specified.

A panel is then displayed where you can view or modify the description of the Report Set and the list of reports it contains. For additional information, see the following topics:

- "Log Report Sets" on page 283
- "Monitor Report Sets" on page 471
- "Connect Report Sets" on page 548
- "TRF Report Set" on page 606
- "ATF Report Set" on page 638

**Running Report Sets**

The IMS PA dialog generates the JCL for batch report processing.

**Procedure**

To run your Report Set, Report Category, or individual reports, enter the RUN command.

Before IMS PA generates the JCL to run your reports, you are prompted to specify runtime options. Under certain circumstances, you can elect to bypass this prompt so that IMS PA submits the JCL immediately using options previously specified.
Example

The following figure shows a request to run a Log Report Set.

![Report Set Table]

**RUN command**

The RUN command oversees the specification of runtime options and the generation of JCL.

The SUBMIT, JCL, and JCLCMD commands are considered to be specialized RUN requests that predetermine the Execution Mode.

For users of the JCLCMD (or JCM) command to generate JCL with command input, there are two improvements:

1. There is no longer any requirement to save the Report Set prior to issuing the command. This is useful for ad hoc reporting where you can activate the required reports and then issue the JCLCMD command to generate the JCL without first having to save the Report Set. Afterwards you can cancel out of the Report Set leaving it intact.
2. The command comments are no longer bunched at the top of the command input. Instead they are now located immediately above their associated commands.

**Specifying runtime options**

Before IMS PA generates the JCL to run your reports, you are prompted to specify runtime options.

**About this task**

However, under certain circumstances, you can elect to bypass this prompt so that IMS PA submits the JCL immediately using options previously specified.
The first thing to notice on the Run Report Set panel is **System Selection**. This specifies the IMS subsystem or Group you wish to report against. The + sign to the right of the input field indicates that selection by prompt is available. Simply position the cursor on the input field and press Prompt (F4) to display a list of systems from which to choose. System Selection alleviates the problem of continually having to go back to System Definitions to set the IMSID exclude indicators.

After you define your IMS subsystems and DBRC environment (using System Definitions), DBRC Log Selection can be requested at run time to automatically select the required Log files for reporting, saving you the effort of entering the Log file data set names manually. Simply specify the required reporting time period and IMS PA will invoke DBRC to select the required SLDS primary log file data sets from the RECON.

Notice the use of relative dates. Specify 0 for today, -1 for yesterday, and so on. This is especially useful when you want to save IMS PA JCL in an automated job scheduler library. Used in conjunction with DBRC Log Selection, the same JCL can run every day without change.

The **Log Selection Options** is where you choose either to use your explicitly specified Log files or DBRC Log Selection.

The **Unresolved Data Set Options** is a useful feature that provides more flexibility when IMS PA is unable to generate complete report JCL. Unresolved data sets occur when the IMS system or Group that you have selected for report processing has missing information in its System Definition. For Log Report Sets this means that either log files or DBRC settings are not specified, depending on your Log Selection Options. For Monitor Report Sets this means that monitor files are not specified.

You have two choices:
- Instruct IMS PA to issue an error message when this occurs. In this case you must return to System Definitions and complete the specifications for the
required IMS systems. You can do this without leaving your Report Set by using the **SysDefs** action bar choice or issuing the SYSDEFS command.

- Instruct IMS PA to leave the data set names unresolved in the JCL. The missing data set names are substituted with a token of `<unresolved>`. In this case, IMS PA forces you to edit the JCL where you can specify the data set names manually, prior to submitting the JCL.

The **Bypass run-time options prompt** allows you to bypass the Run Report Set panel for quick submission, but only under certain circumstances. The Run Report Set panel is never bypassed if:

- This option is not set.
- The RUN command is used to run the Report Set. Only SUBMIT, JCL, and JCLCMD can bypass the runtime prompt. If you have set this option to bypass, then it can only be reset by using the RUN command.
- Required runtime options have not been specified. For example, System Selection is required before report JCL can be generated.
- Report Interval is specified. IMS PA insists that you are aware of and have the opportunity to change the time period for which reporting is to occur.
- DBRC Log Selection is used, but only because this option requires the Report Interval to be specified. The Bypass runtime options prompt replaced the LogInput and MonInput commands and action bar choices of the IMS PA V3R1 dialog.

To redirect output to the IMS Tools Knowledge Base, select **Write to the ITKB repository** and specify the ITKB server name.

### RUN command as a line action

The RUN command can also be used as a line action at the report category and individual report level.

When used this way, **RUN** only runs the selected categories and reports, temporarily overriding any **Active** statuses of **No** if necessary. **RUN** line actions always generate JCL with command input because you are overriding the **Active** statuses of the Report Set.

For example, [Figure 70 on page 131](#) shows how to use the **RUN** line action to request the **Transaction Resource Usage** report and all active reports in the **Fast Path Transit Reports** category.
You can also use RUN line actions in conjunction with the RUN primary command (from the command line). This generates command input for all active reports in all active categories, as well as for categories and reports selected via the RUN line actions.

viewing or printing report output

To view or print the generated reports, use standard facilities such as SDSF or ISPF option 3.8 Outlist Utility.

procedure

To use SDSF:

1. Press the Split (F2) key to split your dialog.
2. Select SDSF from the ISPF Primary Option Menu.
3. Enter ST on the command line.
4. Enter ? next to your JobID.
5. Enter S next to the reports you wish to view.
**Graphing & Exporting extract by interval data**

To view or print GDDM graphs of Extract by Interval data, export the data for use by external programs, or download the exported data to a PC, select 8 **Graphing & Export** from the IMS PA primary option menu.

**About this task**

This facility is not applicable to the extract data produced by particular reports such as the Transaction (MSGQ/FP) Traffic, CPU Usage and Database Update Activity reports. These extract data sets can be imported directly by external programs such as DB2, or PC tools such as Microsoft Excel. For examples of using these tools for further processing and graphing of the extract data, refer to the IMS Performance Analyzer for z/OS: Report Reference.

For more information, see Chapter 3, “Processing extract data sets,” on page 45.

**Automated job scheduling**

IMS PA reports can be run on a daily basis using an automated job scheduler.

To do this, you need to create JCL than can run every day without modification. This requires that you use:

1. DBRC log selection to automatically select the required SLDS log files. See “Preparing for DBRC Log Selection” on page 199.
2. Relative dates in the **Report Interval** that consistently identify today (0) or yesterday (-1)

The Run Report Set panel in Figure 71 shows the options required to create automated JCL.

![Figure 71. Specifying runtime options for automated JCL](image)

The resultant JCL can be saved into a library that is used by an automated job scheduler.

**Related concepts:**
Chapter 15, “Automated File Selection,” on page 197
DBRC Log Selection is a facility of IMS PA that uses DBRC to automate the selection of log files for report processing.
Chapter 8. Expectation Sets

An Expectation Set specifies your expectations of transaction performance by defining minimum and maximum installation-expected values for nine measures. Log data falling within these bounds is considered “as expected” and not reported. Log data falling outside the bounds is reported as an “exception”.

Expectation Sets can be specified for the following log reports:
- Management Exception
- Transaction (MSGQ) Exception
- Fast Path Transaction Exception

Expectations can be defined as direct values or, for the Management Exception report, relative to historic averages recorded in an Averages Data Set.

If no Expectation Set is specified, there are no performance expectations with which to compare the log data. In this case, the Management Exception report shows data for This Run only with no Expectation information, while the Transaction (MSGQ/FP) Exception reports treat all transactions as exceptions.

Maintaining Expectation Sets

You can use the IMS PA dialog to maintain (create, edit, delete) Expectation Sets.

Procedure

1. Select option 4 Expectation Sets from the IMS PA primary option menu.
   The Expectation Sets panel is displayed, which lists the Expectation Sets in the nominated Expectation Sets data set.
2. If you have not nominated an Expectation Sets data set, IMS PA allocates a data set for you with default characteristics. To change the Expectation Sets data set, select option 0.4 IMS PA Control Data Sets from the IMS PA primary option menu.
3. From here you can select Expectation Sets to review or update, or you can create a new Expectation Set.

   ![Expectation Sets list](Figure 72. Expectation Sets list)

   All the fields are display-only on this panel. The Expectation Sets are listed with the following user-defined attributes:

   **Name**  1–8 character name in ISPF member name format, used to uniquely identify the Expectation Set within the Expectation Sets data set.
Description
Free format text up to 32 characters, used to clarify the contents and purpose of the Expectation Set.

The Expectation Sets also have the following system-generated attributes:

Changed
Date and time when last updated.

ID
The user ID that last updated the Expectation Set.

Line actions:
The valid line actions for the list of Expectation Sets are:
/  Display the menu of line actions
E  Edit the Expectation Set
S  Select the Expectation Set (same as Edit)
V  View the Expectation Set (Edit without Save)
R  Rename the Expectation Set
D  Delete the Expectation Set

Primary commands:
The following primary commands are available:

NEW name
Define a new Expectation Set member. The name must be unique. If the command is valid, the edit panel is displayed for you to complete the definition. Otherwise, you are prompted to specify valid parameters. Also available from the File menu on the action bar.

SELECT
Select (edit) a member in the Expectation Sets member list. If the name is a member in the list, the edit panel is displayed. If the name is omitted or invalid, you are prompted for a valid name. This command is the same as entering line action S (Select) or E (Edit). Also available from the File menu on the action bar.

REFRESH (REFR)
Repopulate the list of Expectation Sets by re-accessing the Expectation Sets data set. Also available from the View menu on the action bar.

SORT field1 field2
Sort the list on any one, or a combination of columns. The default sort field is Name. The sort sequence disregards upper and lower case, and can be ascending (ASC) or descending (DESC), with ascending the default for all but the Changed column. The sort order is retained only until Exit or another SORT command is issued. Also available from the View menu on the action bar.

LOCATE (L or LOC)
Locate an entry in the list based on the primary sort field.

Creating new Expectation Sets
If you want IMS PA to only report data that is outside of your expectations ("exceptions"), you need to create an Expectation Set that specifies threshold values of your expectations for various transaction measurements.
**Procedure**

To create an Expectation Set:

1. On the IMS PA primary option menu, select option 4 **Expectation Sets**.
   The Expectation Sets panel is displayed, showing the list of existing Expectation Sets.

2. Either:
   - On the command line, enter `NEW` followed by the name of the new Expectation Set and optional initialization details using the following syntax:
     ```
     /SM590000/SM590000
     NEW <name>
     MODEL <model name>
     datasetname(<model name>)
     /SM590000/SM630000
     ```
   - On the action bar, select **File > New**.
     A pop-up dialog window is displayed. Enter the name of the new Expectation Set, and select the method of initialization as either:
     a. Based on defaults
     b. Modelled from an existing Expectation Set (specify the name of the model Expectation Set, and the data set name if other than the current data set)

   When you have specified the required fields, press Enter.

   A panel is then displayed for you to view or modify the description of the Expectation Set and its contents.

**Specifying Expectations**

An Expectation Set consists of a list of transaction codes for which you wish to report only **exceptions** (data outside your expectations). For each transaction code, you specify lower and upper threshold values for a set of nine performance measures. These measures are predefined by IMS PA. Optionally, you can specify the special transaction code *DEFAULT that applies to transaction codes not explicitly listed.

**Procedure**

To specify expectations:

1. On the IMS PA primary option menu, select option 4 **Expectation Sets**.
The Expectation Sets panel is displayed, showing the list of existing Expectation Sets.

2. To create a new Expectation Set, enter NEW on the command line; to edit an existing Expectation Set, enter $ next to the Expectation Set. The Edit Expectation Set panel is displayed.

3. Specify transaction codes and their threshold values.

<table>
<thead>
<tr>
<th>Description</th>
<th>EXPECTATIONS FOR THE END OF YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>TranCode</td>
<td>TotInput</td>
</tr>
<tr>
<td>*DEFAULT</td>
<td>121</td>
</tr>
<tr>
<td>DSFFHR2L</td>
<td>120</td>
</tr>
<tr>
<td>DSFFHR2M</td>
<td>120</td>
</tr>
<tr>
<td>DSFFHR2N</td>
<td>120</td>
</tr>
<tr>
<td>DSFFHR2O</td>
<td>120</td>
</tr>
</tbody>
</table>

Figure 74. Defining an Expectation Set

Values can be expressed as integers in the range 0–99999, or with one decimal place in the range 0–999.9. Direct values for transit or CPU times are expressed only as integers; decimal positions are rounded to the nearest integer. Direct values that are not supplied default to 0. Percentage values default at run time to 50% lower and 20% higher than the value in the Averages Data Set.

The pair of data rows with no TranCode field above the dividing line (the full-width horizontal line) is used for entering column global values and column adjustment values.

The first row affects minimum values and the second affects maximum values. Specifying a value in the first row causes all rows with matching expectation type (direct value or percentage) to have their minimum expectation in that column modified.

Similarly, specifying a value in the second row causes all rows with matching expectation type (direct value or percentage) to have their maximum expectation in that column modified.

Measurements lower than the minimum expectation or higher than the maximum expectation are reported as “exceptions”.

The rows below the dividing line are grouped two per TranCode. The first row contains minimum expected values and the second contains maximum expected values for the specified transaction code.

The Expectation Set fields are:

**Description**

Default: IMS PA Expectation Set
A descriptive title used to clarify the contents and purpose of the Expectation Set.

TranCode
Represents a 1- to 8-character transaction code contained in the input message.

A transaction code of *DEFAULT is the default expectation which may optionally be specified. For transaction codes not explicitly listed, the default values specified in the *DEFAULT row are applied at run time. If more than one of these rows is specified, the last one takes precedence.

Rows with a blank transaction code are deleted on Reset or Exit.

% (Expectation Type)
Default: Blank. Expected values are specified as direct values.

Expectation Type determines how the specified expectation values are to be interpreted.

Leave blank to indicate that the expected values for this transaction code are specified as direct values. If the actual measurement is outside the specified range, it is reported as an “exception”.

Select with a / to indicate that all expected values specified for this transaction code are percentages. If the actual measurement deviates from the transaction code’s average by more than the specified minimum percentage, or exceeds the average by more than the specified maximum percentage, it is reported as an “exception”.

Percentage values apply only to the Management Exception report when an Input Averages Data Set is specified. In all other cases, they are ignored.

Transit Time
Transit time in milliseconds.

Total Total transit time (milliseconds) per transaction; the time between input message arrival and output message send. In the example, transaction code DSFFHR2L has an expected minimum transit time of 120 milliseconds and maximum of 150 milliseconds per transaction.

Input Input queue time (milliseconds) per transaction; the time between input message arrival and message processing start. In the example, transaction code DSFFHR2L has an expected minimum input queue time of 3 milliseconds and maximum of 5 milliseconds per transaction.

Proc Processing time (milliseconds) per transaction. Processing (or execution) time is the time between message processing start and message processing end. In the example, transaction code DSFFHR2L has an expected minimum processing time of 50 milliseconds and maximum of 122 milliseconds per transaction.

Outpt Output queue time (milliseconds) per transaction; the time between message processing end and output message send. In the example, transaction code DSFFHR2L assumes the default 0 for the minimum expected output queue time and has a specified expected maximum output queue time of 1 millisecond per transaction.
DB Calls
Represents the number of database calls issued by the transaction. For Fast Path transactions, the database calls include both DEDB and MSDB DL/I calls. In the example, transaction code DSFFHR2L has an expected minimum of 2 database calls and maximum of 30 database calls per transaction.

DC Calls
Represents the number of data communication calls issued by the transaction. This is not applicable to Fast Path transactions. In the example, transaction code DSFFHR2L has an expected minimum of 2 DC calls and maximum of 5 DC calls per transaction.

DB Waits
Represents program isolation waits for the transaction; the number of database waits, for program isolation enqueue, issued by the transaction. For Fast Path transactions, it represents the total number of DEDB UOW, CI, and OBA waits. In the example, the number of DB Waits for transaction code DSFFHR2L is expected to be in the range 0 to 2.

CPU Time
Represents the amount of CPU Time (milliseconds) to process the transaction. This is not applicable to Fast Path transactions. The example shows that the expected CPU Time for transaction code DSFFHR2L is between 20 to 50 milliseconds.

Proc Rate
Represents transaction processing rate (transactions per minute). This is not applicable to the Transaction (MSGQ/FP) Exception reports. In the example, the expected execution rate of transaction code DSFFHR2L is in the range 0.2 to 2 transactions per minute.

Line actions:
The following line actions can be performed on the contents of Expectation Sets to create or remove Expectation data for specific transaction codes:
/ Display the menu of line actions
I Insert a null row after this row
R Repeat this row
C Copy this row
M Move this row
A Move/Copy after this row
B Move/Copy before this row
D Delete this row

The resulting sequence is retained only for the current edit or view session; by default, the list is presented in TranCode order.

Primary commands:
The following primary commands are available:

Reset (RES)
Remove all line actions and delete any blank rows. Remove all rows where the transaction code is blank. Also available from the Edit menu on the action bar.

SAVE Write all unsaved changes to the Expectation Sets data set. If the Expectation Set already exists, it is overwritten. If it does
not exist, it is created. Editing of the data can continue after the save is complete. Also available from the File menu on the action bar.

**SAVEAS name**

Save the Expectation Set as the specified name. If only a member name is specified, the current Expectation Sets data set is assumed. To save in another data set, specify the DSN and member name. If the Expectation Set already exists, it is overwritten. If it does not exist, it is created. Editing of the data can continue after the save is complete. Also available from the File menu on the action bar.

**Adjusting Expectations**

You may need to adjust the values in an Expectation Set if characteristics of your IMS installation change. For example, if a new CPU is installed with processing capacity twice that of the previous CPU, you may wish to halve associated expectations.

**Procedure**

- To replace a single value in the Expectations Set, overtype it with the required value.
- To arithmetically adjust a value, overtype it with an operator followed by a value:
  - * Multiply. For example *1.5
  - / Divide. For example /1.5
  - + Add. For example +1.5
  - — Subtract. For example -1.5

If you omit the operator, the cell is changed to the specified value.

Commands entered in the global cells (above the dividing line) apply to all corresponding cells in the column. For example, if % is selected in the global area, then values entered in the minimum value row will be applied to all % minimum values in the same column, and a value in the maximum value row will be applied to all % maximum values in the same column. Similarly, if % is not selected in the global area, then only values in rows that do not have % selected will be affected.
Chapter 9. Averages Data Sets

Averages Data Sets provide historic average values which can be used by the Management Exception report to identify data for exception reporting.

For details on how the report uses these values, see “Management Exception report” on page 327.

Averages Data Sets must be sequential data sets as they can be specified as both input and output to the report process. See [Figure 178 on page 330] which shows the panel used to specify the input and output Averages Data Sets to be used by the Management Exception report.

The strategy you adopt for your Averages Data Sets may be to use either:
- One data set only to keep a running tally of averages, updated by each run.
- Multiple data sets to save the running average after each of a number of report runs (for example, a generation data group (GDG) of at least 10 to 15 generations).

Creating new Averages Data Sets

To create a new Averages Data Set, use ISPF option 3.2.

About this task

Default allocation details for output Averages Data Sets can be specified in Reporting Allocation Settings on the action bar Options menu. See [Figure 13 on page 71]. The default attributes are applied at the time the Report Set JCL is built if the specified output Averages Data Set does not exist. They are not applied to input Averages Data Sets which are assumed to exist at the time of report generation.

Note: IMS PA stores an Averages Data Set in a special format. It must not be modified using facilities other than IMS PA as this may make it unusable by IMS PA. Should this occur, an error message similar to the following will be displayed when you attempt to view or edit the data set:

The EDIT request cannot be performed on the specified Averages Data Set as the file is not in Average format.

Procedure

Use ISPF option 3.2 to allocate and catalog a sequential data set with VB format, a record length of 4092, and an appropriate blocksize.

Maintaining Averages

You can use the IMS PA dialog to view or edit values in an Averages Data Set.
About this task

Typically, you use the Management Exception reporting job to update values in an Averages Data Set. However, under some circumstances, you might want to manually update these values.

Procedure

1. Select option 5 Averages from the IMS PA primary option menu.

   Command ===> ______________________________________________________
   Specify the name of the Averages Data Set.
   Averages Data Set . . . 'IMSPA.AVERAGES.D2014'__________________
   / "/" to Edit the Averages Data Set
   Press Enter to proceed with Averages Data Set processing.
   Enter EXIT or CANCEL to leave without processing.

   Figure 75. Averages Data Set

   The field on this panel is:
   Averages Data Set
   The name of an Averages Data Set, which must already be allocated and cataloged.
   From this panel you can view or edit the Averages data set.

2. Type / to edit the data set, or leave blank and press Enter to view it.

Specifying Averages

When you view or edit the Averages data set, IMS PA displays a panel similar to the Expectations data set.

About this task

The data row with no TranCode field above the dividing line (the full-width horizontal line) is used for entering column global values and column adjustment values.
The rows below the dividing line each define average values for one TranCode. Specifying a value above the line causes all rows below the line to have their average in that column modified accordingly.

Values are expressed as integers in the range 0 to 99999, or with one decimal place in the range 0 to 999.9. Values for transit or CPU times are expressed only as integers; decimal positions are rounded to the nearest integer. Averages that are not supplied for a newly-entered transaction code default to 0; if values for a pre-existing transaction code are erased, the pre-existing values are reinstated.

The Averages fields are:

**TranCode**
Each row contains average data for one transaction code.
For transaction codes not explicitly listed there are no averages held. However, IMS PA automatically maintains averages for every transaction code that it encounters.
Rows with a blank transaction code are deleted on Reset or Exit.

**Count**
Transaction Count is the total number of transactions processed for the specified transaction code, upon which the average values in the row have been based.
The transaction count directly affects the average values and therefore cannot be modified.

**Transit Time**
Transit time per transaction.

- **Total** The average total transaction transit time (milliseconds) per transaction; the time between input message arrival and output message send.
- **Input** The average input transit time (milliseconds) per transaction; the time between input message arrival and message processing start.
- **Proc** The average processing transit time (milliseconds) per transaction; the time between message processing start and message processing end.
- **Outpt** The average output transit time (milliseconds) per transaction; the time between message processing end and output message send.

**DB Calls**
The average number of database calls per transaction.

**DC Calls**
The average number of data communication calls per transaction.

**DB Waits**
The average number of database waits, for program isolation enqueue, per transaction.

**CPU Time**
The average CPU time (milliseconds) per transaction.

**Proc** The processing rate; the number of transactions per minute. This number is calculated by the Management Exception report as the Transaction Count divided by the elapse time for that transaction. If modified by the user, it is
rounded to the nearest integer which is exactly divisible into the Transaction Count, thereby making the elapse time a whole number of minutes.

**Line actions:**
The following line actions can be performed on Averages Data Sets to create or remove averages data for specific transaction codes:

- **I** Insert a null row after this row
- **R** Repeat this row
- **C** Copy this row
- **M** Move this row
- **A** Move/Copy after this row
- **B** Move/Copy before this row
- **D** Delete this row

The resulting sequence is retained only for the current edit or view session; by default, the list is presented in TranCode order.

**Primary commands:**
The following primary commands are available:

- **Reset (RES)**
  Remove all line actions and delete any blank rows. Remove all rows with a blank transaction code. Also available from the Edit menu on the action bar.

- **SAVE**
  Write all unsaved data to the Averages data set overwriting the contents of the data set. Editing of the data can continue after the save is complete. Also available from the File menu on the action bar.

*Note:* The SaveAs command is not available on this panel.

---

### Adjusting Averages

You may need to adjust the values in an Averages Data Set if characteristics of your IMS installation change. For example, if a new CPU is installed with processing capacity twice that of the previous CPU, you may wish to halve associated averages.

**About this task**

Arithmetic operations that can be performed are:

- ***** Multiply. For example, *1.5
- **/** Divide. For example, /1.5
- **+** Add. For example, +1.5
- **-** Subtract. For example, -1.5

**Procedure**

To replace a single value in the Averages Data Set, overtype it with the required value. To arithmetically adjust a value, overtype it with an operator followed by a value. For example, *1.5 If you don't specify an operator, the cell is changed to the specified value. Commands entered in the global cells (above the dividing line) apply to all cells in the column.
Chapter 10. Object Lists

A major feature of IMS PA is the ability to include or exclude input records, based on the values of fields such as Database, LTERM, and Transaction code. This is done by specifying the field types (object types), and values of each object type to either include or exclude.

Commonly, more than one value needs to be included or excluded. Therefore an Object List must be used to define the values. For example, in the Transaction Transit reports, you may want to include only two or three suspect transaction codes. You would create an Object List containing the codes, and specify this Object List as a selection criterion when requesting the report.

Each Object List has a specified type, and can only contain items or sublists of that type. The types are:

- **APGRP**: Application Group
- **AREA**: DEB Area
- **BLKID**: Block ID
- **CLASS**: Message Class
- **CLIENT**: Connect Client ID (Connect reports only)
- **DB**: Database
- **DD**: DDname
- **DDGRP**: DDname Group
- **ESSID**: External Subsystem ID
- **IMSID**: IMS Subsystem ID
- **KEY**: Key
- **LINE**: Line
- **LN/PT**: Line/Terminal
- **LTERM**: Logical Terminal
- **MSGID**: Message ID
- **NODE**: VTAM Node
- **PORT**: TCP/IP Port (Connect reports only)
- **PROG**: Program Name (PSB)
- **RECCD**: Record Code
- **RGJOB**: Region Job Name
- **RGPST**: Region ID by PST Number
- **RTCDE**: Routing Code
- **TPIPE**: Tpipe (Connect reports only)
- **TRAN**: Transaction Code
CLIENT, PORT, and TPIPE are used when specifying Selection Criteria for IMS Connect reports. They are not relevant to Log, Monitor, TRF, or ATF reporting.

Object Lists are also used to define application and DDname groupings to appear in monitor reports.

Object Lists can be defined as a hierarchy, by including the names of other Object Lists. This allows a basic set of Object Lists to be used to create higher level lists, avoiding the need to repetitively create and maintain detailed lists. This can be done for all types of Object Lists and to any depth of hierarchy. For example, as depicted in Figure 77 the Finance Databases Object List could contain the names of three other Database Object Lists: Payroll, Debtors, and Creditors, which in turn contain the actual database names.

![Hierarchical Structure of Object Lists](image)

### Maintaining Object Lists

To maintain (create, edit, delete) Object Lists, use the IMS PA dialog.

**Procedure**

Select option 6 **Object Lists** from the IMS PA primary option menu. The Object Lists panel is displayed, which lists the Object Lists in the nominated Object Lists data set. If you have not specified an Object Lists data set, IMS PA allocates a data set for you with default characteristics. To change the Object Lists data set, you can use **Options** in the action bar or option 0.4 **IMS PA Control Data Sets** from the IMS PA primary option menu. From here you can select Object Lists to review or update, or you can create a new Object List.
All the Object List fields are display-only on this panel. The Object Lists are listed with the following user-defined attributes:

**Name**  
1–8 character name in ISPF member name format, used to uniquely identify the Object List within the Object Lists data set.

**Description**  
Free-format text up to 32 characters, used to clarify the contents and purpose of the Object List.

In addition, the Object Lists are listed with the following system-generated attributes:

**Type**  
Type of Object List, as defined in Object List types. Can be one of APGRP, AREA, BLKID, CLASS, DB, DD, DDGRP, ESSID, IMSID, KEY, LINE, LN/PT, LTERM, MSGID, NODE, PROG, RECCD, RGJOB, RGPST, RTCDE, TRAN, USERID, USRDEF, CLIENT, PORT, or TPIPE.

**Changed**  
Date and time when last updated.

**ID**  
The userid that last updated the Object List.

**Line actions:**  
The following line actions can be performed on the list of Object Lists:

- `/`  
  Display the menu of line actions

- `E`  
  Edit the Object List

- `S`  
  Select the Object List (same as Edit)

- `V`  
  View the Object List (Edit without Save)

- `R`  
  Rename the Object List

- `D`  
  Delete the Object List

**Primary commands:**  
The following primary commands are available.

- **Refresh (REFR)**  
  To re-populate the list of Object Lists by re-accessing the Object Lists data set. Also available from the View menu on the action bar.

- **Sort**  
  To sort the list on any one, or a combination of columns. The default sort field is Name. The sort sequence disregards upper and lower case, and can be ascending (ASC) or descending (DESC), with ascending the default for all but the Changed column. The sort sequence is retained only until Exit or another SORT command is issued. Also available from the View menu on the action bar.
LOCATE (L or LOC)
Locate an entry in the list based on the primary sort field. Also available from the View menu on the action bar.

NEW name type1 Model modelname
Define a new Object List. If the command is valid, the edit panel is displayed for you to complete the definition. Otherwise, you are prompted to specify valid parameters. Also available from the File menu on the action bar.

SELECT name
Select (edit) a member in the Object Lists member list. If the name is a member in the list, the edit panel is displayed. If the name is omitted or invalid, you are prompted for a valid name. This command is the same as entering line action S (Select) or E (Edit). Also available from the File menu on the action bar.

Creating Object Lists

If you want a reusable list of values for including or excluding input records from reports or extracts, you need to create an Object List.

Procedure

To create an Object List:
1. Either:
   • In the command line, enter NEW followed by the name of the new Object List and initialization details using the following syntax:

   ```
   NEW newname objectlisttype
   MODEL modelname datasetname(modelname)
   ```

   • Select File > New from the action bar. A pop-up dialog window is displayed as shown in Figure 79 on page 151. Enter the name of the new Object List, and select the method of initialization as either:
     a. One of the Object List types
     b. Modelled from an existing Object List (specify the name of the model Object List, and the data set name if other than the current data set)
New Object List

Specify the name of the new Object List and the type or model.

Name . . . . ASSETS

List Type or MODEL

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Class</td>
<td>13. LTERM</td>
<td>23. VTAM Node</td>
</tr>
<tr>
<td>5. DDname</td>
<td>15. Program Name</td>
<td>24. Connect Client ID</td>
</tr>
<tr>
<td>6. DDname Group</td>
<td>16. Record Code</td>
<td>25. TCP/IP Port</td>
</tr>
<tr>
<td>7. DEDB Area</td>
<td>17. Region ID by PST</td>
<td>26. Tpipe</td>
</tr>
<tr>
<td>8. External SSID</td>
<td>18. Region Jobname</td>
<td></td>
</tr>
<tr>
<td>9. IMS Subsystem ID</td>
<td>19. Routing Code</td>
<td>27. MODEL (see below)</td>
</tr>
</tbody>
</table>

Model . . . . ______________________________________________________

Press ENTER to create the Object List, EXIT or CANCEL to leave.

Figure 79. Specifying a new Object List

2. Press Enter when the required fields have been specified.

   A panel is displayed where you can view or modify the description of the Object List and its list of values.

   For an explanation of how to edit Object Lists see “Types of Object Lists and values.”

Types of Object Lists and values

There are several types of Object List. The type of an Object List determines what the values are allowed in the Object List, and what those values represent.

Table 1. Types of Object Lists and their attributes

<table>
<thead>
<tr>
<th>Type of Object List</th>
<th>Values allowed</th>
<th>Attribute</th>
<th>Mask allowed</th>
<th>Range allowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>APGRP</td>
<td>APGRP or PROG Object List name</td>
<td>1-8 character name</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>AREA</td>
<td>DEDB Area name</td>
<td>1-8 character name</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>BLKID</td>
<td>Block ID (DLOGRBA in log record 50)</td>
<td>4 bytes hexadecimal</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>CLASS</td>
<td>Message Class</td>
<td>numeric 1-255</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>CLIENT</td>
<td>IMS Connect Client ID</td>
<td>1-8 characters</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>DB</td>
<td>Database name</td>
<td>1-8 character name</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>DD</td>
<td>DDname</td>
<td>1-8 character name</td>
<td>yes</td>
<td>yes (but not in DDGRP)</td>
</tr>
<tr>
<td>DDGRP</td>
<td>DDGRP or DD Object List name</td>
<td>1-8 character name</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>ESSID</td>
<td>External Subsystem ID</td>
<td>1-4 character name</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>IMSID (Datastore)</td>
<td>IMS Subsystem ID or Datastore</td>
<td>1-4 character name</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>KEY</td>
<td>Key (KSDS)</td>
<td>1-8 characters</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>
### Table 1. Types of Object Lists and their attributes (continued)

<table>
<thead>
<tr>
<th>Type of Object List</th>
<th>Values allowed</th>
<th>Attribute Mask allowed</th>
<th>Range allowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>LINE</td>
<td>Line number</td>
<td>1-8 digit number</td>
<td>no</td>
</tr>
<tr>
<td>LN/PT</td>
<td>Line/Terminal</td>
<td>1-8 digits each</td>
<td>no</td>
</tr>
<tr>
<td>LTERM</td>
<td>Logical Terminal</td>
<td>1-8 character name</td>
<td>yes</td>
</tr>
<tr>
<td>MSGID</td>
<td>Message ID</td>
<td>1-8 characters</td>
<td>yes</td>
</tr>
<tr>
<td>NODE</td>
<td>VTAM Node name</td>
<td>1-8 character name</td>
<td>yes</td>
</tr>
<tr>
<td>PORT</td>
<td>TCP/IP Port Number</td>
<td>1-65535</td>
<td>no</td>
</tr>
<tr>
<td>PROG</td>
<td>Program (PSB) name</td>
<td>1-8 character name</td>
<td>yes</td>
</tr>
<tr>
<td>RECCD</td>
<td>Record Codes, Log or Monitor</td>
<td>1 byte hexadecimal (2 hex characters)</td>
<td>no</td>
</tr>
<tr>
<td>RGJOB</td>
<td>Region ID by Job</td>
<td>1-8 character name</td>
<td>yes</td>
</tr>
<tr>
<td>RGPST</td>
<td>Region ID by PST</td>
<td>1-4095</td>
<td>no</td>
</tr>
<tr>
<td>RTCDE</td>
<td>Routing Code</td>
<td>1-8 character name</td>
<td>yes</td>
</tr>
<tr>
<td>TPIPE</td>
<td>Tpipe</td>
<td>1-8 characters</td>
<td>yes</td>
</tr>
<tr>
<td>TRAN</td>
<td>Transaction Code</td>
<td>1-8 character name</td>
<td>yes</td>
</tr>
<tr>
<td>USERID</td>
<td>User ID</td>
<td>1-8 characters</td>
<td>yes</td>
</tr>
<tr>
<td>USRDEF</td>
<td>User-defined Code</td>
<td>1-8 characters</td>
<td>yes</td>
</tr>
</tbody>
</table>

**Note:** Object Lists of every type can also contain entries that are Object Lists of the same type. For example, a PROG Object List can contain the names of other PROG Object Lists.

### Specifying values in Object Lists

You can specify any number of values in an Object List. Depending on the type of Object List and its purpose, values may be specified as single values, ranges of values, masks, or groups. You can also specify sublists, which are Object Lists of the same type as the Object List being edited.

### About this task

When an Object List is used for reporting, the list of objects processed includes all specified values in the Object List and all values in the Sublist Object Lists as well.

The order of entries in the list is not relevant to the batch report processors.

### Procedure

On the Object List edit panel, specify values appropriate for the type of Object List:

**Description**

- **Default:** IMS PA OBJECT LIST

  Free format text up to 32 characters to describe the contents and purpose of the Object List.
Sublist
Depending on the Object List type, specifies a value, Object List, or Object List type.

For APGRP and DDGRP Object Lists:
Specify whether the List Name is the same type as the Object List being edited (/) or a different type (blank). For example:
- An APGRP Object List can specify APGRP (/) or PROG (blank) Lists that define groups of applications for the Application Detail report.
- A DDGRP Object List can specify DDGRP (/) or DD (blank) Lists that define groups of DDnames for the Database IWAIT reports.

List Name: Object Lists of type APGRP and DDGRP define groups of values for reporting purposes. They enable report details to be summarized by group. Each group of values is defined in an Object List which you specify as the List Name.

For other types of Object Lists:
Indicate whether the From field specifies an Object List (/) or an actual value or mask (blank).

The usual method of populating an Object List is to specify the required values. In this case the Sublist indicator remains blank.

You may have a requirement to include one Object List inside another. This is called a Sublist. In this case, set the Sublist indicator to /.

From must be specified.
To is only specified if a range of values is being specified.

Validation Warning
Warnings indicate errors such as Member not found or Member not of correct type. (“Member” refers to an Object List name, as Object Lists are stored as members in the Object Lists Data Set.) Such occurrences are given as warnings rather than errors to allow you to specify them on the current panel and take subsequent action to correct the situation, such as to then create the specified Object List.

If Warning Confirmation has been requested from option 0.1 IMS PA Settings, you will be prompted to confirm any Exit or Save attempt if a warning is outstanding.

Line actions:
The following line actions can be performed on rows within an Object List:
/ Display the menu of line actions
I Insert a null row after this row
R Repeat this row
C Copy this row
M Move this row
A Move/Copy after this row
B Move/Copy before this row
D Delete this row

Primary commands:
The following primary commands are available:
Reset (RES)
Remove all line actions and delete any blank rows. Also available from the Edit menu on the action bar.

SAVE
Write all unsaved changes to the Object Lists data set. If the Object List already exists, it is overwritten. If it does not exist, it is created. Editing of the data can continue after the save is complete. Also available from the File menu on the action bar.

SAVEAS name
Save the Object List as the specified name. If only a member name is specified, the current Object Lists data set is assumed. To save in another data set, specify the DSN and member name. If the Object List already exists, it is overwritten. If it does not exist, it is created. Editing of the data can continue after the save is complete. Also available from the File menu on the action bar.

Examples
Single values
For example, to specify that the PAYMAST and PAYHIST databases are to be included (or excluded), define a Database (type DB) Object List which contains the database names as shown in Figure 80.

Ranges of values
For example, to specify that regions 1, 4, 5, 6, 8, 11, 12, and 13 are to be included (or excluded), define a Region ID by PST (type RGPST) Object List which contains the values as shown in Figure 81 on page 155.

Ranges are not supported for APGRP and DDGRP Object Lists, nor for their PROG and DD sublists.
**Generic forms of the value (Masking)**

Specify a pattern using the masking character * (asterisk) for any number of characters. For example, specifying a transaction code value of T*K will match transaction codes TK, TRK, TURK but not TURKEY, and THWACK but not ATTACK.

Masking is not supported for Object Lists of type APGRP, BLKID, CLASS, DDGRP, LINE, LN/PT, LOGCD, or RGPST.

---

**Group values**

These are Application Groups and DD Groups which allow, respectively, a hierarchical grouping of Program (PSB) Names and DDnames. Figure 83 on page 156 shows a DD Group Object List which contains two further DD Group sublists FINANCE and STOCK, and two DDname Object Lists EMPLOYEE and PAYROLL. There are validation warnings for two of them because they have not yet been created.
Using Object Lists in Selection Criteria

Rather than specifying multiple individual values in selection criteria, you can refer to the name of an object list (that contains those values).

About this task

Here is part of a typical panel that allows record selection for a report:

![Selection Criteria Panel]

**Selection Criteria:**

<table>
<thead>
<tr>
<th>Object Type</th>
<th>Inc/Exc</th>
<th>Object</th>
<th>List</th>
<th>Validation Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transaction Code</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LTERM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 83. Specifying Group Values in an Object List**

**Example**

For example, to include only transaction codes listed in Object List TL000001 specify:

**Selection Criteria:**

<table>
<thead>
<tr>
<th>Object Type</th>
<th>Inc/Exc</th>
<th>Object</th>
<th>List</th>
<th>Validation Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transaction Code</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LTERM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

To exclude transaction code PAY specify:

**Selection Criteria:**

<table>
<thead>
<tr>
<th>Object Type</th>
<th>Inc/Exc</th>
<th>Object</th>
<th>List</th>
<th>Validation Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transaction Code</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 84. Using Object Lists to Select Records**

In the row for **Transaction Code:**

**Inc/Exc**

Type INC to include only the specified Transaction Codes. Type EXC to exclude the specified Transaction Codes.

**Object**

Specify a transaction code, a mask (using * to represent non-compare positions), or the name of an Object List of type TRAN.

**List**

Select List with a / if Object is an Object List, otherwise it is assumed to be an individual transaction code or a mask.
Chapter 11. Distributions

A feature of IMS PA is the ability to produce graphs showing the distribution (dispersion) of the values of performance measures (for example, the distribution of Transit Times). Each graph can be individually customized by specifying range values and labels in a PDS member called a Distribution.

For example:
- Value ranges (Limits) = 1,5,10,30,50,100,300,500,1000
- Values Title = Sc Mil Mic (seconds, milliseconds, microseconds)
- Values Multiplier = 1000
- Values Edit Mask = ZZZ.ZZ9.999

Nominating the Distribution is the mechanism for requesting the graph, as well as defining its characteristics. Sample Distributions are provided for all distribution graphs.

Maintaining Distributions

You can use the IMS PA dialog to maintain (create, edit, delete) Distributions.

Procedure

1. Select option 7 Distributions from the IMS PA primary option menu.

   The Distributions panel is displayed, which lists the Distributions in the nominated Distributions data set.

2. If you have not nominated a Distributions data set, IMS PA allocates a data set for you with default characteristics. To change the Distributions data set, select option 0.4 IMS PA Control Data Sets from the IMS PA primary option menu. If the data set contains no user-defined Distributions, IMS PA populates it with the sample Distributions listed in “Distribution and Report cross-reference” on page 161.
3. From here you can select Distributions to review or update, or you can create new Distributions.

The Distributions are listed with the following user-defined attributes:

**Name**
1–8 character name in ISPF member name format, used to uniquely identify the Distribution within the Distributions data set.

**Description**
Free format text up to 32 characters, used to clarify the contents and purpose of the Distribution.

In addition, the Distributions are listed with the following system-generated attributes:

**Changed**
Date and time when last updated.

**ID**
The userid that last updated the Distribution.

**Line actions:**
The following line actions can be performed on Distributions:

- / Display the menu of line actions
- E Edit the Distribution
- S Select the Distribution (same as Edit)
- V View the Distribution (Edit without Save)
- R Rename the Distribution
- D Delete the Distribution

**Primary commands:**
The following primary commands are available:

- Refresh (REFR)
  Repopulate the list of Distributions by re-accessing the Distributions data set. Also available from the View menu on the action bar.

- Sort
  Sort the list on any one, or a combination of columns. The default sort field is Name. The sort sequence disregards upper and lower case, and can be ascending (ASC) or descending (DESC), with ascending the default for all but the Changed column. The sort sequence is retained only until Exit or another SORT command is issued. Also available from the View menu on the action bar.

- LOCATE (L or LOC)
  Locate an entry in the list based on the primary sort field. Also available from the View menu on the action bar.
NEW name Model modelname
Define a new Distribution member. If the command is valid, the edit panel is displayed for you to complete the definition. Otherwise, you are prompted to specify valid parameters. Also available from the File menu on the action bar.

SELECT name
Select (edit) a member in the Distributions member list. If the name is a member in the list, the edit panel is displayed. If the name is omitted or invalid, you are prompted for a valid name. This command is the same as entering line action S (Select) or E (Edit). Also available from the File menu on the action bar.

Creating new Distributions
If you want a distribution graph with custom value ranges, you need to create a Distribution that specifies those value ranges.

Procedure
To create a Distribution:
1. On the IMS PA primary option menu, select option 7 Distributions. The Distributions panel is displayed, showing the list of existing Distributions.
2. Either:
   • On the command line, enter NEW followed by the name of the new Distribution and optional initialization details using the following syntax:

```
NEW name (Model name) datasetname
```
   • On the action bar, select File > New.
      A pop-up dialog window is displayed. Enter the name of the new Distribution, and select the method of initialization as either:
      a. Based on defaults
      b. Modelled from an existing Distribution (specify the name of the model Distribution, and the data set name if other than the current data set)

```
New Distribution

Specify the name of the new Distribution and optional model.

Name . . . . DS000009
Default or MODEL . . . . 1 1. Default
  2. MODEL (specified below)
Model ______________________________________________________

Press Enter to create the Distribution.
Press Exit or Cancel to cancel the request.
```

Figure 87. Specifying a new Distribution
When you have specified the required fields, press Enter.
A panel is then displayed for you to view or modify the description of the Distribution and its characteristics.

### Specifying Distribution characteristics

The characteristics of a Distribution are the nine range limits that appear on the vertical axis of a distribution graph.

#### Procedure

To define the characteristics of a Distribution:

1. On the IMS PA primary option menu, select option 7 **Distributions**.
   
   The Distributions panel is displayed, showing the list of existing Distributions.

2. To create a new Distribution, enter NEW on the command line; to edit an existing Distribution, enter S next to the Distribution.
   
   The Edit Distribution panel is displayed, showing the characteristics of the Distribution.

3. Edit the characteristics.

```plaintext
EDIT Distribution - DS000002
Command ==> _________________________________________________________________
Specify distribution options.
Description . . . Elapsed Time per Schedule____
Limit Values . . . . . . (1) 1____ (2) 5____ (3) 10____
      (4) 30____ (5) 50____ (6) 100____
      (7) 300____ (8) 500____ (9) 1000____
Limit Values Title . . . . Sc Mil Mic__
Limit Value Multiplier . . . 1000____
Limit Value Edit Mask . . . ZZ.ZZZ9.999________
```

*Figure 88. Defining a Distribution*

The fields in the Edit Distribution panel are:

**Description**

Default: IMS PA DISTRIBUTION

A descriptive title used to clarify the contents and purpose of the Distribution.

**Limit Values**

Default: 1, 5, 10, 30, 50, 100, 300, 500, 1000

Limit Values define the nine range-limits for the vertical axis of the graph. A tenth range is added by IMS PA to catch all values greater than the highest specified limit. If limits are to be specified, then all 9 values must be provided. The values will be sorted into ascending sequence. Limits are multiplied by the Limit Multiplier at the time of producing the graph.

**Limit Values Title**

Default: Sc Mil Mic (for seconds, msecs, microsecs)

Specify the title to be printed for the limit values on the vertical axis of the graph.
Limit Value Multiplier
Default: 1000
Each Limit Value is multiplied by the Limit Multiplier when producing the graph.

Limit Value Edit Mask
Default: ZZZ.ZZ9.999 or 402020204B2021204B2020

Specify an edit mask to be used when printing the limit values along the vertical axis of the graph. Two formats are accepted:

- Up to 11 characters, where any character may be specified but the following are digit-select characters: Z (zero suppression), 9 (digit mask), S (trigger start). Any other character is copied into the mask; the fill character is blank and the field is right-justified.

- Up to 12 bytes hexadecimal (represented by up to 24 characters) which will be used as the edit mask as specified in the ESA/390 Principles of Operation, SA22-7201.

For both formats, the number of digit-select characters (X'20' and X'21' in format 2) must be greater than zero and should be odd. If the number of digit-select characters is even, then the low order digit of the result will not be formatted.

The format of the following graph was produced by the Distribution specified in the previous figure.

![Graph](image)

**Figure 89. Distribution Graph**

### Distribution and Report cross-reference

Distributions do not apply to all reports. This cross-reference lists the log and monitor reports that can produce distribution graphs, with the name of the sample Distribution provided.

**Table 2. Distribution and Report cross-reference**

<table>
<thead>
<tr>
<th>Distribution type</th>
<th>Sample Distribution</th>
<th>Report type</th>
<th>Report</th>
<th>Where Distribution is specified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit Time</td>
<td>LOGIN</td>
<td>Log</td>
<td>Transit Time Statistics</td>
<td>report panel</td>
</tr>
<tr>
<td>Processing (CPU) Time</td>
<td>$IPDIST1</td>
<td>Log</td>
<td>CPU Usage</td>
<td>report panel</td>
</tr>
<tr>
<td>Elapsed Time</td>
<td>$IPDIST2</td>
<td>Log</td>
<td>CPU Usage</td>
<td>report panel</td>
</tr>
<tr>
<td>Distribution type</td>
<td>Sample Distribution</td>
<td>Report type</td>
<td>Report</td>
<td>Where Distribution is specified</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>--------------------</td>
<td>-------------</td>
<td>---------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Checkpoint Duration</td>
<td>SYSCKPT</td>
<td>Log</td>
<td>System Checkpoint</td>
<td>report panel</td>
</tr>
<tr>
<td>Elapsed Time per Schedule</td>
<td>ELAPSCH</td>
<td>Monitor</td>
<td>Region Summary</td>
<td>Monitor Global - Distributions Options</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Region Detail Region Analysis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PSB-TranCode Analysis</td>
<td></td>
</tr>
<tr>
<td>Elapsed Time per Call</td>
<td>ELAPCAL</td>
<td>Monitor</td>
<td>Region Summary</td>
<td>Monitor Global - Distributions Options</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Region Detail Region Analysis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Region Analysis Exception Listing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PSB-TranCode Analysis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Program Trace</td>
<td></td>
</tr>
<tr>
<td>Elapsed Time per IWAIT</td>
<td>ELAPIWT</td>
<td>Monitor</td>
<td>Region Summary</td>
<td>Monitor Global - Distributions Options</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Region Detail Region Analysis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Region Analysis Exception Listing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PSB-TranCode Analysis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Program Trace</td>
<td></td>
</tr>
<tr>
<td>IWAITs per Call</td>
<td>IWTSCAL</td>
<td>Monitor</td>
<td>Region Summary</td>
<td>Monitor Global - Distributions Options</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Region Detail Region Analysis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Region Analysis Exception Listing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PSB-TranCode Analysis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Program Trace</td>
<td></td>
</tr>
<tr>
<td>Elapsed Time per IWAIT</td>
<td>IWTSUMMY</td>
<td>Monitor</td>
<td>Total System IWAIT Summary and Detail</td>
<td>report panel</td>
</tr>
<tr>
<td>Lock IWAIT Elapsed Time</td>
<td>FPRCLIW</td>
<td>Monitor</td>
<td>DEDB Resource Contention</td>
<td>report panel</td>
</tr>
<tr>
<td>Fast Path Buffer Statistics</td>
<td>FPBSCNT</td>
<td>Monitor</td>
<td>Fast Path Buffer Statistics</td>
<td>report panel</td>
</tr>
<tr>
<td>Queue Length per Message</td>
<td>FPBGQLN</td>
<td>Monitor</td>
<td>BALG/Shared EMHQ Analysis</td>
<td>report panel</td>
</tr>
<tr>
<td>Queue Time per Message</td>
<td>FPBGELP</td>
<td>Monitor</td>
<td>BALG/Shared EMHQ Analysis</td>
<td>report panel</td>
</tr>
<tr>
<td>Active OTHREAD Counts</td>
<td>FPOTACT</td>
<td>Monitor</td>
<td>OTHREAD Analysis</td>
<td>report panel</td>
</tr>
<tr>
<td>Waiting Area</td>
<td>FPOTWTA</td>
<td>Monitor</td>
<td>OTHREAD Analysis</td>
<td>report panel</td>
</tr>
<tr>
<td>Buffers on Queue</td>
<td>FPOTBOQ</td>
<td>Monitor</td>
<td>OTHREAD Analysis</td>
<td>report panel</td>
</tr>
<tr>
<td>Line Elapsed Time</td>
<td>COMMELP</td>
<td>Monitor</td>
<td>Communication Summary</td>
<td>report panel</td>
</tr>
<tr>
<td>Line IWAIT Elapsed Time</td>
<td>COMMIME</td>
<td>Monitor</td>
<td>Communication IWAIT</td>
<td>report panel</td>
</tr>
<tr>
<td>Received Blksize per Block</td>
<td>COMMLFR</td>
<td>Monitor</td>
<td>Communication Line Functions</td>
<td>report panel</td>
</tr>
<tr>
<td>Transmitted Blksize per Block</td>
<td>COMMLFT</td>
<td>Monitor</td>
<td>Communication Line Functions</td>
<td>report panel</td>
</tr>
<tr>
<td>Turnaround Interval</td>
<td>COMMLFI</td>
<td>Monitor</td>
<td>Communication Line Functions</td>
<td>report panel</td>
</tr>
</tbody>
</table>
Table 2. Distribution and Report cross-reference (continued)

<table>
<thead>
<tr>
<th>Distribution type</th>
<th>Sample Distribution</th>
<th>Report type</th>
<th>Report</th>
<th>Where Distribution is specified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Queue Length per Message</td>
<td>MSCQLEN</td>
<td>Monitor</td>
<td>MSC Queuing</td>
<td>report panel</td>
</tr>
<tr>
<td>Queue Time per Message</td>
<td>MSCQELP</td>
<td>Monitor</td>
<td>MSC Queuing</td>
<td>report panel</td>
</tr>
</tbody>
</table>

Notes:
- The Exception Listing does not produce graphs but uses the Distribution values as thresholds.
- The name of the Distribution used in batch command input to associate the Distributions with the reports is the same name as the Sample Distribution shown in this table, with the following exceptions:

  Command Name  
  Sample Distribution
  ELAP/SCH   
  ELAP/SCH   
  ELAP/CAL   
  ELAP/CAL   
  ELAP/IWT   
  ELAP/IWT   
  IWTS/CAL   
  IWTS/CAL
Part 3. Specifying input data for reporting

You need to specify to IMS Performance Analyzer the data that you want to analyze. You can do this by defining systems and groups of systems. Then specify the files explicitly, or for IMS Log and IMS Connect data, you can use Automated File Selection to automatically locate the files in a specified period.
Chapter 12. Systems and Files

To identify the input data for reporting, you must first define your IMS subsystems, their log, monitor, and OMEGAMON TRF and ATF files and your IMS Connect systems.

Input
Disk or tape:
- SLDS (or OLDS)
- IMS Log records
- IMS Connect Extensions journal
- IMS Connect event records
- IMS Monitor data set
- IMS Monitor records
- OMEGAMON TRF data set
- TRF Extractor records
- OMEGAMON ATF journal
- ATF records

Output
- IMS PA ISPF dialog
- JCL
- Report set request with input file ddnames
- Batch job

Specifying IMS Log files or IMS Connect files explicitly is optional as IMS PA can use Automated File Selection to locate them. See Chapter 15, “Automated File Selection,” on page 197. For shared queues log reporting, you must use Groups to define the IMS subsystems in a sysplex.

To define your IMS subsystems and associated DBRC settings, log, monitor, TRF and ATF files, and groups, use IMS PA primary option menuoption 1 System Definitions. Alternatively, you can select SysDefs in the action bar of most Report Set panels.

IMS Connect system definitions are maintained by IMS Connect Extensions in the Definitions Data Set (option 0.5 IMS Connect Extensions Definitions Data Set). They cannot be created or changed by IMS PA, but can be assigned to or removed from Groups. However, you can define standalone Connect systems and files if the Definitions Data Set is not available.
At run time, specify the system or Group that the Report Set is to process. IMS PA automatically generates the JCL that contains the required files (or DBRC settings).

For log reporting, the IMS version is also included in the JCL as the log data and reports are release-dependent.

**Defining Systems**

With System Definitions, you can define IMS subsystems and their related information from a single point.

**About this task**

IMS subsystems participating in a sysplex must be defined in a Group. A Group is simply a list of IMS subsystems and Connect systems that you wish to group together for reporting purposes. At Report Set run time, you can request reporting for an individual system or a Group. If your previous Log Input specified more than one IMS system that was not excluded, then IMS PA will define them to a Group called SYSPLEX1. You can assign IMS subsystems to a Group from System Definitions. To maintain your Group definitions, use option 2 Groups from the IMS PA primary option menu.

**Procedure**

Select option 1 System Definitions from the IMS PA primary option menu. The Systems Definitions panel is displayed. This panel lists the systems that are available for Log, Monitor, and Connect reporting. Scroll Left (F10) and Right (F11) to view all columns. Each listed system has the following attributes.

<table>
<thead>
<tr>
<th>System ID</th>
<th>Type</th>
<th>VRM</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMS V12</td>
<td>IMS</td>
<td>121</td>
<td>IMS V12 subsystem</td>
</tr>
<tr>
<td>IMS V13</td>
<td>IMS</td>
<td>131</td>
<td>IMS V13 subsystem</td>
</tr>
<tr>
<td>IMSPAHWS</td>
<td>Connect</td>
<td></td>
<td>IMS PA Test HWS</td>
</tr>
</tbody>
</table>

*Figure 91. System Definitions*

following attributes.

**System**

The unique identifier of an IMS subsystem or IMS Connect system:

- IMS subsystem ID is a 1-4 alphanumeric character name. IMS subsystem definitions are shared by IMS PA and IMS PI (IMS Problem Investigator) and can be created or changed by both.
- IMS Connect system name is a 1-8 alphanumeric character name. Connect system definitions are maintained by IBM IMS Connect Extensions for z/OS in the Definitions Data Set (see option 0.5 IMS Connect Extensions Definitions Data Set). New or changed system details are maintained in IMS PA System Definitions and Groups only, they do not affect the Definitions Data Set.
The order in which the systems are specified on the panel is not relevant to IMS PA. You may list them in the order that is convenient for you.

**Type**

Type refers to whether the system is an IMS subsystem (IMS) or a Connect system (Connect).

**VRM**

VRM is the release of the IMS subsystem. The supported releases are 121, 131, and 141.

IMS PA uses the VRM to perform release-dependent batch report processing.

VRM is not applicable to Connect systems.

**Description**

Description contains up to 36 characters of text to describe the system. This is for your reference only, although IMS PA inserts it as a comment in your Report Set JCL.

**Files**

IMS PA sets the Files indicator to Yes or No as follows:

- **Log**
  - Yes indicates that the IMS Subsystem has Log files explicitly specified.

- **Mon**
  - Yes indicates that the IMS Subsystem has Monitor files explicitly specified.

- **CEX**
  - Yes indicates that the IMS Connect system has Journal data sets (archive or active) explicitly specified.

- **TRF**
  - Yes indicates that the IMS Subsystem has OMEGAMON TRF files specified.

- **ATF**
  - Yes indicates that the IMS Subsystem has OMEGAMON ATF journals specified.

**Auto_File Selection**

IMS PA sets the indicator for Automated File Selection to Yes or No as follows:

- **DBRC**
  - Yes indicates that RECON or MDA data sets have been specified for the IMS Subsystem making it eligible for DBRC Log Selection.

- **CEX**
  - Yes indicates that the Connect system is in the IMS Connect Extensions definitions repository and eligible for Journal File Selection.

**Line actions:**

The valid line actions for the list of systems are:

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>/</td>
<td>Display the menu of line actions</td>
</tr>
<tr>
<td>S</td>
<td>Select to modify or review the system details</td>
</tr>
<tr>
<td>I</td>
<td>Insert a blank row to define a new system of the same type</td>
</tr>
<tr>
<td>R</td>
<td>Repeat this row</td>
</tr>
<tr>
<td>C</td>
<td>Copy this row</td>
</tr>
<tr>
<td>M</td>
<td>Move this row</td>
</tr>
<tr>
<td>A</td>
<td>Move/Copy after this row</td>
</tr>
<tr>
<td>B</td>
<td>Move/Copy before this row</td>
</tr>
<tr>
<td>D</td>
<td>Delete this row</td>
</tr>
</tbody>
</table>

**Note:**

1. If a Connect system is deleted and it is from the IMS Connect Extensions Definitions Data Set (select option 0.5 **IMS Connect Extensions Definitions Data Set**), then the system is removed from IMS PA System Definitions and
Groups, but it is still available to IMS PA to be reassigned to a group for combined reporting (option 3 Report Sets) or for IMS Connect reporting (option 9 IMS Connect).

2. If an IMS subsystem is deleted, it is completely removed from IMS PA.

3. A row command on this panel applies to the system and all its related information. For example, copying a system will copy the system details and related files and groups.

**Primary commands:**

The following primary commands are available:

- **NEW name type**
  This command defines a new system. You can also select this from File in the action bar.
  - To define a new IMS subsystem, enter NEW name IMS or NEW name or NEW.
  - To define a new IMS Connect system, enter NEW name CONNECT or NEWC name.

- **RESET**
  This command (or RES) removes all pending line actions and deletes any blank rows. Reset is also available from Edit in the action bar.

- **SORT System | Type | Vrm | Description**
  This command sorts the list of systems on the specified column. The default is System. The order is retained on exit.
  You can also sort by selecting a point-and-shoot column heading.

- **SAVE**
  Save all changes to system definitions.

**Note:** The Save command is available from the System Definitions panel, being the top in the hierarchy of panels. Exit (F3) from a subordinate panel only temporarily retains changes. No changes are permanently saved until Save or Exit is entered into the top panel. Cancel (F12) discards all unsaved changes on this and subordinate panels.

**IMS Subsystem**

To define a new IMS Subsystem, type NEW on the command line of the System Definition panel.

The IMS Subsystem panel is used to specify the attributes of an IMS subsystem, its DBRC settings, log and monitor files, and groups that it belongs to. IMS PA uses this information to generate the JCL to run your Report Sets.

The panel has multiple views (affecting the bottom half of the display only):

1. **DBRC Settings**
2. **Log Files**
3. **Monitor Files**
4. **Groups**
5. **OMEGAMON TRF Files**
6. **OMEGAMON ATF Journals**

You can switch between the views by entering the number of your choice, scrolling Right (F11), or scrolling Left (F10). DBRC Settings is the initial view. For each IMS subsystem, IMS PA remembers its last view and returns there next time.
The IMS subsystem details are:

**IMS Subsystem ID**
Specify the IMS subsystem identifier. An IMS ID is a 1–4 alphanumeric character name and must be unique.

**IMS Version (VRM)**
VRM is the release of the IMS subsystem. The supported releases are 121, 131, and 141.

IMS PA uses the VRM to perform release-dependent batch report processing. IMS Version is a required field and must be kept up to date because IMS log record formats can change from version to version. IMS PA needs to ensure that it selects the correct version-dependent reporting routines for this system's log data.

**Description**
Description is free-format text up to 36 characters to describe the IMS subsystem. This is only for your reference. IMS PA does not use it to identify the system.

**RESLIB Data Set**
RESLIB data set name. For DBRC Log Selection, the RESLIB data set must contain the DBRC API routine DSPAPI00. You do not need to specify the RESLIB data set name if the modules reside in the system link list (LNKLST).

The RESLIB data set can also be used to determine the IMS version if it contains module DFSVC000. IMS PA will use the IMS version from information in module DFSVC000 instead of the VRM specified explicitly.
DBRC Settings for an IMS Subsystem

To specify the DBRC Settings that allow you to use DBRC Log Selection for Log reporting, use view 1 DBRC Settings of the IMS Subsystem panel.

DBRC Log Selection is a facility that you can use when submitting your report requests. It automatically selects the required Log files from DBRC for the required reporting time period, saving you the effort of manually entering the Log file data set names.

Figure 92 on page 171 shows an example of the panel used to specify DBRC settings for an IMS subsystem.

The DBRC Settings details are:

**DBRC Subsystem ID**

The DBRC Subsystem ID defines the DBRC Subsystem (SSID) that owns the SLDS entries. Specify DBRC Subsystem ID when the DBRC Subsystem ID is longer than 4 characters, or different to the IMS Subsystem ID.

- For IMS and DBCTL subsystems, the DBRC Subsystem ID is the IMSID value from IMSCTRL SYSGEN macro (four characters). In this case, DBRC Subsystem ID need not be specified. DBRC Log Selection uses the IMS Subsystem ID as the DBRC Subsystem ID.
- For Batch and Utility subsystems, specify the job name.
- For XRF, specify the RSENAME (Recovery Service Element) of the IMS systems (active and alternate).

**DBRC IMSplex name**

Specify the name of the IMSplex.

DBRC Log Selection JCL is generated with the IMSPLEX parameter:

```
// EXEC PGM=IPIDBRC,PARM='IMSPLEX=plexname'
```

The Group IMSplex specification is used for reporting on a group of systems.

The System IMSplex specification is used for reporting on a system, and is ignored when reporting on a group.

**DBRC Sharing Group ID**

Specify the DBRC group ID defined in the RECON data set used by the DBRC group.

DBRC Log Selection JCL is generated with the DBRCGRP parameter:

```
//IPIDBRC EXEC PGM=IPIDBRC,PARM='IMSPLEX=plexname,DBRCGRP=grp'
```

Specify IMSPLEX and DBRCGRP as you would when using the Database Recovery Control utility (DSPURX00):

```
EXEC PGM=DSPURX00,PARM='IMSPLEX=plexname,DBRCGRP=xxx,READONLY'
```

The Group DBRCGRP specification is used for reporting on a group of systems.

The System DBRCGRP specification is used when reporting on a system, and is ignored when reporting on a group.

**RECON Data Set**

Specify the names of the two or three RECON data sets used by this IMS
subsystem. If specified, and DBRC log selection is requested, IMS PA will use DBRC to determine from the RECON data sets the log files for input to the report processors.

The RECON data sets may be omitted if the MDA data set is specified. However, if both are specified, IMS PA will use the RECON specification after validating it against the information in the MDA.

Specification of the RECON or MDA data sets is only required for DBRC Log Selection which is an optional feature of IMS PA.

**MDA Data Set**
Specify the name of the MDA (MVS™ Dynamic Allocation) data set for this IMS subsystem.

If the RECON data set names are not specified, and DBRC log selection is requested, IMS PA will use the MDA data set to determine the RECON data set names, and in turn use DBRC to select the log files for input to the report processors.

If RECON data sets are specified, they will be validated against the MDA information.

Specification of the RECON or MDA data sets is only required for DBRC log selection which is an optional feature of IMS PA.

**Log Data Sets are Cataloged**
Enter `/` if the SLDS data sets are cataloged. IMS PA then omits UNIT, VOLSER, and LABEL parameters from the Report Set JCL. This prevents JCL failures when the log files are SMS-managed cataloged data sets.

Default: Not selected; Log data sets are not cataloged. IMS PA will include UNIT, VOLSER, and LABEL parameters in the Report Set JCL.

**Use OLDS that are not Archived**
Enter `/` to allow IMS PA to select OLDS log files that cover the requested reporting period when SLDS log files are not yet available. OLDS data sets will only be considered for selection if they are eligible for archive, but are yet to be archived.

Default: Not selected; OLDS data sets will not be used.

**Use Secondary Log Data Sets**
Enter `/` to use secondary SLDS data sets if they are available, instead of primary SLDS data sets.

Default: Not selected; primary SLDS data sets will be used.

**JES2 options**
Specify JES2 Control Statement options to run DBRC Log Selection jobs on the system where the RECONs and SLDS Log files are available.

Default: Not selected.

**DBRC Node and SYSAFF**
Specify JES2 Control Statement options to run DBRC Log Selection jobs on the system where the RECONs Log files are available.

Node is the network node where the job must execute, generating: `/*XEQ Node` and `/*ROUTE PRINT Node`.

SYSAFF is the system name to process the job, generating: `/*JOBPARM SYSAFF=name`.
SLDS Node and SYSAFF

Specify JES2 Control Statement options to run report jobs on the system where the SLDS Log files are available.

Node is the network node where the job must execute, generating:
/*XEQ Node and /*ROUTE PRINT Node.

SYSAFF is the system name to process the job, generating:
/*JOBPARM SYSAFF=name.

Note: The JES2 Control Statements will only be generated if they are specified in your IMS PA Settings (option 0.1 IMS PA Settings).

For more information on preparing for DBRC log selection, see Chapter 15, “Automated File Selection,” on page 197.

Log Files for an IMS Subsystem

To specify the IMS log data sets associated with an IMS subsystem, use View 2 of the IMS Subsystem panel. This data is used by the IMS PA dialog in the generation of JCL to run log Report Sets.

However, if DBRC Log Selection is requested, the files specified on this panel are ignored as IMS PA will use DBRC to locate them based on a specified time period. See “Running reports using DBRC Log Selection” on page 202.

Each listed data set has the following attributes:

Exc The data set is marked by a * if it is to be excluded from Log reporting. Excluded data sets are not eligible for Report Set JCL generation.

Enter the line action X to change (reverse) the exclude status of the data set.

Data Set Name (DSN)

Specify the name of the data set in TSO format. Data sets that are not excluded are concatenated in the Report Set JCL in the order in which they are specified on the panel.
For a report to span more than one data set, the data sets must be specified in time sequence with no large time gaps between them; otherwise for single subsystem reporting, IMS PA would build multiple reports, and for multi-subsystem shared queue reporting, the results would be unpredictable.

If the data set is not cataloged or you wish to establish overriding data set characteristics, then specify:

**UNIT** The device type or group name associated with the data set, such as 3390, SYSALLDA, or CART. This must represent a device that is defined in the Eligible Device Table of the current processor as either TAPE or DASD. To select one from a list of possible Units, position the cursor on the **UNIT** field and press **Prompt (F4)**.

**UNIT** may be specified without a **VOLSER**, in which case the explicitly specified device type will be honored in the process of generating JCL but the **UNIT** parameter will not be included in the generated JCL. In this way the JCL generation process can be made aware of the device type of a data set that is yet to be cataloged, or is cataloged on another system. The device type is needed to generate the JCL for unit affinity. It also is needed to generate the JCL for shared queue merge processing when not enough tape devices are available to concurrently open the log files from all subsystems.

**SEQ** Data set sequence number; identifies the relative position of the data set on a tape volume. Omit, or code 0 or 1 to indicate the first data set on the tape volume.

**VOLSER** The volume serial number of the data set. It is only required for uncataloged data sets.

A + sign indicates that the data set spans multiple volumes.

To display up to 16 volumes of the VOLSER list, do one of the following:

- Place the cursor on the + sign and press Enter.
- Place the cursor on the **VOLSER** field and press **Prompt (F4)**.
- Enter the line action V.

**Line actions:**

The following line actions are valid for a data set in the list:

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>/</td>
<td>Display the menu of line actions</td>
</tr>
<tr>
<td>I</td>
<td>Insert a null row after this row</td>
</tr>
<tr>
<td>R</td>
<td>Repeat this row</td>
</tr>
<tr>
<td>C</td>
<td>Copy this row</td>
</tr>
<tr>
<td>M</td>
<td>Move this row</td>
</tr>
<tr>
<td>A</td>
<td>Move/Copy after this row</td>
</tr>
<tr>
<td>B</td>
<td>Move/Copy before this row</td>
</tr>
<tr>
<td>D</td>
<td>Delete this row</td>
</tr>
<tr>
<td>U</td>
<td>Select a Unit from a list</td>
</tr>
<tr>
<td>V</td>
<td>Display the VOLSER list for this data set</td>
</tr>
<tr>
<td>X</td>
<td>Reverse this row’s exclude status (Excluded/Included)</td>
</tr>
</tbody>
</table>

**Primary commands:**

The following primary command is available:
RESET  This command (or RES) removes all pending line actions and deletes any blank rows. You can also select Reset from Edit in the action bar.

Note: The SAVE command is not available from this panel. Changes are saved only on Save or Exit (F3) from the System Definitions panel.

Monitor Files for an IMS Subsystem
To associate monitor data sets with an IMS subsystem, use View 3 of the IMS Subsystem panel. This data is used by the IMS PA dialog in the generation of JCL to run monitor Report Sets.

Groups for an IMS Subsystem
To specify the groups that an IMS subsystem belongs to, use View 4 of the IMS Subsystem panel. A group contains the IMS subsystems of a sysplex for shared queue processing. This data is used by the IMS PA dialog in the generation of JCL to run log Report Sets.

For further information on groups, see Chapter 13, “Defining Groups,” on page 185.
Each group has the following attributes:

**Group**  
A Group name is an arbitrary name used to identify a group of related IMS subsystems for reporting purposes, such as systems belonging to a sysplex. For example, specify a Group name of PRODPLEX to identify all IMS subsystems in your production IMS sysplex. Group names can be up to eight alphanumeric (A-Z,0-9) or special (@,#,$) characters.

**Description**  
Description is free format text up to 36 characters to describe the group of IMS subsystems. This is for your reference only, although IMS PA inserts it as a comment in your Report Set JCL.

**Line actions:**  
The following line actions are valid against entries in the groups list:

- / Display the menu of line actions  
- S Select one or more groups from a list  
- I Insert a null row after this row  
- R Repeat this row  
- C Copy this row  
- M Move this row  
- A Move/Copy after this row  
- B Move/Copy before this row  
- D Delete this row

**Primary commands:**  
The following primary commands are available:

- **RESET**  
  This command (or RES) removes all pending line actions and deletes any blank rows. Reset is also available from **Edit** in the action bar.

- **SORT Group | Description**  
  This command sorts the list of groups on the specified column. The default is Group. The order is retained on Exit.

You can also sort by selecting a point-and-shoot column heading.
Note: The SAVE command is not available from this panel. Changes are saved only on SAVE or Exit (F3) from the System Definitions panel.

**TRF Files for an IMS subsystem**

To associate TRF Extractor data sets with an IMS subsystem, use View 5 of the IMS Subsystem panel.

<table>
<thead>
<tr>
<th>Command</th>
<th>IMS Subsystem definition:</th>
<th>Scroll</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IMS Subsystem ID .... ICDE IMS Version (VRM) ... 131</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description ........ TRF extractor detail &amp; logs</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>RESLIB Data Set ..........</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Specify required view .. 5 1. DBRC Settings 4. Groups
2. Log Files 5. OMEGAMON TRF Files
3. Monitor Files 6. OMEGAMON ATF Journals

Specify the OMEGAMON TRF Files (in time sequence) for this collection:

/ Exc Data Set Name (DSN) UNIT + SEQ VOLSER +
—IPI000.QADATA.TCOMG008.ICDE.TRF.DET2'_______ ________ ___ ______
*************** Bottom of data ********************************

Specify the OMEGAMON TRF Extractor data set names and attributes in a similar way to IMS log and monitor data sets.

See "Log Files for an IMS Subsystem" on page 174 for a description of the fields, available line actions, and action bar choices.

**Note:**

- TRF files, like Monitor files, have no repository or register, and so no automated file selection based on start and stop time is available.
- Extractor files may contain data from multiple systems in an IMSplex. The system name in the System Definition is not used for JCL generation.
- OMEGAMON TRF Collector records are in the IMS log and as such, the IMS log data sets are specified in the usual way on the IMS log files panel. TRF Collector records can be analyzed by IMS Problem Investigator.

**ATF journals for an IMS subsystem**

To associate OMEGAMON ATF journal data sets with an IMS subsystem, use View 6 of the IMS Subsystem panel. This data is used by the IMS PA dialog in the generation of JCL to run ATF Report Sets.
Specify the data set names of the OMEGAMON ATF journal files in a similar way to IMS Connect journal files.

The data sets must be cataloged. For a description of the fields, available line actions, and action bar choices, see “Journal Files for a Connect System” on page 182.

**Note:**
- ATF journals are not involved in automated file selection.
- ATF journals can contain data from multiple systems in an IMSPLEX. The system name in the System Definition is not used for JCL generation.

**IMS Connect systems and data sets**

Prior to using IMS PA for IMS Connect reporting, you must implement IMS Connect Extensions Event Collection.

For information about how to set up and activate Event Collection, see the *IBM IMS Connect Extensions for z/OS: User’s Guide* (SC19-3632).

IMS PA analyzes and reports against the Event Collection data contained in Archive Journal data sets. To report this data, you must first identify the IMS Connect systems and data sets to IMS PA, and specify your report requests in IMS Connect Report Sets.
Note that IMS Connect systems and their Archive data sets are defined by IMS Connect Extensions, not IMS PA. IMS PA reports the event data recorded by IMS Connect Extensions, but does not provide maintenance functions for IMS Connect Extensions system definitions and Archive data sets.

To request Connect reports and extracts using the IMS PA dialog:

1. Use option 0.5 **IMS Connect Extensions Definitions Data Set** from the IMS PA primary option menu to specify the name of the IMS Connect Extensions Definitions Data Set that defines the IMS Connect Systems and Archive Data Sets that you want to report on.

   ![IMS Connect Extensions Definitions Data Set](image)

   **Figure 96. IMS Connect Extensions Definitions Data Set**

2. Use option 3 **Report Sets** from the IMS PA primary option menu to specify your IMS Connect report requests in Report Sets of type CEX. You can enter line action **RUN** to select a Report Set, a category or an individual report for batch execution. For more information, see Chapter 24, "Requesting IMS Connect reports," on page 547.

3. Use option 9 **IMS Connect** from the IMS PA primary option menu to view the list of IMS Connect Systems and Archive Data Sets. You can enter line action **RUN** to select a system or a data set for batch reporting.

The remainder of this topic explains the functionality available from primary menu option 9 **IMS Connect**.

When you select option 9 **IMS Connect**, the list of IMS Connect systems defined in the IMS Connect Extensions Definitions Data Set is displayed.

![IMS Connect System Definitions](image)

**Figure 97. IMS Connect Systems**

Two line actions are available:

- Enter line action **RUN** to run a Report Set against a particular system. The runtime options are displayed as shown in "Run Connect Report Set" on page 551. Archive Selection will be used to locate the data sets in a reporting interval that you specify at run time.
- Enter line action **S** to display the list of Archive Data Sets for the system as shown in the following panel.
Enter line action **S** (or **RUN** or '/') to run a Report Set for a particular data set. The runtime options are displayed as shown in the following figure.

Notice that the selected **System** is already specified for you.

When reporting on a selected Archive data set, the **Report Interval** is optional. It defaults to the time period that is spanned by the data in that data set, but you can overtype these values, or leave blank. If blank, the entire file is processed.

When reporting on an IMS Connect System, the **Report Interval** is required so that IMS Connect Extensions Automated File Selection can locate the data sets that are relevant to that time period.
Specify the Report Set that you wish to run. Press Prompt (F4) from the Report Set field to select from a list of available CEX Report Sets.

**Journal Files for a Connect System**

To specify the Journal Files (active or archive) for a Connect system, use the IMS Connect Extensions Journal Files view of the Connect System panel.

This data is used by the IMS PA dialog in the generation of JCL to run Connect Report Set and select Use specified journal files. However, if automated file selection with DBRC Log Selection is requested, the files specified on this panel are ignored as IMS PA will use Connect Journal File Selection to locate them based on a specified time period. See the “Combined IMS Log and Connect reporting” on page 197.

Each listed data set has the following attributes:

- **Exc** The data set is marked by a * if it is to be excluded from Connect reporting. Excluded data sets are not eligible for Report Set JCL generation.

  Enter the line action X to change (reverse) the exclude status of the data set.

- **Data Set Name (DSN)**

  Specify the name of the data set to be used as input for reporting. IMS PA uses these data set names in the JCL generation when you run a Connect Report Set and select Use specified journal files. The data sets must be cataloged. Data sets that are not excluded are concatenated in the Report Set JCL in the order in which they are specified on the panel.

  For a report to span more than one data set, the data sets must be specified in time sequence with no large time gaps between them; otherwise for single subsystem reporting, IMS PA would build multiple reports, and for multi-subsystem shared queue reporting, the results would be unpredictable.

  Specify the data set names in TSO format. Enclose fully-qualified names in quotes, otherwise your prefix will be added as the high-level qualifier.

- **Line actions:**

  The following line actions are valid for a data set in the list:

  - / Display the menu of line actions
  - I Insert a null row after this row
  - R Repeat this row
  - C Copy this row
  - M Move this row
  - A Move/Copy after this row
  - B Move/Copy before this row
  - D Delete this row
  - X Reverse this row’s exclude status (Excluded/Included)

- **Primary commands:**

  The following primary command is available:

  - RESET This command (or RES) removes all pending line actions and deletes any blank rows. You can also select Reset from Edit in the action bar.

**Note:** The SAVE command is not available from this panel. Changes are saved only on SAVE or Exit (F3) from the System Definitions panel.
Groups for a Connect System

To specify the groups that a Connect system belongs to, use the Groups view of the Connect System panel.

This data is used by the IMS PA dialog in the generation of JCL to run CEX Report Sets for Connect or combined IMS and Connect reporting.

For further information on groups, see Chapter 13, “Defining Groups,” on page 185.

For a description of the attributes, line actions, and primary commands, see "Groups for an IMS Subsystem" on page 176.
Chapter 13. Defining Groups

Groups is a facility that allows you to group IMS subsystems and IMS Connect systems for reporting purposes. All IMS subsystems participating in a shared queues sysplex environment must be defined in a Group. This enables IMS PA to report end-to-end response time for your shared queues transactions. IMS PA merges the Log Files from each system and "connects" the originating system's log records to the processing system's log records to obtain a complete picture of each transaction's life cycle.

About this task

Groups are used for Log and combined (Log and Connect) reporting. Monitor and OMEGAMON TRF and ATF reporting can only process a single IMS subsystem at a time.

Groups allow you to:

- Connect IMS subsystems participating in a sysplex. Reporting on the Group can produce end-to-end response time statistics for shared queue transactions.
- Connect IMS subsystems that use data sharing. Reporting on the Group can produce consolidated database reporting.
- Connect IMS subsystems for periodical or ad hoc reporting. Reporting on the Group can produce reports for each IMS subsystem in a single run.
- Connect IMS subsystems and Connect systems to produce combined IMS and Connect Form-based reports.

Procedure

On the IMS PA primary option menu, select option 2 Groups. (Alternatively, you can select SysDef in the action bar of a Report Set panel.) The Groups panel is displayed.

This is where you maintain your Group definitions. You can:

- Create, delete or rename a Group.
- Assign IMS systems to a Group
- Remove old systems from a Group

The Group details are:

<table>
<thead>
<tr>
<th>Group</th>
<th>Description</th>
<th>Row 1 to 2 of 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRODPLEX</td>
<td>Production IMS Sysplex</td>
<td>3 Yes Yes 0 No No</td>
</tr>
<tr>
<td>TESTPLEX</td>
<td>Test IMS Sysplex</td>
<td>2 Yes No 1 Yes Yes</td>
</tr>
</tbody>
</table>

Figure 101. Groups

**Group**  A Group name is an arbitrary name used to identify a group of related IMS subsystems for reporting purposes, such as systems belonging to a sysplex. For example, specify a Group name of PRODPLEX to identify all IMS subsystems in your production IMS sysplex. Group names can be up to eight alphanumeric (A-Z,0-9) or special (@,#,$) characters.
Description
Description is free format text up to 36 characters to describe the group of IMS subsystems. This is for your reference only, although IMS PA inserts it as a comment in your Report Set JCL.

IMS
Details of the IMS subsystems defined to the Group.

# (Count)
The number of IMS subsystems defined to the Group.

Auto
Yes indicates that all IMS Subsystems in the group are eligible for DBRC Log Selection. RECON or MDA data sets have been specified.

Tip: Use DBRC Log Selection for Group reporting. DBRC Log Selection will ensure that the Log Files for all subsystems in the Group contain data for the required reporting time interval. Refer to “Running reports using DBRC Log Selection” on page 202 to learn why using DBRC makes reporting easier.

Files
Yes indicates that all IMS Subsystems in the Group have Log Files eligible for inclusion in Report Set JCL.

Connect
Details of the Connect systems defined to the Group.

# (Count)
The number of IMS Connect systems defined to the Group.

Auto
Yes indicates that all IMS Connect systems in the Group are in the IMS Connect Extensions Definitions Data Set and eligible for Journal File Selection. This applies when Use automated file selection is requested at run time.

Files
Yes indicates that all IMS Connect systems in the Group have journal data sets specified in System Definitions and eligible for inclusion in report JCL. This applies when Use specified journal files is requested at run time.

Line actions:
The valid line actions for the list of groups are:
/
Display the menu of line actions
S
Select to modify or review the IMS Subsystems in the Group
I
Insert a Group
R
Repeat this row
C
Copy this row
M
Move this row
A
Move/Copy after this row
B
Move/Copy before this row
D
Delete this row

Note: A row command on this panel applies to the Group and its associated information on the subordinate panels. That is, repeating a group row also repeats the IMS subsystems for that group.

Primary commands:
The following primary commands are available:

NEW name
This command defines a new group. You can also select this from File in the action bar.
RESET This command (or RES) removes all pending line actions and deletes any blank rows. Reset is also available from Edit in the action bar.

SORT Group\l\Description
This command sorts the list of groups on the specified column. The default is Group. The order is retained on exit.
You can also sort by selecting a point-and-shoot column heading.

SAVE Save all changes to groups.

Note: The SAVE command is available from the Groups panel, being the top in the hierarchy of panels. Exit (F3) from a subordinate panel only temporarily retains changes. No changes are permanently saved until SAVE or Exit (F3) from the top panel. Cancel (F12) discards all unsaved changes on this and subordinate panels.

Assigning Systems to a Group

You can assign both IMS subsystems and Connect systems to a Group by editing an existing Group or defining a new group.
• To define a new Group, select option 2 Groups on the IMS PA primary option menu, and then type NEW on the command line of the Groups panel.
• To edit an existing Group, select option 2 Groups on the IMS PA primary option menu, and then enter line action S against a row on the Groups panel.

Both actions display the Group of Systems panel.

<table>
<thead>
<tr>
<th>Group</th>
<th>PRODPLEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>IMS Sysplex</td>
</tr>
<tr>
<td>DBRC options:</td>
<td>JES2 options:</td>
</tr>
<tr>
<td>IMSPLEX . . . .</td>
<td>(DBRC) Node . .</td>
</tr>
<tr>
<td>DBRCGRP . . . .</td>
<td>(SLDS) Node . .</td>
</tr>
</tbody>
</table>

--- IMS -- - Connect- 
/ System + Type VRM Description Auto Files Auto Files
- IMSA IMS 121 IMS Production System A Yes Yes
- IMSB IMS 121 IMS Production System B No Yes
- IMSC IMS 121 IMS Production System C No Yes

Figure 102. Group of Systems

From this panel, you can define a new Group by specifying a unique 1-8 character name and a description. To rename a Group, over-type the existing name.

For each Group, you can specify DBRC and JES2 options:

**IMSPLEX**
Specify the name of the IMSplex. DBRC Log Selection JCL is generated with the IMSPLEX parameter:

```
// EXEC PGM=IPIDBRC,PARM='IMSPLEX=name'
```
The Group IMSplex specification is used for Group report requests. The System IMSplex specification is used for System report requests, and is ignored when the System is part of a Group report request.

If multiple RECONs use this IMSplex, also specify the DBRC Sharing Group ID (DBRCGRP).

**DBRCGRP**

Specify the name of the DBRCGRP when multiple RECONs will be using the same IMSplex name.

DBRC Log Selection JCL is generated with the DBRCGRP parameter:

```
//IPIDBRC EXEC PGM=IPIDBRC,PARM='IMSPLEX=name, DBRCGRP=grp'
```

The Group DBRCGRP specification is used for reporting on a group of systems.

The System DBRCGRP specification is used when reporting on a system, and is ignored when reporting on a group.

(**DBRC**) **Node and SYSAFF**

Specify JES2 Control Statement options to run DBRC Log Selection jobs on the system where the RECONs Log files are available.

- **Node** is the network node where the job must execute, generating: /*XEQ Node and /*ROUTE PRINT Node.
- **SYSAFF** is the system name to process the job, generating: /*JOBPARM SYSAFF=name.

(SLDS) **Node and SYSAFF**

Specify JES2 Control Statement options to run report jobs on the system where the SLDS Log files are available.

- **Node** is the network node where the job must execute, generating: /*XEQ Node and /*ROUTE PRINT Node.
- **SYSAFF** is the system name to process the job, generating: /*JOBPARM SYSAFF=name.

**Note:** The JES2 Control Statements will only be generated if they are specified in dialog option 0.1 IMS PA Settings.

To specify the IMS subsystems and Connect systems that belong to the Group, enter the system in the **System** field or select one or more from a list of available systems. To select from a list, position the cursor on the **System** field and press **Prompt** (F4) or enter line action **S**.

Each system in the list has the following attributes:

**System**

Specify the IMS subsystem or Connect system identifier.

The order in which the systems are specified on the panel is not relevant to IMS PA. You may list them in the order that is convenient for you.

**Type**

Type of system. The associated system can be an IMS subsystem or a Connect system.

**VRM**

**VRM** is the release of the IMS subsystem. The supported releases are 121, 131, and 141.
IMS PA uses the **VRM** to perform release-dependent batch report processing. **VRM** is only applicable to IMS subsystems.

**Description**
Description of the IMS subsystem for your reference only.

A group can contain IMS subsystems, IMS Connect systems, or both.

**IMS**
For IMS systems in the group, Yes/No indicators are set as follows:

**Auto** Yes indicates that the IMS system is eligible for DBRC Log Selection, that is, it has DBRC settings (RECON or MDA data sets) specified.

**Files** Yes indicates that the IMS system has explicitly-specified log files.

**Connect**
For IMS Connect systems in the group, Yes/No indicators are set as follows:

**Auto** Yes indicates that the Connect system is eligible for automated journal file selection. That is, it is defined in the IMS Connect Extensions definitions repository and has at least one archive journal.

**Files** Yes indicates that the Connect system has explicitly-specified journal data sets.

**Note:** Although an indicator is shown for explicitly specified files, they are not used for group reporting. Group reporting is only available using batch processing when automated file selection is used to locate the files covering the requested report interval.
Chapter 14. IMS Connect systems and data sets

Prior to using IMS PA for IMS Connect reporting, you must implement IMS Connect Extensions Event Collection.

For information about how to set up and activate Event Collection, see the *IBM IMS Connect Extensions for z/OS: User’s Guide* (SC19-3632).

IMS PA analyzes and reports against the Event Collection data contained in Archive Journal data sets. To report this data, you must first identify the IMS Connect systems and data sets to IMS PA, and specify your report requests in IMS Connect Report Sets.

Note that IMS Connect systems and their Archive data sets are defined by IMS Connect Extensions, not IMS PA. IMS PA reports the event data recorded by IMS Connect Extensions, but does not provide maintenance functions for IMS Connect Extensions system definitions and Archive data sets.

To request Connect reports and extracts using the IMS PA dialog:

1. Use option 0.5 **IMS Connect Extensions Definitions Data Set** from the IMS PA primary option menu to specify the name of the IMS Connect Extensions Definitions Data Set that defines the IMS Connect Systems and Archive Data Sets that you want to report on.

   ![IMS Connect Extensions Definitions Data Set](image)

   **Figure 103. IMS Connect Extensions Definitions Data Set**

   Command ===> ____________________________________________________________

   Specify the name of the IMS Connect Extensions Definitions Data Set.

   Data Set Name . . . 'CEX.REPOSITORY'_________________________________________

2. Use option 3 **Report Sets** from the IMS PA primary option menu to specify your IMS Connect report requests in Report Sets of type CEX. You can enter line action RUN to select a Report Set, a category or an individual report for batch execution. For more information, see Chapter 24, “Requesting IMS Connect reports,” on page 547.

3. Use option 9 **IMS Connect** from the IMS PA primary option menu to view the list of IMS Connect Systems and Archive Data Sets. You can enter line action RUN to select a system or a data set for batch reporting.

   The remainder of this topic explains the functionality available from primary menu option 9 **IMS Connect**.

   When you select option 9 **IMS Connect**, the list of IMS Connect systems defined in the IMS Connect Extensions Definitions Data Set is displayed.
Two line actions are available:

- Enter line action **RUN** to run a Report Set against a particular system. The runtime options are displayed as shown in the following figure. Archive Selection will be used to locate the data sets in a reporting interval that you specify at run time.

- Enter line action **S** to display the list of Archive Data Sets for the system as shown in the following panel.

![IMS Connect System Definitions](image)

**IMS Connect System Definitions**
Row 1 to 4 of 4

**Command ==>** ____________________________________________________________

**Definitions Data Set . . : CEX.REPOSITORY**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Changed</th>
<th>ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>Stats collection system 1</td>
<td>2014/03/25 13:46:02</td>
<td>PXN</td>
</tr>
<tr>
<td>HWS0</td>
<td>Test1</td>
<td>2014/03/28 14:37:10</td>
<td>PXN</td>
</tr>
<tr>
<td>QA01</td>
<td>Test2</td>
<td>2014/01/20 16:44:42</td>
<td>PXN</td>
</tr>
<tr>
<td>TRICKLE</td>
<td>Stats collection system 2</td>
<td>2014/03/29 10:36:41</td>
<td>PXN</td>
</tr>
</tbody>
</table>

*Figure 104. IMS Connect Systems*

- Enter line action **S** to display the list of Archive Data Sets for the system as shown in the following panel.

![Archive Data Sets for TRICKLE](image)

**Archive Data Sets for TRICKLE**
Row 1 to 16 of 16

**Command ==>** ___________________________________________ **Scroll ==> PAGE**

**Select Archive data set to run report.**

<table>
<thead>
<tr>
<th>Data Set Name</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEX240.TEST.TRICKLE.D140323.T143727</td>
<td>2014-03-23 13.51</td>
<td>14.37</td>
</tr>
<tr>
<td>CEX240.TEST.TRICKLE.D140324.T095211</td>
<td>2014-03-23 14.37</td>
<td>09.52</td>
</tr>
<tr>
<td>CEX240.TEST.TRICKLE.D140324.T111624</td>
<td>2014-03-24 09.54</td>
<td>10.13</td>
</tr>
<tr>
<td>CEX240.TEST.TRICKLE.D140324.T113311</td>
<td>2014-03-24 11.16</td>
<td>11.33</td>
</tr>
<tr>
<td>CEX240.TEST.TRICKLE.D140324.T115845</td>
<td>2014-03-24 11.33</td>
<td>11.58</td>
</tr>
<tr>
<td>CEX240.TEST.TRICKLE.D140324.T121311</td>
<td>2014-03-24 12.05</td>
<td>12.13</td>
</tr>
<tr>
<td>CEX240.TEST.TRICKLE.D140324.T121656</td>
<td>2014-03-24 12.13</td>
<td>12.16</td>
</tr>
<tr>
<td>CEX240.TEST.TRICKLE.D140324.T125935</td>
<td>2014-03-24 12.17</td>
<td>12.59</td>
</tr>
<tr>
<td>CEX240.TEST.TRICKLE.D140324.T130328</td>
<td>2014-03-24 12.59</td>
<td>13.03</td>
</tr>
<tr>
<td>CEX240.TEST.TRICKLE.D140324.T133926</td>
<td>2014-03-24 13.27</td>
<td>13.39</td>
</tr>
<tr>
<td>CEX240.TEST.TRICKLE.D140324.T134154</td>
<td>2014-03-24 13.40</td>
<td>13.41</td>
</tr>
<tr>
<td>CEX240.TEST.TRICKLE.D140324.T140219</td>
<td>2014-03-24 13.45</td>
<td>14.02</td>
</tr>
<tr>
<td>CEX240.TEST.TRICKLE.D140324.T142133</td>
<td>2014-03-24 14.09</td>
<td>14.21</td>
</tr>
</tbody>
</table>

*Figure 105. IMS Connect System Archive Data Sets*

Enter line action **S** (or **RUN** or **/) to run a Report Set for a particular data set. The runtime options are displayed as shown in the following figure.
Notice that the selected System is already specified for you.

When reporting on a selected Archive data set, the Report Interval is optional. It defaults to the time period that is spanned by the data in that data set, but you can overwrite these values, or leave blank. If blank, the entire file is processed.

When reporting on an IMS Connect System, the Report Interval is required so that IMS Connect Extensions Automated File Selection can locate the data sets that are relevant to that time period.

Specify the Report Set that you wish to run. Press Prompt (F4) from the Report Set field to select from a list of available CEX Report Sets.

**Run Connect Report Set**

The IMS PA dialog generates the JCL for batch report processing. From the IMS Connect System Definitions panel, enter the RUN command to select an IMS Connect System or Archive data set for reporting.

**About this task**

The following figure shows an example of how to request System reporting.

![IMS Connect System Definitions](image-url)

**Figure 107. RUN Connect System**
Before IMS PA generates the JCL, the Run Report Set panel is displayed to prompt you to specify runtime options.

Specify your desired runtime options. When the specification is complete, press Enter to proceed with JCL generation.

Note that the selected Connect System is already specified for you. Specify the Report Set that you want to report against. Press Prompt (F4) from the Report Set field to select from a list of available CEX Report sets.

The fields on the Run Report Set panel are:

**System Selection**
The IMS Connect System that you want to report on. IMS PA builds the JCL using the Archive Data Sets defined for this system in the IMS Connect Extensions Definitions Data Set that you specified in your Profile Options.

When the run request is invoked from an IMS Connect System or Archive Data Set, the system name is protected and cannot be overtyped.

**Report Selection**
Specify the name of a Connect Report Set that defines the report requests that you want to run.

Type the name directly or press Prompt (F4) to select from a list of available CEX Report sets.

**Report Interval**
When reporting on an IMS Connect System, the Report Interval is required so that IMS Connect Extensions Automated File Selection can locate the data sets that are relevant to that time period. When reporting on a specific Archive Data Set, the Report Interval is optional.

Default: As previously saved. However, if reporting on a specific Archive Data Set, the From and To date/time fields are primed with the time stamps of the first and last records of the data set. You can overtype these values or leave blank. If blank, the entire file is processed.

The Report Interval allows selection of a subset of the input data for passing to the report processors. Records with time stamps on or after the From date/time and before the To date/time are selected for processing.

---

**Figure 108. Run Connect Report Set for selected IMS Connect System**

Specify run options then press Enter to continue submit.

<table>
<thead>
<tr>
<th>Command ==&gt;</th>
<th>Run Report Set</th>
</tr>
</thead>
</table>

**System Selection:**
System . . . . HWSH

**Report Selection:**
Report Set . . .

**Report Interval:**
YMM/DD HH:MM:SS:TH

**Execution Mode:**
1. Submit Report Set
2. Edit JCL before submit
3. Edit JCL with command input

**Unresolved Data Sets Options:**
1. Issue error message
2. Edit unresolved JCL

Enter "/" to select option
_Bypass run-time options prompt_
Reducing the time period can significantly reduce processing time for generating the reports in the Report Set.

Date can be either a calendar date or a relative date. Calendar dates must conform to your Preferred Date Format in Profile Options. Relative dates are specified as 0, -1, -2, ... to signify a date relative to the current date. 0 represents today, -1 yesterday, -2 two days ago, and so on. If both From and To dates are specified, they must be in the same format.

Time is optional. If From time is not specified, it defaults to the start of the day. If Stop time is not specified, it defaults to the end of the day. Time is expressed as hh:mm:ss:th for hours, minutes, seconds, tenths and hundredths of a second using colon delimiters.

The date/time range is generated as parameter input in the JCL:

• For IMS Connect Extensions Automated File Selection:

//IPIPARAM DD *
FROM=(yyyy/mm/dd,hh:mm:ss:th)
TO=(yyyy/mm/dd,hh:mm:ss:th)

or

//IPIPARAM DD *
FROM=(-nnn,hh:mm:ss:th)
TO=(-nnn,hh:mm:ss:th)

• For IMS Connect Extensions Automated File Selection and Report Set processing:

//IPIOPTS DD *
IMSPACEX START(yyyy/mm/dd,hh:mm:ss:th),
STOP(yyyy/mm/dd,hh:mm:ss:th)

or

//IPIOPTS DD *
IMSPACEX START(-nnn,hh:mm:ss:th),
STOP(-nnn,hh:mm:ss:th)

Execution Mode

Specify whether to execute the Report Set or generated commands, and whether you want to edit the JCL before submit. Editing JCL before submit will enable you to save the JCL in an external data set for automated job scheduling or ad hoc report requests.

Default: Set by the command (RUN, SUB, JCL, JCM) that invoked this panel.

The options are:

1. Submit the Report Set. Same as the SUBMIT or SUB command. This directly submits a batch job to execute the Report Set. The Report Set JCL contains the statements:

//IPIRSET DD DSN=ReportSets.DSN(ReportSetName),DISP=SHR
//IPIOBJL DD DSN=ObjectLists.DSN,DISP=SHR
//IPIFORM DD DSN=ReportForms.DSN,DISP=SHR

2. Edit JCL before submit. Same as the JCL command. This generates the same JCL as SUBMIT, but allows you to edit it.

3. Edit JCL with command input. Same as the JCLCMD or JCM command. This generates JCL in which the Report Set, and any Object Lists and Distributions it uses, are converted to a stream of commands and displayed to allow you to edit them. For a Connect Report Set, the JCL contains the statements:
//IPICMD DD *
  IMSPACEX ....
  INCL|EXCL(...),...
  IMSPACEX EXECUTE

Note that when you enter RUN at the report-level as a line action or
override, option 3 is the only option available to you.
Chapter 15. Automated File Selection

DBRC Log Selection is a facility of IMS PA that uses DBRC to automate the selection of the log files for report processing.

This facility offers an alternative to having to explicitly specify log input files. Simply specify the time period for which log reporting is required, and IMS PA will use DBRC to select the SLDS files covering that time period.

DBRC Log Selection can be used as:
- An alternative to specifying log input file names prior to report submission
- A facility to generate report JCL for submission by an automated job scheduler

Related concepts:
“Automated job scheduling” on page 132

IMS PA reports can be run on a daily basis using an automated job scheduler.

Combined IMS Log and Connect reporting

By reporting against a Group of IMS and Connect systems, you can get a complete end-to-end transit picture of IMS Connect transactions. This facility is only available to Form-based Connect List and Summary reports and extracts.

Figure 109 illustrates how IMS PA uses automated file selection to locate the files that are relevant to the specified systems and report period.

Automated file selection employs the following utilities:
1. DBRC Log Selection to locate the relevant log files for the specified IMS systems. For more information, see Chapter 15, “Automated File Selection,” on page 197.

2. IMS Connect Extensions Automated File Selection to locate the relevant journal data sets (archive or active) for the specified IMS Connect systems. For more information, see “IMS Connect Extensions Journal File Selection” on page 210.

Sample JCL: Combined IMS and Connect reporting

This JCL is produced when you run a CEX Report Set against a group of IMS and Connect systems.

```batch
//IMSPA JOB (ACCOUNT), 'NAME'
//IPIDBRC EXEC PGM=IPIDBRC
//STEPLIB DD DSN=IMSPA.V440.SIPILINK,DISP=SHR
//SYSUDUMP DD SYSOUT=*  
//SYSPRINT DD SYSOUT=*
//IPIPRINT DD SYSOUT=*  
//IPIRDR DD SYSOUT=(A,INTRDR)
//IPIWRK1 DD SPACE=(CYL,(1,1,1)),UNIT=SYSDA
//IPIWRK2 DD SPACE=(CYL,(3,1)),UNIT=SYSDA
//CEXDEF DD DSN=CEX.REPOSITORY,DISP=SHR
//SYSIN DD SPACE=(CYL,(1,1)),UNIT=SYSDA  
//IPIPARM DD *
FROM=(2014/01/10,02:24:00:00)
TO=(2014/02/15,02:00:00)
IMSID=ICD0
VRM=121
CAT=YES
OLDS=YES
RESLIB=IMS.V121.SDFSRESL
RECON1=ICD0.V121.RECON1.D180106
RECON2=ICD0.V121.RECON2.D180106
RECON3=ICD0.V121.RECON3.D180106
IMSID=ICD1
VRM=121
CAT=YES
OLDS=YES
RESLIB=IMS.V121.SDFSRESL
RECON1=ICD1.V121.RECON1.D180106
RECON2=ICD1.V121.RECON2.D180106
RECON3=ICD1.V121.RECON3.D180106
HWSID=HWSCEX1
HWSID=HWSCEXA

/*
//IPISKEL DD DATA,DLM=$$
//IMSPA JOB (ACCOUNT), 'NAME'
//IPI EXEC PGM=IPIMAIN,PARM='V121'
//STEPLIB DD DSN=IMSPA.V440.SIPILINK,DISP=SHR
//SYSPRINT DD SYSOUT=*  
//IPICMOD DD *
//IMSPALOG IGNORSEQ,LOG,EXEC
/*
//IPISMQW1 DD DISP=SHR,DSN=IPI.$$$.PUNCH
$$_*

Figure 110. JCL for automated file selection: combined reporting

1 The CEXDEF DD statement is required to obtain the IMS Connect Extensions journal data set names. Only one IMS Connect Extensions definitions data set is allowed.
OLDS=YES identifies that OLDS data sets may be required for this IMS subsystem. This must be specified for each IMSID where OLDS selection is being requested.

HWSID=cccccccc identifies an IMS Connect system within the CEXDEF repository. Multiple HWSID systems can be specified, but they must be contained in the CEXDEF repository. IMS Connect Extensions Automated File Selection utility will locate the journal files for this system that are applicable to the requested report period.

Preparing for DBRC Log Selection

Before you can use DBRC Log Selection, you need to define IMS subsystems to IMS PA. After this step, you can submit reports without having to return to System Definitions to specify log input files.

About this task

Security note: The IMSPLEX authorization exit IPIUAUTH ensures that the DBRC Log Selection utility IPIDBRC always uses the correct IMSPLEX identification settings. An incorrect EXEC PARM='IMSPLEX=xxxxx, DBRCGRP=xxx' specification can inadvertently cause DBRC to change control information in the RECON data sets and disrupt IMS. As a safeguard, consider installing the Request Authorization Exit for IMSPLEX security. See the authorization exit and associated install JCL supplied in the sample library, and "Authorization Exit for IMSPLEX security" on page 723.

Procedure

To prepare for using DBRC Log Selection:

1. From the Primary Option menu, select option 1 System Definitions to display the table of your IMS subsystems.
   For the first time user, no IMS subsystems will be defined. For a user upgrading from an earlier IMS PA release, your IMS subsystems should already be defined.

2. Enter the line action S against the IMS subsystem that is to use DBRC Log Selection. To go to the IMS Subsystem view that displays the DBRC Settings, enter View number 1 or use the Right or Left function keys.
3. Enter the IMS subsystem details. For detailed information, refer to "DBRC Settings for an IMS Subsystem" on page 172.

**IMS Subsystem ID**

The unique identifier of the IMS subsystem.

**IMS Version (VRM)**

IMS Version. IMS PA supports IMS versions 121, 131, and 141.

**RESLIB Data Set**

RESLIB data set name. For DBRC Log Selection, the RESLIB data set must contain the DBRC API routine DSPAPI00. You do not need to specify the RESLIB data set name if the modules reside in the system link list (LNKLST).

The RESLIB data set can also be used to determine the IMS version if it contains module DFSVC000. IMS PA will use the IMS version from information in module DFSVC000 instead of the VRM specified explicitly.

**DBRC Subsystem ID**

The DBRC Subsystem ID defines the DBRC Subsystem (SSID) that owns the SLDS entries.

Specify DBRC Subsystem ID when the SSID is longer than 4 characters or different to the IMS Subsystem ID.

- For IMS and DBCTL subsystems, the DBRC Subsystem ID is the IMSID value from IMSCTRL SYSGEN macro (four characters). In this case, DBRC Subsystem ID need not be specified. DBRC Log Selection uses the IMS Subsystem ID as the DBRC Subsystem ID.
- For Batch and Utility subsystems, specify the job name.
- For XRF, specify the RSENAME (Recovery Service Element) of the IMS Subsystems (active and alternate).
DBRC IMSplex name
Specify the name of the IMSplex.
DBRC Log Selection JCL is generated with the IMSPLEX parameter:

```
//IPIDBRC EXEC PGM=IPIDBRC,PARM='IMSPLEX=name'
```

The Group IMSplex specification is used for reporting on a group of systems.

The System IMSplex specification is used for System report requests, and is ignored when the System is part of a Group report request.

If multiple RECONS use this IMSplex, also specify the DBRC Sharing Group ID (DBRCGRP).

DBRC Sharing Group ID
Specify the DBRC group ID defined in the RECON data set used by the DBRC group.
DBRC Log Selection JCL is generated with the DBRCGRP parameter:

```
//IPIDBRC EXEC PGM=IPIDBRC,PARM='IMSPLEX=name, DBRCGRP=grp'
```

Specify IMSPLEX and DBRCGRP as you would when using the Database Recovery Control utility (DSPURX00):
```
EXEC PGM=DSPURX00,PARM='IMSPLEX=plexname, DBRCGRP=xxx,READONLY'
```

The Group DBRCGRP specification is used for reporting on a group of systems.

The System DBRCGRP specification is used when reporting on a system, and is ignored when reporting on a group.

RECON Data Set 1,2,3
The DBRC RECON data set names used by this IMS subsystem. DBRC requires at least two RECON data set names to be specified. The RECON data set names can be omitted if the MDA data set is specified.

MDA Data Set
The IMS MDA (MVS Dynamic Allocation) data set for this IMS subsystem. If the RECON data set names are not specified, IMS PA uses the MDA data set to determine the RECON data set names.

Log Data Sets are Cataloged
If the SLDS data sets are not cataloged, IMS PA will include UNIT, VOLSER, and LABEL parameters in the Report Set JCL. If cataloged, the parameters will be omitted.

It is recommended that if your IMS online systems use MDA to dynamically allocate the RECON data sets, then MDA should also be used for IMS PA.

IMS PA ensures RECON data set integrity by:
• Using the DBRC API routine DSPAPI00.
• Ensuring that there is no data set name conflicts between RECON and MDA specifications.

Sometimes, it is not possible to allow users to have access to the DBRC RECON data sets, because the enqueue issued by the DBRC Utility can cause your IMS online system to wait. If this is a problem, take a copy of your live RECON data sets and instruct IMS PA to use the copies by specifying the RECON copy data set names explicitly. For an example of how to do this, see “DBRC Log Selection using RECON copy data sets” on page 207.
Note that IMS V10 introduced a READONLY parameter which IMS PA uses to avoid the enqueue.

4. After you have completed updating the subsystem information, exit the IMS Subsystem panel. You will notice that the DBRC indicator for the subsystem is set to Yes. This indicates that the IMS subsystem is eligible for report submission using DBRC Log Selection.

5. Repeat steps 2 to 4 for each IMS subsystem that will use DBRC Log Selection.

6. Optionally, specify the DASD Work File Unit name. If your system does not have a default DASD Unit Name, such as SYSDA, then you will need to specify a unit name in your settings, otherwise you can use the system default. DBRC Log Selection uses temporary DASD work files when retrieving Log file details via DBRC. From the Primary Option menu, select option 0.1 IMS PA Settings. Specify the DASD Work File Unit Name for your system.

This completes the setup for DBRC Log Selection, and you are now ready to submit extract, CSV, or report JCL using this facility.

### Running reports using DBRC Log Selection

After you have specified your IMS subsystem DBRC definitions in System Definitions, you can submit report JCL using DBRC Log Selection. Submitting Report Sets using DBRC Log Selection is the same as when using explicit Log files, except you must specify a date/time range for reporting. This enables IMS PA to select the correct Log files for this time period.

**Procedure**

1. From the IMS PA primary option menu, select option 3 Report Sets. Prepare your Report Sets in the usual way. For details on how to do this, see [Chapter 7, "Report Sets," on page 123.]

2. Enter the RUN command to run your Report Set. The Run Report Set panel is displayed.

3. From the Run Report Set panel, specify the required Report Interval.

   The date can be specified as a relative date to the current date. This indicates that when DBRC is asked to select the Log files for processing, files will be selected for the day relative to the current date. Thus, 0 means select Log files for today, -1 yesterday, -2 two days ago, and so on. By using relative dates, report JCL can be saved into a data set for automated job scheduling, and the JCL will never need to be updated.

   The date/time range specified here at submission time overrides the Global Report Interval time range specified in the Report Set or batch commands.

4. Optionally, change your System Selection to report against another IMS subsystem or Group.

5. For Log Selection Options, select 2 Use DBRC to select log files.

6. Optionally, change Unresolved Data Set Options to issue an error message or continue to create the JCL with missing files marked <unresolved>.

7. Optionally, change Execution Mode to instruct IMS PA how to build the report JCL. Editing JCL before submit will enable you to save the JCL in an external data set for automated job scheduling, or ad hoc report requests.

8. To redirect output to the IMS Tools Knowledge Base, select Write to the ITKB repository and specify the ITKB server name.

9. Press Enter to complete the request. IMS PA constructs the JCL according to your requirements.
For the SUBMIT command, IMS PA submits the Report JCL (assuming no missing data sets). For the JCL or JCLCMD commands, IMS PA presents the Report JCL in ISPF edit.

**DBRC Log Selection utility**

IMS PA DBRC Log Selection is performed in batch by the DBRC Log Selection Utility, IPIDBRC. Report JCL built by the dialog when DBRC Log Selection is used differs from Report JCL for explicitly specified log files.

Using DBRC Log Selection causes IMS PA to execute two jobs:
1. The DBRC Log Selection Utility, which invokes DBRC to select Log files.
2. Report processing, submitted by the DBRC Log Selection Utility.

The DBRC Log Selection JCL is a single step job whose JCL is constructed from the options specified in the dialog.

The DBRC Log Selection Utility performs the following tasks:
- Selects the Log files for processing, by invoking DBRC.
- Constructs the Report JCL, appending Log file DD statements at the end of the Report JCL skeleton or after a work file (IPISMQW1) DD card. This allows the JCL skeleton to be multistep. The dialog generates the JCL with the IPISMQW1 DD statement. DBRC log selection discards it if no merge is required, or replicates it, incrementing the last character if multiple merge work data sets are required.
- Submits the constructed Report JCL.

The execution of the Report Set (or batch commands) takes place in a second job, submitted by the DBRC Log Selection Utility.

Splitting Log selection and Report processing into two jobs enables IMS PA to avoid dynamic allocation of Log files on tape devices. Leaving allocation of tape devices to JES or the initiator avoids potential job failures.

**Report Set JCL using DBRC Log Selection**

The JCL built by IMS PA for the batch execution of DBRC Log Selection and Reporting is based on the sample library member IPILDBRC.

DBRC Log Selection performs the following tasks:
- Selects the Log files for processing, by invoking DBRC.
- Constructs the Report JCL
- Submits the Report JCL

Execution parameters are passed to the DBRC Log Selection utility in DDname IPIPARAM:

```
FROM=(yyyymmdd,hhnnmsssth)
```

Reporting start date/time. Date is required, and can be an actual date specification, or a relative date. Relative dates are specified as 0, -1, -2,.... and signify a date relative to the current date. 0 represents today, -1 yesterday, -2 two days ago, and so on. Time is optional, and if not specified, defaults at run time to the start of the day.
TO=(yyyy/mm/dd,hh:mm:ss:th)
Reporting end date/time. Date is required, and must be in the same format as the FROM specification. Time is optional, and if not specified, defaults to the end of the day.

TAPES=nn
Number of tape/cartridge devices available to IMS PA for report processing. TAPES is only required when processing log input for multiple IMS subsystems in a sysplex, and only then when there are more IMS subsystems than tape devices available. IMS PA supports up to 35 tape devices.

HWSID=cccccccc
IMS Connect system ID. The name of an IMS Connect system submitted for reporting. Multiple statements may be specified for reporting on a group of systems.

IMSID=ssss
IMS subsystem ID.
For sysplex processing, multiple subsystems may be specified. The following parameters must be preceded by an IMSID specification, and apply to that subsystem:

SSID=subsysid
The DBRC subsystem (SSID) that owns the SLDS entries. Specify the DBRC subsystem ID when the SSID is longer than 4 characters or different to the IMS subsystem ID.
For IMS and DBCTL subsystems, the DBRC subsystem ID is the IMSID value from the IMSCTRL SYSGEN macro. In this case, you can leave the DBRC subsystem ID blank, then IMS PA DBRC Log Selection will use the IMS subsystem ID as the DBRC subsystem ID.
For batch and utility subsystems, specify the job name.
For XRF, specify the RSENAME of the IMS subsystems.

VRM=vrm
IMS version. IMS PA supports IMS versions 121, 131, and 141.

CAT=YES|NO
Whether the log data sets are cataloged. If not, IMS PA will include UNIT, VOLSER, and LABEL parameters in the Report Set JCL.

OLDS=NO|YES
Whether to use OLDS data sets in the event that SLDS files are not available for the requested reporting time period.

SLDS=SEC|PRI
Specify SEC to use secondary SLDS data sets (if they are available) instead of primary SLDS data sets. Specify PRI to only use primary SLDS data sets.

RESLIB=dsname
IMS RESLIB data set. The DBRC API routine DSPAPI00 must reside in this data set.

RECON1=dsname
First RECON data set name.
RECON2=dsname
Second RECON data set name. DBRC requires at least two RECON data sets to be specified.

RECON3=dsname
Third RECON data set name.

MDA=dsname
MDA (MVS Dynamic Allocation) data set name. The RECON MDA members must reside in this data set. Explicit RECON data set name specification is not required if MDA is specified.

IMS PA builds the JCL to execute the DBRC Log Selection utility IPIDBRC using the following options specified from the dialog.

**JOB**  **Job Statement Information** in IMS PA Settings.

**EXEC PGM=IPIDBRC[,PARM='IMSplex=\'name[,DBRCGRP=\'grp\']']**
Execute the DBRC Log Selection utility.

If the RECON data sets that you want to use belong to an IMSplex:
- Specify the name of the IMSplex in the PARM parameter. This is generated from the IMS Subsystem **DBRC IMSplex name**.
- The structured call interface (SCI) address space must be running on the system on which you want to run the automated file selection utility.

Specify the **DBRC Sharing Group ID** (DBRCGRP) defined in the RECON data set used by the DBRC group.

**STEPLIB DD**
**IMS PA Load Library** and optionally **User Program Load Library** in IMS PA Settings.

**SYSPRINT DD**
Message output file for the DBRC API routine DSPAPI00.

**IPIPRINT DD**
IMS PA DBRC Log Selection message output file.

**IPIRDR**
Internal Reader file. IMS PA submits Report Set JCL to this file after DBRC Log Selection has completed.

**IPIWRK1**
Work file PDS.

**IPIWRK2**
Work file data set.

**SYsin DD**
Work file data set.

**IPIPARM DD** *
DBRC Log Selection parameter input.

**IPIskel DD**
Log Report JCL skeleton. IPIskel contains the Report Set JCL, without the log input files specified.

**CEXDEF DD**
**IMS Connect Extensions Definitions Data Set** specified in your Profile Options. This data set contains the IMS Connect Extensions system definitions.
Sample JCL with DBRC Log Selection: Log Report Set

The following JCL is produced when you run a Report Set using DBRC to select the log files.

```plaintext
//IMSPA JOB (ACCOUNT),'NAME'
/*
/* IMS PA Report Set SAMPLOG - Sample Log Report Set
/*
/IPIDBRC EXEC PGM=IPIDBRC
//STEPLIB DD DSN=IMSPA.V440.SIPILINK,DISP=SHR
//SYSUDUMP DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
//IPIPRINT DD SYSOUT=*
//IPIRDR DD SYSOUT=(A,INTRDR)
//IPIWRK1 DD SPACE=(TRK,(1,1,1)),UNIT=SYSDA
//IPIWRK2 DD SPACE=(TRK,(3,1)),UNIT=SYSDA
//SYSIN DD SPACE=(TRK,(3,1)),UNIT=SYSDA
//IPIPARM DD *
FROM=(2014/02/25,09:00:00:00)
TO=(2014/02/25,16:00:00:00)
IMSID=IMSB
VRM=141
CAT=NO
OLDS=NO
RESLIB=IMS.V141.SDFSRESL
RECON1=IMSB.V141.RECON1.D180114
RECON2=IMSB.V141.RECON2.D180114
RECON3=IMSB.V141.RECON3.D180114
MDA=IMS.MDALIB
/*
/IPISKEL DD DATA,DLM= $$
//IMSPA JOB (ACCOUNT),'NAME'
/*
/* IMS PA Report Set SAMPLOG - Sample Log Report Set
/*
/IP1 EXEC PGM=IPIMAIN,PARM='V141'
//STEPLIB DD DSN=IMSPA.V440.SIPILINK,DISP=SHR
/* Sysout data set
//SYSPRINT DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//IPICMD DD *
IMSPALOG IGNORSEQ,LOG,EXEC
/* Report Set
//IPISET DD DSN=IMSPA.V440.RSET(SAMPLOG),DISP=SHR
//IPISMQW1 DD DISP=(NEW,DELETE,DELETE),
//       UNIT=SYSDA,SPACE=(CYL,(100,20)),RLSE) 2
$$
```

Figure 11. JCL for DBRC Log Selection: Log Report Set

1 OLDS=YES added to the sub parameters of an IMSID identifies that OLDS data sets may be required. This must be specified for each IMSID where OLDS selection is being requested.

2 OLDS=YES is used when the date and time specified in the TO parameter is beyond the last IMS log available. The selection process then looks for OLDS data sets that are eligible for archive (but are yet to be archived) and that are within the time range, and adds them to the created JCL.

3 OLDS=NO specifies that the OLDS data sets will not be selected even if the IMS logs do not cover the complete time range requested. This is the default.
Specify the DCB attributes for allocating the Shared Queue Merge Work File in your profile options 0.3 Shared Queue Settings (see Figure 14 on page 74).

DBRC Log Selection using RECON copy data sets

IMS PA uses the standard DBRC interfaces.

DBRC Log Selection uses the DBRC API service DSPAPI00, only requiring READ access intent with the READONLY=YES option.

However, some installations do not allow you to access the online RECON data sets, for reasons such as:

• User batch jobs can cause IMS systems to wait, holding up critical transaction workload.
• Prior to IMS version 10, update intent to the RECONs was required.

In such installations, DBRC Log Selection cannot be used against active RECON data sets. An alternative is to use copies of the RECON data sets.
Creating copies of the active RECON data sets

This JCL creates copies of the active RECON data sets.

```
//IMSPA JOB, NOTIFY=&SYSUID
//*
//DELETE EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT**
//SYSIN DD *
DELETE ('OFFLINE.IMSP.RECON1' -
     'OFFLINE.IMSP.RECON2' -
     'OFFLINE.IMSP.RECON3')
SET MAXCC=0
/*
//DEFINE EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT**
//SYSIN DD *
DEFINE CLUSTER (NAME('OFFLINE.IMSP.RECON1') -
    MODEL('IMSP.RECON1'))
DEFINE CLUSTER (NAME('OFFLINE.IMSP.RECON2') -
    MODEL('IMSP.RECON2'))
DEFINE CLUSTER (NAME('OFFLINE.IMSP.RECON3') -
    MODEL('IMSP.RECON3'))
/*
//REPRO EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT**
//I1 DD DISP=SHR,DSN=IMSP.RECON1
//O1 DD DISP=SHR,DSN=OFFLINE.IMSP.RECON1
//I2 DD DISP=SHR,DSN=IMSP.RECON2
//O2 DD DISP=SHR,DSN=OFFLINE.IMSP.RECON2
//I3 DD DISP=SHR,DSN=IMSP.RECON3
//O3 DD DISP=SHR,DSN=OFFLINE.IMSP.RECON3
//SYSIN DD *
REPRO IFILE(I1) OFILE(O1)
SET MAXCC=0
REPRO IFILE(I2) OFILE(O2)
SET MAXCC=0
REPRO IFILE(I3) OFILE(O3)
SET MAXCC=0
/*
```

Figure 112. JCL for creating copies of the active RECON data sets

1 Active RECON data set names: IMSP.RECONn

2 Copied RECON data set names: OFFLINE.IMSP.RECONn

Note that one of the REPRO requests may fail. This can occur against the spare RECON data set, but this is not a problem and can be ignored.

You will need to repeat this step periodically so that the copies contain the most recent SLDS data sets.

Changing the system definition

The IMS PA system definitions must be modified to specify the RECON data set copies.

The following system definition for IMS subsystem IMSP demonstrates how to specify the alternate RECON data set names.
Ensure that the IMS version is correct. Both DBRC Log Selection and batch reporting need this information to execute their correct version-dependent processors.

The RESELIB data set must contain the DBRC utility or API module.

Specify the data set names of the RECON copies.

The MDA data set specification must be blank to ensure that the RECON copies are used.

### Requesting DBRC Log Selection using the copies

There is no difference in the way you request DBRC Log Selection when using RECON copies.

The following Report Set runtime panel shows the settings required to request DBRC Log Selection.

---

<table>
<thead>
<tr>
<th>Command !==&gt;</th>
<th>More: &lt; &gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMS Subsystem definition:</td>
<td></td>
</tr>
<tr>
<td>IMS Subsystem ID . . . IMSP IMS Version (VRM) . . . 141 +</td>
<td></td>
</tr>
<tr>
<td>Description . . . . IMS Production</td>
<td></td>
</tr>
<tr>
<td>RESELIB Data Set . . . 'IMSP.SDFSRESL'</td>
<td></td>
</tr>
<tr>
<td>Specify required view . .</td>
<td>1. DBRC Settings 4. Groups</td>
</tr>
<tr>
<td>2. Log Files 5. OMEGAMON TRF Files</td>
<td></td>
</tr>
<tr>
<td>3. Monitor Files 6. OMEGAMON ATF Journals</td>
<td></td>
</tr>
<tr>
<td>Specify DBRC Settings for automated log file selection:</td>
<td></td>
</tr>
<tr>
<td>DBRC Subsystem ID . . . . (Specify RENAME for XRF)</td>
<td></td>
</tr>
<tr>
<td>DBRC IMSplex name . . . . (RECON Loss Notification)</td>
<td></td>
</tr>
<tr>
<td>DBRC Sharing Group ID . . . (Parallel RECON Access)</td>
<td></td>
</tr>
<tr>
<td>RECON Data Set 1 . . . 'OFFLINE.IMSP.RECON1'</td>
<td>3</td>
</tr>
<tr>
<td>2 . . . 'OFFLINE.IMSP.RECON2'</td>
<td></td>
</tr>
<tr>
<td>3 . . . 'OFFLINE.IMSP.RECON3'</td>
<td></td>
</tr>
<tr>
<td>MDA Data Set . . . .</td>
<td>4</td>
</tr>
<tr>
<td>Enter &quot;/&quot; to select option JES2 options:</td>
<td></td>
</tr>
<tr>
<td>Log Data Sets are Cataloged (DBRC) Node . . . SYSAFF . . .</td>
<td></td>
</tr>
<tr>
<td>Use OLDS that are not Archived (SLDS) Node . . . SYSAFF . . .</td>
<td></td>
</tr>
<tr>
<td>Use Secondary Log Data Sets</td>
<td></td>
</tr>
<tr>
<td>Figure 113. Specify the alternate RECON data set names</td>
<td></td>
</tr>
</tbody>
</table>

---

**Note:**

1. Ensure that the IMS version is correct. Both DBRC Log Selection and batch reporting need this information to execute their correct version-dependent processors.

2. The RESELIB data set must contain the DBRC utility or API module.

3. Specify the data set names of the RECON copies.

4. The MDA data set specification must be blank to ensure that the RECON copies are used.

---

**Chapter 15. Automated File Selection  209**
IMS Connect Extensions Journal File Selection

IMS Connect Extensions Journal File Selection is an IMS PA facility that automatically selects the Journal files for report processing.

This facility is similar to DBRC Log Selection. It offers an alternative to having to explicitly specify or select the Journal input files. Simply specify the time period for which IMS Connect reporting is required, and IMS PA will select the Journal files covering that time period.

The generated JCL refers to the RECON copies.

```
//IMSPA JOB ,NOTIFY=&SYSUID
/*/ IMS PA Report Set SAMPLOG - Sample Log Report Set */
//IPIDBRC EXEC PGM=IPIDBRC
//STEP1LIB DD DSN=IMSPA.V440.SIPILINK,DISP=SHR
//SYSUDUMP DD SYSOUT=* 
//SYSPRINT DD SYSOUT=* 
//IPIRDR DD SYSOUT=(A,INTRDR) 
//IPIWRK1 DD SPACE=(CYL,(1,1,1)),UNIT=SYSDA 
//IPIWRK2 DD SPACE=(CYL,(3,1)),UNIT=SYSDA 
//SYSIN DD SPACE=(CYL,(1,1)),UNIT=SYSDA 
//IPIPARM DD * 
FROM=(-1,10:00:00:00) 
TO=(-1,11:00:00:00) 
IMSID=IMSP 
VRM=121 
CAT=NO 
OLDS=NO 
RESLIB=IMSP.SDFSRESL 
RECON1=OFFLINE.IMSP.RECON1 
RECON2=OFFLINE.IMSP.RECON2 
RECON3=OFFLINE.IMSP.RECON3 
/*/ 
//IPISKEL DD DATA,DLM=\$ 
... 
```

Figure 115. JCL for DBRC Log Selection using the RECON copies

IMS Connect Extensions Journal File Selection
Journal File Selection can be used as:
- An alternative to specifying or selecting Journal input file names prior to report submission
- A facility to generate report JCL for submission by an automated job scheduler

Preparing for Journal File Selection
To prepare for using Journal File Selection, you need to first specify the IMS Connect Extensions Definitions Data Set.

From the IMS PA primary option menu, select option 0.5 **IMS Connect Extensions Definitions Data Set** to display the panel where you can enter the name of the IMS Connect Extensions data set.

Running reports using Journal File Selection
After you have specified your IMS Connect Extensions Definitions Data Set, you can submit report JCL using Journal File Selection. This enables IMS PA to select the correct Journal files for the time period.

Procedure
To use Journal File Selection:
1. From the IMS PA primary option menu, select option 3 **Report Sets**. Prepare your CEX Report Sets in the usual way.
2. Issue the RUN command to run your Report Set. The Run Connect Report Set panel is displayed.
3. From the Run Report Set panel, specify the required **Report Interval**.
4. Specify the required IMS Connect system in **System Selection**.
5. Select **File Selection Option 2, Automated file selection**.
6. Optionally, change **Execution Mode** to instruct IMS PA how to build the report JCL. Editing JCL before submit will enable you to save the JCL in an external data set for automated job scheduling, or ad hoc report requests.
7. Press Enter to complete the request.

IMS PA constructs the JCL according to your requirements. For the SUBMIT command, IMS PA submits the Report JCL (assuming no missing data sets). For the JCL or JCLCMD commands, IMS PA presents the Report JCL in ISPF edit.

Journal File Selection
Connect Journal File Selection is performed in batch by the Automated File Selection utility, IPIDBRC. Report JCL built by the dialog when Journal File Selection is used differs from Report JCL for explicitly specified Journal files.

Using Automated File Selection causes IMS PA to execute two jobs:
1. The Automated File Selection utility to select the required Journal files and build then submit the Report JCL
2. Report processing, as submitted by the Automated File Selection utility

The Automated File Selection JCL is a single step job whose JCL is constructed from the options specified in the dialog.

The Automated File Selection utility performs the following tasks:
- Selects the required Connect Journal files for processing
- Constructs the Report JCL, appending Journal file DD statements at the end of the Report JCL skeleton
- Submits the constructed Report JCL

The execution of the Report Set (or batch commands) takes place in a second job, submitted by the Automated File Selection utility.

Splitting Journal selection and Report processing into two jobs enables IMS PA to avoid dynamic allocation of Journal files on tape devices. Leaving allocation of tape devices to JES or the initiator avoids potential job failures.

**Report Set JCL using Automated File Selection**

IMS PA uses options that you specify in the dialog to build JCL that invokes the Automated File Selection utility before running a Report Set.

IMS Connect Extensions Automated File Selection performs the following tasks:
1. Selects the Connect Journal files for processing by invoking IPIDBRC
2. Constructs the Report JCL
3. Submits the Report JCL

IMS PA builds the JCL to execute the Automated File Selection utility IPIDBRC using the following options specified from the dialog.

**JOB**  
*Job Statement Information* in IMS PA Settings.

**STEPLIB DD**  
*IMS PA Load Library* in IMS PA Settings.

**SYSPRINT DD**  
IPIDBRC utility message output file.

**CEXDEF DD**  
*IMS Connect Extensions Definitions Data Set* specified in your Profile Options. This data set contains the IMS Connect Extensions system definitions.

**IPIRDR DD**  
Internal Reader file. IMS PA submits Report Set JCL to this file after Automated File Selection has completed.

You can also specify a Data Set or SYSOUT class instead of the Internal Reader. If you do so, IPIDBRC will write the Report Set JCL to the nominated destination but will not submit the JCL. This facility allows you to generate and save the required JCL, including required Journal files, for editing without having the job submitted.

**IPIPARM DD** *
Automated File Selection parameter input.
Execution parameters are passed to the Automated File Selection utility in DDname IPIPARM:

**FROM**=(yyyy/mm/dd,hh:mm:ss)th)

Reporting start date/time. Date is required, and can be an actual date specification, or a relative date. Relative dates are specified as 0, -1, -2,..., and signify a date relative to the current date. 0 represents today, -1 yesterday, -2 two days ago, and so on. Time is optional, and if not specified, defaults at run time to the start of the day.

**TO**=(yyyy/mm/dd,hh:mm:ss)th)

Reporting end date/time. Date is required, and must be in the same format as the FROM specification. Time is optional, and if not specified, defaults to the end of the day.

**HWSID=cccccccc**

IMS Connect system ID. The name of the IMS Connect system against which you want to run the CEX reports.

**IPISKEL DD**

CEX Report JCL skeleton. IPISKEL contains the Connect Report Set JCL similar to that shown in "IMS Connect Report Set JCL" on page 581 or "Connect JCL with command input" on page 582.
Figure 117. JCL for Connect Extensions Automated File Selection
Part 4. Form-based transit reporting

Report Forms allow you to personalize the format and content of Transaction Transit reports and extracts to include only the information that interests you. This part describes how to request and run Form-based reports and extracts using the dialog and batch commands.
Chapter 16. Introduction to Form-based transit reporting

Report Forms are used to tailor the format and content of Transaction Transit reports and extracts so that reporting can be targeted to meet your individual requirements.

A Report Form is a user-defined template for the design of a report that specifies:

- A list of fields to be reported (for example, transaction code, user ID, response time, CPU time).
- Summary options for grouping purposes (for example, summarize by transaction code or by transaction code within each 5 minute time interval).
- Statistical functions including average, minimum, maximum, standard deviation, peak percentile, total, and count (for example, report average response time, 95th percentile response time or total number of database calls).

With Form-based reports and extracts you can:

- Print report output or view using SDSF or ISPF Outlist utility.
- Export extract data sets to DB2 tables or PC spreadsheets.

Form-based reporting features and benefits

Compared to standard transit reporting, Form-based reporting is distinguished by its usability and coverage.
Usability

The usability features of Form-based reporting include:

- **Customizable reporting.** You can design your own reports, select what you want to see and how you want to see it:
  - Batch command syntax is complicated, so you can use the Form editor in the dialog to design your report formats, or select from supplied samples.
  - Reference the Form in a Report Set.
  - Submit the Report Set to generate the JCL.
  - Save the JCL in your library, then review or modify for subsequent report requests.

- **Two reporting styles:**
  - List – Chronological list of transactions with performance details.
  - Summary – Statistical analysis based on any key field combination.

- **For summarization,** you can fold transaction activity by any means:
  - For a dashboard effect, summarize by:
    - Region type – MPP, BMP, JAVA, IFP, ...
    - Input source – OTMA (Connect and MQ), APPC, VTAM, ...
    - Time interval – show performance for each hour of the day.
  - For a more in-depth analysis, summarize by transaction code.
  - Specify up to 8 keys to group information as you need to see it.

- **Report output options:**
  - Print the report or view it in SDSF.
  - Extract to a CSV file for analysis using a PC tool such as Microsoft Excel.
  - Export to DB2 tables for SQL-based analysis.

- **More information, more reliable.** Form-based transit reporting exploits additional log record types to provide:
  - More transit time details, for example the type 5612 record that signals end of transaction processing provides more reliable processing elapsed time values.
  - Additional resource usage information, for example type 5937 provides Fast Path database usage statistics.

- **Almost all performance information contained in the log is now selectable in the report.** There are over 100 pieces of information in total. Select what you want to see:
  - The dialog form editor has online help for every report field, so you do not need to reference the manual.

- **Up to microsecond precision for transit and CPU times – formerly millisecond.**
- **Statistical functions** – average, maximum, minimum, standard deviation, peak percentile, total.
- **Distributions or service levels** – “What percentage of transactions had a response time greater than 1 second?”
- **Improved reporting accuracy, both in terms of coverage and response time breakdown** – more log record types analyzed:
  - Processing time is now very accurate, where before it was an estimate.
  - All transaction activity accounted for.
  - Use Start Level=2 to report all transactions, even when the 01 input record is in a previous log file – input queue time is extrapolated.

- **Run as many reports as you want in a single pass of the data – each with a different focus.**
Create a Transaction Index – extract file that contains a record for each IMS transaction, together with cumulative information from the IMS log about that transaction:

- Use the index in IMS PA to run additional reports, bypassing the SLDS log files and saving time.
- Use the index in IMS PI for intelligent diagnosis, for example “Locate all transactions with response time greater than 1 second”.

Wide reports – no 132 character page width restriction.

**Coverage**

Form-based reporting provides better coverage. All transactions in the IMS log are reported. The standard style reports may have omitted some transactions due to not analyzing all log record types that affect transit activity. Incomplete transactions (not reported in the standard style reports) can also be reported in Form-based reporting by specifying a reporting completion level, so that no transactions slip through the reporting net.

- Integrated MPP and IFP support – all transaction types now supported:
  - See your entire transaction workload in a single report.
- Fast Path database support – for MPP and IFP transactions alike:
  - DEDB calls, Area I/O, FP buffer usage and contention, VSO.
- End-to-end MSC
  - Merge the front and back end logs to get the complete response time breakdown.
- IMS V12+ support – including support for 56FA transaction-level accounting – accurate CPU time, VSAM and OSAM DB IO and lock analysis.
- IMS Connect reporting, including end-to-end IMS and Connect analysis:
  - Create a form that contains both Connect and IMS events.
  - Merge the IMS log with the IMS Connect Extension journal.
  - View the resulting report that shows Connect and IMS event latencies together.
- Comprehensive OMEGAMON TRF reporting.

**List reporting**

The List Report Form defines the columns to be included in a Transit List report or extract. Each line in the list represents one transaction, typically used for the detailed analysis of recent transaction events.

The following is an example of a List Report Form, so every transaction in the IMS log file will be reported. All available transit information will be reported by this Form.
You can delete fields you do not want reported, insert fields that you do want reported, or move fields in the Form to suit your preferred order. You can use line action H against fields in the Form to display additional help information about the fields.

This Report Form produces a report like the following that lists all transactions and their performance metrics.

**Figure 119. List Report Form: all transit information**

You can delete fields you do not want reported, insert fields that you do want reported, or move fields in the Form to suit your preferred order. You can use line action H against fields in the Form to display additional help information about the fields.

This Report Form produces a report like the following that lists all transactions and their performance metrics.
Summary reporting

The Summary Report Form defines the columns to be included in a Transit Summary report or extract. Each line in the summary represents transaction activity summarized by the specified grouping or key fields, for example statistics for each transaction over the entire reporting period or time interval.

The following is an example of a Summary Report Form, so transaction activity is summarized according to the key fields. All available transit information is reported by this Form.
Notice the fields marked with K at the top of the Form. Key fields determine how transaction activity is summarized. In this case, STARTIMS and TRancode indicate summarization by transaction code with a specified time interval.

The Transaction Summary report provides a statistical summary of transaction activity and related performance metrics. Each line in the summary represents transaction activity summarized by the specified grouping or key fields, for example statistics for each transaction over the entire reporting period or time interval.
Table: Form-based Transaction Summary Report

<table>
<thead>
<tr>
<th>Trancode</th>
<th>Count</th>
<th>Tran CPU</th>
<th>InputQ Time</th>
<th>Process Time</th>
<th>OutputQ Time</th>
<th>Global SMQ</th>
<th>Local SMQ</th>
<th>Total IMS Time</th>
<th>UOR IMS Time</th>
<th>OutQ IMS Time</th>
<th>IMS Resp Time</th>
<th>IMS Call Count</th>
<th>IMS Get Count</th>
<th>IMS Update Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEXSNOC</td>
<td>8</td>
<td>8</td>
<td>25</td>
<td>950</td>
<td>0</td>
<td>20</td>
<td>0</td>
<td>960</td>
<td>4358</td>
<td>81</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>CEXTNONC</td>
<td>12</td>
<td>13</td>
<td>13</td>
<td>548</td>
<td>0</td>
<td>18</td>
<td>0</td>
<td>556</td>
<td>61837</td>
<td>1104</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>DFSIVP4</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>IVTCY</td>
<td>32</td>
<td>2</td>
<td>13</td>
<td>305</td>
<td>11</td>
<td>92</td>
<td>0</td>
<td>330</td>
<td>308</td>
<td>142</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>IVTN0</td>
<td>9</td>
<td>1</td>
<td>30</td>
<td>302</td>
<td>0</td>
<td>28</td>
<td>0</td>
<td>332</td>
<td>7157</td>
<td>112</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>IVTNV</td>
<td>12</td>
<td>1</td>
<td>10</td>
<td>309</td>
<td>14</td>
<td>182</td>
<td>0</td>
<td>333</td>
<td>5876</td>
<td>211</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>PART</td>
<td>3</td>
<td>14</td>
<td>93</td>
<td>613</td>
<td>0</td>
<td>38</td>
<td>0</td>
<td>705</td>
<td>616</td>
<td>489</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>78</td>
<td>5</td>
<td>19</td>
<td>424</td>
<td>8</td>
<td>84</td>
<td>0</td>
<td>447</td>
<td>11489</td>
<td>275</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Figure 122. Form-based Transaction Summary report

Note that summarization is by transaction code, but this can be changed to any key field defined in the Form. The Transaction Count represents the number of transactions in the statistical range for the row.

The level of summarization can be varied depending on the number of key fields. You can specify up to 8 key fields to summarize and sort by, and you can request up to 7 levels of subtotaling.
### Transaction information provided by Report Forms

Form-based reporting is available for IMS, IMS Connect, Combined IMS/IMSConnect, and OMEGAMON TRF reporting.

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#### Figure 123. Form-based Summary report showing different levels of totaling
IMS

Message queue related transaction activity is reported using the LOG Report Set. Input is from the IMS log.

Over 150 IMS transaction information fields are selectable in a Report Form, including:

- **Identification:**
  - Transaction code, User ID, LTERM, Terminal.
  - Originating and processing tracking unit of work IDs.
  - Recovery token.
- **Run-time attributes:**
  - Transaction type including MSC, APPC, OTMA, IMS Connect.
  - Response mode, conversational, recoverable.
  - Locally or globally processed on the shared queue.
  - Transaction class and priority.
- **Completion,** including ABEND code.
- **Message,** including input and output message lengths and counts.
- **Performance:**
  - Response time.
  - Transit time broken down into input queue, processing and output queue times.
  - WFI.
  - Scheduling and syncpoint latencies.
- **Resource usage:**
  - CPU time.
  - CPU service units.
  - Full Function database call and wait activity.
  - Fast Path database call and wait activity.
- **Fast Path (IFP) transactions.**

IMS Connect

IMS Connect transaction activity is reported using the CEX Report Set. Input is from the IMS Connect Extensions journal data set.

Over 40 IMS Connect transaction information fields are selectable in a Report Form, including:

- **Identification:**
  - Transaction code, User ID, LTERM.
  - Client ID, Port number, Socket number, Tpipe name.
  - Logon (event) token.
- **Run-time attributes:**
  - Commit mode and SYNCH level.
- **Completion:**
  - ACK and NAK, timeout and other failure indicators.
- **Performance:**
  - Response time
- Transit time broken down into TCP/IP, message exit, SAF and OTMA components.

**Combined IMS and IMS Connect**

Combined IMS Connect and IMS log reporting can be requested from a CEX Report Set. Input from the IMS log and IMS Connect Extensions journal is merged to provide an end-to-end picture of IMS Connect transactions.

Combined reporting allows you to select performance information from both the IMS log and IMS Connect environments. A single report provides end-to-end IMS Connect analysis. You can see at a glance where transaction performance is adversely affected, for example IMS Connect TCP/IP socket activity, IMS input queue, or IMS transaction execution in a message processing region.

**OMEGAMON TRF**

The TRF Report Set provides List and Summary Form-based reports from IMS transaction performance and resource utilization statistics collected by the OMEGAMON Transaction Reporting Facility (TRF). The TRF data includes transaction response time breakdown, CPU time, and other resource usage statistics, Full Function and Fast Path database DL/I call count and elapsed time, and DB2 database call count and elapsed time.

Combined reporting allows you to select performance information from both the IMS log and IMS Connect environments. A single report provides end-to-end IMS Connect analysis. You can see at a glance where transaction performance is adversely affected, for example IMS Connect TCP/IP socket activity, IMS input queue, or IMS transaction execution in a message processing region.

### Requesting Form-based reporting

The Report Forms editor is used to create Report Forms. Report Forms are saved into the Report Forms data set (similar to Report Sets) and can be shared with other users.

**Procedure**

1. Select option 10 **Report Forms** from the IMS PA primary option menu and define a Report Form.
   
   Several sample Report Forms are provided for some of the more common performance analysis tasks.

2. Select option 3 **Report Sets** from the IMS PA primary option menu and request one or more reports.

   A category of reports called **Transaction Transit Reports (Form-based)** is available in the LOG and CEX Report Set types:
   
   - The LOG Report Set requests IMS transaction transit reporting from the IMS log.
   - The CEX Report Set requests Connect transaction transit reporting from the IMS Connect Extensions journal.
   - Optionally the CEX Report Set can request combined Connect and IMS reports by merging IMS Connect Extensions journal and IMS log file data to provide an end-to-end picture of the Connect transaction lifecycle.
Combined IMS log and IMS Connect Extensions journal reporting requires the specification of a System Definition Group (option 2 Groups from the IMS PA primary option menu) that includes both IMS and IMS Connect systems.
You can use Report Forms to tailor the format and content of the Transaction Transit reports in IMS log and IMS Connect Report Sets, and Message Queue reports in OMEGAMON TRF Report Sets.

There are two types of Report Form, matching the two Transaction Transit reports:
- To tailor a Transaction Transit List report, you use a List Report Form.
- To tailor a Transaction Transit Summary report, you use a Summary Report Form.

Both reports are “tabular”: they display lines of data under column headings.

Both types of Report Form define:
- The report title.
- The fields displayed in the report columns.
- The order of the columns.

However, while each line in a list report contains data for a single transaction, each line in a summary report can summarize data for many transactions. To do this, Summary Report Forms specify a key consisting of up to 8 fields. Transactions with the same key appear on a single line with average values for the non-key fields. If an average value is not appropriate for a field, you can select another statistical function, such as max, min, or total.

Summary reports can contain three types of line:

**Summary**
- These lines summarize transactions with the same key.
- Summary lines will always be included in the report.

**Subtotal**
- These lines summarize transactions at the level of each key field, up to a “totals level” that you specify when you request the report (not in the Report Form).

For example, if you specify a totals level of 3, then your summary report will contain 3 types of subtotal line:
- For each unique combined value of key fields 1, 2, and 3.
- For each unique combined value of key fields 1 and 2.
- For each unique value of key field 1.

Subtotal lines appear in the report between summary lines, as the values of the key fields change. Specifying a totals level that is greater than the number of key fields has the same effect as specifying the number of key fields: the report will contain subtotals for each key field.

Subtotal lines will only be included when a “totals level” in the range 1–7 is specified when you request the report.

**Grand total**
- This single line appears at the bottom of the report, and groups transactions for the entire report interval.
A grand total line will only be included in the report when it is:

- Requested explicitly by specifying a “totals level” of 0 (the default).
- Requested implicitly by specifying a “totals level” in the range 1–7.

No totals are included if you do not specify a “totals level” (leave it blank) or if you specify the batch report operand NOTOTALS.

When requesting a summary report, in addition to specifying a Report Form, you can specify a summary time interval. This causes the report to summarize data at regular intervals within the overall report interval. For example, if you request a summary report for 12 noon to 1 p.m., and you specify a summary time interval of 15 minutes.

**Note:** The summary time interval is only relevant when the fields STARTIMS or STARTCON are specified in the Report Form key.

The following figure shows the structure of a summary report where 3 key fields have been selected in the Report Form and a “totals level” of 2 was specified when the report was requested.
You specify these items when you request the report, not in the Report Form: the report interval, the summary interval, and the totals level.

Subtotal lines contain one or more blank key fields, indicating the subtotal level.

**Note:** the 1.2 “subtotal” value shown here is not simply an average of the values 1.1 and 1.5 shown in the previous summary lines. Instead, this “subtotal” is calculated by averaging the IMS response time of every ABC transaction that ran across all IMSIDs included in the report within the summary interval.

In this summary interval, the ABC transaction ran only on IMS1. However, the report still contains a subtotal line at the IMSID key field level (even though the subtotal is identical to the summary line).

---

**Figure 124. Structure of a summary report**

1. You specify these items when you request the report, not in the Report Form: the report interval, the summary interval, and the totals level.

2. Subtotal lines contain one or more blank key fields, indicating the subtotal level.

3. In this summary interval, the ABC transaction ran only on IMS1. However, the report still contains a subtotal line at the IMSID key field level (even though the subtotal is identical to the summary line).
Maintaining Report Forms

To maintain (create, edit, delete) Report Forms, select option 10 Report Forms from the IMS PA primary option menu.

Procedure

Select option 10 Report Forms from the IMS PA primary option menu. The Report Forms panel is displayed, which lists the Report Forms in the nominated Report Forms data set. The current Report Forms data set is one of the Control Data Sets in your profile settings. To change it, use Options in the action bar.

From the list of Report Forms, you can select one at a time to view or modify, or you can create new Report Forms. You can also add a selection of sample Report Forms by selecting Samples in the action bar or entering the SAMPLES command. See “Sample Report Forms” on page 234.

The Report Forms are listed with the following user-defined attributes:

Name 1–8 character name in ISPF member name format, used to uniquely identify the Report Form within the Report Forms data set. By default, the panel is sorted on the Name field.

Type The type of Report Form, either LIST or SUMMARY.

Description Free format text up to 32 characters that describes the contents and purpose of the Report Form. The description is used in the report subheading.

In addition, the Report Forms are listed with the following system-generated attributes:

Changed Date and time when last updated.

ID The userid that last updated the Report Form.

Line actions: The following line actions can be entered against any row in the Report Forms list:

/ Display the menu of line actions.
E Edit the Report Form.
S Select the Report Form (same as Edit).
View the Report Form. This looks like the Edit panel but has no 'hold' on the data and has no Save capability.

Rename the Report Form.

Delete the Report Form.

Export data to a DB2 table from a Form-based extract data set created from this Report Form.

**Note:** The format of the extract data set and the corresponding DB2 table are both defined by this Report Form. Ensure that the Form does not change between extract and export processing.

Format the form as JCL command input. This option provides a preview to the command input generated by IMS PA when you submit a form-based report or extract that uses this form.

**Primary commands:**

The following primary commands are valid for this panel:

- **NEW name type**
  - This command creates a new Report Form with the specified name.
  - The type can be one of:
    - **LIST** List Report Form
    - **SUMMARY** Summary Report Form
    - **MODEL** Model on an existing Report Form
  - It displays the New Report Form window populated with values from your entered command or from the last Report Form you created, and prompts you for further details to define the new Report Form.
  - Also available from File in the action bar.

- **SELECT name**
  - This command (or S) selects the specified Report Form for editing.
  - Also available from File in the action bar.

- **SORT Name|Type|Description|Changed|Id**
  - This command sorts the list of Report Forms on one or two columns. The default sort field is Name. The sort disregards upper and lower case, and is ascending for all but the Changed column which is descending. The sort order is retained only until Exit or another SORT command is issued.

- **LOCATE string**
  - This command (or L or LOC) is used to locate an entry in the list based on the primary sort field. By default, LOCATE operates on the Name field. The string should be no longer than the primary sort field and not enclosed in quotes. The display will scroll to the entry which matches the string, or the entry preceding it if an exact match is not found.
SAMPLES
This command displays the list of Sample Report Forms. You can select one or more Forms from the list to populate your Report Forms data set.

Also available from Samples in the action bar.

Sample Report Forms

A set of sample Report Forms is provided with IMS PA. They demonstrate how IMS PA reports can be tailored to reflect the many ways you use and configure your IMS systems.

The IMS PA reports and extracts produced using these sample Report Forms will provide a detailed picture of the many aspects affecting IMS system performance.

To add the samples to your Report Forms data set, select Samples in the action bar of the Report Forms panel or enter SAMPLES on the command line.
The sample Report Forms can be added to your Report Forms data set at any time regardless of its current contents. A sample Report Form will not be available for selection if a Report Form of the same name already exists.

Enter line action S (or any non-blank character) to select one or more sample Report Forms.

Alternatively, enter S * on the command line to select all the samples. The RESET command will clear all line actions.

You can use FIND and Rfind (F5) to search for a specified character string in any column.

Press Exit (F3) to complete your selection.
Sample forms for Log reporting

A Report Form is a user-defined template for the design of a report. The batch equivalent is the FIELDS operand. A set of sample report forms is supplied with IMS Performance Analyzer.

The following sample forms are available to demonstrate how Form-based Log Transaction Transit reports can be tailored to meet your specific requirements.

For more information on the fields generated in the sample reports, you can use dialog option 10 Report Forms to display the list of sample forms, select the form you are interested in, then enter line action H for help information on any field.

List reports

ALLLIST
Transaction List report/extract

DBCTLIST
List of DBCTL Transactions

FPLOG
Fast Path Transaction Transit Log

FPTRANX
Fast Path Transaction Exception - Basic

FPTRANXD
Fast Path Transaction Exception - Detailed

SMQLIST
SMQ Transaction Transit Log

SYNCCOUT
Synchronous Callout List report

TRANLIST
Transaction Transit Log

Summary reports

ALLSUMM
Transaction Summary report

ALLSUMMX
Transaction Summary extract

BADRESP
Bad Transaction Response Time

COMPLVL
Transaction Completion Summary

CPUHIGH
High CPU Usage Transactions

DASH
Transaction Dashboard

DBCTSUMM
Summary of DBCTL Transactions

FPANAL
Fast Path Transit Analysis by Trancode

FPBUFUSE
Fast Path Buffer Usage

FPDCALL
Fast Path Database Calls

FPMMSG
Fast Path Message Statistics

FPRESUSE
Fast Path Resource Usage
Sample forms for Connect and Combined reporting

A Report Form is a user-defined template for the design of a report. The batch equivalent is the FIELDS operand. A set of sample Report Forms is provided with IMS Performance Analyzer. These include samples that demonstrate how Form-based Connect and combined Transaction Transit reports can be tailored to meet your specific requirements.

For more information on the fields generated in the sample reports, select dialog option 10 Report Forms to display the list of sample forms, select the form you are interested in, then enter line action H for help information on any field. The sample reports available in this category are:

List reports

COMBLIST
Combined IMS and Connect List

CONNLIST
Connect Transit Log

Summary reports

COMBSUMM
Combined IMS and Connect Summary

CONNACK
Connect ACK/NAK Summary

CONNPLEX
Connect PLEX Usage Summary

CONNTCOD
Connect Analysis by Trancode

BADRESP: Bad Transaction Response Time report

The Bad Transaction Response Time report provides an analysis of transaction response time by reporting the longest response times first. You can use sample report form BADRESP to format this report.

Instead of reporting in the usual transaction code sequence, the report is sorted in descending response time sequence so those transactions with the worst response time can be easily identified. The breakdown of transit time is provided to identify the reasons for the long response time.
COMBLIST: Combined IMS and Connect List report

The Combined IMS and Connect List report lists all IMS Connect transactions, providing IMS Connect and IMS log information in a single report. You can use sample report form COMBLIST to format this report.

For each transaction you can identify both IMS Connect and IMS system latencies that may be the cause of excessive response time. Only transactions identified in the IMS Connect Extensions journal are reported. If the associated transaction from the IMS log is located then the combined information is reported as a single IMS Connect transaction instance. If the associated transaction from the IMS log is not located then the IMS Connect transaction is reported but with IMS system information missing from the report.

COMBSUMM: Combined IMS and Connect Summary report

The Combined IMS and Connect Summary report summarizes IMS Connect transaction activity, providing IMS Connect and IMS log information in a single report. You can use sample report form COMBSUMM to format this report.

For each transaction code, the number of transactions processed is reported enabling you to identify both IMS Connect and IMS system latencies that may be the cause of excessive response time. Only transactions identified in the IMS Connect Extensions journal are reported. If the associated transaction from the IMS log is located then the combined information is reported as a single IMS Connect transaction instance. If the associated transaction from the IMS log is not located then the IMS Connect transaction is reported but with IMS system information missing from the report.

COMPLVL: Transaction Completion Summary report

The Transaction Completion Summary report provides a breakdown of transaction activity on the IMS log for each region type, such as MPP, BMP. The breakdown by completion level indicates for each type of transaction, how far they progressed towards completing. You can use sample report form COMPLVL to format this report.

The following completion levels indicate how transactions were processed:

0  System generated output messages, not related to transaction activity, reported by IMS PA for completeness when analysis of overall message activity is being performed.

1  Transaction input messages remain on the input queue but have not been processed by a dependent region. This could indicate that no dependent regions are eligible or available to process this transaction code.

2  Transactions are being processed by a dependent region but have not completed. This usually indicates long running transactions or transactions at the end of the log that have not completed.

3  Transactions have finished processing in the dependent region but the output message has not been sent. This could indicate that the output LTERM is not available to receive messages.

4  Transactions have completed processing, but the dependent region schedule has not terminated (type 07 log record is not available). This usually indicates that the transactions were processed by long running WFI or pseudo-WFI regions. IMS PA attempts to wait until the schedule is completed before reporting a completed transaction, but virtual storage
constraints in the IMS PA batch job cause it to report transactions without their type 07 accounting statistics (completion level 5). All transit time information is available for these transactions, however CPU usage and DB/DC DLI call counts obtained from the type 07 application termination records are not available.

5 Transactions have completed processing, and the dependent region schedule has terminated (type 07 log record is available). Information about the transaction is available for reporting, including CPU usage and DB/DC call counts, but are approximations only. Type 07 application termination record statistics are apportioned equally amongst all transactions processed by the program schedule.

6 Transactions have ended and resource utilization statistics are available. Unlike the approximations at completion level 5, type 56FA transaction-level accounting records provide accurate and reliable information. All fields are available for reporting. Non-message driven BMP and DBCTL transactions are also included.

**CONNACK: Connect ACK/NAK Summary report**

The Connect ACK/NAK Summary report summarizes IMS Connect transaction acknowledgement activity. You can use sample report form CONNACK to format this report.

For each transaction code, the number of transactions processed is reported and the IMS and client acknowledgement counts provide an indication of the number of transactions that were either positively or negatively acknowledged. Acknowledgement must be provided by:

- IMS to indicate that the transactions was either successfully processed (ACK) or failed to complete successfully (NAK)
- For SYNCLEVEL=CONFIRM only, the Connect client must either accept the transaction response (ACK) or reject it (NAK).

**CONNLIST: Connect Transit Log report**

The Connect Transit Log report lists all transactions processed by IMS Connect. You can use sample report form CONNLIST to format this report.

The report highlights identification information including transaction code, datastore and start time, as well as a breakdown of response time into its transit time components.

**CONNPLEX: Connect PLEX Usage Summary report**

The Connect PLEX Usage Summary report provides a high-level breakdown of Connect transaction activity across all your IMS Connect systems and IMS datastores. You can use sample report form CONNPLEX to format this report.

For each IMS Connect system, transaction activity and performance is reported for every IMS datastore that processes transactions on behalf of the Connect system.

**CONNTCOD: Connect Analysis by Trancode report**

The Connect Analysis by Trancode report provides a breakdown of IMS Connect transaction performance by transaction code. You can use sample report form CONNTCOD to format this report.
For each transaction code you can see at a glance how the transaction performed, and if necessary identify the phase of processing that caused excessive response time in IMS Connect, including Socket IO, message exit and SAF processing, OTMA, and client acknowledgement.

**CPUHIGH: High CPU Usage Transactions report**

The High CPU Usage Transactions report provides an analysis of transaction CPU usage by reporting the highest CPU times first. You can use sample report form CPUHIGH to format this report.

Instead of reporting in the usual transaction code sequence, the report is sorted in descending CPU time sequence so those transactions with the highest CPU usage can be easily identified.

**DASH: Transaction Dashboard report**

The Transaction Dashboard report provides a high-level overview of the type of activity in your IMS environment. You can use sample report form DASH to format this report.

Transaction activity is broken down by region type (such as MPP, BMP) and transaction type (OTMA, IMS Connect, APPC MSC).

**DBCTLIST: DBCTL List report**

The DBCTL List report lists all DBCTL transactions and their performance characteristics. You can use sample report form DBCTLIST to format this report.

**DBCTSUMM: DBCTL Summary report**

The DBCTL Summary report summarizes DBCTL transaction activity. You can use sample report form DBCTSUMM to format this report.

It summarizes transaction activity information detailed in sample report form "DBCTLIST: DBCTL List report."

**MSGLEN: Message Length Analysis report**

The Message Length Analysis report shows for each transaction code, statistical information about the number and length of all input and output messages. You can use sample report form MSGLEN to format this report.

**QTYPE: Queue-type Summary report**

The Queue Type Summary report provides a breakdown of how transactions are processed in a shared queues sysplex environment. For each region type, you can see at a glance the performance characteristics of transactions processed globally versus those processed locally in a shared queues environment. You can use sample report form QTYPE to format this report.

You can compare input queue times for transactions that were processed locally against those that required putting onto the CQS shared queue for processing on the back-end system.

**RESPDIST: Response Time Distribution % report**

The Response Time Distribution % sample report form, RESPDIST, generates a report that shows the percentage of transactions within a series of pre-defined
ranges. You can use this sample form to create your own report that, for example, shows the percentage of transactions with a response time within a required service level.

Range values (distributions) can be reported as counts or percentages.

**SMQLIST: SMQ Transaction Transit Log report**

The SMQ Transaction Transit Log report lists all transactions processed in a shared queues sysplex environment. You can use sample report form `SMQLIST` to format this report.

The report highlights standard transit information as well as information specific to sysplex processing including originating and processing systems, as well as time spent by the input and output messages on the shared message queue.

**SMQTCOD: SMQ Transaction Analysis report**

The SMQ Transaction Analysis report summarizes transaction activity in a shared queues sysplex environment. You can use sample report form `SMQTCOD` to format this report.

For each transaction code, the number of transactions processed and standard transit information is reported. Information specific to sysplex processing including originating and processing systems, as well as time spent by the input and output messages on the shared message queue is also reported.

This report summarizes the detailed information in the List report generated using report form `SMQLIST`.

**SYNCCOUT: Synchronous Callout List report**

The Synchronous Callout List report provides a detailed analysis of synchronous callout activity in regions and by application programs.

You can create a Synchronous Callout report in IMS Performance Analyzer by using a Form-Based Transaction Transit report. Use the IMSPALOG batch command with either the LIST or SUMMARY operands together with one or more of the following FIELDS:

- `ICALTNT`
- `SCOACKCT`
- `SCOACKTM`
- `SCONAKCT`
- `SCONAKTM`
- `SCOCALCT`
- `SCOCALTM`
- `SCOEXTCT`
- `SCOEXTTM`

**TRANCLAS: Transit Analysis by Class report**

The Transit Analysis by Class report provides a breakdown of transaction transit performance by transaction class, as specified by the TRANSACT macro MSGTYPE parameters. You can use sample report form `TRANCLAS` to format this report.
TRANINTV: Interval Transaction Analysis report

The Interval Transaction Analysis report summarizes transaction activity for each user-specified time interval. You can use sample report form TRANINTV to format this report.

For example, the performance characteristic of each transaction is reported for every 15 minute interval during the day so that you can identify how transaction performance varies over time.

TRANLIST: Transaction Transit Log report

The Transaction Transit Log report lists all transactions processed by IMS systems including shared queues sysplexes. You can use sample report form TRANLIST to format this report.

The report provides identification information including transaction code, user id and start time, as well as a breakdown of IMS response time into its transit time components.

TRANPRTY: Transit Analysis by Priority report

The Transit Analysis by Priority report provides a breakdown of transaction transit performance by transaction priority, as specified in the TRANSACT macro PRTY parameter. You can use sample report form TRANPRTY to format this report.

TRANRESU: Transaction Resource Usage report

The Transaction Resource Usage report provides, for each transaction code, a breakdown of IMS response time together with resource usage including CPU time and DB/DC DLI call activity. You can use sample report form TRANRESU to format this report.

TRANTCOD: Transit Analysis by Trancode report

The Transit Analysis by Trancode report provides a breakdown of transaction transit performance by transaction code. For each transaction code you can see at a glance how the transaction performed, and if necessary identify the phase of processing that caused excessive response time. You can use sample report form TRANTCOD to format this report.

Creating new Report Forms

If you want to create a form-based report or extract that contains your choice of fields, you need to create a Report Form.

Procedure

To create a Report Form:

1. On the IMS PA primary option menu, select option 10 Report Forms.
   The Report Forms panel is displayed, showing the list of existing Report Forms.
2. Either:
   • On the command line, enter NEW followed by the name of the new Report Form and initialization details using the following syntax:
- On the action bar, select **File > New**. A pop-up dialog window is displayed. This panel prompts you for details of the new Report Form.

The options are:

**Name**  The name of the new Report Form. A 1–8 character name in ISPF member name format. The name must be unique within the Report Forms data set.

**Type**  Select the type of Report Form or model which dictates how the new Form is to be initialized (such as the fields, order, sort sequence). Type is important since a Form can only be used by reports and extracts of compatible type:

1. **List**  Can be used for the Transaction Transit List report or extract in a LOG, CEX, or TRF Report Set.

2. **Summary**  Can be used for the Transaction Transit Summary report or extract in a LOG, CEX, or TRF Report Set.

3. **Model**  Can be used to model your new Report Form on an existing one.

**Model options:**

If you selected the new Report Form is to be modelled on an existing one, specify the name of the model Report Form and data set where it is stored. **Prompt (F4)** is available for both the Report Form data set name and the Report Form member name. The new Report Form will be the same type (List or Summary) and initialized with the same data fields as the model.

**List or Summary options:**

If you chose not to model on an existing form, but selected either type 1. **List** or 2. **Summary**, you must specify which fields to include in the new Report Form. The choices are:

- Include IMS fields – for LOG reporting
- Include Connect fields – for CEX Connect-only reporting
- Include IMS fields and Connect fields – for CEX Combined reporting
- Include OMEGAMON TRF fields – for TRF reporting

**Specify Field Categories**

To help you specify IMS or OMEGAMON TRF fields in your new Report Form, you can select the fields by category.

With this option selected, the user is prompted to select one or more field categories after pressing Enter to create the report form. The following pop-up dialog window is displayed.
Select the desired field categories, then press Exit. The fields in the selected categories are then available in the Report Form. The default field categories are the selection shown in Figure 127: Transaction Identification, Response Time, and Resource Usage.

3. When you have specified all required details, press Enter to create the Report Form.

Specifying Report Form contents

A Report Form contains a list of field names, with additional information depending on the type of Report Form, LIST or SUMMARY.

Procedure

To specify the contents of a Report Form:
1. On the IMS PA primary option menu, select option 10 Report Forms.
   The Report Forms panel is displayed, showing the list of existing Report Forms.
2. Either:
   • Create a new Report Form by entering NEW on the command line or by selecting File > New on the action bar.
   • Select an existing Report Form by entering line action E or S next to it, or by entering the SELECT command.
   The Report Form Edit panel is displayed.

   Tip: Alternatively, you can enter line action V to display the Report Form View panel. Viewing a Report Form works in every way like Edit except there is no exclusive hold on the data and changes cannot be saved.

3. Specify the Report Form contents. The contents of a Report Form depends on its type: LIST or SUMMARY.

LIST Report Form

The LIST Report Form can be used to tailor the format and content of the Transaction Transit List report or extract in a Log or Connect Report Set.
The LIST Report Form defines the fields to be included, the order of the columns, and a title for the report.

When you select option 10 Report Forms from the IMS PA primary option menu, and then select a LIST Report Form to Edit or View, the following view is displayed.

```
<table>
<thead>
<tr>
<th>Description</th>
<th>Connect Transit Log</th>
<th>Page Width</th>
<th>132</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field</td>
<td></td>
<td>Precision</td>
<td>3</td>
</tr>
<tr>
<td>Name + Func</td>
<td></td>
<td>Digit Grouping</td>
<td>NO</td>
</tr>
<tr>
<td>Field Name</td>
<td>Description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STARTCON</td>
<td>Connect transaction start time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRANCODE</td>
<td>Transaction Code</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TARGETS</td>
<td>Target datastore</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PORT</td>
<td>TCP/IP Port number</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESPON</td>
<td>Connect response time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRTOTMA</td>
<td>Total pre-OTMA input time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INREAD</td>
<td>Input read Socket time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>READEXIT</td>
<td>Read message Exit time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAFTIME</td>
<td>SAF security call time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROCOTMA</td>
<td>OTMA processing time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONFIRM</td>
<td>Client Confirm time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POSTOTMA</td>
<td>Total post-OTMA output time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>XMEXIT</td>
<td>Transmit message Exit time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EOR</td>
<td>Transaction failure indicator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EOX</td>
<td>End of Report</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACKREAD</td>
<td>Acknowledgement read socket time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CLIACK</td>
<td>Client acknowledgement indicator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CLIENTID</td>
<td>Client ID</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMMITMD</td>
<td>Commit mode</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

**Figure 128. LIST Report Form**

The LIST Report Form consists of the following:

**Description**

Specify up to 32 characters of text to describe the purpose of the Report Form and help you distinguish it from others.

**Note:** IMS PA uses the description as the report title.

**Page Width**

Page width of the report, in the range 80 to 8000. The default is 132.

When you increase the page width, you can include more fields in the report. Move EOR down the list or move fields above EOR to include the fields of interest. IMS PA automatically adjusts the EOR marker when the fields overflow the page width.

When you view the report output (using SDSF), scroll right to see the additional fields. Note that when you print the report, data that exceeds the maximum printer page width will be truncated.

**Precision**

Default: 3
The precision of numeric fields. Numeric fields can be formatted to either 3, 4, 5, or 6 decimal places.

For example, if the field value is 10.123456 seconds:
- 3 decimal places is 10.123 precision
- 4 decimal places is 10.1235 precision
- 5 decimal places is 10.12346 precision
- 6 decimal places is 10.123456 precision

**Note:** Rounding occurs for elapsed and CPU time values.

Precision and digit grouping affect how the field values are represented in the report. Precision and digit grouping can be specified in the Report Form and the Report Set. The Report Set takes precedence.

**Digit Grouping**

Default: NO

Digit grouping affects the formatting of time and count fields. Specify the digit grouping as follows:

**YES**  Digit grouping will include the separator character to delineate each group of three digits, aligned to milliseconds for time and 1000 for count. For time fields, the separator is . (period). For count fields, the separator is , (comma).

**NO**  No digit grouping. Count and time fields will be displayed as whole numbers with no separators.

**SEC**  The separator character will delineate the decimal point only. SEC applies to time fields only and assumes YES for count fields. Use SEC for extracts when time fields must be in seconds and fractions of seconds when importing data into a spreadsheet or database.

**Field Name**

The IMS PA name for the IMS or Connect field. Press Prompt (F4) to select from a list of fields applicable to this Form. For the list of available field names, refer to the [Chapter 41, “Glossary of Report Form field names,” on page 753](#).

**EOR** and **EOX** are special entries:

- **EOR** is managed by IMS PA. It signals the end of the report line. The fields listed above **EOR** fit on the report line and are included in the report in the same order as they appear in the list. Those below **EOR** will not be reported and are ignored.

IMS PA automatically sets **EOR** when the Report Form is created and resets it if necessary when the Form is changed to ensure that the maximum page width as specified in the **Page Width** field is not exceeded. In positioning **EOR**, IMS PA allows for one blank separator between each field.

To produce a report line shorter than the specified **Page Width**, move **EOR** towards the top of the Form, delete unwanted fields, or move them below **EOR**.

- **EOX** signals the end of the extract record. There are no restrictions on record length so **EOX** can be positioned anywhere in the list. **EOX** is initially positioned just below **EOR**. Fields above **EOX** are included in the extract, those below are ignored. If **EOX** is not specified, **EOR** is used.
Func

For time stamp fields STARTIMS and STARTCON, specify the output format:

ISO

Full time stamp in the format yyyy-mm-dd hh:mm:ss.thmiju where the subsecond format depends on the precision.

DATE

Date in the format yyyy-mm-dd

TIME

Time in the format hh:mm:ss.thmiju where the subsecond format depends on the precision. Time is the default applied at run time.

For any field, you can specify HIDE to omit it from the report or extract.

Len

The length of the field in the report or extract. This is used to calculate the width of the print line.

Description

This is a short description of the field. Enter line action H (Help) to see a more detailed description.

Line actions:

The following line actions are valid on this panel:

/ Display the menu of line actions.

S Select a field name from a list of all fields appropriate to the type of Report Form.

I Insert a blank row after this row for entry or selection of another field.

R Repeat this row.

RR Repeat a block of rows bounded by two RRs.

C Copy this row.

CC Copy a block of rows bounded by two CCs.

M Move this row.

MM Move a block of rows bounded by two MMs.

A Move/Copy after this row.

B Move/Copy before this row.

D Delete this row.

DD Delete a block of rows bounded by two DDs.

H Field Help. Display a detailed explanation of the field.

Note: Line operations can span the EOR and EOX rows. IMS PA will reset EOR after the operation has completed to ensure the page width is not exceeded. Only one EOR and one EOX is retained, that closest to the top of the list. If EOX is deleted, EOR is assumed to define the length of the extract.

Primary commands:

The following primary commands are valid for the LIST and SUMMARY Report Form panels:

FIND string

This command (or F) looks for the specified character string in all columns of displayed data. The string is not case sensitive. The display scrolls to the row where the string is found and positions the cursor on the matching data.
To find more occurrences, use F5 or the RFIND command repeatedly.

If there is no match but the search did not begin at the top of the list, the screen does not change and the message *Bottom of data reached* is displayed. Press F5 or enter RFIND to search from the top. If there is no match in the entire list, the screen does not change and a String not found message is displayed.

SAVE  This command is only available from Edit mode and saves any changes you have made. To save any changes made in View mode, use SAVEAS.

Also available from File in the action bar.

SAVEAS  formname\datasetname(formname)

This command is available from both Edit and View mode to save the contents of this Report Form under another name, either in the current data set (assumed if no data set name is provided) or in another suitable data set (if the name of a valid PDS is provided).

Also available from File in the action bar.

RESET  This command (or RES) removes all outstanding line actions and deletes any blank rows.

Also available from Edit in the action bar.

Related reference:

“Transaction Transit List report and extract” on page 316
The options for the Transaction Transit List report and extract are described here.

“LIST: Transaction Transit List report and extract (Form-based)” on page 423
The LIST operand of the IMSPALOG batch command requests the Transaction Transit List report or extract for IMS fields.

“Transaction Transit List report and extract” on page 563
The Form-based Transit List in the CEX Report Set is similar to the Form-based Transit List in the Log Report Set.

“LIST: Transaction Transit List report and extract (Form-based)” on page 591
The LIST operand of the IMSPACEX batch command requests the Transaction Transit List report or extract for IMS or Connect fields.

**SUMMARY Report Form**

The SUMMARY Report Form defines the format and content of the Transaction Transit Summary report and extract.

The SUMMARY Report Form defines the fields to be included, the order of the columns, sort sequence, and a title for the report.

When you select option 10 **Report Forms** from the IMS PA primary option menu, and then select a SUMMARY Report Form to Edit or View, the following view is displayed.
The SUMMARY Report Form consists of the following:

### Field Sort

<table>
<thead>
<tr>
<th>Name</th>
<th>Func</th>
<th>Len</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRANCODE</td>
<td>K A</td>
<td>8</td>
<td>Transaction Code</td>
</tr>
<tr>
<td>STARTCON</td>
<td>K * TIME</td>
<td>8</td>
<td>Connect transaction start time</td>
</tr>
<tr>
<td>TRANCNT</td>
<td>B</td>
<td>8</td>
<td>Transaction count</td>
</tr>
<tr>
<td>RESPON</td>
<td>AVE</td>
<td>8</td>
<td>Connect response time</td>
</tr>
<tr>
<td>PREDMA</td>
<td>AVE</td>
<td>8</td>
<td>Total pre-OTMA input time</td>
</tr>
<tr>
<td>TREAD</td>
<td>AVE</td>
<td>8</td>
<td>Input read Socke time</td>
</tr>
<tr>
<td>READEXIT</td>
<td>AVE</td>
<td>8</td>
<td>Read message Exit time</td>
</tr>
<tr>
<td>SAFTIME</td>
<td>AVE</td>
<td>8</td>
<td>SAF security call time</td>
</tr>
<tr>
<td>PROCOTMA</td>
<td>AVE</td>
<td>8</td>
<td>OTMA processing time</td>
</tr>
<tr>
<td>CONFIRM</td>
<td>AVE</td>
<td>8</td>
<td>Client Confirm time</td>
</tr>
<tr>
<td>POSTOTMA</td>
<td>AVE</td>
<td>8</td>
<td>Total post-OTMA output time</td>
</tr>
<tr>
<td>XMITEXIT</td>
<td>AVE</td>
<td>8</td>
<td>Transmit message Exit time</td>
</tr>
<tr>
<td>EOR</td>
<td></td>
<td></td>
<td>End of Report</td>
</tr>
<tr>
<td>EOX</td>
<td></td>
<td></td>
<td>End of Extract</td>
</tr>
<tr>
<td>ABENDCNT</td>
<td></td>
<td>8</td>
<td>Abend count</td>
</tr>
<tr>
<td>ACKREAD</td>
<td></td>
<td>8</td>
<td>Acknowledgement read socket time</td>
</tr>
<tr>
<td>APPC</td>
<td>K *</td>
<td>4</td>
<td>APPC indicator</td>
</tr>
</tbody>
</table>

---

**Figure 129. SUMMARY Report Form: First view**

Scroll Left (F10) or Right (F11) to see the second view.

---

**Figure 130. SUMMARY Report Form: Second view**

The SUMMARY Report Form consists of the following:
Form Description
Specify up to 32 characters of text to describe the purpose of the Report Form and help you distinguish it from others.

Note: IMS PA uses the description as the report title.

Page Width
Page width of the report, in the range 80 to 8000. The default is 132.
When you increase the page width, you can include more fields in the report. Move EOR down the list or move fields above EOR to include the fields of interest. IMS PA automatically adjusts the EOR marker when the fields overflow the page width.
When you view the report output (using SDSF), scroll right to see the additional fields. Note that when you print the report, data that exceeds the maximum printer page width will be truncated.

Precision
Default: 3
The precision of numeric fields. Numeric fields can be formatted to either 3, 4, 5, or 6 decimal places.
For example, if the field value is 10.123456 seconds:
- 3 decimal places is 10.123 precision
- 4 decimal places is 10.1235 precision
- 5 decimal places is 10.12346 precision
- 6 decimal places is 10.123456 precision

Note: Rounding occurs for elapsed and CPU time values.
Precision and digit grouping affect how the field values are represented in the report. Precision and digit grouping can be specified in the Report Form and the Report Set. The Report Set takes precedence.

Digit Grouping
Default: NO
Digit grouping affects the formatting of time and count fields. Specify the digit grouping as follows:
YES Digit grouping will include the separator character to delineate each group of three digits, aligned to milliseconds for time and 1000 for count. For time fields, the separator is . (period). For count fields, the separator is , (comma).
NO No digit grouping. Count and time fields will be displayed as whole numbers with no separators.
SEC The separator character will delineate the decimal point only. SEC applies to time fields only and assumes YES for count fields. Use SEC for extracts when time fields must be in seconds and fractions of seconds when importing data into a spreadsheet or database.

Field rows
One row for each field. The order of the fields in the rows dictates the order of the columns in the report or extract. The fields have the following attributes: Name, Sort Sequence (only certain fields), Statistical Function (clock and count fields only), Length, and Description.
Field Name
The IMS PA field name for the IMS or Connect field. Use Prompt (F4) to select from a list of fields applicable to this Form type.

EOR and EOX are special entries:
- EOR is managed by IMS PA. It signals the end of the report line. The fields listed above EOR fit on the report line and are included in the report in the same order as they appear in the list. Those below EOR will not be reported and are ignored.
- IMS PA automatically sets EOR when the Report Form is created and resets it if necessary when the Form is changed to ensure that the maximum page width as specified in the Page Width field is not exceeded. In positioning EOR, IMS PA allows for one blank separator between each field.
- To produce a report line shorter than the specified Page Width, either move EOR towards the top of the Form, delete unwanted fields, or move them below EOR.
- EOX signals the end of the extract record. There are no restrictions on record length so EOX can be positioned anywhere in the list. EOX is initially positioned just below EOR. Fields above EOX are included in the extract, those below are ignored. If EOX is not specified, EOR is used.

Sort Sequence
SUMMARY Sort fields are identified by K in the SORT K column. The report can be ordered in ascending or descending sequence, as specified in the SORT O column, A and D respectively.

Sort fields identify the grouping required for summarization and can be any key field.

A Sort Order of * (asterisk) identifies a candidate sort field, and is ignored for reporting purposes.

To activate a candidate sort field, move it to the top of the Form and set Sort Sequence to A or D.

Key fields above EOR must appear first in the list of fields. Key fields below EOR are ignored. Up to 8 key fields can be specified, and at least one must be specified. The order of the key fields in the list defines the sort and summarization precedence, with the first key field being the major sort field.

Sort Order
In addition to the Sort Key fields, one numeric field can be selected as Ascending or Descending to activate Alternate Sequencing. This will change the order of report lines from Sort Key to numeric field sequence. For example, specify Alternate Sequencing of D for RESPIMS to see the IMS transactions with the highest response time at the top of the report. Note that grouping by Sort Key for summarization remains unaffected.

Func
The required summary statistical function for time and count fields. The valid functions are:
- AVE Average value (this is the default).
- DEV Standard deviation.
- MAX Maximum value.
- MIN Minimum value.
- RANGE Distribution (count or percent) in specified range.
TOTAL
   Sum total.

nnn  Peak percentile nn% (for example, 85%).

COUNT
   Number of transactions with a valid field value.
   Note: Completion Level affects whether the field value is available
   and the disparity (if any) between COUNT and TRANCNT. For
   example, transaction TRANA executed 1000 times
   (TRANCNT=1000), but of those transactions, CPU time was only
   available for 500 of them (CPUTIME COUNT=500). COUNT is
   used in the calculation of statistics (AVE, DEV, %) so that reported
   values are not skewed by transactions that do not complete.

For time stamp fields STARTIMS and STARTCON, specify the output
format:

TIME  Time in the format hh:mm:ss. Time is the default applied at run
       time.

DATE  Date in the format yyyy-mm-dd

ISO   Date and time in the format yyyy-mm-dd hh:mm:ss

For any field, you can specify HIDE to omit it from the report or extract.
If specified for a field with A or D sort order, typically ordering fields such
as PGMSWIT, the output is sorted on this field but the field itself is not
reported. If specified for TRANCNT, the value is calculated but not
reported.

Len   The length of the field in the report or extract. This is used to calculate the
       width of the print line.

Field Description
   This is a short description of the field. Enter line action H (Help) for a
   more detailed description.

For fields with the RANGE function, the options are:

Range From
   For count and time fields, specify a limit value consisting of either a
   comparison operator followed by a value, or a single value with no
   operator. For example, specify >=1 for a comparison of greater than or
   equal to 1. Allowed operators are: = > >= < <=

   Time fields can be specified in seconds or milliseconds. Use a decimal
   point to indicate seconds. For example, 1.0 and 1000 represent the same
   value; 1.0 (1 second) is equal to 1000 milliseconds. The unit of measure
   (Seconds, Milliseconds) is displayed at the right-hand end of the row.

   Count fields are defined as integer fields. That is, only whole numbers are
   allowed.

   For character fields, specify a single value for this field (no operator). Press
   Prompt (F4) for a list of valid values. Where a blank or null value is valid,
   this is selected by the use of the hyphen (-) symbol. The character fields for
   which the RANGE function is valid are: APPC, CLIACK, COMMITMD,
   COMPLVL, COMPLVLCL, CONVERS, DBACMETH, DBORGTYPE, FAILED,
   FPPRCTYP, IMSACK, MSC, OTMA, QTYPE, RECOVER, REGTYPE,
   REJECT, RESPMODE, RESUMETP, STARTLVL, SYNCLEV, TIMEOUT.
Range To

Specify a single upper limit value (no operator). It is required for count and time fields where a lower limit (no operator) has been specified as a From value. It is not allowed when the From value is preceded by a comparison operator. Where From and To values are specified, the range check assumes greater than or equal to (>=) the From value and less than (<) the To value.

It is not valid for character fields.

Report

Whether the reported value is a COUNT or a PERCENT.

Line actions:

For the list of valid line actions for the SUMMARY Report Form panel, see “LIST Report Form” on page 244.

Primary commands:

For the list of valid primary commands for the SUMMARY Report Form panel, see “LIST Report Form” on page 244.

Related reference:

“Transaction Transit Summary report and extract” on page 323
The Transaction Transit Summary report and extract options are described here.

“SUMMARY: Transaction Transit Summary report and extract (Form-based)” on page 426
The SUMMARY operand of the IMSPALOG batch command requests the Transaction Transit Summary Report or Extract for IMS fields.

“Transaction Transit Summary report and extract” on page 566
The Form-based Transit Summary report is similar to the Form-based Transit List report.

“SUMMARY: Transaction Transit Summary report and extract (Form-based)” on page 593
The SUMMARY operand of the IMSPACEX batch command requests a Transaction Transit Summary Report or Extract for IMS and Connect fields.
Chapter 18. Processing form-based extracts (CSV files)

The IMS PA Form-based Extract feature allows you to extract transaction performance data into comma-separated value (CSV) files suitable for import into DB2 tables or PC-based spreadsheet applications. You can then use your usual reporting tools to create management or operational reports.

See “Transaction Transit reports (Form-based)” on page 314 for a full description of how to create a List or Summary CSV extract from a Log report set. It applies similarly to extracts from Connect or TRF report sets.

It is the same process to create a CSV file whether it is for DB2 or for spreadsheets, except you must specify extract options suitable for the intended purpose.

CSV files for DB2 tables

When requesting List or Summary extracts for exporting to DB2, specify the following options:

<table>
<thead>
<tr>
<th>Extract Options:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Include Delimiter</td>
</tr>
<tr>
<td>Include Field Labels</td>
</tr>
<tr>
<td>Numeric Fields in Float Format</td>
</tr>
</tbody>
</table>

**Include Delimiter**
No. Omit the delimiter for DB2 because the load utility imports fields based on column number and field length defined by the Report Form used to create the extract.

**Delimiter**
Ignored. The delimiter is only used if Include Delimiter is selected.

**Include Field Labels**
No. Omit labels for DB2 because the load utility treats them as raw data, not column headings.

**Numeric Fields in Float Format**
Yes, select FLOAT format for DB2 to enable the load utility to interpret numeric fields reliably and consistently:
- Time fields are in units of seconds. For example, 1.234567 represents 1.234567 seconds.
- Count fields are real numbers. For example, average message length is 100.23 characters.

CSV files for spreadsheets

When requesting List or Summary extracts for importing into PC-based spreadsheet applications, specify the following options:
Include Delimiter
Yes, select to use the specified delimiter to separate fields in the extract records.

Delimiter
Typically a comma, semicolon, or blank. Comma is the default, but ensure that you choose a character that is different to the digit-separator used in numeric fields.

Include Field Labels
Yes, select to include field labels as the first record written to the extract data set to identify the columns and assist reporting.

Numeric Fields in Float Format
No. Spreadsheets expect character-based data. Leave this option blank so numeric fields are extracted in character format according to the Precision and Digit Grouping options.

Exporting form-based CSV extracts to DB2
Create a Report Form, then use it to generate a form-based CSV extract data set from a Log, Connect, or TRF report set. Then from the Report Form, IMS PA automates the process of exporting the CSV extract to DB2 tables.

About this task
• Use a Report Form to specify the performance metrics you want to see.
• Use a List report to keep a record of every transaction that ran, useful for short to medium term problem analysis and reporting.
• Use a Summary report to keep statistical information about transaction performance.
• Run IMS PA nightly via an automated job scheduler. Reports and extracts are created from a single pass of the data. Post-process the extract file to load it directly into DB2.
• Use DB2 as a long term performance database for trend analysis, capacity planning or accounting purposes.

Figure 131 on page 257 shows how to use the IMS PA dialog to create a Form-based extract and export it to DB2.
1. **Report Form:** Create a Form containing the fields you want to export to DB2

   ![EDIT Form for ALLLIST](image1)

   **EDIT**
   
   Command --> List Report Form - ALLLIST Row 1 to 14 of 35
   
   Description ... list all performance indicators Page Width ... 999
   
   Precision ... 3
   
   Digit Grouping NO
   
   Field
   
   / Name + Func Len Description
   
   **ORGLTERM** 8 Originating LTERM
   
   **TRANCODE** 8 Transaction Code

2. **Report Set:** Request a Form-based extract using the Form

   ![EDIT Form for SAMLOG](image2)

   **EDIT**
   
   Command --> Report Set - SAMLOG Line 11 of 31
   
   Description ... Sample Log Report Set
   
   Enter "/" to select action.
   
   **--** Reports **--**
   
   - ___ Transaction Transit Reports (Form-based) Yes
   
   _ S _ List Yes

   ![SAMLOG - Transit List](image3)

   **Command --> SAMLOG - Transit List More: < >**

   Specifying required view:
   
   **--** Report Interval **--**
   
   2. Report
   
   1. Extract
   
   From _____ To _____

   Extract Data Sets:
   
   **Type** Form + Extract Data Set Name Disp
   
   1. EXTRACT ALLLIST IMSPA.ALLLIST.CSV

3. **Report Form:** Export the extract to DB2 using the same Form

   ![EDIT Form for ALLLIST](image4)

   **EDIT**
   
   Command --> Report Forms Row 1 to 16 of 27
   
   Report Forms Data Set ... : MYID.IMSPA.FORMS
   
   / Name Type Description Changed ID
   
   X ALLLIST LIST List all performance indicators 2006/08/30 11:23 MYID

   ![Export LIST Extract to DB2](image5)

   **Command --> Export LIST Extract to DB2**

   Report Form ... : ALLLIST
   
   Extract Data Set Name IMSPA.ALLLIST.CSV

---

*Figure 131. Export Form-based extract to DB2*
Procedure
1. Create a Report Form, then use it to generate a Form-based extract data set from IMS Log or Connect data or combined. See "Creating new Report Forms" on page 242.
2. Having created your Form-based extract data set, IMS PA then automates the process of exporting it into DB2 using a two step process:
   a. Create the DB2 table.
   b. Load the table using the DB2 load utility.

Export List extract to DB2

You can define a LIST Report Form to specify the fields that you want to export to DB2, then use that Report Form to create DDL to define a DB2 table, create a List extract data set, and then load the extracted data into DB2.

Procedure
1. On the IMS PA primary option menu, select option 10 Report Forms.

   ![Figure 132. Export List extract to DB2: Select Report Form](image)

2. Enter line action X to invoke the DB2 export function for the relevant Form. The Export to DB2 panel is displayed.
3. Select your export options. Press the Help (F1) key for additional information on each field.

4. Select option 1 **Create DDL to define table** to generate JCL that will create the DB2 table.
5. Submit the job to create the DB2 table.
6. Again from the Export to DB2 panel, select option 1 Load data into table to generate JCL that will load the DB2 table using the DB2 load utility.

Tip: You can save this JCL into an automated job scheduler to run every night so you can keep long-term performance information for trend analysis, capacity planning, or accounting purposes.
Export Summary extract to DB2

You can define a SUMMARY Report Form to specify the fields that you want to export to DB2 (and how you want their values to be summarized), then use that Report Form to create DDL to define a DB2 table, create a Summary extract data set, and then load the extracted data into DB2.

Procedure
1. On the IMS PA primary option menu, select option 10 Report Forms.

```
000001 //JCH#T440 JOB ,NOTIFY=
000002 /* IMS PA LOAD DATA INTO DB2 TABLE
000003 //DSNUPROC EXEC PGM=DSNUTILB,REGION=6M,
000004 // PARM='DB2P'
000005 //SYSPRINT DD SYSOUT**
000006 //UTPRINT DD SYSOUT**
000007 //SYSUDUMP DD SYSOUT**
000008 //SYSREC DD DSN=IMSPA.EXTRACT.DB2L1,
000009 // DISP=SHR
000010 //SYSUT1 DD UNIT=SYSDA,SPACE=(4000,(20,20),,,ROUND)
000011 //SORTOUT DD UNIT=SYSDA,SPACE=(4000,(20,20),,,ROUND)
000012 //SYSIN DD *
000013 LOAD DATA REPLACE
000014 INTO TABLE CPADB.ALLLIST (  
000015 ORGLTERM  POSITION(1)  CHAR(8),
000016 TRANCODE   POSITION(9)  CHAR(8),
000017 PROGRAM    POSITION(17) CHAR(8),
000018 IMSID      POSITION(25) CHAR(8),
000019 PSTID      POSITION(33) CHAR(4),
000020 QTYPE      POSITION(36) CHAR(6),
000021 REGTYPE    POSITION(42) CHAR(3),
000022 CLASS      POSITION(45) CHAR(3),
000023 PRIORITY   POSITION(48) CHAR(2),
000024 STARTIMS_TIME POSITION(50) TIME EXTERNAL(8),
000025 CPUTIME    POSITION(58) FLOAT,
000026 USERID     POSITION(66) CHAR(8),
000027 LTERMOUT   POSITION(74) CHAR(8),
000028 INPUTQ    POSITION(82) FLOAT,
000029 PROCESS   POSITION(90) FLOAT,
000030 OUTPUTQ   POSITION(98) FLOAT,
000031 OUTPUTG   POSITION(106) FLOAT,
000032 OUTPUTL   POSITION(114) FLOAT,
000033 TOTALTM   POSITION(122) FLOAT,
000034 RESPIMS    POSITION(130) FLOAT,
000035 DBCALLS   POSITION(138) FLOAT,
000036 DBGETS    POSITION(146) FLOAT,
000037 DBUPDATS  POSITION(154) FLOAT,
000038 DBNAITS   POSITION(162) FLOAT,
000019...
```

Figure 135. Export List extract to DB2: Load table
2. Enter line action X to invoke the DB2 export function for the relevant Form.

3. From the Export to DB2 panel, select option 1 Create DDL to define table. JCL to create the DB2 table is presented in an edit session.
4. Submit the job to create the DB2 table.
5. Load the data into the DB2 table using IPIUTILB.

When a Summary extract is loaded into a DB2 table with the Resume option, you can use the IMS PA utility IPIUTILB as an alternative to the DB2 batch utility DSNUTILB. If DSNUTILB is used and the extract has a duplicate key to an existing row in the DB2 table, the DB2 load (with resume) of the Summary extract will fail. Duplicate key situations regularly occur when there is an overlapping time interval from one IMS log to the next.

However, if you specify the IPIUTILB plan name, the IPIUTILB module is used instead. Rather than failing, it detects the duplicate key and accumulates the extract record to the DB2 table row.

To use IPIUTILB, you must first bind the DB2 plan. Sample JCL is supplied in member IPIDB2BD in the SIPISAMP library. See “Export to DB2: Bind DB2 Plan” on page 722.
From the Export to DB2 panel, select option 2 Load data into table and select load option 1 Resume. The JCL to load the DB2 table is built to use the IMS PA utility IPIUTILB.

```plaintext
//IMSPA JOB,NOTIFY=&SYSUID
 //*
//BIND EXEC PGM=IKJEFT01
 //*
//STEPLIB DD DISP=SHR,DSN=dsn.dsnload
//SYSTSRT DD SYSOUT=* 
//SYSTSIN DD *
DSN SYSTEM(ssid)
BIND PACKAGE(package) -
MEMBER(IPIDBRMU) -
LIBRARY('IPI.V4R4M0.SIPISAMP') -
VALIDATE(BIND) -
ISOLATION(CS) -
RELEASE(COMMIT)
BIND PLAN(DB2plan) -
PKLIST(package.*) -
ACQUIRE(USE) -
ACTION(REP) -
RETAIN
/*
Figure 139. IPIDB2BD: Sample JCL to create the DB2 package required to run the alternative load utility IPIUTILB

From the Export to DB2 panel, select option 2 Load data into table and select load option 1 Resume. The JCL to load the DB2 table is built to use the IMS PA utility IPIUTILB.

```plaintext
000001 //JCH#T440 JOB (ACCOUNT), 'NAME'
000002 //* IMS PA LOAD DATA INTO DB2 TABLE
000003 //IPIUPROC EXEC PGM=IPIUTILB,REGION=0M,
000004 // PARM='DB2P, IPIUTILB'
000005 //STEPLIB DD DSN=IMSPA.V440.SIPILINK,
000006 // DISP=SHR
000007 //SYSPRINT DD SYSOUT=* 
000008 /UTPRINT DD SYSOUT=* 
000009 //SYSUDUMP DD SYSOUT=* 
000010 //SYSREC DD DSN=IMSPA.EXTRACT.DB2S1,
000011 // DISP=SHR
000012 //SYSIN DD *
000013 LOAD DATA RESUME YES 
000014 INTO TABLE CPADB.ALLSUMMX ( 
000015 STARTIMS_DATE POSITION(1) DATE EXTERNAL(10),
000016 STARTIMS_TIME POSITION(11) TIME EXTERNAL(8),
000017 TRANCODE^ POSITION(19) CHAR(8),
000018 TRANCNT POSITION(27) FLOAT,
000019 CPU_TIME_AVE POSITION(35) FLOAT,
000020 INPUTQ_AVE POSITION(43) FLOAT,
000021 PROCESS_AVE POSITION(51) FLOAT,
000022 OUTPUTQ_AVE POSITION(59) FLOAT,
000023 OUTPUT_AVE POSITION(67) FLOAT,
000024 OUTPUTL_AVE POSITION(75) FLOAT,
000025 TOTALTM_AVE POSITION(83) FLOAT,
000026 UORTIME_AVE POSITION(91) FLOAT,
000027 RESPIMS_AVE POSITION(99) FLOAT,
000028 DBCALLS_AVE POSITION(107) FLOAT,
000029 DBGETS_AVE POSITION(115) FLOAT,
000030 DBUPDATS_AVE POSITION(123) FLOAT,
000031 DBWAITS_AVE POSITION(131) FLOAT,
000032 DCCALLS_AVE POSITION(139) FLOAT,
000033 FPCALLS_AVE POSITION(147) FLOAT,
...
```

Figure 140. Export Summary extract to DB2: Load table using IPIUTILB

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You can save this JCL into an automated job scheduler to run every night so you can keep long-term performance information for trend analysis, capacity planning, or accounting purposes.

Exporting form-based CSV extracts

You can File Transfer extract data sets onto your workstation and import the file into a PC-based reporting tool such as IBM Lotus Symphony Spreadsheets or Microsoft Excel.

List extract

The Transaction List extract creates a data set that contains a list of all transactions and their performance metrics.

The job output provides a recap of the extract:

IMS Performance Analyzer
List all performance indicators

LISX002 Extract has completed successfully
Data Set Name . . . . IMSPA.EXTRACT.L1
Record count . . . . 3,735

Figure 141. List extract: Recap report

The extract data set is in CSV format, ready for exporting to DB2 or a PC spreadsheet.

Figure 142. List extract: PC spreadsheet

Summary extract

The Transaction Summary extract creates a data set that contains a summary of transaction activity including their performance metrics.

The job output provides a recap of the extract:
Figure 143. Summary extract recap

The extract data set is in CSV format, ready for exporting to DB2 or a PC spreadsheet.

<table>
<thead>
<tr>
<th>IMS Tran Start</th>
<th>Trancode</th>
<th>Tran Count</th>
<th>CPU Time Avg</th>
<th>InputQ Time Avg</th>
<th>Process Time Avg</th>
<th>OutputQ Time Avg</th>
<th>Total IMS Time Avg</th>
<th>IMS Resp Time Avg</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.40.00</td>
<td>TPCCB0</td>
<td>52</td>
<td>20</td>
<td>8</td>
<td>153</td>
<td>0</td>
<td>150</td>
<td>148</td>
</tr>
<tr>
<td>10.40.00</td>
<td>TPCCB1</td>
<td>35</td>
<td>20</td>
<td>13</td>
<td>100</td>
<td>0</td>
<td>96</td>
<td>94</td>
</tr>
<tr>
<td>10.40.00</td>
<td>TPCCB2</td>
<td>49</td>
<td>20</td>
<td>15</td>
<td>145</td>
<td>0</td>
<td>137</td>
<td>132</td>
</tr>
<tr>
<td>10.40.00</td>
<td>TPCCB3</td>
<td>60</td>
<td>20</td>
<td>12</td>
<td>176</td>
<td>0</td>
<td>168</td>
<td>165</td>
</tr>
<tr>
<td>10.40.00</td>
<td>TPCCB4</td>
<td>49</td>
<td>20</td>
<td>14</td>
<td>116</td>
<td>0</td>
<td>108</td>
<td>101</td>
</tr>
<tr>
<td>10.40.00</td>
<td>TPCCB5</td>
<td>69</td>
<td>20</td>
<td>7</td>
<td>112</td>
<td>0</td>
<td>108</td>
<td>103</td>
</tr>
<tr>
<td>10.40.00</td>
<td>TPCCB6</td>
<td>42</td>
<td>20</td>
<td>12</td>
<td>134</td>
<td>0</td>
<td>134</td>
<td>127</td>
</tr>
</tbody>
</table>

Figure 144. Summary extract: PC spreadsheet
Chapter 19. IMS Transaction Index

The IMS Transaction Index is a specialized extract file created by IMS Performance Analyzer batch reporting. Each record in the index represents an IMS transaction and contains cumulative information from the IMS log about that transaction.

![Diagram](image)

Figure 145. Creating and using the IMS Transaction Index

Uses of the IMS Transaction Index

You can use an IMS Transaction Index in the following ways: as input for IMS Performance Analyzer transit reporting; for display in the IMS Problem Investigator or Transaction Analysis Workbench log browser; and as input for your own reports.

- IMS Performance Analyzer (IMS PA) form-based transit reporting.

  The IMS Transaction Index can replace the IMS log (SLDS) files as input for transit reporting. This significantly reduces the time and overhead of running IMS Performance Analyzer transit reports. It is recommended that you create the index once, either:
  - At the end of the day in preparation for the next day.
  - When the SLDS is created by the OLDS archive process for more timely analysis.

  All subsequent transit report requests can use the index in place of the original IMS log files. The index will create reports in far less time because:
  - The index is much smaller than the original log files, typically less than 10% in size.
  - The IMS log records have already been interpreted, and all transaction report fields and performance metrics have been calculated and stored in the index.

- IMS Problem Investigator (IMS PI) or Transaction Analysis Workbench intelligent problem detection.
The IMS Transaction Index can be processed on its own or merged with the associated IMS log files in an interactive diagnosis session to provide improved levels of problem detection. For example, “Locate all transactions with response time greater than 1 second.”

- Generating your own reports using your favorite z/OS or PC-based reporting tool.

### IMS Transaction Index record format and contents

The IMS Transaction Index record has the format of an IMS user log record, with a record code of X'CA01'. The record mapping is provided by macro IPILCA01 in the IMS Performance Analyzer macro library.

To review the contents of the index record, see “Displaying IMS Transaction Index record contents” on page 277 or macro IPILCA01. Alternatively, use IMS PA primary option menu option 10 Report Forms to create a new report form to view all the available transaction-level information that can be reported using form-based transit reporting.

The index record contains the information required to report all supported IMS Performance Analyzer report form fields, including:

1. **Transaction identification**
   - Transaction code, terminal, and other identifying names
   - Time stamp of when the transaction started or entered the system
   - All transaction types are comprehensively supported; including MPP, BMP, Fast Path, MSC (end-to-end), APPC (including CPI-CI), OTMA (including Connect and MQ)

2. **Tracking tokens**
   - Tracking, unit of work, OTMA, Connect and other identifying tokens

3. **Event time stamps**

4. **Performance metrics**
   - Transit and response time breakdown
   - Processing delays, including Commit Mode 0 and 1 delays incurred while waiting for client acknowledgement
   - Additional response time components, including Resume Tpipe elapsed time delays
   - ABEND and other processing failure indicators

5. **Resource usage**
   - CPU time
   - Full Function and Fast Path database calls
   - Database buffer, IO and locking
   - Fast Path buffer, VSO and contention
   - External subsystem
   - Input and output message count and lengths

The inherent restrictions of form-based reporting still apply when using the IMS Transaction Index:

1. The type 07 application termination accounting record is required to provide resource usage estimates. In a WFI environment, these records may not be available in the log.
2. IMS V12+ type 56FA transaction-level accounting records are required for accurate and complete resource usage statistics.

Creating and using the index for reporting

These topics explain how to create and report the IMS Transaction Index using IMS Performance Analyzer.

Creating an IMS Transaction Index

The IMS Transaction Index is requested from an IMS Performance Analyzer LOG report set and associated INDEX batch command.

Procedure

1. From the IMS Performance Analyzer primary option menu, select option 3 Report Sets and then define a new log report set or edit an existing one.
2. From the log report set edit menu, select Transaction Index in the form-based transit reports category.

3. Specify the name and disposition of the Transaction Index output data set. Optionally, select additional data sections to include in the index.
4. Enter the RUN command to proceed with the request. When prompted, specify run-time options and press Enter to generate the JCL. The JCL is displayed in the ISPF editor.

5. Batch requests to create the IMS Transaction Index are submitted and processed in the same way as all other Report Set requests. For example, the following JCL generates the index file, writes it to data set JCH.WORKSHOP.INDEX, and also runs three additional reports:

```plaintext
//IMSPA JOB,NOTIFY=&SYSUID
//*
//** EXEC PGM=IPIMAIN,PARM='V141'
//** STEPLIB DD DSN=IMSPA.V440.SGPLINK,DISP=SHR
//** Input IMS log files
//** LIZDE001 DD DISP=SHR,DSN=JCH.WORKSHOP.IZDE.SLDS
//** LIZDF001 DD DISP=SHR,DSN=JCH.WORKSHOP.IZDF.SLDS
//** Transaction Index extract file
//** IPITXOUT DD DSN=JCH.WORKSHOP.INDEX, DISP=(NEW,CATLG), UNIT=SYSDA,SPACE=(TRK,(1,1),RLSE)
//** TXRECAP DD SYSOUT=*  
//** SYSPRINT DD SYSOUT=*  
//** Report Set Command Input
//** IPICMD DD *  
//** IMSPALOG INDEX(  
| [ESAF] | 3 |
| [DBUPDATE] | 4 |
| [ABEND] | 5 |
| [PROC(9999)] | default 0.50 seconds |
| [TOTAL(9999)] | default 1.00 seconds |
| [PGMSWI] |  
| [INCLUD(TRANSTRING(list))][EXCLUD(TRANSTRING(list))], | 6 |
| [INCLUD(TERM(list))][EXCLUD(TERM(list))], |
| [INCLUD(LINE(list))][EXCLUD(LINE(list))], |
| [INCLUD(VTAMNODE(list))][EXCLUD(VTAMNODE(list))], |
| [INCLUD(CLASS(list))][EXCLUD(CLASS(list))], |
```

**Figure 147. IMS PA: Specify Transaction Index data set name**

This diagram illustrates the steps involved in specifying the Transaction Index data set name, including the optional sections and exception criteria for transactions. The diagram also outlines the selection criteria for various object types and their respective inclusion or exclusion options.
DDname IPITXOUT must be specified in the JCL to define the data set that will contain the IMS Transaction Index.

Optional: Specify DDname TXRECAP for the Recap report output. If not specified, TXRECAP is allocated automatically.

The INDEX batch command requests that the IMS Transaction Index is to be created.

Specify ESAF or DBUPDATE or both to request that the index include additional information for external subsystems or database update activity or both.

You can specify exception criteria so the index contains only problem transactions:

• Specify ABEND to only include transactions that abended.
• Specify one or both of the following options to only include transactions that exceed the specified elapsed time threshold (0.01 to 9999 seconds).
  – Specify PROCESS to only include transactions that have a processing elapsed time in the dependent region that exceeds the threshold (default 0.50 seconds).
  – Specify TOTAL to only include transactions that have a total transit time that exceeds the threshold (default 1.00 second).
• Specify PGMSWI to include all transactions in the program switch sequence when at least one of them is an exception. This allows you to analyze the complete transaction set that resulted in the exception.

Specify selection criteria to filter the input file by including or excluding records based on transaction code, LTERM, line, VTAM node, class, or user ID.

Optional additional report requests.

6. Check or change the JCL, then on the ISPF editor command line, enter SUB to submit the job.

7. When the IMS Performance Analyzer batch job has completed successfully, the Recap report gives the name of the IMS Transaction Index data set and the number of records written.

```
IMSPALOG LIST, SUMMARY, IRUR
IMSPALOG EXECUTE
/*
1 DDname IPITXOUT must be specified in the JCL to define the data set that will contain the IMS Transaction Index.

2 Optional: Specify DDname TXRECAP for the Recap report output. If not specified, TXRECAP is allocated automatically.

3 The INDEX batch command requests that the IMS Transaction Index is to be created.

4 Specify ESAF or DBUPDATE or both to request that the index include additional information for external subsystems or database update activity or both.

5 You can specify exception criteria so the index contains only problem transactions:
   • Specify ABEND to only include transactions that abended.
   • Specify one or both of the following options to only include transactions that exceed the specified elapsed time threshold (0.01 to 9999 seconds).
     – Specify PROCESS to only include transactions that have a processing elapsed time in the dependent region that exceeds the threshold (default 0.50 seconds).
     – Specify TOTAL to only include transactions that have a total transit time that exceeds the threshold (default 1.00 second).
   • Specify PGMSWI to include all transactions in the program switch sequence when at least one of them is an exception. This allows you to analyze the complete transaction set that resulted in the exception.

6 Specify selection criteria to filter the input file by including or excluding records based on transaction code, LTERM, line, VTAM node, class, or user ID.

7 Optional additional report requests.

6. Check or change the JCL, then on the ISPF editor command line, enter SUB to submit the job.

7. When the IMS Performance Analyzer batch job has completed successfully, the Recap report gives the name of the IMS Transaction Index data set and the number of records written.
```

8. The IMS Transaction Index is now ready to use.
Using the index for performance reporting

After creating an IMS Transaction Index, you can use it in place of the IMS log (SLDS) files for subsequent form-based transit report requests.

Procedure

Edit the report set JCL to refer to the IMS Transaction Index instead of the IMS log files.

For example, the following JCL shows the IMS log input files replaced by the IMS Transaction Index file (ddname LOGIN). The form-based SUMMARY and LIST report requests will use the index.

```
//IMSPA JOB ,NOTIFY=&SYSUID
//*
//IPI EXEC PGM=IPIMAIN,PARM='V141'
//STEPLIB DD DSN=IMSPA.V440.SIPILINK,DISP=SHR
//* IMS Transaction Index
//LOGIN DD DISP=SHR,DSN=JCH.WORKSHOP.INDEX
//SYSPRINT DD SYSOUT=*       
//* Report Set Command Input
//IPICMD DD *               
  IMSPALOG SUMMARY(SECGROUP,PRECISION(6),
                   FIELDS(TRANCODE,TRANCNT,
                   INPUTQ,PROCESS,OUTPUTQ,TOTAL,CPU))
  IMSPALOG LIST(SECGROUP,PRECISION(6),
                FIELDS(LTERM,TRANCODE,STARTIMS,
                INPUTQ,PROCESS,OUTPUTQ,TOTAL,CPU))
  IMSPALOG EXECUTE
/*
```

The resulting reports will contain the same information as if they were created from the original IMS log files.

Note: The additional information for external subsystems or database update activity will only be available for reporting if the corresponding options (ESAF, DBUPDATE) were specified when the IMS Transaction Index was created.

IMS PI: Using the index to diagnose transaction problems

After creating an IMS Transaction Index with IMS PA, you can then use it in IMS Problem Investigator to diagnose problem transactions.

The IMS Transaction Index can be analyzed on its own, or in conjunction with the IMS log files used to create it. The index is a useful diagnostic mechanism that provides a summary insight into the dynamics of the transaction and provides a shortcut to the cause of the problem.

Preparing the IMS Transaction Index (optional)

IMS Performance Analyzer cuts index records in the order that transactions complete their transit processing in the IMS log file. It is not sorted in transaction start time sequence.

About this task

IMS Problem Investigator expects log file data to be in time sequence so that:
1. Merging can display results in correct chronological order.
2. Time formatting aids (Relative and Elapsed) can display actual (positive) elapsed time deltas.
3. When merging IMS Transaction Index and IMS log files, the type CA01 index and the type 01 IMS transaction message records from which the index was derived, can be adjacent in the display.

**Note:** Sorting the index is optional – IMS Problem Investigator can process an unsorted index. You might decide not to sort the index if you are processing it standalone and looking for individual transaction problems or issues, rather than viewing the file as a time line of system activity.

**Procedure**

If you are using IMS Problem Investigator V2.4 and above, you can use the ISPF dialog to generate JCL to sort the IMS Transaction Index using the ISPF dialog.

1. From the IMS Problem Investigator primary option menu, select option 1 Process.
2. Enter the data set name of the IMS Transaction Index in the Log File column.
3. Enter line action SORT.

**Example**

The following JCL sorts the index file in (message arrival) time sequence using field ISO – the 26 character ISO date and time stamp.

```
//USR JOB (ACCOUNT), 'NAME'
/*
***======================================================================
*** Sort the IMS transaction index
***======================================================================
//SORT EXEC PGM=SORT
//SORTIN DD DISP=SHR,
   DSN=JCH.WORKSHOP.INDEX
//SORTOUT DD DISP=SHR,
   DSN=JCH.WORKSHOP.INDEX.SORTED
//SYSOUT DD SYSOUT=*   //SYSIN DD *
   SORT FIELDS=(265,26,CH,A)
/*
```

*Figure 148. Sample JCL to sort the index in transaction arrival time sequence*

IMS Transaction Index records are variable length. The character positions in the SORT statement allows for the first 4 bytes of each record that contain the record descriptor word (RDW).

**Starting to process the IMS Transaction Index**

To start processing a IMS Transaction Index in IMS Problem Investigator, you specify its data set name on the Process Log Files panel.

**Procedure**

On the Process Log Files panel, select the IMS Transaction Index, and any other log files that you want to browse.
The following IMS Problem Investigator diagnostic session is started by selecting three files; the (sorted) IMS Transaction Index and the two (shared queue sysplex) SLDS files used to create the index. The files are merged and displayed as if they are a single data source.
Notice the initial Filter setting of CA01. This instructs IMS Problem Investigator to display only the IMS Transaction Index records (their type is X'CA01' in the user log record range), hiding all other records from display until they are required.

Tip: Specify the index file before the IMS log files. This will ensure that the CA01 index record is displayed immediately above its associated type 01 IMS input message record.

The following browse panel is the list of all transactions contained in the index, matching the initial filter setting of CA01.

---

**Locating the problem transaction using a filter**

To narrow down the search for a problem transaction, you can use the navigation aids and filtering criteria.

**Procedure**

1. Navigate to a point in time in the log file using point-and-shoot to a time of day.
2. Use the FILTER command to change the active filtering criteria. Select the CA01 record in the filter to specify conditions that will help to locate the problem transaction.
Filtering against the IMS Transaction Index record type allows you to specify conditions based on any attribute of the transaction, including its performance. The following condition requests that only transactions with a processing time greater than 2 seconds are selected for display.

Tracking the problem transaction

When you have located the problem transaction, you can use tracking to view all IMS log records associated with the transaction.

Procedure

Use the TX line action against the required IMS Transaction Index record to initiate transaction tracking, as shown in the following figure.
Transaction tracking displays only those records associated with the problem transaction.

**Analyzing transaction time line and event latencies**

You can use the time formatting provided by IMS Problem Investigator to replay the transaction time line and event latencies.

**Procedure**

1. Use the R line action to display relative time – time since the start of the transaction – as shown in the following figure.

```sql
BROWSE JCH.WORKSHOP.INDEX.SORTED Record 00000317 More: < >
Command ===> Scrolling ====> CSR
Forwards / Backwards .. Time of Day .. 01.10.00.00000

<table>
<thead>
<tr>
<th>Code Description</th>
<th>Date</th>
<th>Time (LOCAL)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2012-03-16</td>
<td>Friday</td>
</tr>
</tbody>
</table>

---

CA01 Transaction

UTC=17.09.44.868329 TranCode=CEXTNONC Program=CEXTPGM Userid=FUNTRM46
LTerm=FUNTRM46 Terminal=SCOTCP46 Region=0002
OrgUOWID=ICDE/BE830080685A9642 IMSID=ICDE IMSRel=121
RecToken=ICDE/0000000000000000 CPU=199.999949 InputQ=0.007895 Process=2.645721
TotalTm=2.653616 RegTyp=MPP DBCalls=5

---

TX CA01 Transaction

UTC=17.10.56.568088 TranCode=ATMWDRAW Program=ATMPROG Userid=NEWYORK
LTerm=NEWYORK Terminal=NYATM001 Region=0002
OrgUOWID=ICDE/BE8300F492D4A23 IMSID=ICDF IMSRel=121
RecToken=ICDF/0000000000000000 CPU=199.999949 InputQ=0.008634 Process=2.564080
TotalTm=2.572714 RegTyp=MPP DBCalls=5

---

CA01 Transaction

UTC=17.12.38.636555 TranCode=CEXTNONC Program=CEXTPGM Userid=FUNTRM48
LTerm=FUNTRM48 Terminal=SCOTCP48 Region=0001
OrgUOWID=ICDE/BE8301562035B20 IMSID=ICDE IMSRel=121
RecToken=ICDE/0000000000000000 CPU=66.666650 InputQ=75.978279 Process=2.186935
TotalTm=78.165214 RegTyp=MPP DBCalls=3

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

Figure 153. IMS PI: initiate tracking for the problem transaction
2. Alternatively use the E line action to display event latency elapsed times – the elapsed time between log record events.

3. Use the W line action to revert back to wall clock time.

Displaying IMS Transaction Index record contents

An IMS Transaction Index record contains all the important information taken from the original log records for the transaction. You can use IMS Problem Investigator to browse the contents of the index records which are processed in the same way as any other log record.

The following figure is an example of an IMS Problem Investigator formatted record display. It shows the formatted contents of all the fields in the IMS Transaction Index record from where you can zoom for more information about any field or switch to view the record contents in dump format.
Figure 155. IMS PI: Analyze IMS Transaction Index record contents (part 1 of 2)
Figure 156. IMS PI: Analyze IMS Transaction Index record contents (part 2 of 2)
Part 5. Log reporting

IMS PA provides both an online dialog and a batch interface. This part describes how to request and run Log reports and extracts using the dialog and batch commands.
Chapter 20. Requesting Log reports

You can use the IMS PA ISPF dialog to specify and request reports generated from IMS log data.

Log Report Sets

Log reports are specified in a Report Set of type LOG.

Report Sets are stored in a Reports Sets data set. If you have not specified a Report Sets data set, IMS PA will allocate a data set for you with default characteristics. To change the Report Sets data set, you can use Options in the action bar or option 0.4 IMS PA Control Data Sets from the IMS PA primary option menu.

To specify Log Reports:
2. Define a new Log Report Set or edit an existing one. See "Maintaining Report Sets" on page 125 for information on how to do this.

A panel is then displayed for you to view or modify the description of the Report Set and the reports it contains. Figure 158 on page 284 shows the sample Log Report Set which IMS PA provides if there are no user-defined Report Sets in the Report Set data set.

The list of reports in the Report Set is presented in a tree structure (folder style). The reports are grouped by category.

The Log Report Set Edit panel shows the list of all available log reports options in a tree structure.

The Tree View is a hierarchical representation of the report categories and reports. This is similar to the way some PC tools display folders and files. The + or - character to the left of each report category shows its current status, expanded (-) or collapsed (+). This allows you to view only the reports that you are currently interested in, and has no affect on which reports are run when the Report Set is submitted.
You can flip the status by selecting the + or - character with the mouse (or lightpen) or cursor select key. Selecting the category with the $ line action also flips its status.

Figure 158. Edit Log Report Set
Tip: If your terminal emulation allows, it is recommended that you configure your
Mouse Options to activate the lightpen function. This allows you to left button
click on the + or - characters to Expand and Collapse the Report Categories. The
use of your mouse as a lightpen may vary depending on your terminal emulation
software.

Each report can be activated (sets the Active column value to Yes) or deactivated
(No). If any changes are made to a report, the dialog will mark the report as active
automatically. Each Report Category can be activated or deactivated. Only active
reports in active report categories are included in the Report Set at submit time.

A Report Set can be submitted for processing only if there is at least one active
report in an active report category. However, you can use the RUN line action to
temporarily override the inactive status of a report or report category.

Line actions

The line actions that you can enter on the Log Report Set panel depend on the
type of item that you enter the line action next to.

The available line actions depend on whether they are acting on either:
• The top of the Report Set menu tree (whole of Report Set)
• A Report or Option Category
• The Global or Transit Options
• A Report or Extract

** Reports **

The available line actions for ** Reports ** at the top of the menu tree are:

/ Display the menu of line actions.
S Expand all categories that are not already expanded, or collapse all
categories if they are all expanded.
A Activate all categories that contain one or more active reports. This does
not affect the status of the individual reports. If there are no active reports
in the category, it cannot be activated. Only the active reports in active
report categories will be run when the Report Set is submitted.
AA Activate all categories, all reports, all options.
D Deactivate all categories. This does not affect the status of the individual
reports. When a report category is deactivated, no reports in that category
will be run when the Report Set is submitted.
DD Deactivate all categories, all reports, all options.
RUN Also R. Run the report category. Run-time options will display.

Report Categories

The available line actions for a Report Category are:

/ Display the menu of line actions.
S Expand or Collapse the report category.
A Activate the report category (sets the Active column value to Yes).
Alternatively, you can type Y in the Active column. This does not affect the
status of the individual reports. If there are no active reports in the
category, it cannot be activated. Only the active reports in active report
categories will be run when the Report Set is submitted.

**AA**  Activate the report category and all the reports and options within it.

**D**  Deactivate the report category (sets the *Active* column value to *No*).
Alternatively, you can type `N` in the *Active* column. This does not affect the
status of the individual reports. When a report category is deactivated, no
reports in that category will be run when the Report Set is submitted.

**DD**  Deactivate the report category and all the reports and options within it.

**RUN**  Also R. Run the report category. Run-time options will display.

**Options**

There are three sets of Options: Log Global Options, Transaction (MSGQ) Transit
Options and Fast Path Transit options. The Options can be edited by selecting with
line action `S`. They cannot be explicitly activated or deactivated.

**Reports**

The available line actions for a report are:

`/`  Display the menu of line actions.

`S`  Select (Edit) the report.

`A`  Activate the report (Active=Yes). Alternatively, you can type `Y` in the
*Active* column.

`D`  Deactivate the report (Active=No). Alternatively, you can type `N` in the
*Active* column.

**RUN**  Also R. Run the report. Run-time options will display.

Not available on the submenu of 21 User-Written Record Processors.

**RUN command**

The RUN command runs the Report Set and prompts you for entry of runtime
options, such as System Selection and Report Interval, before generating the JCL.

**SUB**, **JCL**, and **JCM** are special RUN requests that preset the Execution Mode (see
“Run Log Report Set” on page 287) and allow you to bypass the runtime prompt:

- The SUBMIT or SUB command directly submits the Report Set for execution.
- The JCL command builds the JCL to execute the Report Set and allows you to
edit the job before you submit it or save it in your JCL library.
- The JCLCMD or JCM command builds the JCL, converts the Report Set to a
command stream, and allows you to edit the job before you submit it or save it
in your JCL library.

The RUN command does not reset the Execution Mode. For example, if you SUB a
Report Set, the Execution Mode is set to 1. If next time you RUN a Report Set, the
Execution Mode will default to 1.

RUN is also available as a line action to run individual reports or report categories
and override the Active status. When entered as a line action, only Execution Mode
3 is available. **SUB**, **JCL**, and **JCM** can be entered as a line action, however in this
case they act the same as the **RUN** line action.
Specifying Report Options
The IMS PA dialog stores the report options that you specify in the Report Sets data set.

For additional information about the report options and examples of the reports, see the chapter “Analyzing Log reports and extracts” in the IMS Performance Analyzer for z/OS: Report Reference.

Saving your changes
If an active report is deactivated, its specified options are retained. To return to the default options for a report, edit the report in the Report Set, then select File > Reset To Defaults from the action bar or enter DEFAULTS on the command line. To return to the default value for a single field (excluding flags, selection fields, or fields in a dependent set), just erase the value in the field.

Any changes to a Report Set’s options and activated reports are saved only by issuing a SAVE, SAVEAS, or Exit (F3) command from the EDIT Report Set panel.

Note: Exit (F3) discards changes if Automatic Save on Exit in your IMS PA Profile Options is set to NO.

Saving of changes made on a subordinate panel (for example, a subpanel of the Management Exception Report) is as follows:
• If Exit (F3) from the subpanel, then changes are retained pending SAVE, SAVEAS, or Exit (F3) from the EDIT Report Set panel.
• If CANCEL from the subpanel, then changes just entered on the subpanel are discarded.

Run Log Report Set
The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category or individual reports.

About this task
One way to do this is shown in “Log Report Sets” on page 283.

Before IMS PA generates the JCL, the Run Report Set panel is displayed to prompt you to specify runtime options. You can request to bypass this prompt, except in the following circumstances:
• When the RUN command is used. The prompt for runtime options can only be bypassed if SUB, JCL, or JCM commands are used.
• When a Report Interval is specified, for example, for DBRC Log Selection.
Specify your desired runtime options. When the specification is complete, press Enter to proceed with JCL generation.

The options on the Run Report Set panel are:

**System Selection**

Specify the IMS Subsystem or Group to run the Report Set against. IMS PA includes in the JCL the log files specified for this subsystem or group.

You can type the system or group name or press Prompt (F4) to select one from a list of available systems and groups.

If you want to change your system definition or group specification, you can link there by selecting SysDefs in the action bar.

The generated JCL specifies the release of the IMS system on the EXEC IPIMAIN,PARM='Vvrm' statement. However, if you specified a group with IMS systems at different release levels, they are listed under //IPIOPTS DD as follows:

```
IMSPALOG SYSTEM(ims1,Vvrm)
IMSPALOG SYSTEM(ims2,Vvrm)
```

**Report Interval**

Default: Blank initially, but thereafter your specification is remembered.

Specify a date/time range. This date/time specification overrides at run time the Global Report Interval specified within the Report Set. Date is required for DBRC Log Selection, but otherwise the date/time fields may be left blank.

Date can be either an actual date specification with the same edit rules as the Global Report Interval (see "Log Global Options" on page 290), or it can be a relative date. Relative dates are specified as 0, -1, -2,... to signify a date relative to the current date. 0 represents today, -1 yesterday, -2 two days ago, and so on. If both From and To dates are specified, they must be in the same format.

Time is optional. If From time is not specified, it defaults to the start of the day. If To time is not specified, it defaults to the end of the day.
The specified date/time range is included as parameter input in the generated JCL.

For Log File input, under //IPIOPTS DD *
IMSPALOG START(yyyy/mm/dd,hh:mm:ss:th),
STOP(yyyy/mm/dd,hh:mm:ss:th)

For DBRC Log Selection, under //IPIPARAM DD *
FROM=(yyyy/mm/dd,hh:mm:ss:th)
TO=(yyyy/mm/dd,hh:mm:ss:th)

Log Selection Options
Select 1 to instruct IMS PA to use the log files explicitly specified in your System Definitions.
Select 2 to instruct IMS PA to use DBRC Log Selection to identify the relevant log files. See Chapter 15, “Automated File Selection,” on page 197 for further details of this process.

Unresolved Data Set Options
This option allows you to control what IMS PA does when it strikes a problem with JCL generation because the system or file definitions for your System Selection are incomplete. Select one of the following actions:
1. Issue error message. IMS PA aborts JCL generation and reports the errors in a window titled Report Set JCL Generation Failure. This allows you to link to System Definitions or Groups and correct your file specifications.
2. Edit unresolved JCL. IMS PA proceeds with JCL generation creating DD statements with DSN=<unresolved> where the files are not known. Regardless of your JCL or SUB request, the JCL is edited to allow you to specify the DSNs before submission.

You can use SysDefs in the action bar to link to System Definitions to make changes, or you can edit the JCL and make changes that apply to this run only.

Execution Mode
Default: According to the command entered.
Specify whether to execute the Report Set or generated commands, and whether you want to edit the JCL before submit. Editing JCL before submit will enable you to save the JCL in an external data set for automated job scheduling or ad hoc report requests.

The options are
1. Submit Report Set. This is equivalent to the SUBMIT or SUB command.
   The Report Set JCL contains the statements:
   //IPIRSET DD DSN=ReportSets.DSN(ReportSetName),DISP=SHR
   //IPIOBJL DD DSN=ObjectLists.DSN,DISP=SHR
   //IPIDIST DD DSN=Distributions.DSN,DISP=SHR
   //IPIFORM DD DSN=ReportForms.DSN,DISP=SHR
2. Edit JCL before submit. This is equivalent to the JCL command. It generates the same JCL as SUBMIT, but allows you to edit it.
3. Edit JCL with command input. This is equivalent to the JCLCMD or JCM command.
   This generates JCL in which the Report Set, and any Object Lists and Distributions it uses, are converted to a stream of commands and displayed to allow you to edit them. The Log JCL contains the statements:
Log Global Options

The IMS PA Log Global Options define general control information which applies to all active reports within the Report Set.

To view and edit Log Global Options for a Report Set:
1. Select the Log Report Set
2. Expand the Options category using line action S.
3. Select the Log Global category using line action S.

![File Options Help]

```
Command ===>

Specify Log Global options.

Extract Options:
- Include Field Headings YYYY/MM/DD HH:MM:SS:TH
- Use Comma as Delimiter Character
Processing Options:
- Ignore Log Sequencing Errors

Report Options:
- Report Interval

Processing Options:
- From
- To

Report Options:
- Report Interval
- Date/time pairs or dates only
- Times only

Processing Options:
- Ignore Log Sequencing Errors
```

The options are as follows:

**Report Interval**

Default: Not specified. All records are included.

This allows you to specify a time period for selecting a subset of the input file data for passing to the report processors. Records with time stamps on or after the From Date/Time and before the To Date/Time are selected for processing. Reducing the time period can significantly reduce processing time and virtual storage requirements for generating the reports.

A Report Interval can be specified for some individual reports, and is applied within the context of the Global Report Interval.

You can specify one of the following:

**Date/time pairs or dates only**

This indicates a date-time range (for example, 2014/06/25 8:00 to 2014/06/25 17:00). Input records between the From Date/Time and To Date/Time are selected for report processing. Any records at the start or end of the input file that are outside the specified range are bypassed. The From Date/Time must be before the To Date/Time.

**Times only**

This indicates a particular time slot (for example, 9:00 to 10:00 each day). Input records whose time stamp is within the specified time slot, irrespective of the date, are selected for report processing. Any records throughout the input file whose time of day is not within the specified time slot are bypassed. The From and To Times must
be different. Specifying the From Time greater than the To Time indicates a time slot across midnight.

**Neither date/time pair**

*All* input records are selected.

Rules governing the date:

- A date is expected in a format consistent with your **Preferred Date Format** specified in your Profile Options. See [Figure 12 on page 68](#).
- If the year of the date is specified as **** (four asterisks), the current year is substituted at the time the Report Set is executed.
- If the From Date is omitted, it will default at run time to the start of the input file.
- If the To Date is omitted, it will default at run time to the end of the input file.

Rules governing the time:

- Time is expressed as *hh:mm:ss:th* for hours, minutes, seconds, tenths and hundredths of a second. Colon delimiters separate the parts of the time.
- If the From Time is omitted, it will default at run time to 00:00:00:00.
- If the To Time is omitted, it will default at run time to 23:59:59:99.

**Note:** If producing Transit reports for shared queues log input data, the efficiency of the batch report processing can be significantly improved by specifying a global Report Interval which defines the intersecting time period for the multiple IMS subsystems. See “Specifying the Time Period for Transit Reports” on page 295 for further details.

**Report Output DDname**

Default: RPTOUT

Specify the DDname to be used for the output of the following Transaction Transit reports:

- Analysis
- Statistics
- Graphic Summary
- Extract by Interval

**Include Field Headings**

Default: Not selected.

Select with a / to include field headings as the first record in the extract file. If not selected, the field headings are omitted.

This option applies to the Total and Exception Traffic Extract Data Sets optionally produced by the Transaction (MSGQ) Exception and Fast Path (EMH) Transaction Exception reports.

**Use Comma as Delimiter Character**

Default: Not selected.

Select with a / to use a comma as the delimiter between fields in extract file records. If not selected, a space is used. If any extract data fields are null or have embedded spaces, the space delimiter may confuse subsequent processing by external programs or PC tools.

This option applies to the Total and Exception Traffic Extract Data Sets optionally produced by the Transaction (MSGQ) Exception and Fast Path (EMH) Transaction Exception reports.

**Ignore Log Sequencing Errors**

Default: Not selected; do not ignore.
Select with a / if you want IMS PA to ignore log sequencing errors which might occur, for example, if running from a subset of the records from the original log files.

Usually, if log sequence errors are encountered, IMS PA forces end of data processing and initiates reporting. Instead, if this option is selected, information messages are produced, processing continues, and reporting occurs at log end of file.

**Report Break Points**

Default: STOP

Specify when reports are to be written, as follows:

- **HOUR**: Write reports every hour.
- **STOP**: Write reports at the end of the specified interval, or end of the job if no defined interval.
- **EOF**: Write reports at the end of the job.
- **nnnn**: Write reports every nnnn minutes. The maximum value is 9999.

All times refer to log times.

**Print Lines per Page**

Default: 60

Specify the number of print lines per page. The specified value applies to all log reports except the Transaction Transit Graphic Summary and Extract by Interval.

Valid values are from 1 to 255.

This option generates the PAGESIZE(nnn) global operand.

**Print "%" sign in Report output**

Print the percent sign % in percentage values in report output. This is the default, and applies only to some form-based reporting output.

If not selected, this option generates the NOPCTSIGN global operand.

**Activate inflight processing**

Default: Selected.

Select with a / if you want IMS PA to perform inflight transaction processing.

IMS produces its logs (SLDS data sets) at regular intervals as the online log data dataset (OLDS). As such, some transactions may still be in progress at the end of the log. These incomplete transactions are called inflight transactions.

When **Activate inflight processing** is selected, IMS Performance Analyzer does not report incomplete transactions. Instead it writes their details so far to a work dataset. This data set is then input into the next IMS Performance Analyzer job as a list of transactions pending completion.

There are two data set options when using inflight processing. Both options ensure you will never have to change your report JCL:

- **Fixed data set names**: IMS Performance Analyzer writes to the data set specified in **Outflight DSN**. The **Inflight DSN** and **Outflight DSN** data sets are then switched in an IDCAMS post step after reporting has completed successfully (RC=0). For an example, see "Log Global Options" on page 410.
- **Generation Data Set Group (GDG)**: Use the following IDCAMS command to define the GDG base:
DEFINE GDG (NAME('IMSPA.LOG.INFLIGHT') NOEMPTY SCRATCH LIMIT(3))

The GDG limit is set to 3, even though only 2 data sets are required. This will ensure that in the event of a reporting failure, corrective action can be taken (delete the generation 0 data set and re-run the job).

See "Allocate IMS inflight data sets" on page 718 for samples.

Inflight processing affects the following reports:
- "Transaction Transit reports (Form-based)" on page 314
- "IMS Transaction Index" on page 325
- "Internal Resource Usage reports" on page 336

Notes:
- Use inflight processing to run IMS Performance Analyzer against every newly created SLDS data set.
- A transaction is considered to be complete if, at log end-of-file, its completion level is greater than or equal to 5, i.e. the transaction has completed processing and the type 56FA or 07 log record is available to provide its accounting details.
- It is recommended that you activate TRANSTAT=YES to collect type x'56FA' transaction accounting statistics record. This ensures that CPU usage and DLI call activity per transaction is accurate. Without 56FA these statistics are estimated – apportioned from the 07 schedule termination record. In WFI and pseudo-WFI environments where many transactions are processed per schedule, the reported statistics for a problem transaction may be misleading.
- It is recommended when using inflight to build the IMS Transaction Index as you go. The IMS Transaction Index will keep a detailed record of every transaction processed, providing input for further reporting or problem investigation using IBM IMS Problem Investigator for z/OS.

User Exit
Default: Not specified.

Optionally, specify the name of a Transaction Substitution Exit. The Exit enables you to change the Transaction Code name that is reported by selected Transit reports. The affected reports are the Transit Analysis, Statistics and Transaction Exception reports.

Sample JCL that illustrates how to use the Transaction Substitution Exit facility is provided in the following members in the SIPISAMP library:

**IPITSUB#**
Transaction Substitution Exit documentation: how it works, how to install it, how to use it

**IPITSUBA**
Assembly and Link-Edit JCL

**IPITSUBR**
Run Transit Reports

**IPITSUBS**
JCL to install the USERMOD

**IPITSUBU**
USERMOD to install the Exit
**IPITSUBX**

Sample Exit

**Source of IMS Processing ID**

Default: 1.

Controls how IMS PA sources the IMS Processing ID reported in the Transaction Transit Reports (fixed format and form-based).

1  Select 1 to use the subsystem name taken from the log input ddname in the format Lxxxxunn where xxxx is the IMSID, for example //LIMSA001 DD DSN=IMSA.SLDS.

2  Select 2 to derive the subsystem name from the IMS log records. Field TPCPOSSN in any type 56 record associated with the transaction is typically used.

This option generates the SETIMSID(LOG) batch operand.

Related reference:

- “Log Global Options” on page 410
- “Allocate IMS inflight data sets” on page 718

The Log Global Options define output and general control information for the log reports.

The sample library SIPISAMP contains a member with sample JCL to create IMS inflight data sets.

**Specifying the Time Period for Transit Reports**

When IMS PA merges shared queue log input from multiple IMS subsystems, the Transaction Transit record processors build in-storage queues of individual transaction details. In a shared queue environment, these details may be obtained from the logs of several IMS subsystems. IMS PA cannot complete individual transaction processing until all log records pertaining to the transaction are read.

Missing log data can cause IMS PA to accumulate these transaction queues without them being flushed when the transactions complete. When these queues become too large, IMS PA recognizes that log input may be missing and flushes the oldest transactions automatically without reporting on them.

Specifying a global Report Interval can significantly reduce the CPU and virtual storage requirements of shared queue log input Transaction Transit processing. By specifying a time period within the intersection of the log input from all the IMS subsystems in the sysplex, IMS PA will only accumulate transaction information that is complete and accounted for in reporting.

**Example**

Consider the following three IMS subsystems with log input for January 4, 2014:

- IMSA, from 10:25 to 17:50
- IMSB, from 10:06 to 16:20
- IMSC, from 11:08 to 16:20

For reporting aligned to a ten minute interval, the intersecting time period is January 4, 2014 from 11:10 to 16:20. This is specified using the Report Interval on the Log Global Options panel (see “Log Global Options” on page 290).
When you run the Report Set, the Run Report Set panel can optionally be displayed to allow you to update the Report Interval and other options. The Report Interval specified at run time overrides that specified on the Global Options panel. See “Run Log Report Set” on page 287 for further details of this facility.

The IMS PA Report Set batch run log (in SYSPRINT) details the individual IMS subsystem log input start and end times, as well as the IMS PA reporting period:

```
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```

**Transaction Transit reports**

The options for Transaction Transit reports are described here.

The IMS PA Transaction Transit standard reports (not Form-based) are:

- Analysis
- Statistics
- Log
- Graphic Summary
- Extract by Interval
- Transaction Exception
- Transaction History File

**Transaction Transit Options**

The IMS PA Transaction Transit Options define control information that applies to the Transaction Transit reports within the Report Set.

The Transaction Transit Options apply to the following reports:

- Transaction Transit Analysis
- Transaction Transit Statistics
- Transaction Transit Log
- Transaction Transit Graphic Summary
The options are as follows:

**Processing Options**

**Peak Transaction Time Percentage**

Default: 90

Specify a percentile \textit{nnn} between 50 and 100 to report the transit time within which \textit{nnn}\% of the transactions complete. Computations assume a normal distribution. Thus, 50 gives the median transit time for the sample.

Specify 90 or greater to determine the response time for most transactions. This is useful, for example, when monitoring a service level agreement which states that 95\% of transactions must complete within \textit{nn} milliseconds.

This percentile calculation is applicable to the following Transaction Transit reports:

- Analysis
- Graphic Summary
- Transaction Exception

Note: INMAX/OUTMAX is ignored if BMPs or Message Switches are included.
It does not apply to the Extract by Interval during Report Set processing. However, a percentile calculation can be applied to extracted data at a later stage of IMS PA processing via the Graphing and Export facility.

Report Options

**Include MSC Transactions**
Default: Not selected; do not include MSC transactions.
Select with a / to include MSC transactions that originated on another system.

**Include BMP Transactions**
Default: Not selected; do not include BMP transactions.
Select with a / to include BMP transactions.

**Include APPC/OTMA Transactions**
Default: Not selected; do not include APPC and OTMA transactions.
Select with a / to include APPC and OTMA transactions.
APPC/IMS has three types of application programs:
- Standard
- Modified
- CPI Communications (CPI-C) driven
OTMA transactions use the APPC message prefix.

**Include Message Switches**
Default: Not selected; do not include message switches.
Select with a / to include message switches.
Message switches include MSC transactions that originated in the specified system and have been sent to another system for processing.

**Report All Transactions**
Include all transactions, regardless of whether there was a response to the originating LTERM.
This option will automatically include all MSC, BMP, and APPC and OTMA transactions unless one of Include MSC Transactions, Include BMP Transactions, or Include APPC/OTMA Transactions has been selected. In this scenario, the remaining un-selected options are not included, even if Report All Transactions has been selected.

Selecting Report All Transactions alone will not report Message Switches. To include Message Switches, select the Include Message Switches option.

Processing Limits

**Input Queue Time (INMAX)**
Defaults: 60
Specify the number of seconds a message can remain in the input queue before being discarded by the Transaction Transit reports. When such a message is discarded, all other measurements for that transaction are also discarded. This eliminates the abnormally long times caused by conditions like hardware failures.
Valid values are from 0 to 99999 seconds. Zero (0) has special meaning:

0  No messages will be discarded and all will be reported.

**Note:** INMAX is ignored if BMP Transactions or Message Switches are included.

### Output Queue Time (OUTMAX)

**Defaults:** 60

Specify the number of seconds a message can remain in the output queue before being discarded by the Transaction Transit reports. When such a message is discarded, all other measurements for that transaction are also discarded. This eliminates the abnormally long times caused by conditions like hardware failures.

Valid values are from 0 to 99999 seconds, some with special meaning:

0  No messages will be discarded and all will be reported.

88888  For all transactions, report output queue time as zero.

77777  For all transactions, except MSC transactions, report output queue time as zero.

**Note:** OUTMAX is ignored if BMP Transactions or Message Switches are included.

### Transaction Set Size

**Default:** 32767

Specify the maximum number of transactions in a transaction set to be processed by the IMS PA transaction transit time functions. The purpose of this limit is to ensure that IMS PA doesn't run out of storage and abend.

Valid values are from 1 to 32767. In cases where large transaction sets exist on a log data set, setting the Transaction Set Size to a minimum value decreases the likelihood of an 80A abend.

If an 80A abend occurs, a diagnostic message is printed just before the end-of-file record counts. The message states the size of the largest transaction set and the storage that it required. If the required storage was a significant amount, specify a value for **Transaction Set Size** to restrict the transaction set size; or if it has already been specified, lower its value. Then rerun the job.

### Interval Options

#### Time Interval

**Default:** 15

Specify the value *nnnn*, in minutes, of the reporting interval for transit time by time of day reports, graphs, and extracts. Data is accumulated every *nnnn* minutes from the start of the log input for the following Transaction Transit reports:

- Analysis (by Time of Input)
- Statistics (by Time of Input)
- Graphic Summary
- Extract by Interval
- Transaction Exception (by Time of Input)
The data included in the first reported interval is that from the first record whose time stamp is on or after the specified Start/From date/time. However, the specified Stop/To date/time may fall within the last reported interval, and in order to complete the interval, data whose time stamp is after the Stop/To date/time may therefore be included.

**Note:** If **Align Time Interval to Even Hour** is selected, it is recommended that you specify a value that is a factor or a multiple of 60 to achieve consistent alignment to the hour.

**Align Time Interval to Even Hour**
Default: YES

Applies to the following Transaction Transit reports:
- Analysis (by Time of Input)
- Statistics (by Time of Input)
- Graphic Summary
- Extract by Interval
- Transaction Exception (by Time of Input)

Specify YES to align the reporting interval to the hour. Data is accumulated according to the specified **Time Interval** starting from the hour of the first log input record, but with printing commencing from the first time interval containing data.

For example, if the time of the first record is 10:37:05, the accumulation starts at 10:00:00. If the specified time interval is 30 minutes, the reported start times of the intervals are then 10.30.00, 11.00.00, 11.30.00, 12.00.00, and so on; whereas for a time interval of 25 minutes, the reported times are 10.25.00, 10.50.00, 11.15.00, 11.40.00, 12.05.00, and so on. In both cases, 10.00.00 does not appear in the report as the interval contains no data.

**Note:** To achieve alignment on every hour, specify a time interval which is exactly divisible into an hour. This is recommended if merging of input logs is required, to ensure that time intervals are aligned and the validity of results is retained.

Specify NO for no time interval alignment. For example, if the time of the first record is 10:37:05, and the specified time interval is 30 minutes, the reported start times of the intervals are then 10.37.05, 11.07.05, 11.37.05, and so on; and for a time interval of 25 minutes, the reported times are 10.37.05, 11.02.05, 11.27.05, and so on.

**Selection Criteria**
Default: None specified. Include all records without filtering.

Specify transaction codes to be included in or excluded from all Transaction Transit reports in the Report Set. Within this primary filtering of transaction codes, a further filtering is available on the following Transaction Transit reports:
- Analysis
- Statistics
- Log
- Extract by Interval
- Transaction Exception
This enables you to include in your report only the information that you are interested in. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

For example, to include only transaction codes listed in Object List TL000001 specify:

<table>
<thead>
<tr>
<th>Selection Criteria:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Object Type: In/Exc Object + List Validation Warning</td>
</tr>
<tr>
<td>Transaction Code: INC TL000001 /</td>
</tr>
</tbody>
</table>

To exclude transaction code PAY specify:

<table>
<thead>
<tr>
<th>Selection Criteria:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Object Type: In/Exc Object + List Validation Warning</td>
</tr>
<tr>
<td>Transaction Code: EXC PAY _</td>
</tr>
</tbody>
</table>

Related reference:
“Transaction (MSGQ) Transit Options” on page 412
Transaction Transit Options define general control information for the Transaction Transit reports.

**Transaction Transit Analysis report**

The Transaction Transit Analysis report can show response time performance by logical terminal, transaction code, transaction code within logical terminal, message class, line or VTAM node, and time of input.

IMS PA generates the report command:
IMSPALOG ANALYSIS(...)

Chapter 20. Requesting Log reports 301
These reports are written to the data set defined by the log global option Report Output DDname.

The options are:

**Reports Required**

Report options:
- Transaction Code
- LTERM or User ID
- LTERM-TRANCODE or User ID-TRANCODE
- Line or VTAM Node
- Class
- Time (Interval is nnn minutes)

Default: Transaction Code (single report ordered by Transaction Code)

Select with a / to produce any combination of six reports ordered by Transaction Code, LTERM, Transaction Code within LTERM, Line or VTAM Node, Message Class, or Time. This is the default choice of reports when Transaction Source is set to LTERM. Transaction transit (response) times will be summarized by LTERM.

If Transaction Source is set to User ID, the six available reports are ordered by Transaction Code, User ID, Transaction Code within User ID, Line or VTAM Node, Message Class, or Time. Transaction transit (response) times will be summarized by User ID.

For reporting by Time, the interval of reporting is specified in minutes by the **Time Interval** option, and interval alignment is specified by the **Align Time Interval to Even Hour** option on the Transaction (MSGQ) Transit Options panel.

**Report Interval**

Default: Not specified.
Specify the reporting interval. Within the context of the Global Report Interval, records with time stamps on or after the **From** Date/Time and before the **To** Date/Time are included in the report.

You can specify one of:

**Date/time pairs or dates only**

This indicates a *date-time range* (for example, 2014/06/25 7:00 to 2014/06/25 16:30). The From Date/Time must be before the To Date/Time.

**Times only**

This indicates a particular *time slot* (for example, 9:00 to 10:00 each day). Specifying the From Time greater than the To Time indicates a time slot across midnight.

**Neither date/time pair**

*All* input records are selected.

Rules governing the date and time are the same as those for the Global Report Interval (see “Log Global Options” on page 290).

**Transaction Source**

Transaction Source specifies what the report uses to identify the originating source of a transaction.

1. Specify **LTERM** to see transaction transit (response) times summarized by LTERM. This is the default.
2. Specify **User ID** to see transaction transit (response) times summarized by User ID.

**Report All Transactions**

Default: Not selected; the reports show only transactions that are directly involved in end-to-end response.

Select with a / to report all transactions. By default, the Transit Analysis and Statistics reports only report transactions that are directly involved in end-to-end response. IMS PA tracks the flow of each transaction, across its program switches to the point where it responds back to the originating LTERM. Only then is the transaction considered for reporting.

If this option is selected the requested report will include all transactions regardless of whether there was a response to the originating LTERM. This aligns the report results more closely with the Transaction Exception and Management Exception reports.

**Selection Criteria**

Default: None specified. However, Transaction Code Selection Criteria specified on the Transaction (MSGQ) Transit Options panel is applied at run time.

Selection Criteria enable you to include in your report only the information that you are interested in. Records can be included in or excluded from the report based on their Transaction Code, LTERM, Line or VTAM Node, Message Class, and User ID values. For Transaction Codes, this panel provides a secondary filter within the primary filter specified on the Transaction (MSGQ) Transit Options panel.

The reports are filtered only by the selection criteria that apply to that report. For example:

- Transaction Code report uses the Transaction Code filter
- Message class report uses the Class filter
• User ID report uses the User ID filter
• User ID-TRANCODE report uses the User ID and Transaction Code filters

You can specify a single value, a masking pattern, or an Object List that specifies many values. Masking is not supported for Line or Message Class objects. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

Related reference:
“ANALYSIS: Transaction Transit Analysis report” on page 414

The ANALYSIS operand of the IMSPALOG batch command requests the Transaction Transit Analysis report.

Transaction Transit Statistics report

The Transaction Transit Statistics report is a graphical representation of the information in the Transaction Transit Analysis report.

IMS PA generates the report command:
IMSPALOG STATS(…)

File Options Help

Command ===> SAMPLLOG - Transaction Transit Statistics
Specify report options.

Reports Required: Report Interval 
/ Transaction Code YYY/MM/DD HH:MM:SS:TH
  LTERM From
  LTERM-TRANCODE To 
  Line or VTAM Node Transaction Source: 1. LTERM
  Class 2. User ID

Report Options: Report All Transactions
  Validation Warning

Graph Distribution +

Selection Criteria:
  Object Type Inc/Exc Object + List Validation Warning
  Transaction Code
  LTERM
  Line
  VTAM Node
  Class
  User ID

Figure 165. Transaction Transit Statistics Report

These reports are written to the data set defined by the log global option Report Output DDname.

The options are the same as those for the Analysis Report (see “Transaction Transit Analysis report” on page 301) with the following additional option:
Graph Distribution

Default: If no Distribution is specified, the following defaults are applied at run time:

- Ranges (Limits) = 2, 4, 6, 8, 10, 15, 20, 30, 60
- Title = Sc Mil (for seconds and milliseconds)
- Multiplier = 1
- Edit Mask = ZZZ,ZZZ.ZZ9

Specify the name of a Distribution to define the attributes of the graph. The sample Distribution LOGIN is provided. It defines:

- Ranges (Limits) = 25, 50, 75, 100, 150, 200, 300, 500, 1000
- Title = Sc Mil (for seconds and milliseconds)
- Multiplier = 1
- Edit Mask = ZZZ,ZZ9.999

See Chapter 11, “Distributions,” on page 157 for information on how to define a Distribution.

Related reference:

“STATS: Transaction Transit Statistics report” on page 415

The STATS operand of the IMSPALOG batch command requests the Transaction Transit Statistics report.

Transaction Transit Log report

The Transaction Transit Log report shows the transit activity of each message originating from a logical terminal.

IMS PA generates the report command:

IMSPALOG LOG(...)

File Options Help

Command ===>

Specify report options.

Queue Limits (INMAX/OUTMAX)  Report Interval  YYYY/MM/DD  HH:MM:SS:TH
1. Only Messages Within Limits  From
2. Only Messages Exceeding Limits  To
3. All Messages

Report Output DDname LOGDD

Selection Criteria:

- Object Type: Inc/Exc Object + List Validation Warning
- Transaction Code
- LTERM
- User ID

Note: INMAX/OUTMAX refer to the Input and Output Queue Time values set in Transit Options, which are 0 and 0 seconds respectively.

Figure 166. Transaction Transit Log Report Options

The options are as follows:
Queue Limits
Default: 1. Only Messages Within Limits
Select 1 to include those messages with times less than the values specified by the Transaction (MSGQ) Transit Options INMAX, OUTMAX. See “Transaction Transit Options” on page 296.
Select 2 to include those messages with times greater than the values specified by the Transaction (MSGQ) Transit Options INMAX, OUTMAX.
Select 3 to include all messages.

Report Interval
Default: Not specified.
Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see “Transaction Transit Analysis report” on page 301).

Report Output DDname
Default: LOGDD
Specify the DDname to be used for the report output.

Selection Criteria
Default: Transaction Code Selection Criteria on the Transaction (MSGQ) Transit Options panel, applied at run time.
Records can be included in or excluded from the report based on their Transaction Code, LTERM, and User ID. This panel provides a secondary filter within the primary filter specified on the Transaction (MSGQ) Transit Options panel. This allows you to focus on the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

Related reference:
“LOG: Transaction Transit Log report” on page 417
The LOG operand of the IMSPALOG batch command requests the Transaction Transit Log report.

Transaction Transit Graphic Summary report
There are no individual options for this report. The report can only be activated or deactivated.

The output is written to the data set defined by Report Output DDname on the Log Global Options panel.

The time values on the vertical axis of the graphs are defined by Time Interval and Align Time Interval to Even Hour on the Transaction (MSGQ) Transit Options panel. The layout of the graphs is not controlled by a Distribution.

Related reference:
“GRAPH: Transaction Transit Graphic Summary report” on page 418
The GRAPH operand of the IMSPALOG batch command requests the Transaction Transit Graphic Summary report.

Transaction Transit Extract by Interval
The Transaction Transit Extract by Interval creates extracts by time interval of transaction transit time data.
IMS PA generates the report command:

\texttt{IMSPALOG EXTRACT(...)}

This panel provides a second level of control for extract processing. Values specified on the Log Global Options and Transaction (MSGQ) Transit Options panels provide a primary level of control.

\textbf{Note:} If merging extracted data files, check that the specified values for the filters (such as Transaction Code Selection Criteria, MSC, BMP, and APPC/OTMA Transactions, and Message Switches) and the interval options (Time Interval, Align Time Interval to Even Hour) are consistent for all the extracts to ensure that the results of the merge are meaningful.

The report summarizing the extract processing is written to the data set defined by\texttt{Report Output DDname} on the Log Global Options panel.

The options are as follows:

\textbf{Extract Data Required}

Options:
- By Transaction Within Interval
- By Interval

Default: Both selected.

Select with a / to produce the required extract.

Ensure that you select as a minimum criteria, the data you may wish to graph or export. For example:

- To graph or export by interval, you must first extract by interval.
- To graph or export by transaction, you must first extract by transaction within interval.

For more information, see \textit{Chapter 3, “Processing extract data sets,” on page 45.}
Select **By Transaction Within Interval** to accumulate data for individual transaction codes within each time interval.

For example, if during a particular time interval there are, on the input log file, 3 records for transaction A, 2 records for transaction B, and no records for transaction C, the extract processing writes 2 records to the extract file, 1 with the aggregate data for transaction A, and 1 with the aggregate data for transaction B.

Select **By Interval** to accumulate data for all transactions in each time interval.

For example, in the previous scenario, for the particular interval only 1 record is written to the extract file with the aggregate data for both transactions A and B.

Select both to obtain by time interval, the aggregate data for the individual transaction codes and their totals.

**Report Interval**
Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. **Standard rules apply to the date and time specification** (see “Transaction Transit Analysis report” on page 301).

**Extract Data Sets: Input and Output**
Defaults: None.

Extract processing uses the input data set, if it is specified, for reading previously extracted data, merging it with the data extracted from the current log, and writing it to the output data set. The extracted data is stored in a format suitable for further IMS PA processing, and is not directly readable by external programs.

The input data set is optional, but if specified, it must exist.

The output data set must be specified. If it does not exist, IMS PA will create the data set at the time the extract is run using the allocation details specified for the **Transit Extract by Interval Data Set in Reporting Allocation Settings** from the action bar **Options** menu. If the output data set exists, the JCL is built with **DISP=MOD** and the new extract data is appended to the end. To overwrite the contents, edit the JCL and specify **DISP=OLD**.

The same data set may be specified for input and output, although this is not recommended. You may specify the input and output data sets as generations (0) and (+1) respectively of the same generation data group (GDG) and thereby avoid the need to update the specification between runs.

**Selection Criteria**
Default: **Transaction Code Selection Criteria** on the Transaction (MSGQ) Transit Options panel, applied at run time.

Records can be included in or excluded from the extract based on their Transaction Code. This panel provides a secondary filter within the primary filter specified on the Transaction (MSGQ) Transit Options panel. This enables you to include in your report only the information that you are interested in. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.
Ensure that your selection contains the transaction codes you may wish to export or graph. See Chapter 3, “Processing extract data sets,” on page 45.

Related reference:
"EXTRACT: Transaction Transit Extract by Interval” on page 418
The EXTRACT operand of the IMSPALOG batch command requests the Transaction Transit Extract by Interval.

**Transaction Exception report and extract**

The Transaction Exception report shows transaction performance information that affects response time.

IMS PA generates the report command:
IMSPALOG TRANEXC(...)

---

**Figure 168. Transaction Exception Report and Extract Options**

The options are as follows:

**Reports Required**
Options:
- Transaction Code
- User ID
- Class
- Time (Interval: 15 Minutes)

Select with a / to produce any combination of four Transaction Exception reports ordered by Transaction Code, User ID, Message Class, or Time of Input Message.

The Transaction Exception Recap report is always produced at the end to give a summary of the processing of the selected reports and requested extracts.

For reporting by Time, the interval of reporting is specified in minutes by the **Time Interval** option, and interval alignment is specified by the **Align Time Interval to Even Hour** option on the Transaction (MSGQ) Transit Options panel.

**Report Interval**

Defaults: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see “Transaction Transit Analysis report” on page 301).

**Report Output DDname**

Default: TRANEXC

Specify the DDname to be used for the report output.

**Report Options**

Select to include accumulated transaction totals or shared queue details.

**Transaction Totals Only**

Default: Not selected.

This option applies to the Transaction Exception reports by User ID, by Message Class, and by Time of Input Message which, by default, show a further breakdown of the data by Transaction Code.

Select with a / to show only the accumulated totals of transaction activity by User ID, Message Class, and Time.

**Shared Queue Details**

Default: Not selected.

This option is applicable when processing shared queue data.

Select with a / to include shared queue information in the report. If not selected, shared queue details will not be reported.

This option does not apply to the extract files which will include shared queue details whenever present in the log data.

**Print Expectations**

Default: Not selected; do not report expectation details.

Select with a / to include the values from the Expectation Set in the report in addition to the actual values. This will help you relate exceptions to expectations.

This option generates the PRINTEXP report operand.

**Extended format**

Default: Not selected.

The Transaction Exception report has two formats: original and extended. The default is the original format (FORMAT1 report operand).
Select with a / to produce the extended format report (FORMAT2 report operand).

Transaction performance statistics are reported in three parts: *Total = *Exception + *OK.

- *Total: the overall performance of transactions in the sample (summary grouping)
- *Except: transactions that failed to meet the performance exception criteria as defined in the Expectation Set
- *OK: transactions with acceptable performance

The two report formats look similar but the report lines have different meanings:

**FORMAT1**
For the transaction code report, the three report lines (in order) are *Exception, then *OK, then *Total.

For user ID, class, and time breakdown, the single report line is *Exception only. Transactions with acceptable performance are omitted.

**FORMAT2**
The transaction code report, as well as the user ID, class, and time reports, all have the same three report lines: *Total, then *Exception, then *OK.

This is the recommended format because all reports have the same consistent format. Exception transactions are always reported on the *Except row and all reports give the complete breakdown of *Total = *Exception + *OK.

**Transaction Limits: Expectation Set**
Default: None.

Specify the name of an Expectation Set which contains user-supplied expected values for any of the following transaction attributes:
- Input queue time
- Processing time
- Output queue time
- Total transit time
- DB DL/I calls
- DC DL/I calls
- DB waits
- CPU time

"Specifying Expectations" on page 137 describes how to specify expected values in an Expectation Set.

The report will show a transaction as an exception if it is outside the range for any of the values defined in the Expectation Set. If the Expectation Set is not specified, then the report shows all transactions as exceptions.

To print the Expectation Set with the report, select the Print Expectations option.

**Extract Data Sets**
Extract options:
- Total Traffic
- Exception Traffic

Defaults: None.
Specify the names of either or both of the following optional extract data sets:

- The Total Traffic data set. All transactions have a detail record written to this data set.
- The Exception Traffic data set. Only exception transactions have an exception record written to this data set.

If the data set does not exist, IMS PA will create it at the time the report and extract are run using the allocation details specified in option 0.2 **Reporting Allocation Settings** from the IMS PA primary option menu.

If the data set exists, the new extract data will be appended to the end (DISP=MOD). To overwrite the contents of the extract data set, edit the JCL and specify DISP=OLD.

You may specify the extract data set as a generation of a Generation Data Group (GDG) and thereby avoid the need to update the specification between runs.

**Selection Criteria**

Default: None specified. However, the Transaction Code Selection Criteria specified on the Transaction (MSGQ) Transit Options panel is applied at run time.

Records can be included in or excluded from the report based on their Transaction Code, User ID, and Message Class values. For Transaction Codes, this panel provides a secondary filter within the primary filter specified on the Transaction (MSGQ) Transit Options panel. This enables you to include in your report only the information that you are interested in. You can specify a single value, a masking pattern (but not for Message Class objects), or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

**Related reference:**

"TRANEXC: Transaction Exception report and extract“ on page 420

The TRANEXC operand of the IMSPALOG batch command requests the Transaction Exception reports.

**Transaction History File**

The Transaction History File is used to collect historical performance data, useful for long-term trend analysis and capacity planning. Information is summarized for each transaction code over a short time interval, including transaction transit, response and CPU times, as well as DLI call statistics.

Data is provided in a format suitable for loading directly into DB2 databases, from where you can run queries or produce reports. For a description of the data, refer to "Understanding the Transaction History File” on page 735. Sample DB2 jobs are supplied in the SIPISAMP library to help you load the data into DB2 tables and run queries:

- Sample DDL job IPITHDDL to create the DB2 tables
- Sample Load job IPITHLOD to populate the DB2 tables with the history data
- Sample SQL query jobs IPITHQM1, IPITHQM2, IPITHQM3, IPITHQM4

IMS PA generates the report command:

```
IMSPALOG TRANHIST(...)
```
The options are:

**Time Interval**

Default: 00:15:00 (15 minutes)

Specify the time interval over which transaction activity is summarized. For each interval, IMS PA accumulates the data by transaction code and writes a history record for each.

Note that this is a required field, so always overrides the Transit Global Options time interval.

Specify a value in the range 00:00:01 (1 second) to 24:00:00 (24 hours). A time interval under an hour must fit evenly into the hour. IMS PA will round it down to the nearest interval that aligns to the hour. For example, 1.35 is reduced to 00:01:30 minutes which will produce 40 interval records for each hour of data. A time interval over an hour must fit evenly into the day. IMS PA will round it down to the nearest interval that aligns to the day. For example, 10.30.23 is reduced to 08:00:00 hours which will produce 3 interval records for each day of data. Minutes take precedence for an abbreviated entry. For example:

- 1 becomes 00:01:00
- 1.1 becomes 00:01:00 (rounded down from 00:01:01)
- 1.1.1 becomes 01:00:00 (rounded down from 01:01:01)

This option generates the INTERVAL(hh:mm:ss) operand.

**Report Interval**

Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 301).

**Report Output DDname**

Default: TRANHIST

Specify the DDname to be used for the Recap report output.

This option generates the DDNAME(ddname) operand.
**Transaction History DSN:**

Defaults: Not specified; DSN is required.

Specify the name of the Transaction History File data set.

If the data set does not exist, IMS PA will create it at run time using the Extract by Interval allocation details specified in **Reporting Allocation Settings** in your Profile Options.

If the data set exists, the new extract records will be appended to the end (DISP=MOD). To overwrite the contents of the data set, edit the JCL before submission and specify DISP=OLD.

You can specify the extract data set as a generation of a generation data group (GDG) and thereby avoid the need to update the specification between runs.

**Selection Criteria**

Default: None specified; include all.

Log records can be included or excluded from the history file based on their Transaction Code values. This enables you to include in your report only the transactions that you are interested in. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

For further information, see “Transaction History File samples” on page 723, “Understanding the Transaction History File” on page 735, and “Transaction History File” in the IMS Performance Analyzer Report Reference.

**Related reference:**

“TRANHIST: Transaction History File” on page 421

The TRANHIST operand of the IMSPALOG batch command requests the Transaction History File.

---

**Transaction Transit reports (Form-based)**

The options for each form-based Transaction Transit report are described here.

The IMS Performance Analyzer Transaction Transit (Form-based) reports are:

- Transaction Transit List report and extract
- Transaction Transit Summary report and extract

They use IMS logs as input.

**Transaction Transit (Form-based) Options**

The IMS PA Form-based Transaction Transit Options define control information that applies to the Form-based Transaction Transit reports within the Report Set.

The Form-based Transaction Transit Options apply to the following reports:

- “Transaction Transit List report and extract” on page 316
- “Transaction Transit Summary report and extract” on page 323
- “Transaction Transit reports” on page 296
### BMP treatment option

- **Default:** 2, except when inflight processing has been activated. See “Log Global Options” on page 290.

This option is only applicable to non-message driven BMPs.

Specify one of the following options:

1. Treat each BMP syncpoint interval as a transaction. With this option, BMP activity can be analyzed in greater detail. Each database checkpoint is analyzed to provide a cross-reference of databases (read-only and updated) against the BMPs that access them.

   When using this option, it is recommended that you collect type x’56FA’ transaction accounting log records (TRANSTAT=YES) to analyze CPU usage and DLI call activity in more detail for each BMP syncpoint interval.

2. Treat the BMP as a single transaction. All syncpoint intervals are accumulated and reported at job end.

### Shared queues option

- **Default:** 2, except when inflight processing has been activated. See “Log Global Options” on page 290.

Specify one of the following options:

1. Only report transactions that were processed on subsystems whose logs were input.

2. Report all transactions, even those processed on other subsystems whose logs were not input.

### Program switches

- **Default:** 2, except when inflight processing has been activated. See “Log Global Options” on page 290.

Specify one of the following options:

1. Report all transactions separately. Program switch sequences are not reported as a group.

2. Track transactions involved in program switch sequences. Program switch sequences are reported as a group.

---

### Figure 170. Transaction Transit (Form-based) Options

The options are as follows:

- **BMP treatment option**
  - Default: 2, except when inflight processing has been activated. See “Log Global Options” on page 290.
  
  This option is only applicable to non-message driven BMPs.

  Specify one of the following options:

  1. Treat each BMP syncpoint interval as a transaction. With this option, BMP activity can be analyzed in greater detail. Each database checkpoint is analyzed to provide a cross-reference of databases (read-only and updated) against the BMPs that access them.

     When using this option, it is recommended that you collect type x’56FA’ transaction accounting log records (TRANSTAT=YES) to analyze CPU usage and DLI call activity in more detail for each BMP syncpoint interval.

  2. Treat the BMP as a single transaction. All syncpoint intervals are accumulated and reported at job end.

- **Shared queues option**
  - Default: 2, except when inflight processing has been activated. See “Log Global Options” on page 290.

  Specify one of the following options:

  1. Only report transactions that were processed on subsystems whose logs were input.

  2. Report all transactions regardless of where they were processed.

- **Program switches**
  - Default: 2, except when inflight processing has been activated. See “Log Global Options” on page 290.
Specify one of the following options:

1. Report all transactions independently. Program switch sequences are not reported as a group.
2. Group transactions associated with a program switch sequence for reporting purposes, allowing you to visualize the transaction flow in a program switch sequence, as well as measure end-user response time when a later transaction in the sequence eventually responds back to the end-user.

Related reference:

“Transaction Transit (Form-based) Options” on page 422
Form-based Transaction Transit Options define general control information for the Form-based Transaction Transit reports.

“Report Set JCL” on page 717
The sample library SIPISAMP contains members with sample JCL to generate IMS PA reports and extracts. Also included are examples for Automated file selection and BMP analysis.

Transaction Transit List report and extract
The options for the Transaction Transit List report and extract are described here.

Report options

<table>
<thead>
<tr>
<th>Command ====&gt;</th>
<th>SAMPLLOG - Transit List</th>
<th>More: &lt; &gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specify required view:</td>
<td>Report Interval</td>
<td></td>
</tr>
<tr>
<td>2. Extract</td>
<td>From</td>
<td></td>
</tr>
<tr>
<td>3. Transit options</td>
<td>To</td>
<td></td>
</tr>
</tbody>
</table>

Reports Required:

<table>
<thead>
<tr>
<th>Type</th>
<th>Form + Messages Precision</th>
<th>Output Grouping Mix Width Tran Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. REPORT</td>
<td>NO 3 NO 1 1</td>
<td>132</td>
</tr>
<tr>
<td>2.</td>
<td>NO 3 RO T</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>NO 3 RO T</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>NO 3 NO T</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>NO 3 NO T</td>
<td></td>
</tr>
</tbody>
</table>

Selection Criteria:

<table>
<thead>
<tr>
<th>Transaction Code</th>
<th>Inc/Exc Object + List Validation Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTERM</td>
<td></td>
</tr>
<tr>
<td>Line</td>
<td></td>
</tr>
<tr>
<td>VTAM Node</td>
<td></td>
</tr>
<tr>
<td>Class</td>
<td></td>
</tr>
<tr>
<td>User ID</td>
<td></td>
</tr>
</tbody>
</table>

Figure 171. Log Transaction Transit List (View 1 of 3): Report options

The report options are:

Specify required view
Default: 1
To request Form-based reports and extracts, there are too many details for a single view. Specify the required view as follows:

1. The Report view is used to specify details of your report request. These details are relevant when the Type of output is either REPORT or EXTRACT.
2. The Extract view is used to specify additional details for an extract. These details are relevant only when the Type is EXTRACT.
3. The Transit options view is used to specify additional details for a report or extract.

Enter the number of your choice, or scroll Left (F10) or Right (F11) to switch views. More: > is displayed in the top right corner to indicate that more details are available in another view.

Report Interval
Default: Not specified.

Specify the reporting interval. Within the context of the Global Report Interval, records with time stamps on or after the From Date/Time and to the To Date/Time are included in the report.

You can specify either:
- Date/time pairs or dates only. This indicates a date-time range (for example, 2014/06/25 7:00 to 2014/06/25 16:30). The From Date/Time must be before the To Date/Time.
- Times only. This indicates a particular time slot (for example, 9:00 to 10:00 each day). Specifying the From Time greater than the To Time indicates a time slot across midnight.
- Neither date/time pair. All input records are selected.

Type
Default: REPORT

Specify whether the output is to be a REPORT or an EXTRACT file.

Form
Default: Not specified.

The name of a LIST Report Form used to tailor the format and content of the report or extract. If a Form is not specified, an internally defined default Form will be used.

Output Messages
Default: NO

Specify whether to include transaction output messages in the report as follows:

YES Report all output messages from the transaction.
NO Report only the first output message for the transaction.

Precision
Default: 3

The precision of numeric fields. Numeric fields can be formatted to either 3, 4, 5, or 6 decimal places.

For example, if the field value is 10.123456 seconds:
- 3 decimal places is 10.123 precision
- 4 decimal places is 10.1235 precision
- 5 decimal places is 10.12346 precision
- 6 decimal places is 10.123456 precision
Note: Rounding occurs for elapsed and CPU time values.

Precision and Digit Grouping affect how the field values are represented in the report. Precision and Digit Grouping can be specified in the Report Form and the Report Set. The Report Set takes precedence.

An indicator shows whether the options you select in the Report Set make the report width different from the Report Form width. The > symbol indicates that the report precision is less than the Report Form precision. The > symbol indicates that the report precision is greater than the Report Form precision.

Digit Grouping
Default: N0

Digit grouping affects the formatting of time and count fields. Specify the digit grouping as follows:

YES  Digit grouping will include the separator character to delineate each group of three digits, aligned to milliseconds for time and 1000 for count. For time fields, the separator is . (period). For count fields, the separator is , (comma).

N0  No digit grouping.

SEC  The separator character will delineate the decimal point only. SEC applies to time fields only and assumes YES for count fields. Use SEC for extracts when time fields must be in seconds and fractions of seconds when importing data into a spreadsheet or database.

Tran Mix
Default: 1

Specify the mix of transactions to be reported. The transaction mixes are:

1  All transactions.
2  All transactions, excluding IFP.
3  IFP transactions only.
4  Transactions that use Fast Path (EMH and/or DEDB).
5  All transactions, excluding BMP.
6  Non-message driven BMP only.

Report Width
Report Forms allow you to request reports wider than the standard 132 character page width. The width of the report depends on the fields requested in the Form. The default format of the report is no more than 132 characters wide, but the report width is impacted by changes to the Report Form, Precision, or Digit Grouping. The Report Form defines the fields in the report. Precision and Digit Grouping affect how the field values are represented in the report. Precision and Digit Grouping can be specified in the Report Form and the Report Set. The Report Set takes precedence.

An indicator shows whether the options you select in the Report Set make the report width different from the Report Form width. The < symbol indicates that the report width is less than the Report Form width as calculated at EOR. The > symbol indicates that the report width is greater than the Report Form width as calculated at EOR.
Note that you can view reports in full using SDSF, but when you print wide reports, data that exceeds the maximum printer page width will be truncated.

For an extract, report width is not an issue and is not displayed.

**Selection Criteria**
Default: Not specified.

Records can be included in or excluded from the report based on their Transaction Code, LTERM, Line or VTAM Node, Message Class, and UserID values. You can also filter on PROGRAM by editing the JCL. This allows you to focus on the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

**Extract options**

| Command ===>
| Specify required view: | ----- Report Interval -----
| 2. Extract | From __________ ___________
| 3. Transit options | To __________ ___________

**Extract Data Sets:**

<table>
<thead>
<tr>
<th>Type</th>
<th>Form</th>
<th>Extract Data Set Name</th>
<th>Disp</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. EXTRACT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
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<tr>
<td>3.</td>
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</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Extract Options:**

/ Include Delimiter
7 Include Field Labels
| Numeric Fields in Float Format |

Figure 172. LOG Transaction Transit List (View 2 of 3): Extract options

The additional extract options are:

**Extract Data Set Name**

Default: Not specified.

The name of the data set where the extract records are written. If IMS PA is to create the data set at run time, the default allocation attributes specified for Transaction (MSGQ/FP/Connect) Transit Total Traffic in Reporting Allocation Settings will be used when generating the JCL. If the data set is already cataloged, then IMS PA will use DISP=OLD or DISP=MOD according to your request to overwrite or append to the existing data set. Alternatively, you can use a generation data group (GDG) to create a new data set each time the extract is run. When generating the JCL, IMS PA assigns a default DDname of LIXXnnnn where nnnn is a sequential number 0001–9999 to ensure DDnames are unique.

When specifying the data set name, standard TSO conventions apply. For example, if the TSO option PROFILE PREFIX is in effect, the prefix will be appended as the high-level qualifier unless the data set name is enclosed in quotes.
Disp  Default: Not specified

Specify a disposition of OLD to overwrite the data set contents with the new extract data or MOD to append the new extract data.

Include Delimiter
Default: /

Select / to use your specified delimiter to separate fields in the extract records. Leave this option blank if you do not want to use a delimiter to separate fields in the extract records.

Delimiter
Default: , (comma)

The field delimiter used to separate the data fields in the extract records. The same delimiter is used to separate the field labels, if present.

Include Field Labels
Default: /

Select / to include field labels as the first record written to the extract data set. Use field labels when importing extracts into spreadsheets, to identify the columns and to aid reporting. Leave this option blank if you do not want field labels.

Numeric Fields in Float Format
Default: Not specified.

Select / to write numeric fields in the extract in FLOAT format. Use FLOAT format if you plan to import the extract into a DB2 table. When the DB2 Load Utility is used, it will interpret all numerical fields reliably and consistently in FLOAT format.

• Time fields are in units of seconds. For example, 1.234567 represents 1.234567 seconds.
• Count fields are real numbers. For example, average message length is 100.23 characters.

Leave this option blank if you want numerical fields in the extract to be written in character format according to the Precision and Digit Grouping options. This is suitable for importing into spreadsheets that expect character-based data.
Transit options

The additional transit options are:

**DDname**

Default: IMS PA assigns a default DDname of LISTnnnn where nnnn is a sequential number 0001–9999 to ensure each report has a unique DDname.

The DDname for the report output. Specify 1–8 alphanumeric characters starting with an alphabetic character. The DDname is mandatory and should be unique to separate the output of multiple reports. Multiple reports of the same type can use the same DDname without consequence, however a mix of reports using the same DDname may interleave the print lines.

In the event of the output being an extract file, the DDname is used for the Extract Recap report output. The Extract Recap report contains information regarding the extract output including extract file name and record count.

**Start Level**

Default: 2

Start level is an attribute that IMS PA assigns to every transaction reported in the IMS log. It is an indicator of how far the transaction lifecycle has already progressed at the start of the IMS log. Together with Completion level, Start level is an indicator of the completeness of information collected about the reported transaction. For example, you may choose to report only those transactions that started and ended with the IMS log to guarantee complete performance metrics.

Specify Start level to instruct form-based reporting to report only those transactions with a Start level less than or equal to the required value. For example: Specify 1 to report start level 1 transactions only; specify 2 to report start level 1 and 2 transactions, and so on. This option generates the STARTLVL operand.

The IMS transaction start levels are:

1. The transaction first arrives in this log.

   For message driven transactions, the type 01 input message is available indicating the transaction has arrived onto the message queue. For non-message driven transactions (BMP, DBCTL,
ODBM), the type 08 program start record is available indicating the start of processing. Use start level 1 when analyzing input message arrival rates and lengths.

2

The transaction starts processing in this log.

For message driven transactions only, the type 01 input message is not available, but the type 31 DLI record is available indicating that transaction dependent region processing starts in this IMS log. The complete transit time breakdown is available, including input queue time (which is derived). Use Start level 2 when analyzing transaction dependent region processing time.

3

Dependent region processing is already in progress at the start of this log.

The type 08 application start record is not available for long running BMP or thread processes that commenced processing prior to this log. Processing start time is derived from the first log event for the Job. Processing elapsed time is calculated from this time to the job end (type 07). Use Start level 3 when analyzing all activity that occurred in the IMS log.

Completion Level
Default: 3

Enter a value between 0 and 6 to specify the minimum IMS transaction completion level for reporting.

IMS PA assigns a completion level to every transaction. Form-based reporting can specify a minimum completion level, instructing IMS PA to report only those transactions that have reached this level of completion.

The IMS transaction completion levels are:

0 Transaction message received. IMS message is a message switch or generated output message, not a transaction. Use Completion level 0 to analyze all message queue activity, not when transaction transit information is required.

1 Transaction input message enqueued onto the IMS message queue. Use Completion level 1 to analyze transaction message queue activity, not when transaction transit information is required.

2 Transaction has started processing in the dependent region but has not completed processing. Only input queue time is available for reporting.

3 Transaction has finished processing in the dependent region but has not sent the output message to the destination LTERM. Input queue and processing times are available for reporting.

4 Transaction has ended but resource utilization statistics (from the type 07 application termination record) are not available, possibly due to WFI processing (schedule not ended). Input queue, processing, output queue and total times are available for reporting.

5 Transaction has ended and resource utilization statistics are available, but approximations only. Type 07 application termination
record statistics are apportioned equally amongst all transactions processed by the program schedule. All fields are available for reporting.

6 Transaction has ended and resource utilization statistics are available. Type 56FA transaction-level accounting record provides accurate and reliable information. All fields are available for reporting. Non-message driven BMP transactions are also included.

Related concepts:
“LIST Report Form” on page 244
The LIST Report Form can be used to tailor the format and content of the Transaction Transit List report or extract in a Log or Connect Report Set.

Related reference:
“LIST: Transaction Transit List report and extract (Form-based)” on page 423
The LIST operand of the IMSPALOG batch command requests the Transaction Transit List report or extract for IMS fields.

Transaction Transit Summary report and extract
The Transaction Transit Summary report and extract options are described here.

![Figure 174. Log Transaction Transit Summary (View 1 of 3): Report options](image)

Like the Form-based List, the Form-based Summary has three views. The extract and transit option views are the same for the List and the Summary. Most of the report options are the same for the List and Summary. For a description of these, see “Transaction Transit List report and extract” on page 316.

The report options that are different for the Summary report are:

**Form**  Default: Not specified.
The name of a SUMMARY Report Form used to tailor the format and content of the extract. If a Form is not specified, an internally defined default Form will be used.

**Time Interval**

Default: 00:01:00

The time interval applies when you want to summarize activity over time. It is used when you specify a SUMMARY Report Form which has one or both sort fields `STARTIMS` or `STARTCON` included. When reporting, IMS PA accumulates the data for each interval in the report period and writes a report line for each. Specify a value in the range 00:00:01 (1 second) to 24:00:00 (24 hours). A time interval under an hour must fit evenly into the hour. IMS PA will round it down to the nearest interval that aligns to the hour. For example, 1.35 is reduced to 00:01:30 minutes which will produce 40 interval report lines for each hour of data. A time interval over an hour must fit evenly into the day. IMS PA will round it down to the nearest interval that aligns to the day. For example, 10.30.23 is reduced to 08:00:00 hours which will produce 3 interval report lines for each day of data. Minutes take precedence for an abbreviated entry. For example: 1 becomes 00:01:00, 1.1 becomes 00:01:00 (rounded down from 00:01:01), and 1.1.1 becomes 01:00:00 (rounded down from 01:01:01).

**Totals Level**

Default: 0

Specify the grand total and subtotal levels required for reporting as follows:

- **Blank**  No totals.
- **0**  Grand totals only, no subtotals.
- **1–7**  Grand total and subtotals to the corresponding key level.

**Precision**

**Time**

Default: 3

The precision of numeric fields. Numeric fields can be formatted to either 3, 4, 5, or 6 decimal places.

For example, if the field value is 10.123456 seconds:

- 3 decimal places is 10.123 precision
- 4 decimal places is 10.1235 precision
- 5 decimal places is 10.12346 precision
- 6 decimal places is 10.123456 precision

**Note:** Rounding occurs for elapsed and CPU time values.

Precision and Digit Grouping affect how the field values are represented in the report. Precision and Digit Grouping can be specified in the Report Form and the Report Set. The Report Set takes precedence.

An indicator shows whether the options you select in the Report Set make the report width different from the Report Form width. The > symbol indicates that the report precision is greater than the Report Form precision. The < symbol indicates that the report precision is less than the Report Form precision.

**Count**

Default: 0
Specifies the precision of count fields, applicable only when reported as average, from 0 to 2 decimal places.

**Extract Data Set Name**
Default: Not specified.

The name of the data set where the extract records are written. If IMS PA is to create the data set at run time, the default allocation attributes specified for Summary (CPU Usage, Database Update Activity and Connect) Extracts in Reporting Allocation Settings will be used when generating the JCL. If the data set is already cataloged, then IMS PA will use DISP=OLD or DISP=MOD according to your request to overwrite or append to the existing data set. Alternatively, you can use a generation data group (GDG) to create a new data set each time the extract is run. When generating the JCL, IMS PA assigns a default ddname of SUM$nnnn$ where $nnnn$ is a sequential number 0001–9999 to ensure ddnames are unique.

When specifying the data set name, standard TSO conventions apply. For example, if the TSO option PROFILE PREFIX is in effect, the prefix will be appended as the high-level qualifier unless the data set name is enclosed in quotes.

**DDname**
Default: IMS PA assigns a default ddname of SUM$nnnn$ where $nnnn$ is a sequential number 0001–9999 to ensure each report has a unique ddname.

The ddname for the report output. Specify 1–8 alphanumeric characters starting with an alphabetic character. The ddname is mandatory and should be unique to separate the output of multiple reports. Multiple reports of the same type can use the same ddname without consequence, however a mix of reports using the same ddname may interleave the print lines.

In the event of the output being an extract file, the ddname is used for the Extract Recap report output. The Extract Recap report contains information regarding the extract output including extract file name and record count.

**Related concepts:**
“SUMMARY Report Form” on page 248
The SUMMARY Report Form defines the format and content of the Transaction Transit Summary report and extract.

**Related reference:**
“SUMMARY: Transaction Transit Summary report and extract (Form-based)” on page 426
The SUMMARY operand of the IMSPALOG batch command requests the Transaction Transit Summary Report or Extract for IMS fields.

### IMS Transaction Index

The IMS Transaction Index is a specialized extract file created by IMS Performance Analyzer batch reporting. Each record in the index represents an IMS transaction and contains cumulative information from the IMS log about that transaction.

For details, see Chapter 19, “IMS Transaction Index,” on page 267

**Related reference:**
“INDEX: IMS Transaction Index” on page 430
The INDEX operand of the IMSPALOG batch command requests the IMS Transaction Index.
Resource Usage and Availability reports

The options for each Resource Usage and Availability report are described here.

The Resource Usage and Availability Reports are:
- Dashboard
- Management Exception
- Transaction Resource Usage
- Resource Availability
- CPU Usage
- Internal Resource Usage
- MSC Link Statistics
- Message Queue Utilization
- Database Update Activity
- Region Histogram
- OSAM Sequential Buffering
- Deadlock
- System Checkpoint
- BMP Checkpoint
- Gap Analysis
- Cold Start Analysis

Dashboard report

The Dashboard report provides a quick overview of critical system performance indicators, including transaction throughput and IMS system resources. It can highlight potential performance problems quickly, providing a springboard to other reports that provide more detailed information.

IMS PA generates the report command:
IMSPALOG DASHBOARD(...)

File Options Help

Command ==> SAMPLOG - Dashboard

Specify report options.
Report Output DDname DASH

Figure 175. Dashboard report options

The only option is:

Report Output DDname
Default: DASH

Specify the DDname to be used for the report output.

Related reference:
“DASHBOARD: Dashboard report” on page 431
The DASHBOARD operand of the IMSPALOG batch command requests the Dashboard report.
Management Exception report

The Management Exception report is designed to give managers a concise survey of selected, critical operands from other IMS PA reports. The report shows, by exception, which operands are outside specified boundaries.

The report optionally calculates accumulated averages, and can provide a formatted print of the Averages Data Set.

IMS PA generates the report command:
IMSPALOG MGREX(...)

![File Options Help](File Options Help)

Specify report options.

Reports Required: / Transaction Exception/Average Error Conditions Log:
/ Program Abend
/ Backout Failure
/ Security Violation
/ I/O Error
/ Snap Trace

Report Options
Processing Type: Select to Modify:
1. Exception Report
2. Print Averages Data Set
3. Exclude "OTHERS" from report

Validation Warning

Figure 176. Management Exception Report Options

The options are as follows:

Reports Required

Option: Transaction Exception/Average Error Conditions Log:
- Error Conditions Log
- Program Abend
- Backout Failure
- Security Violation
- I/O Error
- Snap Trace

Default: All selected.

Select with a / to produce the required reports.

To produce the Management Exception Summary report, select Transaction Exception/Average and specify options in the Transaction Exception/Average Report Options area at the bottom of the panel.
To produce the Error Conditions log, select one or more of the five types of errors listed below Error Conditions Log. Only those selected are included in the report. If none of the five are selected, then the Error Conditions log is not produced.

**Report Interval**
Defaults: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 301).

**Report Output DDname**
Default: MGRXDD

Specify the DDname to be used for the report output.

**Related reference:**
MGREX: Management Exception report” on page 432
The MGREX operand of the IMSPALOG batch command requests the Management Exception report.

**Transaction Exception/Average report options**
These options only have effect if the Transaction Exception/Average report is selected. They do not affect the Error Conditions Log.

**Processing Type**
Options:
1. Exception Report
2. Print Averages Data Set

Default: 1 (Produce the Management Exception Summary report and don’t print the Averages Data Set)

Select 1 to produce the Management Exception Summary report showing by Transaction Code, information for “This Run”, and if requested, the Average and Expectation.

Select 2 to produce the Management Exception Summary showing only the contents of the input Averages Data Set.

**Exclude "OTHERS" from report**
Default: Not selected. "OTHERS" are reported.

This option is used in conjunction with transaction code selection criteria.

By default, transaction codes that are excluded by filtering are reported in a group called *OTHERS*, and included in the final *SYSTEM* total.

Enter / to select this option so that transaction codes that are excluded by filtering are not reported, and consequently not included in the final *SYSTEM* total.

This option generates the NOOTHERS operand. For example, IMSPALOG MGREX(NOOTHERS, INCL(TRAN(....)))

**Expectation Set**
Default: None.

Specify the name of an Expectation Set which contains user-supplied expected values to be used in producing the exception report. The report will flag occurrences which fall outside the specified expected values. “Specifying Expectations” on page 137 describes how to specify expected values in an Expectation Set.
If no Expectation Set is specified, there are no performance expectations with which to compare the log data, in which case the report shows “This Run” but contains no Expectation information.

**Exception Report Options**
Select with an E or S to display the Transaction Exception Options panel where you can view or edit additional report options and qualifiers. See Figure 177.

**Averages Data Sets Specification**
Select with an E or S to display the Transaction Averages Data Sets panel where you can specify the Averages Data Sets, and optionally view or edit their contents. See “Transaction Averages data sets specification” on page 530.

**Transaction Exception report options**
This panel defines further options and qualifiers for the Management Exception report. They only apply if Transaction Exception/Average is selected on the Management Exception panel.

```
Command ===>

Specify Transaction Exception report options.

Exception Processing Queues:
  Number of Queues (0-255)
  Omit Message After Minutes

Report Options:
  List All Transactions (not just exceptions)

Selection Criteria:
  Object Type Inc/Exc Object + List Validation Warning
  Transaction Code

Figure 177. Management Exception Report: Transaction Exception Options
```

The options are as follows:

**Number of Queues**
Default: None.

The number of exception processing queues used in processing the Management Exception report. Varying the number of queues may improve performance when you are doing high-volume processing. The maximum number of queues that can be specified is 255.

**Omit Message After nnn Minutes**
Default: None; messages are not omitted.

The number of minutes after which a message is deleted from the management exception processing queue. (Deletion occurs at checkpoint record processing.) This may improve performance when transactions are held on IMS message queues for a long time. The maximum number of minutes that can be specified is 999.

**List All Transactions**
Default: Not selected; only list exceptions.

Select with a / to list all transactions on the report, not just the exceptions.
Selection Criteria
Default: None specified. Include all.

Records can be included or excluded based on their Transaction Code. This enables you to report only the transactions of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

By default, transaction codes and programs that are excluded by filtering are reported in a line item called *OTHERS*, and included in the final *SYSTEM* total. If you do not want the excluded transaction codes included in the *SYSTEM* total, you can omit it from the report by selecting the option Exclude "OTHERS" from report.

Transaction Averages data sets specification
This panel specifies the input and output data sets to be used for calculating and storing the accumulated averages for the Management Exception report. The data sets are only used if Transaction Exception/Average is selected on the Management Exception panel.

Chapter 9, “Averages Data Sets,” on page 143 describes how to allocate Averages Data Sets and how to modify their contents.

![Command Prompt](image.png)

**Figure 178. Management Exception Report: Transaction Averages Data Sets**

The options are as follows:

**Input Data Set**
**Output Data Set**

Defaults: None.

Specify the name of the input and output Averages Data Sets. If no input data set is specified, then averages are not applied. If no output data set is specified, then updated averages are not saved. If no input is specified, an output data set can still be created.

Management exception processing uses the input data set, if it is specified, for reading accumulated totals and averages. Each time management exception processing is invoked, it does the following:

- Extracts the total from the input Averages Data Set
- Calculates averages by dividing by the number of occurrences represented by the totals
- Compares these averages with the current values to identify exceptions to be reported (where expectations are specified in terms of averages)

When processing finishes, the current values are added to those in the input Averages Data Set, and the results are stored in the output Averages Data Set if it is specified. If you specify the input and output data sets as...
generations (0) and (+1) respectively of the same generation data group (GDG) then the specification need not be updated between report runs.

E/V Default: None.

Enter E or V to edit or view the data set.

Note: If characteristics of your IMS installation change, such as installing a faster processor, the contents of the Averages Data Set should be modified to make the historic values with the slower processor comparable to the current values with the new processor.

Transaction Resource Usage report

This report provides a comprehensive overview of transaction resource usage.

IMS PA generates the report command:

IMSPALOG TRANRESU(...)

<table>
<thead>
<tr>
<th>File</th>
<th>Options</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAMPLOG - Transaction Resource Usage</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Specify report options.

Reports Required: Report Interval
Long List YYYY/MM/DD HH:MM:SS:TH
Long Summary From To
Short (DLI Call) Summary

Long Report Options: Report Output DDnames:
/ Include DB Calls Long List .... TRANRESU
/ Include DC Calls Long Summary .... TRANRESU
/ Include Other DLI Calls DLI Call Summary .. TRANRESU
/ Include ENQ/DEQ Counts

Selection Criteria:
Object Type Inc/Exc Object + List Validation Warning
Region ID
Transaction Code
Program (PSB)
IMS Subsystem ID

Figure 179. Transaction Resource Usage Report Options

The report options are as follows:

Reports Required
Default: Long Summary

Enter / to request any combination of reports:

Long List

This report lists statistics for each selected transaction using the IMS Transaction Terminate Accounting Log Record (type 07). It is similar in format to the Long Summary report with the exclusion of averages. The report provides additional transaction information such as Program name and Completion Codes. This report is used to review the performance of individual transactions.
Long Summary
This is a two-part report generated using the IMS Transaction Terminate Accounting Log Record (type 07). Each part consists of two sections, Totals and call group statistics. The first part is a summary of statistics by region type (such as BMP, MPP, CPI-C) giving an overall view of region performance. The second part provides a breakdown by transaction for each region giving an overall view of transaction performance.

Short (DLI Call) Summary
This report lists the transaction code, the total number of messages for each transaction, CPU, DB and DC call averages per message for each transaction using the IMS Transaction Terminate Accounting Log Record (type 07). The report also provides a total line that includes the total number of messages for all selected transactions and the average CPU, DB & DC calls per message.

Long Report Options
Default: Include DB Calls and Include DC Calls selected.

Enter / to include any combination of the following types of data in the Long Summary and List reports:
- Include DB Calls
- Include DC Calls
- Include Other DLI Calls
- Include ENQueue/DEQueue Counts

Report Interval
Default: Not specified; no further filtering on date/time.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see “Transaction Transit Analysis report” on page 301).

Report Output DDname
Default: TRANRESU

Specify the DDname to be used for each of the reports.

Selection Criteria
Default: No values specified; include all records without filtering.

Records can be included in or excluded from the report based on their Region ID, Transaction Code, Program (PSB), and IMS Subsystem ID values. This enables you to include in your report only the information that you are interested in. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists. Region ID may be specified by PST Number, or by Message Region Jobname. Masking is not supported for Region ID by PST objects.

Related reference:
“TRANRESU: Transaction Resource Usage report” on page 434

The TRANRESU operand of the IMSPALOG batch command requests the Transaction Resource Usage report.

Resource Availability report
The Resource Availability report indicates the relative amount of time a specific resource is active, idle, or unavailable.
IMS PA generates the report command:
IMSPALOG AVAIL(...)

The options are as follows:

**Reports Required**
Options:
- **Region**
- **Transaction Code**
- **Program (PSB)**
- **Database**
- **Line or VTAM Node**

Default: All except Line/Node.

Select with a `/` to produce a separate report ordered by, respectively, Region, Transaction Code, Program, Database, and Line or VTAM Node.

Reports not selected will not be produced.

**Report Interval**
Default: Not specified.

Specify the reporting interval within that specified by **Start** and **Stop** Date/Time on the Log Global Options panel. Standard rules apply to the date and time specification (see “Transaction Transit Analysis report” on page 301).

**Report Output DDname**
Default: AVALDD

Specify the DDname to be used for the report output.

**Selection Criteria**
Default: None specified; include all.
Records can be included in or excluded from the report based on their Region ID, Transaction Code, Program (PSB), Database, Line, VTAM Node and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists. Region ID may be specified by PST Number, or by Message Region Jobname. Masking is not supported for Region ID by PST or Line objects.

Related reference:
“AVAIL: Resource Availability report” on page 435

The AVAIL operand of the IMSPALOG batch command requests the Resource Availability report.

**CPU Usage report and extract**

The CPU Usage report gives statistics for CPU time and elapsed time during a specified period for regions, transactions and programs.

IMS PA generates the report command:

IMSPALOG CPUR(…)

--- Ordering Operands ---
Level-1 Level-2 Level-3 From
1. REGN PROG TRAN To
2.
3.
4.
5.

Report Output DDname CPURDD

Report Options:
Exclude "OTHERS" from report

Extract Data Set:

Data Set Name...

Graph Distributions: Validation Warning
Processing Time (CPU) +
Elapsed Time +

Selection Criteria:
Object Type Inc/Exc Object + List Validation Warning
Region ID
Transaction Code
Program (PSB)
IMS Subsystem ID

Figure 181. CPU Usage Report Options

The options are as follows:

**Reports Required (ordered by Region, Program, Transaction Code):**

Default: Single report in the order REGN PROG TRAN

Up to 5 different reports can be requested, using the keywords REGN (region), PROG (program), and TRAN (transaction code) to specify their
sequence. For each report, either one, two, or three of the keywords can be specified to represent up to three levels of nesting. Duplicate report requests are ignored.

Exclude "OTHERS" from report
Default: Not selected.

This option is used in conjunction with Transaction Code and Program (PSB) Selection Criteria. By default, transaction codes and programs that are excluded by the qualifiers are reported in a group called *OTHERS*, and included in the report subtotals and totals.

Enter / to select this option so that transaction codes and programs that are excluded by the qualifiers are not reported, and not included in the report subtotals and totals.

Report Interval
Defaults: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 301).

Report Output DDname
Default: CPURDD

Specify the DDname to be used for the report output.

Extract Data Set
Default: Not specified; extract is not produced.

To extract CPU Usage details to an output file, specify a name for the extract data set that is generated in the Report Set JCL with DDname CPURXTR0. Note that you can specify global options to include column headings in the extract file and to use a comma as the field delimiter.

Graph Distributions
Defaults: If no Distribution is specified, the corresponding sample Distribution is applied at run time:
• $IPDIST1 for the Processing Time (CPU) graph
• $IPDIST2 for the Elapsed Time graph

Specify the name of the Distributions to define the attributes of the graphs.

For the Processing Time (CPU) graph, the sample Distribution $IPDIST1 is provided. It specifies:
- Ranges (Limits) = 25,50,75,100,150,200,300,500,1000
- Title = Sc Mil (for seconds and milliseconds)
- Multiplier = 1
- Edit Mask = ZZZ,ZZZ.ZZ9

For the Elapsed Time graph, the sample Distribution $IPDIST2 is provided. It specifies:
- Ranges (Limits) = 300,600,900,1200,1500,2000,3000,5000,10000
- Title = Sc Mil (for seconds and milliseconds)
- Multiplier = 1
- Edit Mask = ZZZ,ZZZ.ZZ9

See Chapter 11, “Distributions,” on page 157 for information on how to define a Distribution.

Selection Criteria
Default: None specified; include all.
Records can be included in or excluded from the report based on their Region ID, Transaction Code, Program (PSB), and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists. Region ID may be specified by PST Number, or by Message Region Jobname. Masking is not supported for Region ID by PST objects.

Data excluded by the selection criteria are reported as one group labeled *OTHERS* and included in report subtotals and totals. If you don't want the excluded data included in the totals, you can omit the *OTHERS* category by selecting Exclude "OTHERS" from report.

Related reference:

“CPU: CPU Usage report and extract” on page 436

The CPUR operand of the IMSPALOG command requests the CPU Usage report and optionally an extract file.

**Internal Resource Usage reports**

The Internal Resource Usage reports provide statistics on the use of various IMS pools and resources.

IMS PA generates the report command:

IMSPALOG IRUR(...)
Minimum CHKP Interval (in minutes)
Default: 0 (zero)

Checkpoints occurring less than this interval after the preceding checkpoint are excluded from the report. Valid values are 0 to 9999.

Include Fast Path Transactions
Default: Not selected; Fast Path transactions are not included.

Enter / to include the Fast Path transaction count in the Miscellaneous Statistics report.

Print Report after each CHKP
Default: Not selected. Print report only at the end of the run.

Enter / to print a report after each system checkpoint encountered during log processing.

This option takes precedence over the Global Option Report Break Points for this report. However, if Report Break Points is specified as anything other than STOP or blank, unpredictable results may occur.

Report Interval
Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 301).

Report Output DDname
Default: IRURDD

Specify the DDname to be used for the report output.

Reports Required
Default: All selected.

Select with a / the reports that are required. Reports not selected will not be produced.

A description of the Internal Resource Usage reports follows:

Message Queue Pool
This report provides information related to the activity and I/O associated with IMS message queues. This activity is a key indicator as to the performance of your IMS system.

Message Format Buffer Pool
This report provides information related to the activity associated with message formatting.

OSAM Buffer Pool
This report provides information related to the activity in each OSAM subpool. Subpools which have no activity in the reporting period are not reported on. The final report contains cumulative statistics for all of the OSAM buffer pools.

VSAM Buffer Pool
This report provides information related to the activity in each VSAM subpool. Subpools which have no activity in the reporting period are not reported on. The final report contains cumulative statistics for all of the VSAM buffer pools.

Variable Pools
This report provides information as to the size and utilization of
the various DMB and PSB pools. Shortages in these pools, particularly the DMB pool, can cause scheduling delays. Use this report to detect over or under specification of the pool sizes.

**Application Scheduling Statistics**
This report provides information relating to the various types of scheduling failures and scheduling activity during the report period.

**Program Isolation Statistics**
This report provides information about the size and usage of the PI pool.

**Latch Statistics**
This report provides information regarding each IMS latch and the activity associated with that latch.

**DL/I Call Statistics**
This report provides a count of all programs scheduled, transactions processed, and DL/I calls issued by call type.

**Miscellaneous Statistics**
This report provides information on the highest PST used, the highest and current number of conversations in use, transaction counts by transaction type (conversational, WFI, non-recoverable and response mode), RECANY buffer usage, and IMS and statistics record versions. Optionally, the report includes Fast Path transactions.

**Storage Statistics**
This report provides information about the various storage pools used by IMS. Pools not used in the reporting period are not reported on.

**Fixed Pool Usage Statistics**
This report provides information about the fixed pools used by IMS. A number of statistics are provided for each buffer size in the pool; these include size, high water marks, and a number of other performance related statistics associated with each buffer.

**Dispatcher/Dynamic SAP Statistics**
This report provides performance related information for the various IMS TCBs.

**Logical Logger Statistics**
This report provides various statistics describing the performance of the IMS log and WADS. I/O counts and buffer wait counts can be used to see if any system performance problems are being caused by bad logger or WADS I/O times.

**IRLM System**
This report provides information on the performance of the IRLM system. Counts of the various IRLM activities, as well as buffer and CSA usage, deadlock frequency and VTAM sends are reported.

**IRLM Subsystem (User)**
This report provides information on the performance of the IRLM that relates to a particular IMS subsystem. Counts of the various IRLM activities are reported.

**RACF**
This report provides information related to the performance of the
RACF® TCBs, such as counts of the various RACF activities, and the CPU and elapsed time used by these RACF activities.

**Virtual Storage usage**
Introduced with IMS V10, this report provides information related to general storage use in the system and in the IMS control region. The report is in two sections, Global Storage and Local (CTL Region) storage.

**IMODULE Statistics**
Introduced with IMS V10, this report provides information related to IMODULE services. Statistics are provided for IMODULE requests that obtained or deleted common storage. Statistics are also provided for IMODULE requests by call type.

**EWLM Statistics**
Introduced with IMS V10, this report provides statistics for EWLM correlator token table.

**64-bit Storage Statistics**
Introduced with IMS V11, this report provides statistics for the 64-bit cache storage manager.

**Fast Path 64-bit Buffer Statistics**
Introduced with IMS V11, this report provides statistics for the Fast Path 64-bit buffer manager.

**User Exit Statistics**
Introduced with IMS V12, this report provides statistics for User Exit modules.

**Selection Criteria**
Default: None specified; include all.

Records can be included in or excluded from the report based on their IMS Subsystem ID values. This enables you to report only the systems of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

**Related reference:**
“IRUR: Internal Resource Usage report” on page 438

The IRUR operand of the IMSPALOG batch command requests the Internal Resource Usage reports.

**MSC Link Statistics report**
The MSC Link Statistics report contains information on the use of MSC links from the X'4513' log record.

IMS PA generates the report command:
IMSPALOG MSCLSTAT(....)
The options are as follows:

**Reports Required**
Default: Both selected; produce both reports.
Select with a / to request one or both reports:

- **General Statistics**
  This report provides summary information on the overall usage of each MSC link.

- **Send/Receive Statistics**
  This report provides summary information for each MSC link with a more detailed breakdown of Send and Receive traffic.

**Print Report after each CHKP**
Default: Not selected. Print report only at the end of the run.
Enter / to print a report after each system checkpoint encountered during log processing.

This options takes precedence over the Global Option **Report Break Points** for this report. However, if **Report Break Points** is specified as anything other than STOP or blank, unpredictable results may occur.

**Report Interval**
Defaults: Not specified.
Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 301).

**Report Output DDname**
Default: MSCLSTAT
Specify the DDname to be used for the report output.

**Selection Criteria**
Default: None specified; include all.
Records can be included in or excluded from the report based on their IMS Subsystem ID values. This enables you to report only the systems of interest. You can specify a single value, a masking pattern, or an Object List. See [Chapter 10, “Object Lists,” on page 147](#) for information on how to define Object Lists.
Related reference:
“MSCLSTAT: MSC Link Statistics report” on page 439
The MSCLSTAT operand of the IMSPALOG batch command requests the MSC Link Statistics report.

Message Queue Utilization report
The Message Queue Utilization report contains information on the use of message queues.

IMS PA generates the report command:
IMSPALOG MSGQ(...)
Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 301).

**Report Output DDname**
Default: MQURDD

Specify the DDname to be used for the report output.

**Selection Criteria**
Default: None specified; include all.

Records can be included in or excluded from the report based on their IMS Subsystem ID values. This enables you to report only the systems of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Related reference:
“MSGQ: Message Queue Utilization report” on page 440

The MSGQ operand of the IMSPALOG batch command requests the Message Queue Utilization report.

**Database Update Activity report and extract**

The Database Update Activity report can help you determine the cost of database calls. It indicates the number of purge writes at sync point time to a database and provides a count of actual updates made to each database in the time period being reported. If your database is a HALDB, you can also report on specific HALDB partitions because the name of the partition is found on the database name field of the various records used in this report.

IMS PA generates the report command:
IMSPALOG DBUPDATE(...)

```
<table>
<thead>
<tr>
<th>File Options Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command ===&gt; SAMPLLOG - Database Update Activity</td>
</tr>
<tr>
<td>Specify report options.</td>
</tr>
<tr>
<td>Report Options: Report Interval</td>
</tr>
<tr>
<td>Format ... I (1 or 2) YYYY/MM/DD HH:MM:SS:TH</td>
</tr>
<tr>
<td>Uncommitted BLock Updates Limit 10000 From To</td>
</tr>
<tr>
<td>Order by Database and Program Name Report Output DDname DBUADD</td>
</tr>
<tr>
<td>Extract Data Set: Data Set Name ...</td>
</tr>
<tr>
<td>Selection Criteria: Object Type Inc/Exc Object + List Validation Warning</td>
</tr>
<tr>
<td>Database IMS Subsystem ID</td>
</tr>
</tbody>
</table>
```

*Figure 185. Database Update Activity Report Options*

The options are as follows:
Format

Specify the format of the report (1 or 2). Reports generated using format 2 provide a faster, more concise breakdown of database update activity. Format 2 is the recommended report option.

Uncommitted Block Updates Limit

Specify a limit on the number of uncommitted block updates to track for the Database Update Activity report. The purpose of this limit is to ensure that IMS PA doesn’t run out of storage and abend.

The maximum value that can be specified is 32000. When the maximum number of uncommitted block updates for a database is reached, IMS PA flushes the update queues and reports ******** for the block update count for that database.

If there is not enough storage to continue processing, IMS PA flushes all block update queues for subsequent database updates. Message 1P10050E is issued stating, by database, the highest uncommitted block update count at flush time.

Order by Database and Program Name

If selected, the program name is included in the report and the report is ordered by database and program name.

If not selected, the report is ordered by database name only, and the program name is not reported.

Report Interval

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 301).

Report Output DDname

Specify the DDname to be used for the report output.

Extract Data Set

To extract Database Update Activity details to an output file, specify a name for the extract data set. This will be included in the Report Set JCL with DDname Dbuaxt0. Note that you can specify global options to include column headings in the extract file and to use a comma as the field delimiter.

Selection Criteria

Records can be included in or excluded from the report based on their Database name and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See "Chapter 10, “Object Lists,” on page 147" for information on how to define Object Lists.

Related reference:
The DBUPDATE operand of the IMSPALOG batch command requests the Database Update Activity report.

**Region Histogram report**

The Region Histogram report is a graphic display of region activity. It shows the times a region is active or idle and the patterns of transaction scheduling in each region.

IMS PA generates the report command:

```
IMSPALOG HISTGRAM(...)
```

---

**Figure 186. Region Histogram (Log) Report Options**

The options are as follows:

**Report Interval**

Defaults: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see “Transaction Transit Analysis report” on page 301).

**Report Output DDname**

Default: HISTDD

Specify the DDname to be used for the report output.

**Regions to Include**

Default: First 13 active regions encountered in the input data.

Specify a Region ID or the name of a Region ID Object List to nominate which regions to include in the report, up to a maximum of 13 regions. Region ID can be specified by PST Number or by Message Region Jobname. The included Region IDs will apply to each included IMS Subsystem, up to a maximum of 13 regions. You can specify a masking pattern for IMS Subsystem ID. Masking is not supported for Region ID, however a range of values can be specified in an Object List. If a requested region is not found in the input data, a report column will still be created for it.
If you specify an Object List, you can enter the name directly, or to select one from a list of the appropriate type, position the cursor in the Object field and press **Prompt (F4)**. Select **List** with a / to denote that it is an Object List and not a single value.

**Related reference:**

“HISTGRAM: Region Histogram (Log) report” on page 443

The HISTGRAM operand of the IMSPALOG batch command requests the Region Histogram report.

**OSAM Sequential Buffering report**

The OSAM Sequential Buffering report provides statistics on the usage of OSAM sequential buffers, by buffer pool and by PSB.

IMS PA generates the report command:

IMSPALOG SB(...)

---

<table>
<thead>
<tr>
<th>File</th>
<th>Options</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SAMPLOG - OSAM Sequential Buffering</td>
<td></td>
</tr>
</tbody>
</table>

Specify report options.

**Reports Required:**

- Activity Log
- Program (PSB) Summary

**Report Interval**

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>YYYY/MM/DD HH:MM:SS:TH</td>
<td></td>
</tr>
</tbody>
</table>

**Selection Criteria:**

- Object Type Inc/Exc Object + List Validation Warning
- Program (PSB)
- Database
- IMS Subsystem ID

![Figure 187. OSAM Sequential Buffering Report Options](image)

The options are as follows:

**Reports Required**

Options:

- Activity Log
- Program (PSB) Summary

Default: Both selected.

Select **Activity Log** with a / to produce the following reports:

- Sequential Buffering Summary for Region, a one-page summary of buffer pool status and activity
- SB Detail Statistics, a three-part report for each buffer pool

Select **Program (PSB) Summary** with a / to produce the OSAM SB Program Summary, a summary of activity by PSB.

**Report Interval**

Defaults: Not specified.
Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 301).

**Report Output DDname**
Default: $BD0

Specify the DDname to be used for the report output.

**Selection Criteria**
Default: None specified; include all.

Log records can be included in or excluded from the report by their Program (PSB), Database and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

**Related reference:**
*SB: OSAM Sequential Buffering report* on page 443

The SB operand of the IMSPALOG batch command requests the OSAM Sequential Buffering report.

## Deadlock report

The Deadlock report provides a comprehensive analysis of deadlock events.

IMS PA generates the report command:

```plaintext
IMSPALOG DEADLOCK(...) 
```

---

**File Options Help**

<table>
<thead>
<tr>
<th>Command</th>
<th>SAMPLOG - Deadlock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specify report options.</td>
<td></td>
</tr>
</tbody>
</table>

**Reports Required:**

- **List**
- **Summary**

**Report Interval**

YYYY/MM/DD HH:MM:SS:TH

From

To

**Report Output DDnames:**

| List . . . DEADLOCK |
| Summary . . DEADLOCK |

---

**Figure 188. Deadlock Report Options**

The options are as follows:

**Reports Required:**

- **Default: Summary**

Enter / to select one or both of the List or Summary reports.

**Report Interval**

Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 301).
Report Output DDnames

Default: DEADLOCK (for both List and Summary reports)

Specify the DDname to be used for the List and Summary report output. You can use different DDnames for each report type.

If both List and Summary reports are selected, and their DDnames are the same, then only one report will be produced, containing both the List and Summary reports.

Related reference:
“DEADLOCK: Deadlock report” on page 444

The DEADLOCK operand of the IMSPALOG batch command requests the Deadlock report.

System Checkpoint report

The System Checkpoint report provides a detailed analysis of IMS internal checkpoint activity.

IMS PA generates the report command:
IMSPALOG CHECKPOINT(...)

File Options Help

Command ===> SAMPL0G - System Checkpoint

Specify report options.

Reports Required: Report Interval
- Database Definitions YYYY/MM/DD HH:MM:SS:TH
- Transaction Definitions From
- Terminal: To
  - Sorted by LTERM
  - Sorted by PTERM
- Record Events
- Report Output DDname CHECKPT

Graph Distribution: Validation Warning

Checkpoint Duration +

Selection Criteria:
Object Type Inc/Exc Object + List Validation Warning
- Database
- Transaction Code
- LTERM
- VTAM Node
- Line/Terminal
- IMS Subsystem ID

Figure 189. System Checkpoint Report Options

The options are:

Reports Required:
Options:
- Database Definitions
- Transaction Definitions
- Terminal:
  - Sorted by LTERM
  - Sorted by PTERM
• Record Events

Enter / to select any combination of reports.

**Database Definitions** shows a list of databases and is produced from data in the DDIR blocks.

**Transaction Definitions** provides a list of transactions and is created from data contained in the SMB and PDIR blocks.

**Terminal** produces a list of terminals from data contained in the CNT, CTB, and SPQB blocks. You can request the report by LTERM, by PTERM, or both.

**Record Events** shows the details of each individual checkpoint.

**Checkpoint Duration**

Default: Not specified.

Produce a checkpoint duration distribution graph.

**Report Interval**

Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 301).

**Report Output DDname**

Default: CHECKPT

Specify the DDname to be used for the report output.

**Selection Criteria**

Default: None specified; include all.

Log records can be included in or excluded from the report by their Database, Transaction Code, LTERM, VTAM Node, Line/Terminal, and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

**Related reference:**

“CHECKPOINT: System Checkpoint report” on page 445

The CHECKPOINT operand of the IMSPALOG batch command requests the System Checkpoint report.

**BMP Checkpoint report**

The BMP Checkpoint report provides an analysis of BMP checkpoint frequency that can affect online performance and system restartability.

IMS PA generates the report command:

**IMSPALOG BMPCHKP(...)**
The options are as follows:

**Reports Required:**
- Default: **Summary**
  - Enter / to select one or both of the following reports:
    - **List** The List report provides a breakdown of individual BMP checkpoint activity.
    - **Summary** The Summary report provides an overview of each BMP program. This is the default.

**Report Interval**
- Default: Not specified.
  - Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 301).

**Report Output DDname**
- Default: BMPCHKP
  - Specify the DDname to be used for the report output.

**Selection Criteria**
- Default: None specified; include all.
  - Log records can be included in or excluded from the report by their Transaction Code, Program (PSB) name, and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

**Related reference:**
"BMPCHKP: BMP Checkpoint report" on page 447
The BMPCHKP operand of the IMSLOG batch command requests the BMP Checkpoint report.
Gap Analysis report

The Log Gap Analysis report contains information on periods of time where log records are not being cut, potentially highlighting an external system event that may have caused IMS to slow down.

IMS PA generates the report command:

IMSPALOG GAP(…)

---

File Options Help

Command ==> Specify report options.

Report Options:

1. By IMSID and Sysplex
2. By IMS Subsystem only
3. Across Sysplex only

Report Interval

YYYY/MM/DD HH:MM:SS:TH

From

To

Gap Threshold...

5.000000 seconds (s.thmiju)

Ignore IMS 6D records

Selection Criteria:

Object Type Inc/Exc Object + List Validation Warning

IMS Subsystem ID

Report Output DDname GAPS

---

Figure 191. Log Gap Analysis Report Options

The options are as follows:

**Report Options**

1. **By IMSID and Sysplex**
   
   The selection is only relevant when processing multi-subsystem log files. In a single IMS subsystem environment all report options are equivalent.

   Select 1 to produce one report for each subsystem followed by a total system wide report.

   Select 2 to produce only the reports for each subsystem.

   Select 3 to produce only the total system wide report.

2. **Gap Threshold**

   Default: 5.000000 seconds.

   Specify a threshold interval in the range 0.000001 to 9.999999 seconds. This defines the maximum elapsed time tolerated between log records. Every gap longer than the threshold is reported.

3. **Ignore IMS 6D records**

   Default: Not selected, all records are included.

   Exclude IMS x’6D’ records from the Gap Analysis report. If using FDBR there is an x’6D’ record written every 1 second which may distort the report.

4. **Report Interval**

   Defaults: Not specified.
Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 301).

**Report Output DDname**  
Default: GAP5  
Specify the DDname to be used for the report output.

**Selection Criteria**  
Default: None specified; include all.  
Records can be included in or excluded from the report based on their IMS Subsystem ID values. This enables you to report only the systems of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

**Related reference:**  
"GAP: Gap Analysis report” on page 448  
The GAP operand of the IMSPALOG batch command requests the Gap Analysis report.

**Cold Start Analysis report**  
The Cold Start Analysis report provides a point-in-time snapshot of in-train activity, answering the following questions in the event of a cold start: “What input messages (transactions) are lost?” and “What are the incomplete units-of-work, and what database changes did they make?”

An IMS cold start initializes the message queues, the dynamic log, and the restart data sets. The consequences of a cold start can be destructive:  
1. All input and output messages on the IMS message queue are lost  
2. If IMS terminated abnormally, incomplete transactions may have:  
   • Full-function database changes that are not backed-out, leaving databases corrupted.  
   • External subsystem activity that is left in doubt.

IMS PA generates the report command:  
IMSPALOG COLDSTART(…)

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The options are as follows:

**Reports Required**

Default: **Summary**

Select with a / to request the detail or summary report or both. Report content depends on the selected report options (Incomplete UOWs, Input Queue Messages).

- The **Detail** report shows each incomplete unit of work with database update and ESAF (external subsystem) activity, and messages enqueued but not dequeued.
- The **Summary** report provides counts by transaction code, database, and external subsystem only.

**Report Options**

Default: Both selected.

Select with a / to include any of the following in the report:

- **Incomplete UOWs** (units of work) with database update or ESAF (external subsystem) activity.
- **Input Queue Messages** enqueued but not dequeued.

**Report Interval**

Defaults: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 301).

**Report Output DDname**

Default: COLDSTAR

Specify the DDname to be used for the report output.

**Processing Options**

Default: 2 **End of the Log**

Specify when the selected Cold Start Analysis report is to be produced, either:

1. At a specific point in time. Specify both date and time in the same format as the Report Interval date/time.
2. At the end of the input log.

Related reference:
[COLDSTART: Cold Start Analysis report] on page 449

The COLDSTART operand of the IMSPALOG batch command requests the Cold Start Analysis report.

Fast Path Transit reports

The Fast Path Transit reports contain detailed transit time and resource usage statistics for Fast Path transactions.

They are:
- Fast Path Transit Analysis
- Fast Path Transit Log
- Fast Path Transit Extract by Interval
- Fast Path Transaction Exception

Fast Path Transit Options

The IMS PA Fast Path Transit Options define control information that applies to the Fast Path Transit Reports within the Report Set.

The Fast Path Transit Options apply to the following reports:
- Fast Path Transit Analysis
- Fast Path Transit Log
- Fast Path Transit Extract by Interval
- Fast Path Transaction Exception

File Options Help

| Command ===| Samplog - Fast Path Transit Options |
|------------|--|-----------------------------------|
| Specify Fast Path Transit options. |
| Processing Options: |
| Peak Transaction Time Percentage . . 90 (50-100%) |
| Interval Options: |
| Time Interval .............. 15 Minutes |
| Align Time Interval to Even Hour . . YES (Yes or No) |
| Selection Criteria: |
| Object Type Inc/Exc Object + List Validation Warning |
| Transaction Code INC TL000001 / |

Figure 193. Fast Path Transit Options Panel

The options are as follows:

Peak Transaction Time Percentage
Default: 90

Specify a percentile $nnn$ between 50 and 100 to report the transit time within which $nnn\%$ of the transactions complete. Computations assume a normal distribution. Thus, 50 gives the median transit time for the sample.
Specify 90 or greater to determine the response time for most transactions. This is useful, for example, when monitoring a service level agreement which states that 95% of transactions must complete within nn milliseconds.

This percentile calculation is applicable to the Fast Path Transit Analysis report.

It does not apply to the Extract by Interval during Report Set processing. However, a percentile calculation can be applied to extracted data at a later stage of IMS PA processing via the Graphing and Export facility.

**Time Interval**

Default: 15

Specify the value nnnn, in minutes, of the reporting interval for Fast Path Transit reports and extracts. Data is accumulated every nnnn minutes from the start of the log input for the following reports:

- Fast Path Transit Analysis (by Time of Input)
- Fast Path Transit Extract by Interval

The data included in the first reported interval is that from the first record whose time stamp is on or after the specified Start/From date/time. However, the specified Stop/To date/time may fall within the last reported interval, and in order to complete the interval, data whose time stamp is after the Stop/To date/time may therefore be included.

**Note:** If **Align Time Interval to Even Hour** is selected, it is recommended that you specify a value that is a factor or a multiple of 60 to achieve consistent alignment to the hour.

**Align Time Interval to Even Hour**

Default: YES

This option applies to the following reports:

- Fast Path Transit Analysis (by Time of Input)
- Fast Path Transit Extract by Interval

Specify YES to align the reporting interval to the hour. Data is accumulated according to the specified Time Interval starting from the hour of the first log input record, but with printing commencing from the first time interval containing data.

**Example:** If the time of the first record is 10:37:05, the accumulation starts at 10:00:00. If the specified time interval is 30 minutes, the reported start times of the intervals are then 10.30.00, 11.00.00, 11.30.00, 12.00.00, and so on; whereas for a time interval of 25 minutes, the reported times are 10.25.00, 10.50.00, 11.15.00, 11.40.00, 12.05.00, and so on. In both cases, 10.00.00 does not appear in the report as the interval contains no data.

**Note:** To achieve alignment on every hour, specify a time interval which is exactly divisible into an hour. This is recommended if merging of input logs is required, to ensure that time intervals are aligned and the validity of results is retained.

Specify NO for no time interval alignment.

**Example:** If the time of the first record is 10:37:05, and the specified time interval is 30 minutes, the reported start times of the intervals are then 10.37.05, 11.07.05, 11.37.05, and so on; and for a time interval of 25 minutes, the reported times are 10.37.05, 11.02.05, 11.27.05, and so on.
Selection Criteria
Default: None specified; include all.

Specify transaction codes to be included in or excluded from all Fast Path Transit reports in the Report Set. Within this primary filtering of transaction codes, a further filtering is available on the following reports:

- Fast Path Transit Analysis
- Fast Path Transit Log
- Fast Path Transit Extract by Interval

This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

Related reference:
“Fast Path (EMH) Transit Options” on page 450
These operands of the IMSPALOG command define general control information for the Fast Path Transit reports.

Fast Path Transit Analysis report
The Fast Path Transit Analysis report can show response time performance by transaction code, routing code, userid, and time of sync point.

IMS PA generates the report command:
IMSPALOG FPANALYSIS

---

File Options Help
SAMPLOG - Fast Path Transit Analysis
Command ===>
Specify report options.

Reports Required: Report Interval
/ Transaction Code YYYY/MM/DD HH:MM:SS:TH
- Routing Code From
- User ID To
- Time (Interval: 15 Minutes)
Report Output DDname FPTTRPT
Selection Criteria:
Object Type Inc/Exc Object + List Validation Warning
Transaction Code
Routing Code
User ID

Figure 194. Fast Path Transit Analysis Report Options

The options are:

Reports Required
Options:
- Transaction Code
- Routing Code
- User ID
- Time (Interval: nnn Minutes)

Select with a / to produce up to four reports ordered by Transaction Code, Routing Code, User ID, or Time.
For reporting by Time, the interval of reporting is specified in minutes by the **Time Interval** option, and interval alignment is specified by the **Align Time Interval to Even Hour** option on the Fast Path Transit Options panel.

**Report Interval**
Default: Not specified.

Specify the reporting interval. Within the context of the Global Report Interval, records with time stamps on or after the **From** Date/Time and before the **To** Date/Time are included in the report.

You can specify one of the following:

**Date/time pairs or dates only**
This indicates a **date-time range** (for example, 2014/06/25 7:00 to 2014/06/25 16:30). The **From** Date/Time must be before the **To** Date/Time.

**Times only**
This indicates a particular **time slot** (for example, 9:00 to 10:00 each day). Specifying the **From** Time greater than the **To** Time indicates a time slot across midnight.

**Neither date/time pair**
*All* input records are selected.

Rules governing the date and time are the same as those for the Global Report Interval (see “Log Global Options” on page 290).

**Report Output DDname**
Default: FPTTRPT

Specify the **DDname** to be used for the report output.

**Selection Criteria**
Default: None specified. However, Transaction Code Selection Criteria specified on the Fast Path Transit Options panel is applied at run time.

Fast Path log records can be included in or excluded from the report based on their Transaction Code, Routing Code, and User ID values. For Transaction Codes, this panel provides a secondary filter within the primary filter specified on the Fast Path Transit Options panel. This enables you to report only the information of interest. You can specify a single **value**, a **masking pattern**, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

**Related reference**:
"FPANALYSIS: Fast Path Transit Analysis report” on page 450

The **FPANALYSIS** operand of the **IMSPALOG** batch command requests the Fast Path Transit Analysis report.

**Fast Path Transit Log report**
The Fast Path Transit Log is a chronological listing of all IFP transactions processed during the reporting interval.

IMS PA generates the report command:

```
IMSPALOG FPLOG(...) 
```
The options are as follows:

**Report Interval**
- **Defaults:** Not specified.
- Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 301).

**Report Output DDname**
- **Default:** FPTTLOG
- Specify the DDname to be used for the report output.

**Selection Criteria**
- **Default:** None specified. However, Transaction Code Selection Criteria specified on the Fast Path Transit Options panel is applied at run time.
- Records can be included in or excluded from the report based on their Transaction Code. This panel provides a secondary filter within the primary filter specified on the Fast Path Transit Options panel. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

**Related reference:**
- “FPLOG: Fast Path Transit Log report” on page 451

The FPLOG operand of the IMSPALOG batch command requests the Fast Path Transit Log report.

### Fast Path Transit Extract by Interval

The Fast Path Transit Extract by Interval creates extracts by time interval of Fast Path transaction transit time data.

IMS PA generates the report command:
```
IMSPALOG FPEXTRACT(...)
```

This panel provides a second level of control for extract processing. Values specified on the Log Global Options and Fast Path Transit Options panels provide a primary level of control.
**Note:** If merging extracted data files, check that the specified values for the filters (Transaction Code Selection Criteria) and the interval options (Time Interval, Align Time Interval to Even Hour) are consistent for all the extracts to ensure that the results of the merge are meaningful.

![Figure 196. Fast Path Transit Extract by Interval Options](image)

The options are as follows:

**Extract Data Required**
Options:
- **By Transaction Within Interval**
- **By Interval**

Default: Both selected.

Select with a / to produce the required extract.

Ensure that you select as a minimum criteria, the data you may wish to graph or export. For example:
- To graph or export by interval, you must first extract by interval.
- To graph or export by transaction, you must first extract by transaction within interval.

If no selection is made, no extract is produced. For more information on graphing, see Chapter 3, “Processing extract data sets,” on page 45.

Select **By Transaction Within Interval** to accumulate data for individual transaction codes within each time interval.

*For example,* if during a particular time interval there are, on the input log file, 3 records for transaction A, 2 records for transaction B, and no records for transaction C, the extract processing writes 2 records to the extract file, 1 with the aggregate data for transaction A, and 1 with the aggregate data for transaction B.
Select **By Interval** to accumulate data for all transactions in each time interval.

*For example*, in the previous scenario, for the particular interval only 1 record is written to the extract file with the aggregate data for both transactions A and B.

Select both to obtain by time interval, the aggregate data for the individual transaction codes and their totals.

**Report Interval**

Defaults: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. **Standard rules apply to the date and time specification** (see page “Transaction Transit Analysis report” on page 301).

**Report Output DDname**

Default: FPTTERPT

Specify the DDname to be used for the report output.

**Extract Data Sets: Input and Output**

Defaults: None.

Extract processing uses the input data set, if it is specified, for reading previously extracted data, merging it with the data extracted from the current log, and writing it to the output data set. The extracted data is stored in a format suitable for further IMS PA processing, and is not directly readable by external programs.

The input data set is optional, but if specified, it must exist.

The output data set must be specified. If it does not exist, IMS PA will create the data set at the time the extract is run using the allocation details specified for the **Transit Extract by Interval Data Set in Reporting Allocation Settings** from the action bar **Options** menu. If the output data set exists, the JCL will be built with **DISP=MOD** and the new extract data will be appended to the end. To overwrite the contents, edit the JCL and specify **DISP=OLD**.

The same data set may be specified for input and output, although this is not recommended. You may specify the input and output data sets as generations (0) and (+1) respectively of the same Generation Data Group (GDG) and thereby avoid the need to update the specification between runs.

**Selection Criteria**

Default: None specified. However, the Transaction Code Selection Criteria specified on the Fast Path (EMH) Transit Options panel are applied at run time.

Fast Path log records can be included in or excluded from the extract based on their Transaction Code. This panel provides a secondary filter within the primary filter specified on the Fast Path (EMH) Transit Options panel. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

Ensure that your selection contains the transaction codes you may wish to export or graph. See Chapter 3, “Processing extract data sets,” on page 45.

**Related reference:**

Chapter 20. Requesting Log reports 359
The FPCTRL operand of the IMSPALOG batch command requests the Fast Path Transit Extract by Interval.

**Fast Path Transaction Exception report and extract**

The Fast Path Transaction Exception reports provide detailed and summary information about IFP transactions, as well as message queue transactions that use Fast Path databases.

IMS PA generates the report command:

```
IMSPALOG FPTRNEX(...)
```

The options are as follows:

**Reports Required**
- **Exception Detail Log**
- **DEDB Calls**
- **Buffer Usage**
- **VSO**
- **Shared EMHQ**
- **Summary by Transaction**
- **Sync Failure Summary**

Default: All three reports selected, but additional detail lines (DEDB Calls, Buffer Usage, VSO, Shared EMHQ) not selected.

Select with a / to produce the required reports.

To produce the Fast Path Transaction Exception Log report, select **Exception Detail Log** and optionally select one or more of the four types of transaction detail records to include in the report.

*Figure 197. Fast Path Transaction Exception Report and Extract Options*
To produce the Fast Path Transaction Exception Summary report, select **Summary by Transaction**.

To produce the Fast Path Transaction Synchronization Failure Summary, select **Sync Failure Summary**.

The Fast Path Transaction Exception Recap report is always produced at the end to give a summary of the processing of the selected reports.

**Report Interval**

Defaults: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see “Transaction Transit Analysis report” on page 301).

**Report Output DDname**

Default: FPTTXLOG

Specify the DDname to be used for the report output.

**Include Non-IFP Transactions**

Default: Not selected; do not include non-IFP transactions.

Select with a / to report all non-IFP transactions as exceptions.

Non-IFP transactions are message queue transactions that use Fast Path databases.

**Expectation Set**

Default: None.

Specify the name of an Expectation Set which contains user-supplied expected values for any of the following transaction attributes:

- Input queue time
- Processing time
- Output queue time
- Total transit time
- FP DB DL/I calls
- DEDB waits

You can enter the name directly, or to choose an Expectation Set from a list, position the cursor in the field and press **Prompt (F4)**.

“Specifying Expectations” on page 137 describes how to specify expected values in an Expectation Set.

The report will show a transaction as an exception if it is outside the range for any of the values defined in the Expectation Set. If the Expectation Set is not specified, then the report shows all transactions as exceptions.

**Extract Data Sets**

Options:

- **Total Traffic**
- **Exception Traffic**

Defaults: None.

Specify the names of either or both of the following optional extract data sets:

- The Total Traffic data set. All Fast Path transactions have a detail record written to this data set. It is equivalent to the DBFULTA0 Total Traffic data set.
The Exception Traffic data set. Only Fast Path exception transactions have an exception record written to this data set. It is equivalent to the DBFULTA0 Exception Traffic data set.

If the data set does not exist, IMS PA will create it at the time the report and extract are run using the allocation details specified in Reporting Allocation Settings from the action bar Options menu.

If the data set exists, new extract data will be appended to the end (DISP=MOD). To overwrite the contents of the extract data set, edit the JCL and specify DISP=OLD.

You may specify the extract data set as a generation (say +1) of a generation data group (GDG) and thereby avoid the need to update the specification between runs.

Related reference:
“FPTRNEX: Fast Path Transaction Exception report and extract” on page 454

The FPTRNEX operand of the IMSPALOG batch command requests the Fast Path Transaction Exception reports.

Fast Path Resource Usage reports

The options for each Fast Path Resource Usage report are described here.

The IMS PA Fast Path Resource Usage Reports are:
- Fast Path Resource Usage and Contention
- Fast Path Database Call Statistics
- IFP Region Occupancy
- EMH Message Statistics
- DEDB Update Activity
- DEDB Update Trace
- VSO Statistics

Fast Path Resource Usage and Contention report

The Fast Path Resource Usage and Contention report provides detailed statistics on the Fast Path resources used by IFP transactions and non-IFP programs.

IMS PA generates the report command:

IMSPALOG FPIRUC(...)
The options are as follows:

**Report Options**
Default: **1. By IMSID and Sysplex**

The selection is only relevant when processing multi-subsystem log files. In a single IMS subsystem environment all report options are equivalent.

Select 1 to produce one report for each subsystem followed by a total system wide report.

Select 2 to produce only the reports for each subsystem.

Select 3 to produce only the total system wide report.

**Report Interval**
Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 301).

**Reports Required**
Default: **Resource Usage & Contention** report.

Select with a / one or both of the reports:

- The **Resource Usage & Contention** report provides wide-ranging information about transaction Fast Path Resource Usage including DEDB calls, ADS I/O, VSO activity, Fast Path Buffer usage, Contention, Logging, Sync Failure and Transaction rate.

- The **Buffer Usage** report provides a more detailed analysis of Fast Path Buffer usage.

**Report Output DDnames**
Specify the DDnames to be used for the report output for:

- FP Resource Usage & Contention report. Default: FPRUCRPT
- FP Buffer Usage report. Default: FPBUFRPT
Peak NBA/OBA Buffer Percentage
Default: 90

Specify a peak percentage \textit{nnn} between 50 and 100.

The FP Buffer Usage report provides a statistical estimate of the peak percentile for transaction NBA and OBA Buffer usage. For example, specify 95 to report the peak NBA and OBA buffer usage for 95\% of transactions.

Selection Criteria
Default: None specified; include all.

Records can be included in or excluded from the report based on their Transaction Code and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

Related reference:
“FPIRUC: Fast Path Resource Usage and Contention report” on page 455

The FPIRUC operand of the IMSPALOG batch command requests the Fast Path Resource Usage and Contention report or the Fast Path Buffer Usage report or both.

Fast Path Database Call Statistics report
The Fast Path Database Call Statistics report provides a breakdown of DL/I call function codes by transaction code. If your database is a HALDB, you can also report on specific HALDB partitions because the name of the partition is found on the database name field of the various records used in this report.

IMS PA generates the report command:
IMSPALOG FPDBCALL(...)

---

![Figure 199. Fast Path Database Call Statistics Report Options](image)

The options are as follows:

Report Options
Default: 1. By IMSID and Sysplex

---

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The selection is only relevant when processing multi-subsystem log files. In a single IMS subsystem environment all report options are equivalent.

Select 1 to produce one report for each subsystem followed by a total system wide report.
Select 2 to produce only the reports for each subsystem.
Select 3 to produce only the total system wide report.

**Report Interval**
- Defaults: Not specified.
- Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 301).

**Report Output DDname**
- Default: FPDBCRPT
- Specify the DDname to be used for the report output.

**Selection Criteria**
- Default: None specified; include all.
- Records can be included in or excluded from the report based on their Transaction Code and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See [Chapter 10, “Object Lists,” on page 147](#) for information on how to define Object Lists.

**Related reference:**
[“FPDBCALL: Fast Path Database Call Statistics report” on page 457](#)
The FPDBCALL operand of the IMSPALOG batch command requests the Fast Path Database Call Statistics report.

### IFP Region Occupancy report

The IFP Region Occupancy Report provides approximate region occupancy rates for IFP regions.

IMS PA generates the report command:

```sql
IMSPALOG FPRGNO(.
```
The options are as follows:

**Report Interval**
Default: Not specified.
Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 301).

**Report Output DDname**
Default: FPRGORPT
Specify the DDname to be used for the report output.

**Selection Criteria**
Default: None specified; include all.
Records can be included in or excluded from the report based on their Region ID by PST number, Program (PSB) name, and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern (but not for Region ID by PST number), or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

**Related reference:**
"FPRGNO: IFP Region Occupancy report" on page 457
The FPRGNO operand of the IMSPALOG batch command requests the IFP Region Occupancy report.

**EMH Message Statistics report**
The EMH Message Statistics report contains information on the number and length of EMH messages that are processed by balancing groups and shared EMH queues.

IMS PA generates the report command:
IMSPALOG FPEMHQ(…)

Figure 200. IFP Region Occupancy Report Options
The options are as follows:

**Report Interval**

Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see “Transaction Transit Analysis report” on page 301).

**Report Output DDname**

Default: FPMSGRPT

Specify the DDname to be used for the report output.

**Selection Criteria**

Default: None specified; include all.

Records can be included in or excluded from the report based on their Transaction Code. Unlike the other Fast Path Resource Usage reports, there is no support for IMS Subsystem ID filtering as the report is sysplex wide to give details on local and global transaction message lengths. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

**Related reference:**

“FPEMHQ: EMH Message Statistics report” on page 458

The FPEMHQ operand of the IMSPALOG batch command requests the EMH Message Statistics report.

---

**DEDB Update Activity report**

The DEDB Update Activity report can help you determine the cost of DEDB database calls, and shows the rate of processing against your DEDB databases.

IMS PA generates the report command:

IMS P A generates the report command:

IMS P A generates the report command:

IMS P A generates the report command:

IMSPALOG FPDBUPD(...)

---

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The options are as follows:

**Report Options**
Default: 1. By IMSID and Sysplex
- The selection is only relevant when processing multi-subsystem log files. In a single IMS subsystem environment all report options are equivalent.
- Select 1 to produce one report for each subsystem followed by a total system wide report.
- Select 2 to produce only the reports for each subsystem.
- Select 3 to produce only the total system wide report.

**Report Interval**
Default: Not specified.
- Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see page "Transaction Transit Analysis report" on page 301).

**Report Output DDname**
Default: FPDBURPT
- Specify the DDname to be used for the report output.

**Selection Criteria**
Default: None specified; include all.
- Records can be included in or excluded from the report based on their DEDB Database, DEDB Area, and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

**Related reference**
"FPDBUPD: DEDB Update Activity report" on page 459
- The FPDBUPD operand of the IMSPALOG batch command requests the DEDB Update Activity report.
VSO Statistics report

The VSO Statistics report provides detailed statistics on VSO resource usage.

IMS PA generates the report command:
IMSPALOG FPVSO(...)

<table>
<thead>
<tr>
<th>File Options Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command ====&gt; SAMPLLOG - VSO Statistics</td>
</tr>
</tbody>
</table>

Specify report options.

Report Options: Report Interval

1. By IMSID and Sysplex YYY/MM/DD HH:MM:SS:TH
2. By IMS Subsystem only From
3. Across Sysplex only To

Report Output DDname FPVSORPT

Selection Criteria:

Object Type Inc/Exc Object + List Validation Warning

Database
DEDB Area
IMS Subsystem ID

Figure 203. VSO Statistics Report Options

The options are as follows:

**Report Options**

Default: **1. By IMSID and Sysplex**

The selection is only relevant when processing multi-subsystem log files. In a single IMS subsystem environment all report options are equivalent.

Select 1 to produce one report for each subsystem followed by a total system wide report.

Select 2 to produce only the reports for each subsystem.

Select 3 to produce only the total system wide report representing the aggregate of all the included subsystems in the sysplex.

**Report Interval**

Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 301).

**Report Output DDname**

Default: FPVSORPT

Specify the DDname to be used for the report output.

**Selection Criteria**

Default: None specified; include all.

Records can be included in or excluded from the report based on their DEDB Database, DEDB Area, and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single
Related reference:

“FPVSO: VSO Statistics report” on page 460

The FPVSO operand of the IMSPALOG batch command requests the VSO Statistics report.

Trace reports

The options for each trace report are described here.

IMS PA can produce the following trace reports:
- DC Queue Manager Trace
- Database Trace (Full Function)
- DEDB Update Trace
- ESAF Trace

**DC Queue Manager Trace report**

The DC Queue Manager Trace report provides a record of all DC-related activity for the specified time period.

IMS PA generates the report command:

IMSPALOG DCTRACE(...)

![Image](image-url)

**Figure 204. DC Queue Manager Trace Report Options**

The options are as follows:

**Print LTERM, not Line/Terminal**
Default: Not selected.
Select with a / to print LTERMs. If not selected, VTAM Node names or Line/Terminal values are printed. Whatever the choice, the column heading in the report is shown as LTERM.

**Print complete transactions**
Default: Not selected.

Select with a / to ensure that all messages associated with a transaction are reported, regardless of the filtering options in effect. For example, if you include Message ID TR* to only include messages for transactions that start with TR, then IMS PA also reports the output messages for these transactions, even though their Message ID does not match TR*.

**Print entire message text**
Default: Not selected.

Select with a / to print the entire message text. If this option is not specified then only the first part of each text segment that fits on one line is reported.

**Print Tracking UOW report**
Default: Not selected.

Select with a / to include the Tracking UOW for each log record in the report. This option changes the format of the report to include additional information.

**UTC Format**
Select the required format of the UTC time stamp for the DC UOW Tracker report:

1. **Local**. The UTC is converted from GMT to local time by applying the local time zone offset. This is the default.

2. **GMT**. The UTC is not converted to local time. The UTC is reported as it appears in the log record without the time zone offset applied.

**Report Interval**
Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 301).

**Report Output DDname**
Default: DCTRDD

Specify the DDname to be used for the report output.

**Selection Criteria**
Default: None specified; include all.

Log Records can be selected by Line/Terminal, LTERM, VTAM Node, Log Record Code, Message ID, User ID and IMS Subsystem ID.

For example, to include terminals 2 and 5 on line 10, specify INC and the name of a Line/Terminal Object List which contains the values 10/2 and 10/5 and enter a / in the List column. To include only terminal 3 on line 8, enter the value 8/3 directly on this panel and leave the List column blank. If more than eight characters are required to specify a line/terminal value, use an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Masking is not supported for Line/Terminal or Log Record Code objects.
Note: The Message ID is the first 8 characters in the 01 or 03 log record. When specifying a Message ID value on this panel or in an Object List, if it is less than 8 characters append an * (asterisk). For example, specify TR1* to include or exclude all messages for transaction code TR1.

Related reference:
"DCTRACE: DC Queue Manager Trace report" on page 461
The DCTRACE operand of the IMSPALOG batch command requests the DC Queue Manager Trace report.

Database Trace report

The Database Trace report provides a record of all database changes by application programs as recorded on the IMS log. If your database is a HALDB, you can also report on specific HALDB partitions because the name of the partition is found on the database name field of the various records used in this report.

IMS PA generates the report command:
IMSPALOG DBTRACE(...)

<table>
<thead>
<tr>
<th>File</th>
<th>Options</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SAMLOG - Database Trace (Full Function)</td>
<td></td>
</tr>
<tr>
<td>Command ==&gt;</td>
<td>Report Options.</td>
<td></td>
</tr>
<tr>
<td>Specify report options.</td>
<td>Report Options:</td>
<td>______ Report Interval ______</td>
</tr>
<tr>
<td>1 1. Database with transaction oriented information From</td>
<td>YYYYY/MM/DD HH:MM:SS:TH</td>
<td></td>
</tr>
<tr>
<td>2. Database information only To</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Database Open/Close only Report Output DDname DBTRDD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Report Option 1 Selection Criteria:
- Object Type
- Transaction Code
- Database
- Program (PSB)

Report Options 1 and 2 Selection Criteria:
- Object Type
- Key
- Block ID

Report Options 1, 2 and 3 Selection Criteria:
- Object Type
- IMS Subsystem ID

Figure 205. Database Trace Report Options

The options are as follows:

Report Options

Default: 1

Select 1 to report database information and transaction information which includes:
- Database open, close, and update operations for the specified databases.
• Inputs, program schedulings, updates, and program terminations for the programs invoked by the specified transaction codes. All opens and closes for the specified databases are reported because they are not identified by specific transaction codes.

Select 2 to report database open, close, and update operations for all databases. Transaction-oriented information is not reported.

Select 3 to report open and close operations for all databases, but not updates. Transaction-oriented information is not reported.

Report Interval
Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see “Transaction Transit Analysis report” on page 301).

Report Output DDname
Default: DBTRDD

Specify a DDname to be used for the report output.

Selection Criteria
Default: None specified; include all.

For report option 1, records can be filtered by Transaction Code, Database, Program (PSB), Key, Block ID, and IMS Subsystem ID.

For report option 2, records can be filtered by Key, Block ID, and IMS Subsystem ID.

For report option 3, records can be filtered by IMS Subsystem ID only.

Key values are from 1 to 8 characters. Block ID values are 4-byte hexadecimal IDs that can be used if keys are unknown or nonexistent. The specified Block ID values are compared to the DLOGRBA field in the database type 50 log records. The specified Key or Block ID values pertain to all included databases.

This enables you to report only the information of interest. You can specify a single value, a masking pattern (except for Block ID objects), or an Object List. See [Chapter 10, “Object Lists,” on page 147] for information on how to define Object Lists.

Related reference:
“DBTRACE: Database Trace report” on page 462

The DBTRACE operand of the IMSFALOG batch command requests the Database Trace (Full Function) report.

DEDB Update Trace report
The DEDB Update Trace report provides a record of all DEDB changes by application programs as recorded on the IMS log.

IMS PA generates the report command:
IMSPALOG FPDBTRC(…)

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The DEDB Update Trace report can generate large amounts of output over a very short period of time. To avoid large and unwanted report output, it is recommended that you:

1. Use the From and To times to narrow the reporting period.
2. Use Object Lists to filter the databases, programs, or users included in the report.
3. Set the desired report option to include only the type of DEDB events required.

The options are as follows:

**Report Options**

1. **DEDB information including related sync point entries** includes:
   - DEDB updates
   - Application sync points that have some DEDB updates reported
   - DEDB open and close events
   - DEDB errors

2. **DEDB information only** includes:
   - DEDB updates
   - DEDB open and close events
   - DEDB errors

3. **DEDB Open/Close only** includes:
   - DEDB open and close events
   - DEDB errors

**Report Interval**

Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see page "Transaction Transit Analysis report" on page 301).
Report Output DDname
Default: FPDBUTRC

Specify a DDname to be used for the report output.

Selection Criteria
Default: None specified; include all.

The General qualifiers apply to all the possible entries of the Trace. In contrast, the DEDB Update Entry qualifiers apply only to DEDB update entries (5950 log records), though using these filters will affect the application SYNC records included in the report.

The databases to be included in or excluded from the report can be specified by DEDB Database name and DEDB Area name. The source of the database updates can be restricted by filtering on IMS Region by PST number, Program name, User ID, and IMS Subsystem ID. Filtering by Transaction Code is not available as DEDB update records do not contain transaction name.

You can specify a single value, a masking pattern (not for Region ID by PST number), or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

Related reference:
“FPDBTRC: DEDB Update Trace report” on page 463
The FPDBTRC operand of the IMSPALOG batch command requests the DEDB Update Trace report.

ESAF Trace report
The External Subsystem Attach Facility (ESAF) Trace report provides a chronological listing of all external subsystem connects and disconnects for the specified time period.

IMS PA generates the report command:
IMSPALOG ESAF(…)

![Figure 207. ESAF Trace (Log) Report Options](image)

The options are as follows:
Report Interval
Default: Not specified.
Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 301).

Report Output DDname
Default: ESAFDD
Specify the DDname to be used for the report output.

Selection Criteria
Default: None specified; include all.
Records can be included in or excluded from the report based on their External Subsystem ID and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

User-written reports
IMS PA supports up to 21 user-written reports in each Report Set. These can be activated for execution together with other reports in the Report Set in a similar manner to the supplied log reports.

IPIPPGM2 is one such programs supplied with IMS PA. See Chapter 38, “User-written log record processors,” on page 727 for information on writing a record processor.

To include a User-Written Record Processor in a Report Set, from the Log Report Set Edit panel, select User-Written Reports to display the User-Written Record Processors panel.

<table>
<thead>
<tr>
<th>User-Written Record Processors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command ==&gt; ___________________</td>
</tr>
<tr>
<td>Enter &quot;/&quot; to select action.</td>
</tr>
<tr>
<td>1. S IPIPU1C1 2. _ IPIPPGM2 3. _ IPIPU9C1</td>
</tr>
<tr>
<td>4. _ MYPGM1 5. _ MYPGM2 6. _ Not Defined</td>
</tr>
<tr>
<td>10. _ Not Defined 11. _ Not Defined 12. _ Not Defined</td>
</tr>
<tr>
<td>16. _ Not Defined 17. _ Not Defined 18. _ Not Defined</td>
</tr>
</tbody>
</table>

Figure 208. Activating User-Written Reports

This panel allows 21 user-defined processors to be specified and activated or deactivated. Activated processors are highlighted, and if any are activated then the User-Written Reports entry on the Report Set menu is also highlighted. Not Defined indicates that a user program name is not specified for this processor entry, and the entry cannot be activated.

Line actions:
The following line actions are provided:
/ Display the menu of line actions
A Activate the processor

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Enter S or E to select a processor to view or edit its details. The following panel is displayed.

![User Processor Options Panel](image)

This panel is used to specify the report options for a selected user-written record processor. The options are as follows:

**User Program Name**
- Default: None.
- Specify the name of the user-written program. Three programs supplied with IMS PA are IPIPU1xx, IPIPPGM2, and IPIPU9xx. Substitute xx with your required IMS version (C1 for IMS V12, D1 for IMS V13, or E1 for IMS V14). If no name is specified, the processor is automatically deactivated.

**Report Interval**
- Default: Not specified.
- Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see “Transaction Transit Analysis report” on page 301).

**Report Output DDname**
- Default: User Program Name applied at run time.
- Specify the DDname to be used for output from the processor.

**Log Records to Include**
- Default: None specified; include all records.
Specify one log record code, or an Object List of type RECCD specifying many log record codes to be passed to the user program. This filtering is performed by IMS PA.

Select List with a / if Object is an Object List, otherwise it is assumed to be a value. See Chapter 10, “Object Lists,” on page 147 for information on how to define an Object List.

**Selection Criteria**

Any five selections can be specified, using any Object List types. The Object-Label defaults to the Object Type of the specified Object List, but can be changed to any non-blank label.

These include/exclude selections are passed to the user program to be handled by its logic; the selections are not performed by IMS PA.

This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

**Related reference:**

“USERPGM: User-Written Record Processors” on page 464

The USERPGM operand of the IMSPALOG batch command requests that a user-written program is to be run.

“User programs” on page 725

The sample library SIPISAMP contains members with sample user programs that can run under IMS PA and associated JCL.

---

### Extract by Interval graphing and export

For Transaction Transit (MSGQ) Extract by Interval and Fast Path (EMH) Extract by Interval data, IMS PA provides an interactive facility to graph the data, export the data for use by external program such as DB2, and download the exported data to a PC workstation.

**Restriction:** The facility described in this topic is only applicable to Extract by Interval data sets which are in proprietary format. It is not applicable to all other IMS PA extracts which can be directly analyzed by external programs such as DB2, or downloaded for graphing and analysis by PC tools such as Microsoft Excel.

For more information on how to create the Extract by Interval data sets, see “Transaction Transit Extract by Interval” on page 306 and “Fast Path Transit Extract by Interval” on page 357.

The design of the IMS PA graphing and export facility is shown in Figure 210 on page 379. It processes Extract by Interval data previously extracted from Log files using IMS PA. You then choose to either graph the extract data using IMS PA (and GDMD), or download the extract data to your workstation for analysis using your usual PC spreadsheet and graphing tools.
Extract by Interval data

The graphing and export facility operates on transit time data previously extracted from log files into Extract Data Sets.

For details of how to create the extracts, see “Transaction Transit Extract by Interval” on page 306 and “Fast Path Transit Extract by Interval” on page 357.

Data is stored in the Extract Data Sets in proprietary format which is the same for message queue transactions (Transaction Transit Extract by Interval) and Fast Path transactions (Fast Path Transit Extract by Interval). However, for Fast Path transactions, the following fields are set to zero. So when graphing or exporting an Extract Data Set, the Fast Path transactions will have these fields set to zero:

- Program switch time
- Output CQS time
- Output local queue time
- CPU time

Filtering and processing options can be applied to the Extract Data Set for graphing or export:

Figure 210. IMS PA Graphing and Export Facility
The peak transaction time percentage is used to calculate for each time interval, or by transaction code within each interval, the transit time (in milliseconds) within which that percentage of transactions completes.

A date-time range can be specified to narrow the time period of the data to be graphed or exported.

The data can be presented either accumulated by time interval or by transaction code within time interval for a specified transaction code or all, provided it has been extracted at that level of detail.

**Graphing and export of interval data**

To invoke the graphing and export facility, select option 8 Graphing & Export from the IMS PA primary option menu.

The Extract Graphing and Export panel allows you to:

- Export the data for external graphing or processing (option E).
- Produce GDDM graphs from previously extracted data (option G).

You can also specify the filtering and processing options you require. On this and all subordinate panels, the filtering and processing options have defaults which apply on initial entry to the panel until changed by the user.

**Note:** There is no way to revert back to the defaults after you have changed the filtering and processing options.

The options are as follows:

**Extract Data Set**

Default: None.

Specify the name of the Extract Data Set containing the data to be graphed or exported. This data set must already have been populated with data using either or both of the Extract by Interval facilities from the Report Set (LOG) panel.
• **Transaction Transit Extract by Interval**
• **Fast Path Transit Extract by Interval**

**Peak Transaction Time Percentage**

Default: 90

Specify a percentile \( nnn \) between 50 and 100 to report the transit time within which \( nnn\% \) of the transactions complete. Computations assume a normal distribution. Thus, 50 gives the median transit time for the extract sample.

Specify 90 or greater to determine the response time for most transactions. This is useful, for example, when monitoring a service level agreement which states that 95% of transactions must complete within \( mm \) milliseconds.

**Data to Include: By Interval, By Transaction Within Interval**

Default: Not selected.

Select with a / to specify whether to include data for each time interval at the summary level, at the transaction level, or both.

If the transaction level is selected, enter either 1 or 2 to specify, respectively, whether to include data for all transactions or a single transaction code.

The Extract Data Set must contain data extracted according to the selected criteria; the graphing or exporting processes perform no accumulation of data, nor can they report on individual transaction codes if the data has not been extracted at the transaction level. See “Transaction Transit Extract by Interval” on page 306.

If you have selected **By Transaction Within Interval**:  
- If you enter 1 for **All Transactions**, a large number of graphs may be generated because a separate graph is produced for each transaction code in the filtered extract file.
- If you enter 2 for **Single Transaction Code**, specify the transaction code to be graphed or included in the export file.

If no options are selected, processing will not proceed.

**Report Interval From Date, Time To Date, Time**

Defaults: None. (Include all data in the Extract Data Set)

Specify the time period for the data to be included in the graph or export file. On the graph, this becomes the boundaries for the time interval values on the x-axis.

The rules that govern the date and time values are:

**Date**  
A date is expected in a format consistent with your **Preferred Date Format** specified in the dialog settings. See Figure 12 on page 68. If the century of the year is omitted then, if the year is less than 73, century 2000 is assumed, otherwise century 1900 is assumed.

**Time**  
Time is always expressed as \( hh:mm:ss \) for hours, minutes, and seconds. Colon delimiters must be used to separate the parts of the time.

**Date/Time Pair**  
The To Date/Time must not be earlier than the From Date/Time. You can specify a date value without a time value, but if a time value
value is specified, a date value must also be specified. If one or more of the dates or times is omitted, the following defaults are applied at run time:

**Missing Values**

**Default**

**From Date**
Start of extract file

**To Date**
End of extract file

**From Time**
00:00:00

**To Time**
23:59:59

**Extract by Interval graphing**

The Extract by Interval Graphing facility uses GDDM-PGF to display or print graphs of selected transaction transit time by time interval data from an Extract Data Set, and the filtering and processing options specified on the Extract Graphing & Export panel.

The Extract Data Set contains data extracted during log Report Set processing using the Extract by Interval report facilities. You can produce up to eight line graphs, and select which data items are to appear on each graph; you may also select one or more data items to appear on all graphs.

The data item values are plotted on the y-axis against the time interval on the x-axis.

If you select a “Count” item to appear on the same graph as one or more “Transit Time” items, the graph contains two y-axes, with Transit Time (msecs) on the left and Count on the right.

If multiple graphs are requested, they are presented one per page in ascending graph-number order in the following sequence:

1. First, if By Interval is selected, all requested graphs with summary level data for all transactions are presented in turn.
2. Then, if By Transaction Within Interval is selected, all requested graphs per transaction code are presented in descending order of transaction code.

If displaying the graphs, press Enter to page forward and view them sequentially. Press Exit (F3) or Cancel (F12) at any stage if you wish to prematurely terminate the display.

To invoke this facility, select option 6 on the Extract Graphing & Export panel, specify the required filtering and processing options, then press Enter. The following panel is displayed.
The options are as follows:

**Select the Data to Graph**

Default: Not selected.

If you wish to produce only one graph, use / to select those data items to appear on the graph.

If you wish to produce more than one graph:
- Use / to select the data items which you wish to appear on all graphs.
- Use numbers between 1 and 8 to select the data items to appear on up to 8 separate graphs. All data items with the same number will appear on the same graph. The number sequence dictates the order in which the graphs will appear.

If no items are selected, no graphs are produced.

_nnn%_ is the **Peak Transaction Time Percentage** specified on the Extract Graphing & Export panel.

**Output Device (Terminal or Printer)**

Default: 1 (Terminal)

Select 1 to display the GDDM graphs, or 2 to print them.

**Printer ID**

Default: None.

If you select Output Device 2 to print the graphs, specify the ID of the printer. The ID must be a valid GDDM nickname.

**Execution Mode (Foreground or Batch)**

Default: 1 (Foreground)

Select 1 to generate the GDDM graphs in foreground. This is required if the selected output device is the terminal.

Select 2 for batch generation.

When all required options have been specified, press Enter to produce the requested graphs.
Extract by Interval export
The Extract by Interval Export facility makes selected transit time by time interval data available to external programs, or PC applications such as IBM Lotus Symphony Spreadsheets or Microsoft Excel.

About this task
This facility creates an external format Export Data Set from a proprietary format Extract Data Set using filtering and processing options specified on the Extract Graphing & Export panel. The Extract Data Set contains data extracted during log Report Set processing using the Extract by Interval report facilities.

Optionally, the Export file can be transferred to a PC workstation file. With this as the input file, you can then execute your PC application in the usual way to produce graphs or other analyses.

Procedure
To invoke the Export facility:
1. Activate the workstation connection.
2. On the IMS PA primary option menu, select option 8 Graphing & Export. The Extract Graphing & Export panel is displayed.
3. Select option E.
4. Specify the required filtering and processing options.
5. Press Enter.
   The following panel is displayed.

![Extract by Interval Export](image)

The options are as follows:

- **Destination**
  Default: None. No export or transfer occurs.

  Enter 1 to convert the extract data and write it to the Export Data Set.
  Enter 2 to convert the extract data and write it to the Export Data Set, then transfer this to the Workstation File.
Enter 3 to transfer previously converted data in the Export Data Set to the Workstation File.

If you request transfer to a Workstation File (option 2 or 3), look for the message Transfer successful at the top right of the panel when processing is complete.

**Note:** For a successful transfer, the ISPF workstation connection must be active. To do this, run \( wsa.exe \) from your workstation, then use the ISPF SETTNGS command on your terminal emulator. Select the **Workstation** option in the action bar, enter the TCP/IP address of your workstation, and accept the incoming connection. For more information on setting up \( wsa.exe \), see “Export settings” on page 58.

**Export Data Set**
Default: None.

Specify the name of the data set which contains the external format data after filtering and converting the data from the Extract file.

The Export Data Set must be cataloged. Its DCB attributes should be compatible with the Extract Data Set, and its SPACE allocation smaller if only a subset of the data is being exported.

See Table 3 on page 386 for the record layout of the Export Data Set and Figure 214 on page 386 for an example of the contents.

**Workstation File**
Default: None.

Specify the path and file name of the PC file which is to receive the data transferred from the Export Data Set.

**Headings in Export Data Set**
Default: Not selected. Headings are not written to the Export Data Set.

Select with a / to include field headings as the first record in the Export Data Set. The headings are shown in Table 3 on page 386.

**Replace Workstation File**
Default: Not selected. If the workstation file exists, it is not replaced, and the transfer does not take place.

Select with a / to overwrite the workstation file if it already exists.

**Execution Mode (Foreground or Batch)**
Default: 1 (Foreground)

Select 1 to process in foreground. This is required if transferring data to a workstation file.

Select 2 to conduct export processing in batch mode.

**Export file content:**

Export files are comma-separated value (CSV) files.

The field headings are optionally included as the first record in the export file. The headings are comma-separated, in the same sequence but of different length to the data fields. Each subsequent row represents a record of type 2 containing accumulated data for the given transaction code for the given time interval.
The time shown is the start time of the interval and is included in the interval. If there is no transaction code shown, the row represents totals for the interval. The transaction data appears in alphabetical order by transaction code with *TOTAL* (the total for the interval) appearing first.

The following figure shows an example export file.

The data fields are fixed length, comma separated values. Character fields are left-justified and blank-filled to the right. Numeric fields are right-justified and blank-filled to the left.

The following table describes the record format of the export file.

**Table 3. Export file record layout: Transit Extract by Interval**

<table>
<thead>
<tr>
<th>Field description</th>
<th>Column heading</th>
<th>Field length (Bytes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Record Type (=2)</td>
<td>Type</td>
<td>1</td>
</tr>
<tr>
<td>Date (User-defined format)</td>
<td>Date</td>
<td>10</td>
</tr>
<tr>
<td>Sort yyyy/mm/dd</td>
<td>Trancode</td>
<td>8</td>
</tr>
<tr>
<td>U.S. mm/dd/yyyy</td>
<td>Count</td>
<td>10</td>
</tr>
<tr>
<td>European dd/mm/yyyy</td>
<td>Min</td>
<td>8</td>
</tr>
<tr>
<td>Ordinal yyyyddd</td>
<td>Avg Input</td>
<td>6</td>
</tr>
<tr>
<td>Batch ddMMMyyyyyy Where MMM = Jan, Feb, ...</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 214. Export File Contents: Transit Extract by Interval**
### Table 3. Export file record layout: Transit Extract by Interval (continued)

<table>
<thead>
<tr>
<th>Field description</th>
<th>Column heading</th>
<th>Field length (Bytes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Switch time (msec)</td>
<td>Avg Switch</td>
<td>6</td>
</tr>
<tr>
<td>Program Execution time (msec)</td>
<td>Avg Pgm Exec</td>
<td>6</td>
</tr>
<tr>
<td>Output Queue time (msec)</td>
<td>Avg Output</td>
<td>6</td>
</tr>
<tr>
<td>Output CQS time (msec)</td>
<td>Avg Out CQS</td>
<td>6</td>
</tr>
<tr>
<td>Output Local Queue time (msec)</td>
<td>Avg Out Loc</td>
<td>6</td>
</tr>
<tr>
<td>Total Transit time (msec)</td>
<td>Avg Total</td>
<td>6</td>
</tr>
<tr>
<td>Input Queue time User-defined percentage (msec)</td>
<td>nnn% Input</td>
<td>6</td>
</tr>
<tr>
<td>Program Switch time User-defined percentage (msec)</td>
<td>nnn% Switch</td>
<td>6</td>
</tr>
<tr>
<td>Program Execution time User-defined percentage (msec)</td>
<td>nnn% Pgm Exec</td>
<td>6</td>
</tr>
<tr>
<td>Output Queue time User-defined percentage (msec)</td>
<td>nnn% Output</td>
<td>6</td>
</tr>
<tr>
<td>Output CQS time User-defined percentage (msec)</td>
<td>nnn% Out CQS</td>
<td>6</td>
</tr>
<tr>
<td>Output Local Queue time User-defined percentage (msec)</td>
<td>nnn% Out Loc</td>
<td>6</td>
</tr>
<tr>
<td>Total Transit time User-defined percentage (msec)</td>
<td>nnn% Total</td>
<td>6</td>
</tr>
<tr>
<td>Maximum Transit time (msec)</td>
<td>Max</td>
<td>8</td>
</tr>
<tr>
<td>CPU Time (msec)</td>
<td>CPU</td>
<td>8</td>
</tr>
</tbody>
</table>

**Extract export report:**

The Extract Export Report panel provides a summary report of your requested export processing when executing in foreground. If executing in batch mode, a similar report is produced and is written to SYSPRINT.

You can use the report to indicate whether the results of the export are as expected, prior to proceeding with further processing of the export data. For example, if the number of records written to the Export Data Set is unreasonably large, you may choose to return to previous panels to change the filters and processing options to reduce the amount of data selected for export. The number of export records written does not include the record containing the headings.

**Extract Start** and **Extract End** show the period of the data in the Extract file. **Export Start** and **Export End** show the period of the data in the Export file specified using the **From** and **To** date and time option on the Extract Export panel. Compare these periods to verify that you are exporting the required portion of the extract data.
Graphing the export data:

The Export data can be processed by external programs such as DB2, or transferred to a Workstation file and graphed using your familiar PC tools. You can produce graphs like the following example, which is a line graph of transit time (msecs) by time of day and shows Avg Input, Avg Out CQS, Avg Total and Count.
For details on how to produce these graphs using IBM Lotus Symphony Spreadsheets or Microsoft Excel, see “Graphing using PC tools” on page 391.

Graphing and Export JCL

The Graphing and Export JCL facility allows you to customize the job statement used in batch graphing or export jobs, and gives you the option to view or edit the generated JCL prior to submission.

The following panel is displayed if you select option 2 Batch Execution Mode on either the Extract Graphing or Extract Export panels.
The options are as follows:

**Edit JCL before user submit**
Default: Not selected.
Select with a / to view or edit the JCL prior to submitting the job. The JCL will display using the standard ISPF Edit facility. You may modify the JCL as required. To submit the job, enter SUB on the command line of the ISPF Edit panel.
If not selected, IMS PA will automatically submit the job.

**Job Statement Information**
Initial Setting: //userid JOB (ACCOUNT), 'NAME' from the Log/List - JCL option in the action bar of the ISPF Settings panel invoked via the SETTINGS command.
Specify the JOB card to be used by the IMS PA dialog when building the JCL for executing the batch job for GDDM graphing or export processing. Multiple cards can be provided and are taken as is. Embedded or trailing null cards are ignored.
If the specified job card is invalid, TSO Submit processing generates a substitute.

IMS PA generates the JCL to execute the program IPIXTPCD. The graphing and export options specified using the dialog are passed as parameters to IPIXTPCD, together with the following where applicable:

**JOB**

**Job Statement Information** on the Extract - Submit Batch panel shown in Figure 217

**STEPLIB DD**
IMS PA Load Library and GDDM-PGF Load Library from IMS PA Settings in your Profile Options.

**IPIXTRTI DD**
Extract Data Set specified in dialog option 8 Graphing & Export. It was initially created as the Output Extract Data Set on the Transaction Transit Extract by Interval panel in the Log Report Set.

**IPIXPORT DD**
Export Data Set specified on the Extract by Interval Export panel (Graphing and Export option E).
Graphing using PC tools

To create graphs for any extracts other than Extract by Interval, you need to first transfer the extract to a workstation file. All of these extracts are in standard format suitable for direct import into PC applications. After transfer to a workstation file, the extract is then available for import into your familiar PC spreadsheet applications.

About this task

To download an extract, use your usual method, such as FTP or via your terminal emulator. Then use your preferred PC tool to graph the data.

Procedure

To graph Extract by Interval Data using Microsoft Excel:

1. Select option 3 Report Sets from the IMS PA primary option menu.
2. Enter line action S next to the SAMPLOG Report Set.
3. Enter line action S next to Extract by Interval in the Transaction Transit Reports category.
4. Enter the name for the output data set. For example, 'IMSPA.EXTRACT'. We will later refer to this data set when we build our graph.

   Note: If the data set has not already been cataloged, IMS PA will automatically catalog it for you.
5. Run the report and submit the JCL, then press Exit (F3) until you have returned to the IMS PA primary option menu.

   We will now export the extract to a plain text file on our PC.
6. Ensure that your workstation connection is activated:
   a. From your PC, run wsa.exe.
   b. On the command line of your terminal emulator, enter SETTINGS.

Figure 218. Extract by Interval
c. Place your cursor on the Workstation menu item on the toolbar, and select option 1 **Initiate Workstation Connection**.

[FIGURE 219. **Initiate Workstation Connection**

<table>
<thead>
<tr>
<th>Command</th>
<th>More: +</th>
</tr>
</thead>
<tbody>
<tr>
<td>/</td>
<td>Save values in system profile? (/=Yes)</td>
</tr>
<tr>
<td>Workstation Connection</td>
<td>GUI Network Protocol</td>
</tr>
<tr>
<td>1. With GUI display</td>
<td>1. TCP/IP</td>
</tr>
<tr>
<td>2. Without GUI display</td>
<td>2. APPC</td>
</tr>
<tr>
<td>3. Use ISPDTPRF file</td>
<td></td>
</tr>
</tbody>
</table>

**GUI Title**

**TCP/IP Address**

**APPC Address**

Host Codepage . . . ____ Host Character Set . . . ____

---

**Extract Graphing & Export**

**Option ==> E**

<table>
<thead>
<tr>
<th>G</th>
<th>Graph - Produce graphs via GDDM from Extract by Interval data</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>Export - Convert Extract by Interval data to external format</td>
</tr>
</tbody>
</table>

**Extract Data Set 'IMSPA.EXTRACT'**

**Processing Options:**

Peak Transaction Time Percentage 75_ (50-100%)

*** Extract Data Filtering Options ***

**Data to Include:**

--- Report Interval -----

/ By Interval: YYYY/MM/DD HH:MM:SS

- By Transaction Within Interval: From ____ To ____

- 1. All Transactions

- 2. Single Transaction Code: ______

---

*Figure 220. **Extract Graphing and Export**

8. Select option **E** to convert the Extract by Interval data to an external format.

9. Enter the name of the extract data set you created in step [4 on page 391](#) and press Enter. The Extract by Interval Export panel is displayed.
10. Specify your destination option as 2. This will export the extract data into a plain text file on your PC.

11. Specify an Export data set. For example, 'IMSPA.EXPORT'. This data set stores your converted extract data and must be cataloged. For more information on cataloging the Export Data Set, see "Extract by Interval export" on page 384.

12. Specify the full path name of the destination file. Usually, this will be a plain text file. For example, c:\imsxt.txt. If the file does not exist on your workstation, IMS PA will create it. If the file already exists, select the Replace Workstation File option, otherwise a file will not be created on your workstation.

13. Press Enter to transfer the extract data to your workstation file. An Extract Export Report is displayed.

14. Press Enter again to return to the Extract by Interval Export panel. A Transfer successful message is displayed in the top right hand corner of the dialog. For an example of export data, see Figure 214 on page 386.

15. Press Exit (F3) and return to the IMS PA primary option menu.

To graph this export data in Microsoft Excel, use the following steps.


17. Select File > Open from the menu bar.

18. Locate the workstation file containing the exported data and open it. The Text Import Wizard is displayed.

19. Select Delimited as the file type that best describes the data and click Next.

20. Select Comma as the delimiter and click Next.

21. Select General as the column data format and click Finish. The data spreadsheet displays.

22. When the data spreadsheet is displayed, hold down the Ctrl key and click the column headers to highlight the columns of data you wish to graph. For example, click Time, Count, and CPU.

23. Select Insert > Chart from the menu bar to open the Chart Wizard.

24. Step through the Wizard to select the required type and format for your graph.
Log Information report

The Log Information report provides a breakdown of the log record types in the input IMS log files. It shows record count, length, rates per second, and volume. Selected record types are broken down further to provide additional information about transaction arrival and processing throughput.

A Log Information report is produced automatically whenever an IMS PA Log report set is run. In this case, no additional batch commands are required. The ddname for the Log Information report is LOGINFO. Users can also generate a stand-alone Log Information report without running a report set using the appropriate batch command (see "Log Information report" on page 466).

<table>
<thead>
<tr>
<th>Code</th>
<th>Count</th>
<th>MCNT</th>
<th>Recs/Sec</th>
<th>Avg len</th>
<th>Max Len</th>
<th>Byte/Sec</th>
<th>MB</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 IN</td>
<td>6,025</td>
<td>88</td>
<td>719</td>
<td>2,170</td>
<td>63,719</td>
<td>4.3</td>
<td>2.3</td>
<td>IMS Message</td>
</tr>
<tr>
<td>INPUT</td>
<td>6,025</td>
<td>88</td>
<td>719</td>
<td>2,170</td>
<td>63,719</td>
<td>4.3</td>
<td>2.3</td>
<td>Input message</td>
</tr>
<tr>
<td>03 IN</td>
<td>1,412</td>
<td>20</td>
<td>634</td>
<td>799</td>
<td>13,179</td>
<td>0.8</td>
<td>0.5</td>
<td>IMS Message</td>
</tr>
<tr>
<td>INPUT</td>
<td>1,412</td>
<td>20</td>
<td>634</td>
<td>799</td>
<td>13,179</td>
<td>0.8</td>
<td>0.5</td>
<td>Input msg (program switch)</td>
</tr>
<tr>
<td>03 OUT</td>
<td>11,506</td>
<td>101</td>
<td>713</td>
<td>1,734</td>
<td>72,408</td>
<td>4.9</td>
<td>2.6</td>
<td>Output message</td>
</tr>
<tr>
<td>OUTPUT</td>
<td>6,899</td>
<td>101</td>
<td>713</td>
<td>1,734</td>
<td>72,408</td>
<td>4.9</td>
<td>2.6</td>
<td>Output message</td>
</tr>
<tr>
<td>MSG SWI</td>
<td>4,607</td>
<td>67</td>
<td>499</td>
<td>582</td>
<td>33,821</td>
<td>2.2</td>
<td>1.2</td>
<td>Message switch</td>
</tr>
<tr>
<td>07</td>
<td>3,588</td>
<td>7,405</td>
<td>52</td>
<td>456</td>
<td>24,060</td>
<td>1.6</td>
<td>0.9</td>
<td>Program schedule end</td>
</tr>
<tr>
<td>MPP</td>
<td>3,528</td>
<td>6,919</td>
<td>51</td>
<td>456</td>
<td>23,658</td>
<td>1.6</td>
<td>0.8</td>
<td>MPP</td>
</tr>
<tr>
<td>QUICK</td>
<td>45</td>
<td>450</td>
<td>0</td>
<td>456</td>
<td>301</td>
<td>0.0</td>
<td>0.0</td>
<td>MPP quick reschedule</td>
</tr>
<tr>
<td>ABEND</td>
<td>15</td>
<td>36</td>
<td>0</td>
<td>456</td>
<td>100</td>
<td>0.0</td>
<td>0.0</td>
<td>Abended transaction</td>
</tr>
<tr>
<td>08</td>
<td>3,590</td>
<td>52</td>
<td>156</td>
<td>156</td>
<td>8,235</td>
<td>0.5</td>
<td>0.3</td>
<td>Program schedule start</td>
</tr>
<tr>
<td>MPP</td>
<td>3,546</td>
<td>52</td>
<td>156</td>
<td>156</td>
<td>8,132</td>
<td>0.5</td>
<td>0.3</td>
<td>MPP</td>
</tr>
<tr>
<td>QUICK</td>
<td>45</td>
<td>0</td>
<td>156</td>
<td>156</td>
<td>103</td>
<td>0.0</td>
<td>0.0</td>
<td>MPP quick reschedule</td>
</tr>
<tr>
<td>11</td>
<td>1,078</td>
<td>15</td>
<td>68</td>
<td>68</td>
<td>1,078</td>
<td>0.0</td>
<td>0.0</td>
<td>Start of conversation</td>
</tr>
<tr>
<td>12</td>
<td>1,064</td>
<td>15</td>
<td>48</td>
<td>48</td>
<td>751</td>
<td>0.0</td>
<td>0.0</td>
<td>End of conversation</td>
</tr>
<tr>
<td>16</td>
<td>707</td>
<td>10</td>
<td>80</td>
<td>80</td>
<td>831</td>
<td>0.0</td>
<td>0.0</td>
<td>Sign On/Off</td>
</tr>
</tbody>
</table>

Figure 222. Example of Log Information report content

Related reference: “LOGINFO: Log Information report” on page 466

The Log Information report provides a breakdown of the log record types in the input IMS log files. The LOGINFO operand allows users to produce a stand-alone Log Information report without running a report set. This is a batch-only command and is not generated by an IMS PA dialog.
Chapter 21. Log batch interface

The IMS PA dialog generates the JCL and commands for executing your report requests in batch. The JCL and commands for Log report requests are described here. Sample jobs are supplied in the SIPISAMP Library.

Related tasks:
"Run Log Report Set" on page 287

The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category or individual reports.

Log Report Set JCL

The JCL built by IMS PA for the batch execution of a Report Set via the SUBMIT or JCL (or RUN) commands is based on the sample library member IPILOGJC for a Log Report Set.

IMS PA builds the JCL to execute the program IPIMAIN using the following options specified using the dialog:

JOBJ  Job Statement Information in IMS PA Settings.

IPI EXEC IPIMAIN,PARM='parameter list'

IMS PA main program with parameters:

Vnnn for Log Report Sets where nnn is the IMS version (VRM) of the IMS subsystem logs that you are reporting on. If it is a Group that contains IMS systems at different release levels, the systems are listed with their corresponding VRM in the IPIOPTS DD statement. If the PARM= statement (or IPIOPTS specification for a multi-release level group) does not match the IMS version of the logs, the job may fail with message "IPI0024E" on page 662.

UPPER if Reports in Upper Case is YES in IMS PA Settings.

STEPLIB DD
IMS PA Load Library and optionally User Program Load Library In IMS PA Settings in your Profile Options.

Lxxxxunn DD
Log Data Set Name (DSN) From System Definitions.

Each log input data set has its own ddname in the format Lxxxxunn where:

L is a constant to identify it as a log input data set.

xxxx is the IMSID for the IMS Subsystem.

u defines the UNIT affinity; 0 for no affinity (for DASD) and 1–9, A–Z for affinity (for tape to be copied to DASD). This accommodates the situation in which the number of log input data sets on tape or cartridge exceeds the Maximum Tape Units Available for Shared Queue Merge specified on the Shared Queue Settings panel. DDnames with non-zero unit affinity are eligible for pre-merge copy processing (see "Shared Queue merge processing" on page 401).

nn is a sequence number 01–99, A0–ZZ (1035 in total) corresponding to the order in which the Log Files are specified for the IMS Subsystem, and to uniquely identify the data sets.
**IPIRSET DD**
For DSN(member) where:

- **DSN**: Report Sets Data Set in your IMS PA Profile.
- **member**: Name of the Report Set being run.

**IPIOBJL DD**
Object Lists Data Set in your IMS PA Profile.

**IPIDIST DD**
Distributions Data Set in your IMS PA Profile.

**IPIFORM DD**
Report Forms Data Set in your IMS PA Profile.

**IPIOPTS DD ** *
Report Interval This overrides the Report Set Global Report Interval within the IPIRSET or IPIOM0 DD statements.

- It is the report period specified on the Run Report Set panel at run time.
- To display the runtime options, you can issue the RUN command for a Report, Report Category, or Report Set.

**IPIAVGQ DD**
Transaction Averages Input Data Set From the Averages Data Sets Specification for the Management Exception log report.

**IPIAVGO DD**
Transaction Averages Output Data Set From the Averages Data Sets Specification for the Management Exception log report.

- If the data set does not exist, IMS PA uses the Averages Data Set Allocation Details in Reporting Allocation Settings.

**IPIEXPQ DD**
Expectation Sets Data Set in your IMS PA Profile.

**IPISMQWu DD**
A shared queue merge work file where u defines the unit affinity. One data set is required for each tape device that is used during the shared queue copy/merge process.

**IPIXTRTI DD**
Transit Extract by Interval Input Data Set

**IPIXTRTO DD**
Transit Extract by Interval Output Data Set From the Transaction (MSGQ) Transit Extract by Interval.

- If the output data set does not exist, IMS PA uses the Transit Extract by Interval allocation details in Reporting Allocation Settings.

**IPIFPXTI DD**
FP Transit Extract by Interval Input Data Set

**IPIFPXTO DD**
FP Transit Extract by Interval Output Data Set From the Fast Path Transit Extract by Interval.

- If the output data set does not exist, IMS PA uses the Transit Extract by Interval allocation details in Reporting Allocation Settings.

**IPITHIST DD**
Transaction History File data set From the Transaction History File.
If the output data set does not exist, IMS PA uses the **Transit Extract by Interval** allocation details in Reporting Allocation Settings.

**IPITXUT1 DD**
Transaction (MSGQ) Transit Total Traffic Extract Data Set

**IPITXUT2 DD**
Transaction (MSGQ) Transit Exception Traffic Extract Data Set From the Transaction (MSGQ) Transit Transaction Exception report.

If the output data sets do not exist, IMS PA uses the **Transit Total Traffic** and **Transit Exception Traffic** allocation details in Reporting Allocation Settings. IMS PA may set or adjust the DCB attributes at Extract run time.

**IPIFXUT1 DD**
FP Transaction Transit Total Traffic Extract Data Set

**IPIFXUT2 DD**
FP Transaction Transit Exception Traffic Extract Data Set From the Fast Path Transit Transaction Exception report.

If the output data sets do not exist, IMS PA uses the **Transit Total Traffic** and **Transit Exception Traffic** allocation details in Reporting Allocation Settings. IMS PA may set or adjust the DCB attributes at Extract run time.

**CPURXTR0 DD**
CPU Usage Extract Data Set From the CPU Usage report.

If the output data set does not exist, IMS PA uses the **Summary Extracts** allocation details in Reporting Allocation Settings.

**DBUAXTR0 DD**
Database Update Activity Extract Data Set From the Database Update Activity report.

If the output data set does not exist, IMS PA uses the **Summary Extracts** allocation details in Reporting Allocation Settings.

**Sample JCL: Log Report Set**

```
//IMSPA JOB CLASS=A,REGION=0M
//*
//IPI EXEC PGM=IPIMAIN,PARM='V141'
//STEPLIB DD DSN=IMSPA.V440.SIPILINK,DISP=SHR
//* Input data sets
//LIMSA001 DD DSN=IMS.V141.LOG99,DISP=SHR
//* Sysout data sets
//SYSPRINT DD SYSOUT=*  
//SYSUDUMP DD SYSOUT=*  
//* Report Set member
//IPIRSET DD DSN=PREFIX.IMSPA.RSET(LOG01),DISP=SHR
//* Object Lists data set
//IPIOBJL DD DSN=PREFIX.IMSPA.OBJL,DISP=SHR
//* Distributions data set
//IPIDIST DD DSN=PREFIX.IMSPA.DIST,DISP=SHR
//* Report Forms data set
//IPIFORM DD DSN=PREFIX.IMSPA.FORM,DISP=SHR
//* Expectation Sets data set
//IPIEXPQ DD DSN=PREFIX.IMSPA.EXPSET,DISP=SHR
```

*Figure 223. Sample JCL: Log Report Set*

**Related reference:**
The sample library SIPISAMP contains members with sample JCL to generate IMS PA reports and extracts. Also included are examples for Automated file selection and BMP analysis.

Log JCL with command input

To generate JCL that contains commands in-stream, rather than referring to data sets, enter the dialog command JCLCMD, or its abbreviation, JCM; or, equivalently, enter RUN, and then specify the execution mode Edit JCL with command input.

By contrast, to generate JCL that builds commands at runtime from data sets, rather than containing commands in-stream, enter the dialog command JCL (or a RUN command that does not specify Edit JCL with command input). For details, see "Log Report Set JCL" on page 395.

The JCL generated by the JCLCMD command differs in the following ways from the JCL generated by the JCL command:

- The IPICMD DD statement contains the series of user-modifiable commands built from the activated reports in the Report Set. A description of the Report Set appears as comments (* in column 1) preceding the commands. It replaces the IPIRSET DD statement.
- The command input stream contains INCL/EXCL command parameters built from the Object Lists used by the Report Set. They replace the IPIOBJL DD statement.
- The command input stream contains DISTRIBUTION command parameters built from the Distributions used by the Report Set. They replace the IPIDIST DD statement.
- The command input stream contains FIELDS command parameters built from the Report Forms used by Form-based reports and extracts in the Report Set. They replace the IPIFORM DD statement.
- The IMSPALOG command identifies the log reports.

This facility allows you to build report JCL with command input once and store it into an external library for submitting at any time, independent of the original Report Set. Individual report options, such as Date/Time report intervals or object selection filters (such as Transaction Code, Program, Database) can then be modified in the JCL and submitted without making changes to the original Report Set.
Sample JCL with command input: Log Report Set

//IMSPA JOB (ACCOUNT),"NAME"
//** IMS PA Report Set SAMPLOG - Sample Log Report Set
//**
//PI EXEC PGM=IPIMAIN,PARM='V141'
//STEPLIB DD DSN=IMSPA.V440.SIPILINK,DISP=SHR
//* Input Data Sets
//LIMSA001 DD DSN=IMS.V141.IMSA.LOG01,DISP=SHR
//* Report run-time options
//IPIOPTS DD *
* Reporting Time Range
IMSPALOG START(-1,10:00:00:00),STOP(-1,11:00:00:00)
/*
//* Sysout data set
//SYSPRINT DD SYSOUT=* 
//SYSUDUMP DD SYSOUT=* 
//* Report Set Command Input
//IPICMD DD *
* IMS PA Log Report
* Report Set Name - SAMPLOG
* Description - Sample Log Report Set
* Log Report Global Options
* Log Input - LOGIN
* Report Output - RPTOUT
* Print Lines per Page - 60
* When Reports are Written - STOP
* Source of IMS Processing ID - DDNAME
IMSPALOG INPUTDD(LOGIN),
OUTPUTDD(RPTOUT),
PAGESIZE(60),
PRINTAT(STOP),
SETIMSID(DDNAME)
* Transaction Transit Time Report Control Options
* Max Input Queue Time - 0
* Max Output Queue Time - 0
* Percent of Peak Transaction Time - 90
* Transaction Set Size - 32767
* Time Report Interval (mins) - 15
* Time interval is aligned to even hour
* Include BMP Transactions
* Include MSC Transactions
* Include APPC/OTMA Transactions
IMSPALOG INMAX(0),
OUTMAX(0),
PEAK(90),
TSETSIZE(32767),
INTERVAL(15),
ALIGN,
QUALIFY(INCL(BMP),
INCL(MSC),
INCL(APPC))
* Transit Time Analysis Report
* Reports Selected:
  * Tranancode
    IMSPALOG ANALYSIS(
      TRANCODE)
* Transaction Exception Report
* Reports Selected:
  * Transaction Code
  * Standard Format
  * Report Output File - TRANEXC
  * Total Traffic DSN - Not Specified
  * Exception Traffic DSN - Not Specified
IMSPALOG TRANEXC(
TRANCODE,
FORMAT1,
DDNAME(TRANEXC))
* Dashboard Report
  * Report Output File - DASH
    IMSPALOG DASHBOARD(DDNAME(DASH))
* Management Exception Report
  * Reports Selected:
    * Transaction Code Exception
    * Program Abend
    * Security Violation
    * I/O Error
    * Snap Trace
    * Backout Failure
  * Report Output File - MGRXDD
  * Average Input DSN - Not Specified
  * Average Output DSN - Not Specified
    IMSPALOG MGRX(TCREPORT,PGMABEND,SECVIO,IOERROR,SNAPTRC,BACKOUTFAIL,DDNAME(MGRXDD))
* Resource Availability Report
  * Report Output File - AVALDD
  * Reports Selected:
    * Region
    * Trancode
    * Program
    * Database
    IMSPALOG AVAL(DDNAME(AVALDD),REGION,TRANCODE,PROGRAM,DATABASE)
* CPU Usage Report
  * Report Output File - CPURDD
  * Ordering Options:
    * Report 1: 1 Region 2 Program 3 Trancode
    * Extract DSN - Not Specified
    IMSPALOG CPUR(DDNAME(CPURDD),R=P-TC)

Figure 225. JCL with command input: Log Report Set SAMPLSLOG (2 of 3)
**Shared Queue merge processing**

To report performance in an IMS sysplex environment which uses shared queues, IMS PA receives log input from all the subsystems in the sysplex, and merges the log files to present the records to the report processors in time stamp sequence.

IMS PA log reports have three merge processing styles:
- Composite shared queue
- Composite chronological
- By subsystem

**Composite shared queue**

Composite shared queue reports process the input data in time stamp sequence across all subsystems combined. The log records to produce a Transaction Set (lifetime of a transaction) used to produce these reports may come from the log files of more
than one subsystem. The reports can only process intersecting time period data for
the entire sysplex as there is a reliance of one subsystem’s data to the other
subsystems in the sysplex.

These reports are:
- All Transaction (MSGQ) Transit reports:
  - Analysis
  - Statistics
  - Log
  - Graphic Summary
  - Extract by Interval
  - Transaction Exception
  - Transaction History File
  - Form-based Transit List and Summary
- All Fast Path (EMH) Transit reports:
  - Analysis
  - Log
  - Extract by Interval
  - Transaction Exception
- Dashboard
- Management Exception: Transaction Exception/Average Summary
- Resource Availability: Line/Node report only

**Composite chronological**

*Composite chronological* reports receive log input for each subsystem as it becomes
available, or when the requested time period commences. A single report is
produced from data merged from all subsystems in the sysplex. Filtering by IMS
subsystem ID is supported.

These reports are:
- Dashboard
- Management Exception: Error Conditions Log
- Database Trace (Full Function)
- DC Queue Manager Trace
- OSAM Sequential Buffering
- ESAF
- Region Histogram (a unique style of report in which the 13 columns can be for
  any region in any subsystem in the sysplex)
- DEDB Update Trace

**By subsystem**

*By subsystem* reports receive log input for each subsystem as it becomes available,
or when the requested time period commences. A separate report is produced for
each subsystem in the sysplex. The IMS subsystem ID is usually shown in the
report heading. Filtering by IMS subsystem ID is supported.

These reports are:
- Resource Availability (except Line/Node)
- CPU Usage
- Internal Resource Usage
- Message Queue Utilization
- Database Update Activity
- BMP Checkpoint
- Fast Path Resource Usage reports:
Pre-Merge Copy Processing

IMS PA processes the log data sets for a subsystem sequentially in the order specified on the IMS Subsystem Log Files panel, which should be in contiguous time stamp sequence for reliable results. For merging to occur, the sequence of log data sets for each IMS subsystem must be able to be read concurrently with those of all other IMS subsystems in the sysplex.

Log input may be from DASD or tape (or cartridge). Each subsystem in the sysplex can have a combination of DASD and tape log data sets.

If the log files are tape data sets, there may be more IMS subsystems than there are tape units available to IMS PA. In this case, they cannot be processed concurrently during the merge process. Some tape log input must first be copied to a DASD merge work file (IPISMQWu) before being passed on to the merge process.

The number of tape units available and the allocation attributes of the merge work file are specified via the dialog. See "Shared Queue Settings" on page 73 for details.

When the dialog generates the JCL to execute a Report Set, it identifies each input data set with a ddname in the format Lxxxxunn where L represents that it is a Log data set, xxxx is the 1- to 4-character IMS subsystem ID specified on the System Definitions panel, u is the unit assigned by IMS PA (0 for no affinity, 1–9, A–Z for affinity, giving a maximum of 35 tape units), and nn gives the sequence 01–99, A0–AZ, ... Z0–ZZ of the data sets within subsystem to keep them in the same order as specified on the System Definitions panel. In the case that there is no contention for tape units, the unit (u) is zero.

The only significance of the order in which the DD statements are generated is to obey the rules of unit affinity in that the data sets which first use the tape unit are specified (with no UNIT=AFF=) before any other data sets with affinity to the same unit (UNIT=AFF=ddname). Tape data sets from the one subsystem need not have the same unit affinity and hence may be copied to different DASD work files. The ddname of the data set is retained on the work file to identify the data.

There is one merge work file for each tape unit that is used during the pre-merge copy processing. The ddname of the merge work file is IPISMQWu where u corresponds to the unit affinity of each tape unit.

IMS PA optimizes the JCL to:

• Minimize the elapsed time by multitasking the copy to DASD. Each tape device used for copy processing has a subtask (and merge work file) assigned to it. The log input data sets are spread evenly across the tape devices, so each subtask processes approximately the same number.

• Minimize the number of tape data sets copied to DASD. IMS subsystems with the least number of tape log data sets are considered first for copy processing and appear first in the JCL.
• Minimize the volume of data copied. IMS PA filters and compresses the log records written to the merge work file. Log record filtering is based on specified time ranges and whether the activated reports require the log record.

The merge work file space allocation may need to be adjusted depending on the amount and nature of the log input data.

Specify the allocation attributes for the shared queue merge work file in your profile options 0.3 **Shared Queue Settings**. See “Shared Queue Settings” on page 73 for details.

**Merge Work Files (IPISMQW)**

Merge Work Files are only required for Shared Queue log processing when both of the following situations exist:
- The log files are on tape
- There are more IMS subsystems than tape devices available to the job

IMS PA merges the log files from each sysplex system in time sequence. To do this, one log file from each system must be open concurrently. But this is not possible when there are more IMS subsystems than tape drives available to your batch job. In this case, IMS PA copies the required log records from one (or more) systems to the (DASD) Merge Work File. Then when IMS PA merges the log files from each system, it uses the DASD Merge Work File (not the Tape log file).

**JCL example**

Consider a sysplex with five IMS subsystems with various numbers of tape log input data sets. Only two tape units are available to the IMS PA batch job.

<table>
<thead>
<tr>
<th>System</th>
<th>Number of Log Input Data Sets</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMSA</td>
<td>4</td>
</tr>
<tr>
<td>IMSB</td>
<td>5</td>
</tr>
<tr>
<td>IMSC</td>
<td>2</td>
</tr>
<tr>
<td>IMSD</td>
<td>3</td>
</tr>
<tr>
<td>IMSE</td>
<td>2</td>
</tr>
</tbody>
</table>

Since for this job only two tape units are deemed available, the IMS PA merge process can only read log input from two IMS subsystems concurrently. Tape to DASD copy is therefore required. Log input from three subsystems must be selected for copy processing prior to the merge. IMSC, D, and E are selected because they have the least number of log input data sets.

The generated JCL might then be as shown in the following figure.
The IMS PA batch job then processes the log input as follows:

1. LIMSC101, LIMSE101, LIMSD101, LIMSD103 are read in that order using tape unit 1, and filtered and copied to merge work file 1.

2. At the same time as reading from tape unit 1, LIMSC202, LIMSE202, LIMSD202 are read in that order using tape unit 2, and filtered and copied to merge work file 2.

3. When the copies are completed, the two merge work files on DASD, together with IMSA log input (LIMSA001–4) on tape unit 1 and IMSB log input (LIMSB001–5) on tape unit 2 enter the merge process for passing data to the report log record handlers.

**IMSPALOG command**

The IMSPALOG batch command requests a log report. Multiple log reports can be requested in the one batch job.

**Format**

```
IMSPALOG operands
```

The last IMSPALOG command in the batch job must include EXECUTE as its last operand. This informs IMS PA that all log reports have been requested, and processing of log input can commence.

See "Log report operands" on page 408 for a description of the IMSPALOG operands.

**Example**

```
IMSPALOG
IMSPALOG START(2014/04/12,10:00),STOP(2014/04/12,11:00)
IMSPALOG ANALYSIS(TRANCODE, INCL(TC(DC*, AX*))
IMSPALOG CPUR(REGION, REGION-TRANCODE)
IMSPALOG IRUR(INTERVAL(10),
   INCL(POOLS(QP, FP, DB, VS, AS, PI, LT, DLICALLS,
   MISC, CB, LL, FI, DS, RU, RS, RF, ST, IM, EW)))
IMSPALOG EXECUTE
```
From this example, IMS PA produces the following reports for the time period 10 a.m. to 11 a.m. on 12 April 2014:

- Transaction Transit Analysis report for transaction codes that start with DC or AX
- CPU Usage report broken down by region, and transaction code within region
- Internal Resource Usage report for all resource types

**DISTRIBUTION command**

The DISTRIBUTION batch command defines a Distribution to be used for monitor or log reporting. The Distribution describes the presentation and thresholds to be used by the report processors and presented in the report output.

For a detailed description see Chapter 11, “Distributions,” on page 157.

The DISTRIBUTION command does not invoke report processing. It works in conjunction with report processing that produces distribution report output.

**Format**

```
name DISTRIBUTION [LIMITS(value1,...,value9),]
 [TITLE(‘text’),]
 [MULTIPLY(nn),]
 [EDITMASK(‘char.mask’) | EDITMASK(hex.mask)]
```

- `name` Specifies the name of the Distribution. This name associates the Distribution with a particular report or set of reports and must be one of the following: LOGIN, $1PDIST1, $1PDIST2, SYSCPT, ELAP/SCH, ELAP/CAL, ELAP/MT, INTSUM, DIIAP, FPBSCNT, FPBGQLN, FPBQELP, FPOTACT, FPOTWA, FPOTBOQ, FPRLIN, COMMLEP, COMMIE, COMMLFR, COMMLFT, COMMLFI, MSCQLEN, MSCQELP.

For the list of these Distributions, their titles, and the reports they apply to, see “Distribution and Report cross-reference” on page 161.

**DISTRIBUTION**

Identifies the attributes of the distribution graphs.

**LIMITS** Defines the nine limits which define nine ranges for the distributions. The nine limits must be in ascending sequence. When the distribution is printed, the limit values are printed at the left up the vertical axis of the graph. This operand is optional, and if omitted, the default limits are: 1, 5, 10, 30, 50, 100, 300, 500, 1000.

**TITLE** Defines the unit of measure for the graph. Up to 12 characters, including blanks, can be specified as the title. The title is printed on the left at the top of the vertical axis above the column of limit values. This operand is optional, and if omitted, the default title is Sc Mil Mic for seconds, milliseconds and microseconds respectively.

**MULTIPLY** Specifies a numeric value (typically a multiple of 10) to be used to multiply by each limit. This operand is optional, and if omitted, the default is 1000.
EDITMASK
Specifies an edit mask to be used when printing the limit values. Two formats can be used:
1. Eleven (11) character quoted string.
2. Twenty four (24) character string that represents 12 hexadecimal values.

If less than the maximum number of characters allowed is specified, the mask is right justified and padded on the left with blanks.

If the quoted string is used, any character can be specified, but some characters have a special meaning, as follows:
Z Zero suppression
9 Digit mask
S Trigger start

Any other character is used in the result as is. The number of digit select characters (Z, 9, S) must be odd, otherwise the low-order digit of the result will not be formatted.

If the hexadecimal string is used, up to 12 hexadecimal values (24 hex characters) can be represented. The hexadecimal string is the actual edit mask as used by the edit (ED and EDMK) assembler instructions. The mask can include any valid hexadecimal value, but some have a special meaning, as follows:
20 Digit selector
21 Significance starter
22 Field separator

This operand is optional, and if omitted, the default edit mask is 'ZZZ.ZZ9.999' or 402020204B2021204B20202020.

Example
ELAP/CAL DISTRIBUTION LIMITS(1,5,10,30,50,100,300,500,1000),
    MULTIPLY(1000),
    TITLE('Sc Mil Mic'),
    EDITMASK('ZZZ.ZZ9.999')

In this example, the Distribution ELAP/CAL is used to produce distributions of DL/I call elapsed time. The time ranges are the limit values multiplied by the multiplier and would be 0-1000, 1001-5000, 5001-10000, 10001-30000, 30001-50000, 50001-100000, 100001-300000, 300001-500000, 500001-1000000, over 1000000. When formatted by the edit mask, they are printed as 1.000, 5.000, 10.000, ..., 1.000.000 where 1.000 represents 1 millisecond and 1.000.000 represents 1 second.

COPY command
The COPY batch command reads one or more members of the command library. The command library must be a partitioned data set defined by the CMDLIB DD statement.

COPY puts pre-coded commands from the command library into the input stream.

Format

COPY member1[,member2,...]
The only operands for the COPY command are one or more member names in the command library. Each member may in turn contain COPY commands. The EXECUTE operand may be within or following the last COPY command.

Member names are scanned from left to right, and members are read in the order specified. Copied members may themselves employ the COPY command. To prevent COPY loops, any request for a member currently queued for read causes an error and the member is not processed. An error message is issued for any member not found in the command library.

COPY allows users to retrieve pre-coded commands and include them in the input stream. Pre-coded commands would usually include production level command data, or static command input like Distributions, Include and Exclude lists, or commonly used reports.

Example

In this example, LOGREPS contains a common set of Log report commands, and LOGDISTS contains the Distributions used by Log reporting.

```plaintext
IMSPALOG  START(2014/04/12,10:00), STOP(2014/04/12,11:00)
COPY      LOGREPS
IMSPALOG  EXECUTE
COPY      LOGDISTS
```

Log report operands

The IMSPALOG command has two types of operand: report operands and general options operands that apply to multiple reports.

General options are further divided into:

- "Log Global Options" on page 410 global options that apply to all reports
- "Transaction (MSGQ) Transit Options" on page 412 options that apply to Transaction Transit reports
- "Fast Path (EMH) Transit Options" on page 450 options that only apply to Fast Path Transit reports

A list of report operands and the reports they produce can be found in the sections below.

Transaction Transit reports

The Fixed-format Transaction Transit report operands for the IMSPALOG command are:

```
ANALYSIS
  Transaction Transit Analysis
STATS  Transaction Transit Statistics
LOG    Transaction Transit Log
GRAPH  Transaction Transit Graphic Summary
EXTRACT Transaction Transit Extract by Interval
TRANEXC Transaction Exception
TRANHIST Transaction History File
```
Transaction Transit reports (Form-based)

The Form-based Transaction Transit report operands for the IMSPALOG command are:
- LIST  Transaction Transit List (Form-based)
- SUMMARY  Transaction Transit Summary (Form-based)
- INDEX  IMS Transaction Index

Resource Usage and Availability reports

The Resource Usage and Availability report operands for the IMSPALOG command are:
- DASHBOARD  Dashboard (Health Check)
- MGREX  Management Exception
- TRANRESU  Transaction Resource Usage
- AVAIL  Resource Availability
- CPUR  CPU Usage
- IRUR  Internal Resource Usage
- MSCLSTAT  MSC Link Statistics
- MSGQ  Message Queue Utilization
- DBUPDATE  Database Update Activity
- HISTGRAM  Region Histogram
- SB  OSAM Sequential Buffering
- DEADLOCK  Deadlock
- CHECKPOINT  System Checkpoint
- BMPCHKP  BMP Checkpoint
- GAP  Gap Analysis
- COLDSTART  Cold Start Analysis

Fast Path Transit reports

The Fast Path Transit report operands for the IMSPALOG command are:
- FPANALYSIS  Fast Path Transit Analysis
- FPLOG  Fast Path Transit Log
- FPEXTRACT  Fast Path Transit Extract by Interval
- FPTRNEX  Fast Path Transaction Exception

Fast Path Resource Usage reports

The Fast Path Resource Usage report operands for the IMSPALOG command are:
**Trace reports**

The Trace report operands for the IMSPALOG command are:

- **DCTRACE**
  DC Queue Manager Trace
- **DBTRACE**
  Database Trace (Full Function)
- **FPDBTRC**
  DEDB Update Trace
- **ESAF**
  ESAF Trace

**User-Written reports**

The User-Written report operands for the IMSPALOG command are:

- **USERPGM**
  User-Written Record Processors

For further details of the reports and their default values, see the description of the corresponding dialog options in **Chapter 20, "Requesting Log reports," on page 283**.

**Log Global Options**

The Log Global Options define output and general control information for the log reports.

**Format**

```plaintext
IMSPALOG [START(date,time),]
[STOP(date,time),]
[OUTPUTDD(ddname),] default RPTOUT
[PRINTAT(HOUR|STOP|EOF|nnnn),]
[PAGESIZE(nn),] default 60 lines
[NOPCTSIGN,]
[XTRHEADING,]
[XTRCOMMA,]
[IGNORSEQ,]
[TRANEXIT(exitname),]
[SETIMSID(LOG|DDNAME),]
```

**START**
Global Start date and time

**STOP**
Global Stop date and time
OUTPUTDD
Transaction (MSGQ) Transit reports output ddname
PRINTAT
Report break point specifies when reports are written
PAGESIZE
Number of print lines per page
NOPCTSIGN
Do not print % sign in report output (for some form-based reports)
XTRHEADING
Include fields headings in Transit Traffic extract files
XTRCOMMA
Use comma delimiter in Transit Traffic extract files
IGNORSEQ
Ignore log sequencing errors
TRANEXIT
Transaction Substitution Exit name; affects the Transit Analysis, Transit
Statistics, and Transaction Exception reports
SETIMSID
Source of IMS Processing ID.
LOG     Derive the subsystem name from the IMS log records.
DDNAME     Default. Use the subsystem name taken from the log input DD in
    the format Lxxxxunn where xxxx is the IMSID, for example,
    //LIMSA001 DD DSN=IMSA.SLDS.

Example
IMSPALOG     START(2014/03/26,),STOP(2014/03/27,),
OUTPUTDD(RPTOUT),
PRINTAT(STOP),PAGESIZE(60),
XTRCOMMA,IGNORSEQ

Example - Inflight processing

To generate this JCL, activate inflight processing on the IMS Performance Analyzer
ISPF dialog and then submit one of the following reports:
- "Transaction Transit reports (Form-based)" on page 314
- "IMS Transaction Index" on page 325
- "Internal Resource Usage reports" on page 336

For details, see "Log Global Options" on page 290.

```sql
*** In-flight transaction processing
//IMSINFLT DD DSN=USR.IMSPA.INFLIGHT,
  // DISP=SHR
//IMSOTFLT DD DSN=USR.IMSPA.OTFLIGHT,
  // DISP=SHR

*** Report Set Command Input
//IPICMD DD *
* IMS PA Log Report
* Report Set Name - SAMPLOG
* Description - Sample Log Report Set
* Log Report Global Options
* Log Input - LOGIN
* Report Output - RPTOUT
* Inflight transaction processing requested
* Inflight dataset - ddname=IMSINFLT
* Outflight dataset - ddname=IMSOTFLT
```
Inflight DSN - 'USR.IMSPA.INFLIGHT'
Outflight DSN - 'USR.IMSPA.OTFLIGHT'

IMSPALOG INPUTDD(LOGIN),
OUTPUTDD(RPTOUT),

/** Switch In-flight transaction datasets
RENAME EXEC PGM=IDCAMS,(COND=0,NE,IPI)
SYSPRINT DD SYSOUT=* 
SYSIN DD *
ALTER USR.IMSPA.INFLIGHT -
NEWNAME( USR.IMSPA.INFLIGHT.TMP )
ALTER USR.IMSPA.OTFLIGHT -
NEWNAME( USR.IMSPA.INFLIGHT )
ALTER USR.IMSPA.INFLIGHT.TMP -
NEWNAME( USR.IMSPA.OTFLIGHT )
*/

1 JCL generated by the ISPF dialog indicates that inflight processing has been requested.

2 Switching the INFLIGHT and OTFLIGHT data sets using an IDCAMS post step after reporting has completed successfully (RC=0).

Related reference:
"Log Global Options" on page 290
The IMS PA Log Global Options define general control information which applies to all active reports within the Report Set.
"Allocate IMS inflight data sets" on page 718
The sample library SIPISAMP contains a member with sample JCL to create IMS inflight data sets.

Transaction Transit Reports
This section contains the operands for Transaction Transit log reports.

Transaction (MSGQ) Transit Options
Transaction Transit Options define general control information for the Transaction Transit reports.

The Transaction Transit reports are:
- Transaction Transit Analysis
- Transaction Transit Statistics
- Transaction Transit Log
- Transaction Transit Graphic Summary
- Transaction Transit Extract by Interval
- Transaction Exception
- Transaction History File

These operands apply to all Transaction Transit reports unless overridden by individual reports.
Format

IMSPALOG [PEAK(ppp),] default 90 %
[INMAX(nnnn),] default 60 seconds
[OUTMAX(nnnn),] default 60 seconds
[TSETSIZE(nnnn),] default 32767 transactions
[INTERVAL(nnnn),] default 15 minutes
[ALIGN|NOALIGN,]
[REPORTALL,]
[QUALIFY([INCL(TC(list))]|EXCL(TC(list))),
[INCL(MSC),]
[INCL(BMP),]
[INCL(APPC),]
[INCL(MSGSW)])

PEAK  Peak percentile
INMAX  Maximum Input Queue time
OUTMAX  Maximum Output Queue time
TSETSIZE  Maximum Transaction Set size
INTERVAL  Time Interval in minutes
ALIGN  Align Time Interval to the even hour
NOALIGN  Do not align Time Interval to the even hour
QUALIFY  The following options may be specified:
INCL(TC(list)) or EXCL(TC(list))
  Selection criteria to filter (include or exclude) the report on Transaction Code.
  INCL(MSC)
    Include MSC transactions
  INCL(BMP)
    Include BMP transactions
  INCL(APPC)
    Include APPC and OTMA transactions
  INCL(MSGSW)
    Include Message Switches (CNT switches to ISC, MSC, and so on)
REPORTALL
  Include all transactions, regardless of whether there was a response to the originating LTERM.
  REPORTALL will automatically include all MSC, BMP, and APPC and OTMA transactions unless a QUALIFY statement exists that specifically includes one or more of these transaction types. In this scenario, the remaining un-selected options are not included, even if REPORTALL has been specified.
  REPORTALL does not report Message Switches. To include Message Switches, specify the INCL(MSGSW) option.
Example

Transaction Transit Analysis, Log and Graphic Summary with time interval 15 minutes, aligned to the hour, MSC, BMP, and APPC/OTMA transactions included, and message switches not included.

IMSPALOG START(2014/06/25,07:15), STOP(2014/06/25,09:30),
INPUTDD(LOGIN), OUTPUTDD(RPTOUT),
PAGESIZE(60), PRINTAT(STOP)
IMSPALOG INMAX(50), OUTMAX(50), PEAK(85),
TSETSIZE(2500), INTERVAL(15), ALIGN,
QUALIFY(INCL(TC((DSFJ, DSFM), F*, K*, (MDB, MDK))),
   INCL(BMP),
   INCL(MSC),
   INCL(APPC))
IMSPALOG ANALYSIS(TRANCODE)
IMSPALOG LOG(FROM(2014/06/25,08:15), TO(2014/06/25,09:15))
IMSPALOG GRAPH

Related reference:
"Transaction Transit Options" on page 296

The IMS PA Transaction Transit Options define control information that applies to the Transaction Transit reports within the Report Set.

ANALYSIS: Transaction Transit Analysis report

The ANALYSIS operand of the IMSPALOG batch command requests the Transaction Transit Analysis report.

Format

```
IMSPALOG ANALYSIS([TRANCODE,]
   [LTERM|USERID,]
   [LTERM-TRANCODE|USERID-TRANCODE,]
   [LINE,]
   [CLASS,]
   [TIME,]
   [REPORTALL,]
   [FROM(date, time),]
   [TO(date, time),]
   [INCL(TRANCODE(list)) [EXCL(TRANCODE(list))],]
   [INCL(LTERM(list)) [EXCL(LTERM(list))],]
   [INCL(LINE(list)) [EXCL(LINE(list))],]
   [INCL(CLASS(list)) [EXCL(CLASS(list))],]
   [INCL(USERID(list)) [EXCL(USERID(list))]]
```

Any combination of the following reports can be requested. If all six reports are required, either specify the six report operands, or ALL.

TRANCODE
   By Transaction Code
LTERM or USERID
   By LTERM or User ID
LTERM-TRANCODE or USERID-TRANCODE
   By LTERM or User ID, broken down by Transaction Code
LINE
   By Line or VTAM Node
CLASS
By Message Class

TIME

By Time of Input

Transaction Transit Options that may be overridden are:

REPORTALL

Report all transactions (otherwise only report those that respond back to the originating LTERM)

Other report options are:
INCL | EXCL

Selection criteria to filter (include or exclude) the report on Transaction Code, LTERM, Line, VTAM Node, Class, or User ID.

Example

Transaction Transit Analysis by Transaction Code and by Time with the report interval specified within global report interval, peak 95% (to check that 95% of transactions complete within a certain time), time interval 5 minutes, aligned to the hour, filtering on Transaction Code, message switches included, and MSC, BMP, and APPC/OTMA transactions not included.

IMSPALOG START(2014/06/24,12:15),
STOP(2014/06/25,12:15),
OUTPUTDD(RPTOUT)

IMSPALOG PEAK(95), INTERVAL(5), ALIGN, QUALIFY(INCL(MSGSW))

IMSPALOG ANALYSIS(TRANCODE, TIME,
FROM(2014/06/24,12:30),
TO(2014/06/24,13:00),
INCL(TRANCODE((A,K),M*,P*)))

IMSPALOG EXECUTE

Related reference:
“Transaction Transit Analysis report” on page 301

The Transaction Transit Analysis report can show response time performance by logical terminal, transaction code, transaction code within logical terminal, message class, line or VTAM node, and time of input.

STATS: Transaction Transit Statistics report

The STATS operand of the IMSPALOG batch command requests the Transaction Transit Statistics report.

The Transaction Transit Statistics report is similar to the Analysis report, but presents the output as distributions.

Format

The format of the Transaction Transit Statistics report operand is the same as that for the Analysis report, but with the addition of a Distribution named LOGIN.
Any combination of the following reports can be requested. If all six reports are required, either specify the six report operands, or ALL.

TRANCODE
  By Transaction Code
LTERM or USERID
  By LTERM or User ID
LTERM-TRANCODE or USERID-TRANCODE
  By LTERM or User ID, broken down by Transaction Code
LINE
  By Line or VTAM Node
CLASS
  By Message Class
TIME
  By Time of Input

Transaction Transit Options that may be overridden are:

REPORTALL
  Report all transactions (otherwise only report those that respond back to the originating LTERM)

Other report options are:

INCL | EXCL
  Selection criteria to filter (include or exclude) the report on Transaction Code, LTERM, Line, VTAM Node, Class, or User ID.

To use a distribution, specify:

LIMITS
  Range limits for the vertical axis of the graph.
TITLE
  Title for vertical axis of the graph.
MULTIPLY
  Value by which to multiply each limit value for the graph.
MASK
  Edit mask for printing the limit values along the vertical axis of the graph.

Example

Transaction Transit Statistics by Transaction Code and by Message Class with global report interval specified, time interval 10 minutes, aligned to the hour,
filtering on Transaction Code and Message Class, and MSC, BMP, and APPC/OTMA transactions and message switches not included.

```
IMSPALOG  START(2014/06/24,),STOP(2014/06/25,),
           OUTPUTDD(RPTOUT)
IMSPALOG  INTERVAL(10),ALIGN
IMSPALOG  STATS(TRANCODE,CLASS,
               EXCL(TRANCODE(A*)),
               INCL(CLASS(89)))
IMSPALOG  EXECUTE
LOGIN     DISTRIBUTION LIMITS(2,4,6,8,10,15,20,30,60),
           TITLE('Sc Mi1'),
           MULTIPLY(1),
           EDITMASK('ZZZ,ZZZ.ZZ9')
```

Related reference:
"Transaction Transit Statistics report" on page 304
The Transaction Transit Statistics report is a graphical representation of the information in the Transaction Transit Analysis report.

**LOG: Transaction Transit Log report**
The LOG operand of the IMSPALOG batch command requests the Transaction Transit Log report.

**Format**

```
IMSPALOG  LOG(
          [INCL(OK)|EXCL(OK),]
          [INCL(MAX),]
          [INCL(PARSFMT),]  report in IMSPARS format
          [DDNAME(ddname)], default LOGDD
          [FROM(date,time),]
          [TO(date,time),]
          [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
          [INCL(LTERM(list))|EXCL(LTERM(list))],
          [INCL(USERID(list))|EXCL(USERID(list))])
```

The messages to include in the report can be specified as follows:

- **INCL(OK)**
  - Only include messages remaining on the input (or output) queue for less time than that specified by INMAX (or OUTMAX).

- **EXCL(OK),INCL(MAX)**
  - Only include messages remaining on the input (or output) queue for a longer time than that specified by INMAX (or OUTMAX).

- **INCL(OK),INCL(MAX)**
  - Include all messages.

Transaction Transit Options that may be overridden are:

- **INCL(PARSFMT)**
  - Format report in IMSPARS format

Other report options are:

- **DDNAME**
  - The ddname for the recap report output. The default is LOGDD.

- **INCL|EXCL**
  - Selection criteria to filter (include or exclude) the report on Transaction Code, LTERM, or User ID.
**Example**

```
IMSPALOG INMAX(45), OUTMAX(65), QUALIFY(INCL(APPC))
IMSPALOG LOG(INCL(TRANCODE((M, ZZZZZZZZ))), INCL(MAX), INCL(OK), FROM(2014/06/25, 07:15:00:00), TO(2014/06/25, 08:00:00:00), DNNAME(LOGDD))
IMSPALOG EXECUTE
```

**Related reference:**

“Transaction Transit Log report” on page 305

The Transaction Transit Log report shows the transit activity of each message originating from a logical terminal.

**GRAPH: Transaction Transit Graphic Summary report**

The GRAPH operand of the IMSPALOG batch command requests the Transaction Transit Graphic Summary report.

**Format**

```
IMSPALOG GRAPH
[IMSPALOG ANALYSIS]
[IMSPALOG [ALIGN|NOALIGN,]
[INTERVAL(nnnn)]]
```

Transaction Transit Options that may be overridden are:

- **ALIGN** or **NOALIGN**
  - Align time interval to the even hour or do not align time interval to the even hour.

**Example**

Transaction Transit Graphic Summary with narrow global report interval, peak 90% (to check that 90% of transactions complete within a certain time), time interval 10 minutes, aligned to the hour, MSC, BMP, and APPC/OTMA transactions not included, message switches included.

```
IMSPALOG START(2014/06/25, 12:15), STOP(2014/06/25, 15:00), OUTPUTDD(RPTOUT)
IMSPALOG PEAK(90), INTERVAL(10), ALIGN, QUALIFY(INCL(MSGSW))
IMSPALOG ANALYSIS
IMSPALOG GRAPH
IMSPALOG EXECUTE
```

**Related reference:**

“Transaction Transit Graphic Summary report” on page 306

There are no individual options for this report. The report can only be activated or deactivated.

**EXTRACT: Transaction Transit Extract by Interval**

The EXTRACT operand of the IMSPALOG batch command requests the Transaction Transit Extract by Interval.

The extract processing merges previously extracted data in the input file, if it is specified, with data extracted in this run, and writes it to the output file. The output file contains records of data accumulated by time interval, for one or both of the following:
- Individual transaction codes within each time interval.
- All transaction codes in each time interval.

You need to extract the data at the level that you intend to export it; that is, if you want transaction data in your export file, you must extract by transaction code, and if you want interval totals in the export file, you must include the totals in the extract. However, at the time of export, the peak transaction percentage calculations occur and further filtering on transaction code and date/time is possible.

**Format**

```plaintext
IMSPALOG  EXTRACT([TRANCODES,] [TCTOTALS,] [FROM(date,time),] [TO(date,time),] [INCL(TRANCODE(list)),] [EXCL(TRANCODE(list))])

IMSPALOG  [ALIGN|NOALIGN,] [INTERVAL(nn),] [QUALIFY([INCL(MSC),] [INCL(BMP),] [INCL(APPC),] [INCL(MSGSW)]),]

IMSPALOG  [ALIGN|NOALIGN,] [INTERVAL(nn),] [QUALIFY([INCL(MSC),] [INCL(BMP),] [INCL(APPC),] [INCL(MSGSW)]),]

IMSPALOG  ANALYSIS

IMSPALOG  EXECUTE
```

The input extract file is optional. The extract data set may be a generation data group (GDG).

**TRANCODES**
Accumulate data for each Transaction Code

**TCTOTALS**
Accumulate data for Transaction Code totals

Other report options are:

**INCL | EXCL**
Selection criteria to filter (include or exclude) the report on Transaction Code.

Transaction Transit Options that may be overridden are:

**ALIGN or NOALIGN**
Align time interval to the even hour or do not align time interval to the even hour.

**INTERVAL**
The summarization time interval. The default is 15 minutes.

**Example**

```plaintext
IMSPALOG  START(,07:00:00:00),STOP(,10:30:00:00), OUTPUTDD(RPTOUT)
IMSPALOG  INTERVAL(10),ALIGN
IMSPALOG  EXTRACT(TRANCODES, TCTOTALS, FROM(,07:30:00:00),TO(,09:30:00:00), INCL(TRANCODE(T+)))
```
**TRANEXC: Transaction Exception report and extract**

The TRANEXC operand of the IMSPALOG batch command requests the Transaction Exception reports.

**Format**

```
IMSPALOG EXECUTE

TRANEXC ([TRANCODE,]
[USERID,]
[CLASS,]
[TIME,]

[SUMMARY,]
[SHRQ,]
[PRINTEXP,]

[FORMAT1|FORMAT2,] default FORMAT1
[EXPECT(expectation-set-name),]
[DDNAME(ddname),] default TRANEXC
[FROM(date,time),]
[TO(date,time),]

[INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
[INCL(USERID(list))|EXCL(USERID(list)),]
[INCL(CLASS(list))|EXCL(CLASS(list))]

IMSPALOG ANALYSIS
```

Any combination of the following reports may be requested:

**TRANCODE**
- By Transaction Code

**USERID**
- By User ID

**CLASS**
- By Message Class

**TIME**
- By Time of Input

Other report options are:

**SUMMARY**
- Show totals only (do not show a breakdown by Transaction Code) in the User ID, Message Class, and Time of Input reports

**SHRQ**
- Show shared queue details in the report.

**PRINTEXP**
- Print the Expectation Set values with the report.

**FORMAT1 | FORMAT2**
- Original or extended format. FORMAT1 omits OK transactions (non-exceptions) from the User ID, Class, and Time reports. FORMAT2
gives a consistent breakdown of transactions (Total = Exceptions + OK) for
all reports: Transaction Code, User ID, Class, and Time.

EXPECT
Expectation Set (member name in the Expectation Sets data set).

DDNAME
The ddname for the recap report output. The default is TRANEXC.

INCL | EXCL
Selection criteria to filter (include or exclude) the report on Transaction
Code, User ID, or Class.

An Expectation Set may optionally be specified to define, by transaction code,
boundaries for a number of performance measures. A transaction is flagged as an
exception if it performs outside the ranges of values specified for that transaction
code in the Expectation Set.

If an Expectation Set is not specified, all transactions are considered exceptions.
IPIEXPQ is the ddname of the Expectation Sets data set.

Two extract data sets may optionally be specified:
• IPITXUT1 Total Traffic data set contains detail records of all transactions.
• IPITXUT2 Exception Traffic data set contains detail records of exception
transactions only.

An extract data set may be a generation data group (GDG).

Example

IMSPALOG START(2014/01/15,),STOP(2014/01/16,)
IMSPALOG TRANEXC(TRANCODE, TIME, SHRQ, EXPECT(TREXPECT))
IMSPALOG EXECUTE

/*
 //IPITXUT1 DD DSN=IMSPA.MSGQ.TOTAL.TRAFFIC,DISP=MOD
 //IPITXUT2 DD DSN=IMSPA.MSGQ.EXCEPT.TRAFFIC,DISP=MOD
 //IPIEXPQ DD DSN=IMSPA.V440.EXPECTDS,DISP=SHR

Related reference:
[Transaction Exception report and extract] on page 309

The Transaction Exception report shows transaction performance information that
affects response time.

TRANHIST: Transaction History File

The TRANHIST operand of the IMSPALOG batch command requests the
Transaction History File.

This file is used to collect historical performance data, useful for long-term trend
analysis and capacity planning. Information is summarized for each transaction
code over a short time interval, including transaction transit, response and CPU
times, as well as DLI call statistics.

Data is provided in a format suitable for loading directly into DB2, from where
you can run queries or produce reports. For a description of the data, refer to
[Understand the Transaction History File] on page 735.

Sample DB2 jobs are supplied in the SIPISAMP library to help you create and load
DB2 tables and run queries:
• Sample DDL job IPITHDDL to create the DB2 tables
• Sample Load job IPITHLOD to populate the DB2 tables with the history data
Sample SQL query jobs IPITHQM1, IPITHQM2, IPITHQM3, IPITHQM4

Format

```sql
IMSPALOG TRANHIST(
    [DDNAME(ddname),], default TRANHIST
    [INTERVAL(hh:mm:ss),] default 00:15:00 (15 minutes)
    [FROM(date,time),]
    [TO(date,time),]
    [INCL(TRANCODE(list))|EXCL(TRANCODE(list))])
```

The report options are:

**DDNAME**
- The ddname for the recap report output. The default is TRANHIST.

**INTERVAL**
- The summarization time interval. The default is 15 minutes.

**INCL|EXCL**
- Selection criteria to filter (include or exclude) the report on transaction code or IMS subsystem ID.

Examples

Taking defaults:

```sql
IMSPALOG TRANHIST
IMSPALOG EXECUTE
```

Transaction history, summarized in half hour intervals, and filtered by transaction code:

```sql
IMSPALOG TRANHIST(INTERVAL(00:30:00),
EXCL(TRANCODE(A1*,B1*,C1*))
IMSPALOG EXECUTE
```

Related reference:
- "Transaction History File" on page 312

The Transaction History File is used to collect historical performance data, useful for long-term trend analysis and capacity planning. Information is summarized for each transaction code over a short time interval, including transaction transit, response and CPU times, as well as DLI call statistics.

Transaction Transit reports (Form-based)

This section contains the operands for Form-Based Transaction Transit log reports.

Transaction Transit (Form-based) Options

Form-based Transaction Transit Options define general control information for the Form-based Transaction Transit reports.

The Form-based Transaction Transit Options apply to the following reports:
- "LIST: Transaction Transit List report and extract (Form-based)" on page 423
- "SUMMARY: Transaction Transit Summary report and extract (Form-based)" on page 426
- "Transaction Transit Reports" on page 412
BMPSYNC

BMP treatment option. The following options may be specified:

YES
Treat each BMP syncpoint interval as a transaction.

NO
Default. Treat the BMP as a single transaction. All syncpoint intervals are accumulated and reported at job end.

When using this option, it is recommended that you collect type x'56FA' transaction accounting log records (TRANSTAT=YES) to analyze CPU usage and DLI call activity in more detail for each BMP syncpoint interval.

PROCESSEONLY

Determines which shared queue transactions are reported.

The following options may be specified:

YES
Only report transactions that were processed on subsystems whose logs were input.

NO
Default. Report all transactions, even those processed on other subsystems whose logs were not input.

PROGRAMSWITCH

Program switch reporting. The following options may be specified:

YES
Track transactions involved in program switch sequences. Program switch sequences are reported as a group. This is the default option except when inflight processing has been activated. See “Log Global Options” on page 410.

NO
Report all transactions separately. Program switch sequences are not reported as a group.

Related reference:
“Transaction Transit (Form-based) Options” on page 314
The IMS PA Form-based Transaction Transit Options define control information that applies to the Form-based Transaction Transit reports within the Report Set.

“Report Set JCL” on page 717
The sample library SIPISAMP contains members with sample JCL to generate IMS PA reports and extracts. Also included are examples for Automated file selection and BMP analysis.

LIST: Transaction Transit List report and extract (Form-based)
The LIST operand of the IMSPALOG batch command requests the Transaction Transit List report or extract for IMS fields.
## Format

IMSPALOG

<table>
<thead>
<tr>
<th>LIST</th>
<th>default LISTnnnn</th>
</tr>
</thead>
<tbody>
<tr>
<td>[DDNAME(ddname),]</td>
<td>default LISTnnnn</td>
</tr>
<tr>
<td>[FROM(date,time),]</td>
<td></td>
</tr>
<tr>
<td>[TO(date,time),]</td>
<td></td>
</tr>
<tr>
<td>[EXTRACT(ddname),]</td>
<td>default LISXnnnn</td>
</tr>
<tr>
<td>[TRANMIX(n),]</td>
<td>default 1</td>
</tr>
<tr>
<td>[STARTLVL(n),]</td>
<td>default 2</td>
</tr>
<tr>
<td>[COMPLVL(n),]</td>
<td>default 3</td>
</tr>
<tr>
<td>[PRECISION(n),]</td>
<td>default 3</td>
</tr>
<tr>
<td>[GROUP</td>
<td>NOGROUP</td>
</tr>
<tr>
<td>[OUTPUTMSG</td>
<td>NODELUTMSG,]</td>
</tr>
<tr>
<td>[INCL(TRANCODE(list))[EXCL(TRANCODE(list)),]</td>
<td></td>
</tr>
<tr>
<td>[INCL(LTERM(list))[EXCL(LTERM(list)),]</td>
<td></td>
</tr>
<tr>
<td>[INCL(LINE(list))[EXCL(LINE(list)),]</td>
<td></td>
</tr>
<tr>
<td>[INCL(VTAMNODE(list))[EXCL(VTAMNODE(list)),]</td>
<td></td>
</tr>
<tr>
<td>[INCL(CLASS(list))[EXCL(CLASS(list)),]</td>
<td></td>
</tr>
<tr>
<td>[INCL(USERID(list))[EXCL(USERID(list)),]</td>
<td></td>
</tr>
<tr>
<td>[DELIMIT(field-delimiter)</td>
<td>NODELIMIT,] default , (comma)</td>
</tr>
<tr>
<td>[LABELS</td>
<td>NOLABELS,]</td>
</tr>
<tr>
<td>[FLOAT</td>
<td>NOFLOAT,]</td>
</tr>
<tr>
<td>[FIELDS(field1,...)]</td>
<td></td>
</tr>
</tbody>
</table>

### DDNAME

DDname for the report output. The default is LISTnnnn where nnnn is a sequential number in the range 0001–9999.

### FROM and TO

The reporting interval, either a date-time range or a time slot. The time slot can span midnight. The date can be either a calendar date or a relative date. If both dates are specified, they must be in the same format.

### EXTRACT

DDname for the extract output. The default is LISXnnnn where nnnn is a sequential number in the range 0001–9999.

### TRANMIX

Specify the mix of transactions to report:

1. All transactions
2. All transactions, excluding IFP.
3. IFP transactions only.
4. Transactions that use Fast Path (EMH and/or DEDB).
5. All transactions, excluding BMP.
6. Non-message driven BMP only.

### STARTLVL

Specify a value in the range 1–3 to specify the minimum transaction start level for reporting.

### COMPLVL

Specify a value in the range 0–6 to specify the minimum transaction completion level for reporting.
PRECISION
The precision of numeric fields. Numeric fields can be formatted to either
3, 4, 5, or 6 decimal places where 3 is millisecond precision and 6 is
microsecond precision.

GROUP | NOGROUP | SECGROUP
GROUP
Indicates that a 1000’s separator in time and count fields is to be
included in the output. The separator will be a comma for count
fields and a decimal point for time fields.

NOGROUP
Indicates that a 1000’s separator in time and count fields will not
be included in the output.

SECGROUP
Indicates that the separator character will delineate the decimal
point only. Applies to time fields only and assumes GROUP for
count fields.

OUTPUTMSG | NOOUTPUTMSG
OUTPUTMSG
Report all output messages from the transaction.

NOOUTPUTMSG
Report only the first output message for the transaction.

INCL | EXCL
Selection criteria to filter (include or exclude) the report on Transaction
Code, LTERM, Line, VTAM node, Message class, User ID.

DELIMIT | NODELIMIT
DELIMIT
The field delimiter, enclosed in quotes, to be used to separate each
data field in the extract data set.

NODELIMIT
A field delimiter is not to be used to separate each data field in the
extract data set.

LABELS | NOLABELS
LABELS
The first record to be written to the extract data set is to be a field
labels record.

NOLABELS
Field labels are to be omitted from the extract data set.

FLOAT | NOFLOAT
FLOAT
Write numeric fields in the extract in FLOAT format. Specify
FLOAT if you plan to import the extract into a DB2 table. When
the DB2 load utility is used, it will interpret all numerical fields
reliably and consistently in FLOAT format. Time fields are in units
of seconds and count fields are real numbers.

NOFLOAT
Numeric fields in the extract will be written in character format
according to the Precision and Digit Grouping options. This is suitable when importing the extract data into spreadsheets that expect character-based data.

FIELDS
Specifies which fields are included in the report or extract, their order, and format. For the list of available fields, see the Chapter 41, “Glossary of Report Form field names,” on page 753. If the FIELDS operand is omitted, the default report or extract is produced.

Example
IMSPALOG LIST(FIELDS(TRANCODE,
TERMINAL,
USERID,
CPUTIME,
TOTALTM,
TRANCNT))

Related concepts:
“LIST Report Form” on page 244
The LIST Report Form can be used to tailor the format and content of the Transaction Transit List report or extract in a Log or Connect Report Set.

Related reference:
“Transaction Transit List report and extract” on page 316
The options for the Transaction Transit List report and extract are described here.

SUMMARY: Transaction Transit Summary report and extract (Form-based)
The SUMMARY operand of the IMSPALOG batch command requests the Transaction Transit Summary Report or Extract for IMS fields.

Format

```
IMSPALOG SUMMARY(
[DDNAME(ddname),] default SUMMnnnn
[FROM(date, time),]
[TO(date, time),]
[INTERVAL(hh:mm:ss),] default 00:01:00
[EXTRACT(ddname),] default SUMMnnnn
[TRANMIX(n),] default 1
[STARTLVL(n),] default 2
[COMPLVL(n),] default 3
[PRECISION(n1,n2),] default 3,0
[GROUP|NOGROUP|SECGROUP,
[TOTALS(n)|NOTOTALS,
[INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
[INCL(LTERM(list))|EXCL(LTERM(list)),]
[INCL(LINE(list))|EXCL(LINE(list)),]
[INCL(VTAMNODE(list))|EXCL(VTAMNODE(list)),]
[INCL(CLASS(list))|EXCL(CLASS(list)),]
[INCL(USERID(list))|EXCL(USERID(list)),]
[DELIMIT(field-delimiter)|NODELIMIT,] default , (comma)
[LABELS|NOLABELS,
[FLOAT|NOFLOAT,
FIELDS(field1[(options)],...))
```

DDNAME
DDname for the report output. The default is SUMMnnnn where nnnn is a sequential number in the range 0001-9999.
FROM and TO
The reporting interval, either a date-time range or a time slot. The time slot can span midnight. The date can be either a calendar date or a relative date. If both dates are specified, they must be in the same format.

EXTRACT
DDname for the extract output. The default is \texttt{SUMXnnnn} where \texttt{nnnn} is a sequential number in the range 0001–9999.

INTERVAL
Applies when you want to summarize activity over time. It is used when the SUMMARY Report Form has one or both of the sort fields STARTIMS or STARTCON included. When reporting, IMS PA accumulates the data for each interval in the report period and writes a report line for each.

TOTALS
The grand total and the level of subtotaling required. A totals level of 0 will produce grand totals only in the report. Specify a totals level in the range 1–7 to produce both a grand total and subtotals to the corresponding key level.

NOTOTALS
No grand totals or subtotals will be included in the report.

TRANMIX
Specify the mix of transactions to report:

1. All transactions
2. All transactions, excluding IFP.
3. IFP transactions only.
4. Transactions that use Fast Path (EMH and/or DEDB).
5. All transactions, excluding BMP.
6. Non-message driven BMP only.

STARTLVL
Specify a value in the range 1–3 to specify the minimum transaction start level for reporting.

COMPLVL
Specify a value in the range 0–6 to specify the minimum transaction completion level for reporting.

PRECISION
The precision of numeric form fields.

The first value $n1$ specifies the precision of time-based fields, from 3 (millisecond precision) to 6 (microsecond precision). CPU and elapsed times are rounded up where necessary. Time stamps are truncated.

The second value $n2$ specifies the precision of count fields, applicable only when reported as average, from 0 to 2 decimal places.

GROUP | NOGROUP | SECGROUP
GROUP
Indicates that a 1000's separator in time and count fields is to be included in the output. The separator will be a comma for count fields and a decimal point for time fields.
NOGROUP
Indicates that a 1000’s separator in time and count fields will not be included in the output.

SECGROUP
Indicates that the separator character will delineate the decimal point only. Applies to time fields only and assumes GROUP for count fields.

INCL | EXCL
Selection criteria to filter (include or exclude) the report on Transaction Code, LTERM, Line, VTAM node, Message class, User ID.

DELIMIT | NODELIMIT
DELIMIT
The field delimiter, enclosed in quotes, to be used to separate each data field in the extract data set.

NODELIMIT
A field delimiter is not to be used to separate each data field in the extract data set.

LABELS | NOLABELS
LABELS
The first record to be written to the extract data set is to be a field labels record.

NOLABELS
Field labels are to be omitted from the extract data set.

FLOAT | NOFLOAT
FLOAT
Write numeric fields in the extract in FLOAT format. Specify FLOAT if you plan to import the extract into a DB2 table. When the DB2 load utility is used, it will interpret all numerical fields reliably and consistently in FLOAT format. Time fields are in units of seconds and count fields are real numbers.

NOFLOAT
Numeric fields in the extract will be written in character format according to the Precision and Digit Grouping options. This is suitable when importing the extract data into spreadsheets that expect character-based data.

FIELDS
Specifies which fields are included in the report or extract, the order in which they appear in the report, and the statistical functions used to summarize the data. For the list of available fields, see the Chapter 41, “Glossary of Report Form field names,” on page 753. If the FIELDS operand is omitted, the default report or extract is produced.

Up to 8 sort key fields can be specified, and at least one must be specified. The order of the key fields in the list defines the sort precedence, with the first key field being the major sort field. For each key field, the report can be ordered in ascending (ASCEND) or descending (DESCEND) sequence. The default is ascending. Sort key fields identify the grouping required for summarization, and can be STARTIMS or any character field.

The sort key fields must be specified first in the list ahead of the numeric fields. The only field that can appear ahead of a key field is TRANCNT.
In addition to the sort key fields, one numeric field can be selected as ascending or descending to activate Alternate Sequencing. This will change the order of report lines from sort key to numeric field sequence. For example, specify RESPIMS(DESCEND) to see the transactions with the highest response time at the top of the report. Note that grouping by sort key remains unaffected by alternate sequencing.

TRANCNT is a special field computed by IMS PA. It reports the number of transactions. TRANCNT can be reported anywhere on the print line by including it in the FIELDS specification.

Key fields must be specified first in the FIELDS list.

All numeric fields (except TRANCNT) are summarized using any number of the following statistical functions:

- **AVE** Average value (this is the default if a field is specified without a function)
- **COUNT** Number of transactions with a value
- **DATE** STARTIMS field: date in the format yyyy-mm-dd
- **DEV** Standard deviation
- **HIDE** Include field in key but do not print
- **ISO** STARTIMS field: date and time in the format yyyy-mm-dd hh.mm.ss
- **MAX** Maximum value
- **MIN** Minimum value
- **TIME** STARTIMS field: Time in the format hh.mm.ss (this is the default if format is not specified)
- **TOTAL** Sum total
- **nnn** Peak percentile value in the range 50%–100%
- **RNGPERC** Distribution: Percentage of values from a specified limit value or within a range. Specify one of the following options:

  **RNGPERC(operator value)**

  Specify a reporting limit. Use this parameter report a distribution by splitting the values reported by a single field into different columns. For example:

  ```
  FIELDS(STARTIMS(TIME,ASCEND),
  IMSID(ASCEND),
  TRANCODE(ASCEND),
  TRANCNT,
  TOTALTM(MIN),
  TOTALTM(AVE),
  TOTALTM(MAX),
  TOTALTM(RNGPERC(<10)),
  TOTALTM(RNGPERC(<50)),
  TOTALTM(RNGPERC(<100)),
  TOTALTM(RNGPERC(<200)),
  TOTALTM(RNGPERC(<500)),
  TOTALTM(RNGPERC(>=500)),
  TOTALTM(RNGCOUNT(>=500)))
  ```

  The following values of **operator** are valid: =, >, >=, <, and <=.

  **Character ranges:** Specify a character range with character-based fields. Where a blank or null value is valid for a particular field, use a hyphen (-).
**RNGPERC**(*from - to*)

Report on a range of values greater than or equal to the value of *from*, and less than (but *not equal*) to the value of *to*.

A character range can not be specified using this option.

**RNGCOUNT**

Distribution: Count of values from a specified limit value or within a range. Specify one of the following options:

**RNGCOUNT**(operator value)

Specify a reporting limit. The following values of operator are valid: **=**, **>**, **>=**, **<**, and **<=**.

**Character ranges**: Specify a character range with character-based fields. Where a blank or null value is valid for a particular field, use a hyphen (-).

**RNGCOUNT**(from - to)

Report on a range of values greater than or equal to the value of *from*, and less than (but *not equal*) to the value of *to*.

A character range can not be specified using this option.

**Example 1**

IMSPALOG SUMMARY(FIELDS(ORGTRAN(ASCEND),
TRANCODE(ASCEND),
SWITTIME(HIDE,ASCEND),
totalTM(AVE),
INPUTQ(98),
CPUTIME(AVE)))

Related concepts:

“SUMMARY Report Form” on page 248

The SUMMARY Report Form defines the format and content of the Transaction Transit Summary report and extract.

Related reference:

“Transaction Transit Summary report and extract” on page 323

The Transaction Transit Summary report and extract options are described here.

**INDEX: IMS Transaction Index**

The INDEX operand of the IMSPALOG batch command requests the IMS Transaction Index.

The IMS Transaction Index is a specialized extract file created by IMS Performance Analyzer batch reporting. Each record in the index represents an IMS transaction and contains cumulative information from the IMS log about that transaction. Optionally, you can request that the index include additional information for external subsystems or database update activity or both. For more information, see “Creating and using the index for reporting” on page 269.
Format

```plaintext
IMSPALOG INDEX(
  [ESAF,]
  [DBUPDodate])
  [ABEND,]
  [PROCESS(9999),]    default 0.50 seconds
  [TOTAL(9999),]      default 1.00 seconds
  [PGMSW1,]
  [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
  [INCL(LTERM(list))|EXCL(LTERM(list)),]
  [INCL(LINE(list))|EXCL(LINE(list)),]
  [INCL(VTAMNODE(list))|EXCL(VTAMNODE(list)),]
  [INCL(CLASS(list))|EXCL(CLASS(list)),]
  [INCL(USERID(list))|EXCL(USERID(list))])
IMSPALOG EXECUTE
```

Related reference:

"IMS Transaction Index" on page 325

The IMS Transaction Index is a specialized extract file created by IMS Performance Analyzer batch reporting. Each record in the index represents an IMS transaction and contains cumulative information from the IMS log about that transaction.

Resource Usage and Availability reports

This section contains the operands for Resource Usage and Availability log reports.

**DASHBOARD: Dashboard report**

The DASHBOARD operand of the IMSPALOG batch command requests the Dashboard report.

This report provides a quick overview of critical system performance indicators, including transaction throughput and IMS system resources. It can highlight potential performance problems quickly, providing a springboard to other reports that provide more detailed information.

Format

```plaintext
IMSPALOG DASHBOARD(
  [DDNAME(ddname)])    default DASH
```

The purpose of this report is a health check of the total system. There are no tailoring options.

The only option is:

**DDNAME** The ddname for the recap report output. The default is DASH.

Example

Taking defaults:

```plaintext
IMSPALOG DASHBOARD
IMSPALOG EXECUTE
```

Related reference:
The Dashboard report provides a quick overview of critical system performance indicators, including transaction throughput and IMS system resources. It can highlight potential performance problems quickly, providing a springboard to other reports that provide more detailed information.

**MGREX: Management Exception report**

The MGREX operand of the IMSPALOG batch command requests the Management Exception report.

The report has two sections:
- Management Exception Summary containing transaction exceptions and averages
- Error Condition Log reporting up to five types of errors:
  - Program Abend
  - Backout Failure
  - Security Violation
  - Snap Trace
  - I/O Error

**Format**

```plaintext
IMSPALOG MGREX([TCREPORT,]
[PGMABEND,]
[BACKOUTFAIL,]
[SECVIO,]
[IOERROR,]
[SNAPTRC,]
[INCL(PRINT(ALL)|PRINT(AVERAGE)|PRINT(ALL,AVERAGE)),]
[EXPECT(expectation-set-name),]
[OMIT(nn),]
[QUEUES(nn),]
[DDNAME(ddname),] default MGRXDD
[FROM(date,time),]
[TO(date,time),]
[NOOTHERS,]
[INCL(TRANCODE(list))|EXCL(TRANCODE(list))])
IMSPALOG EXECUTE
/*
//IPIAVGQ DD DSN=averages.input.dataset,DISP=SHR
//IPIAVG0 DD DSN=averages.output.dataset,DISP=(,CATLG),
//UNIT=SYSDA,SPACE=(TRK,(2,2),RLSE),
//DCL=(DSORG=PS,RECFM=VB,LRECL=4092,BSIZE=4096)
//IPIEXPQ DD DSN=expect.sets.dataset,DISP=SHR
*/
```

Any combination of the following reports may be requested:
- **TCREPORT**
  - Transaction Exception/Average.
- **PGMABEND**
  - Program Abends in Error Condition Log.
- **BACKOUTFAIL**
  - Backout Failures in Error Conditions Log.
- **SECVIO**
  - Security Violations in Error Conditions Log.
- **IOERROR**
  - I/O Errors in Error Condition Log.
SNAPTRC
Snap Traces in Error Condition Log.

Other report options are:
INCL(PRINT(ALL))
- Report all transactions, not just exceptions.
INCL(PRINT(AVERAGE))
- Report exceptions only and print the input Averages data set.
INCL(PRINT(ALL,AVERAGE))
- Report all transactions and print the input Averages data set.

EXPECT
Expectation Set (member name in the Expectation Sets data set).

OMIT
Omit messages after nnn minutes on the report processing queue.

QUEUES
The number of queues used in processing the report.

DDNAME
The ddname for the recap report output. The default is TRANHIST.

NOOTHERS
Omit *OTHERS* category from report.

NOOTHERS is used in conjunction with Trancode Include/Exclude Selection Criteria. By default, transaction codes and programs that are excluded by filtering are reported in a group called *OTHERS*, and included in the report subtotals and totals. When NOOTHERS is specified, transaction codes that are excluded by filtering are not reported, and not included in the report subtotals and totals.

INCL|EXCL
Selection criteria to filter (include or exclude) the report on Transaction Code.

An Expectation Set may optionally be specified so the report can identify transactions performing outside “expectations”. If an Expectation Set is not specified, exceptions are not reported. IPIEXPQ is the ddname of the Expectation Sets data set.

Two averages data sets may optionally be specified:
- IPIAVGO Input Averages data set.
- IPIAVGO Output Averages data set.

An Averages Data Set may be a generation data group (GDG).

Example
```
IMSPALOG  START(2014/01/06,),STOP(2014/01/07,)
IMSPALOG  MGREX(TCREPORT,
                 PGMABEND,SECVIO,IOERROR,SNAPTRC,BACKOUTFAIL,
                 INCL(PRINT(ALL)),
                 EXPECT(EXPMGRX1),
                 OMIT(3),QUEUES(250))
IMSPALOG  EXECUTE
/*
//IPIAVGQ DD DSN=IMSPA.V440.GDGAVG(0),DISP=SHR
//IPIAVGO DD DSN=IMSPA.V440.GDGAVG(+1),DISP=(,CATLG),
//         UNIT=SYSDA,SPACE=(TRK,(2,2),RLSE),
//         DCB=(DSORG=PS,RECFM=VB,LRECL=4092,BLKSIZ=4096)
//IPIEXPQ DD DSN=IMSPA.V440.EXPECTDS,DISP=SHR
Related reference:
```
The Management Exception report is designed to give managers a concise survey of selected, critical operands from other IMS PA reports. The report shows, by exception, which operands are outside specified boundaries.

**TRANRESU: Transaction Resource Usage report**

The TRANRESU operand of the IMSPALOG batch command requests the Transaction Resource Usage report.

This report provides a comprehensive overview of transaction resource usage, including:

- Scheduling statistics, such as WFI
- CPU usage
- DL/I call statistics
- Enqueue statistics
- DBCTL DB and I/O usage

**Format**

```
IMSPALOG TRANRESU(
    [LIST,]
    [SUMMARY,]
    [CALLSUM,]
    [DB,][DC,][DLI,][ENQ,]
    [LISTDDN(ddname),] default TRANRESU
    [SUMMDDN(ddname),] default TRANRESU
    [CALLDDN(ddname),] default TRANRESU
    [FROM(date,time),]
    [TO(date,time),]
    [INCL(REGION(list))|EXCL(REGION(list))],
    [INCL(REGJBN(list))|EXCL(REGJBM(list))],
    [INCL(TRANCODE(list))|EXCL(TRANCODE(list))],
    [INCL(PROGRAM(list))|EXCL(PROGRAM(list))],
    [INCL(IMSID(list))|EXCL(IMSID(list))] )
```

Any combination of the following reports can be requested.

**LIST** Long list

**SUMMARY** Long summary

**CALLSUM** Short (DLI Call) summary

Other report options are:

**DB** Include DB calls. This option is only applicable to LIST and SUMMARY reports.

**DC** Include DC calls. This option is only applicable to LIST and SUMMARY reports.

**DLI** Include other DLI calls. This option is only applicable to LIST and SUMMARY reports.

**ENQ** Include ENQ/DEQ counts. This option is only applicable to LIST and SUMMARY reports.

**LISTDDNN** DDname for the output of the LIST report

**SUMMDDN** DDname for the output of the SUMMARY report
CALLDDN
  DDname for the output of the CALLSUM report

INCL | EXCL
  Selection criteria to filter the report on Region ID, Region Jobname,
  Transaction Code, Program (PSB), or IMS subsystem ID

Example

All reports, all calls and counts from yesterday’s data:

```
IMSPALOG START(-1,),STOP(0,),
IMSPALOG TRANRESU(  
  LIST,  
  SUMMARY,  
  CALLSUM,  
  DB,  
  DC,  
  DLI,  
  ENQ,  
  LISTDDN(TRANRESU),  
  SUMMDDN(TRANRESU),  
  CALLDDN(TRANRESU))
IMSPALOG EXECUTE
```

Related reference:

"Transaction Resource Usage report" on page 331
This report provides a comprehensive overview of transaction resource usage.

**AVAIL: Resource Availability report**
The AVAIL operand of the IMSPALOG batch command requests the Resource Availability report.

**Format**

```
IMSPALOG AVAIL([REGION,]  
  [TRANCODE,]  
  [PROGRAM,]  
  [DATABASE,]  
  [LINE,]  
  [DDNAME(ddname),] default AVALDD  
  [FROM(date,time),]  
  [TO(date,time),]  
  [INCL(REGION(list))|EXCL(REGION(list))],  
  [INCL(REGJBN(list))|EXCL(REGJBN(list))],  
  [INCL(TRANCODE(list))|EXCL(TRANCODE(list))],  
  [INCL(PROGRAM(list))|EXCL(PROGRAM(list))],  
  [INCL(DATABASE(list))|EXCL(DATABASE(list))],  
  [INCL(LINE(list))|EXCL(LINE(list))],  
  [INCL(VTAMNODE(list))|EXCL(VTAMNODE(list))],  
  [INCL(IMSID(list))|EXCL(IMSID(list))])
```

Any combination of the following reports can be requested. If all five reports are required, either specify the five report operands, or ALL.

**REGION**
  By Region

**TRANCODE**
  By Transaction Code

**PROGRAM**
  By Program (PSB)
DATABASE
  By Database
LINE  By Line or VTAM Node

Other report options are:
DDNAME
  DDname for the recap report output. The default is AVALDD.
INCL/EXCL
  Selection criteria to filter the report on Region ID, Region Jobname,
  Transaction Code, Program (PSB), Database, Line, VTAM Node, or IMS
  subsystem ID

Example
  IMSPALOG START(2014/06/24,),STOP(2014/06/25,)
  IMSPALOG AVAIL(
    REGION,TRANCODE,PROGRAM,DATABASE,LINE,
    INCL(REGJBN(A+)),
    INCL(TRANCODE(B+)),
    INCL(PROGRAM(C+)),
    INCL(DATABASE(D+)),
    INCL(LINE(5)),
    INCL(VTAMNODE(V+)),
    INCL(IMSID(IMSA)))
  IMSPALOG EXECUTE

Related reference:
“Resource Availability report” on page 332
The Resource Availability report indicates the relative amount of time a specific
resource is active, idle, or unavailable.

CPUR: CPU Usage report and extract
The CPUR operand of the IMSPALOG command requests the CPU Usage report
and optionally an extract file.

Up to five reports can be requested, specifying any combination of the following to
produce the reports sequenced accordingly:
  • Region
  • Program (PSB)
  • Transaction Code

The format of the operand is as follows:
If the Distributions are not specified, default Distributions will apply at run time.

report-order represents up to 5 combinations of the following ordering operands, with default REGN-PROG-TRAN (order by Region, then Program, then Transaction Code). A “combination” may be one, two, or three of the ordering operands.

REGN By Region
PROG By Program (PSB) name
TRAN By Transaction Code

Other report options are:
DDNAME
DDname for the recap report output. The default is CPURDD.

NOOTHERS
Omit “OTHERS” category from report.

NOOTHERS is used in conjunction with Trancode and Program Include/Exclude Selection Criteria. By default, transaction codes and programs that are excluded by filtering are reported in a group called *OTHERS*, and included in the report subtotals and totals. When NOOTHERS is specified, transaction codes and programs that are excluded by filtering are not reported, and not included in the report subtotals and totals.

INCL | EXCL
Selection criteria to filter the report on Region ID or Region Jobname, Transaction Code, Program (PSB), or IMS subsystem ID

To extract CPU Usage details to an output file, specify an extract data set with dname CPURXTRO. You can specify global options XTRHEADING to include column headings in the extract file and XTRCOMMA to use a comma as the field delimiter. See “Log Global Options” on page 410 for details.

To use a DISTRIBUTION, specify:
LIMITS
Range limits for the vertical axis of the graph.
TITLE Title for vertical axis of the graph.
MULTIPLY
Value by which to multiply each limit value for the graph.
MASK Edit mask for printing the limit values along the vertical axis of the graph.

See "DISTRIBUTION command" on page 406 for details.

Example

Four reports with filtering, ordered by:
- Program
- Transaction Code
- Transaction Code within Region
- Program within Transaction Code within Region

```sql
IMSPALOG CPUR(P,TC,R-TC,R-TC-P,
INCL(REGJBN(D*)),
INCL(TRANCODE((A,K),M*)),
EXCL(PROGRAM(K*)),
INCL(IMSID(IMSA,IMS8)))
IMSPALOG EXECUTE
$IPDIST1 DISTRIBUTION LIMITS(25,50,75,100,150,200,300,500,1000),
TITLE('Sc Mil'),MULTIPLY(1),
EDITMASK('ZZZ,ZZZ.ZZ9')
$IPDIST2 DISTRIBUTION LIMITS(300,600,900,1200,1500,2000,3000,5000,10000),
TITLE('Sc Mil'),MULTIPLY(1),
EDITMASK('ZZZ,ZZZ.ZZ9')
```

Related reference:
"CPU Usage report and extract" on page 334
The CPU Usage report gives statistics for CPU time and elapsed time during a specified period for regions, transactions and programs.

**IRUR: Internal Resource Usage report**
The IRUR operand of the IMSPALOG batch command requests the Internal Resource Usage reports.

**Format**

```
IMSPALOG CPUR([INCL(POOLS(report-list))]|EXCL(POOLS(report-list))),
[DDNAME(ddname),] default IRURDD
[INTERVAL(nn),] default 0 minutes
[FASTPATH,] default no FP
[PRINTAT([I|S]),] default S
[FROM(date,time),
[TO(date,time),
[INCL(IMSID(list))|EXCL(IMSID(list))]}
```

**INCL/EXCL(POOLS(report-list))**

- `report-list` may be any combination of the following reports:
  - AS Application Scheduling Statistics
  - CB Storage Statistics
  - C6 64-bit Storage Statistics
  - DB OSAM Buffer Pool Statistics
  - DLCALLS DL/I Call Statistics
  - DS Dispatcher/Dynamic SAP Statistics
  - EW EWLM Statistics
If INCL/EXCL(POOLS) is omitted, all reports are produced.

DDNAME
DDname for the recap report output. The default is IRURDD.

INTERVAL
Do not report checkpoints that are less than nnnn minutes apart.

FASTPATH
Include Fast Path transaction count in the Miscellaneous Statistics report.

PRINTAT(value)
Specify one of the following values:
S or STOP
Print a report at the end of each run. This is the default.
I or INTERVAL
Print a report after each checkpoint.

Tip: Use PRINTAT(INTERVAL) only when INTERVAL(0) has been specified and the "Log Global Options" on page 410 are set to PRINTAT(STOP). Results may be unpredictable if multiple break conditions are specified.

INCL | EXCL
Selection criteria to filter (include or exclude) the report on IMS subsystem ID.

Example
IMSPALOG  START(,10:00),STOP(,14:30)
IMSPALOG  IRUR(  
INCL(POOLS(QP,FP,DB,VS,SM,AS,PI,LT,DLICALLS,  
MISC,CB,LL,FI,DS,RU,RS,RF)),
  INTERVAL(5),
PRINTAT(INTERVAL),
  FROM(,12:00),TO(,14:00),
  INCL(IMSID(IMSA,IMSB))
IMSPALOG  EXECUTE

Related reference:
"Internal Resource Usage reports" on page 336
The Internal Resource Usage reports provide statistics on the use of various IMS pools and resources.

MSCLSTAT: MSC Link Statistics report
The MSCLSTAT operand of the IMSPALOG batch command requests the MSC Link Statistics report.
Format

IMSPALOG  MSCLSTAT(
  [DDNAME(ddname),]
  [PRINTAT(INTERVAL),]
  [GENERAL,]
  [SENDRECV,]
  [FROM(date,time),]
  [TO(date,time),]
  [INCL(IMSID(list))][EXCL(IMSID(list))])

Report options are:

DDNAME
  DDname for the report output. The default is MSCLSTAT

PRINTAT(value)
  Specify one of the following values:
    S or STOP
      Print a report at the end of each run. This is the default.
    I or INTERVAL
      Print a report after each checkpoint.

  Tip: Use PRINTAT(INTERVAL) only when the "Log Global Options"
on page 410 are set to PRINTAT(STOP). Results may be
unpredictable if multiple break conditions are specified.

GENERAL
  The General Statistics report provides summary information on the overall
  usage of each MSC link.

SENDRECV
  The Send/Receive Statistics report provides summary information for each
  MSC link with a more detailed breakdown of Send and Receive traffic.

INCL | EXCL
  Selection criteria to filter (include or exclude) the report on IMS subsystem
  ID.

Example

IMSPALOG  START(2014/06/01,),STOP(2014/06/02,)
IMSPALOG  MSCLSTAT(
  EXCL(IMSID(IM9)))
IMSPALOG  EXECUTE

Related reference:

“MSC Link Statistics report” on page 339
The MSC Link Statistics report contains information on the use of MSC links from
the X‘4513’ log record.

MSGQ: Message Queue Utilization report
The MSGQ operand of the IMSPALOG batch command requests the Message
Queue Utilization report.
Format

IMSPALOG MSGQ(
  [INTERVAL(nn)], default 10 bytes
  [ENQUEUE,] default all
  [RECORD,] default complete records
  [DDNAME(ddname),] default MQURDD
  [FROM(date,time),]
  [TO(date,time),]
  [INCL(IMSID(list))|EXCL(IMSID(list))])

INTERVAL
  Record size interval, in bytes, to be reported on each line of the report.

ENQUEUE
  Report only messages that are enqueued.

RECORD
  Report individual records, not complete messages. This option may be
  used for shared queues where OBJAVGSZ is determined based on
  individual records, not complete messages which may span multiple
  records.

Other report options are:

DDNAME
  DDname for the report output. The default is MQURDD.

INCL | EXCL
  Selection criteria to filter (include or exclude) the report on IMS subsystem
  ID.

Example

IMSPALOG   START(2014/06/01,),STOP(2014/06/02,)
IMSPALOG   MSGQ(INTERVAL(25),
                 ENQUEUE,
                 EXCL(IMSID(IMS9)))
IMSPALOG   EXECUTE

Related reference:
“Message Queue Utilization report” on page 341
The Message Queue Utilization report contains information on the use of message
queues.

DBUPDATE: Database Update Activity report and extract
The DBUPDATE operand of the IMSPALOG batch command requests the Database
Update Activity report.
Format

```
IMSPALOG DBUPDATE(
    [PROGRAM,] default none
    [DDNAME(ddname),] default DBUADD
    [FORMAT1,|FORMAT2,] default FORMAT1
    [FROM(date,time),]
    [TO(date,time),]
    [INCL(DATABASE(list))|EXCL(DATABASE(list)),]
    [INCL(IMSID(list))|EXCL(IMSID(list))])
IMSPALOG MAXBLOCK(nn.nn) default 10000, max 32000

IMSPALOG DBUPDATE(
    [PROGRAM,] default none
    [DDNAME(ddname),] default DBUADD
    [FORMAT1,|FORMAT2,] default FORMAT1
    [FROM(date,time),]
    [TO(date,time),]
    [INCL(DATABASE(list))|EXCL(DATABASE(list)),]
    [INCL(IMSID(list))|EXCL(IMSID(list))])
IMSPALOG MAXBLOCK(nn.nn) default 10000, max 32000
```

The report options are:

**PROGRAM**
Include the program name in the report, and order the report by database and program name.

If PROGRAM is *not* specified, the report is ordered by database name only, and the program name is not reported.

**DDNAME**
DDname for the recap report output. The default is DBUADD.

**FORMAT1 or FORMAT2**
Report format. Reports generated using the FORMAT2 option provide a faster, more concise breakdown of database update activity. FORMAT2 is the recommended report option.

**INCL or EXCL**
Selection criteria to filter (include or exclude) the report on Database or IMS subsystem ID.

**MAXBLOCK**
The limit on the number of uncommitted block updates to track for this report.

To extract Database Update Activity details to an output file, specify an extract data set with ddname DBUAXTRO. You can specify global options XTRHEADING to include column headings in the extract file and XTRCOMMA to use a comma as the field delimiter.

**Example**

Taking defaults:
```
IMSPALOG DBUPDATE
IMSPALOG EXECUTE
```

Creating a FORMAT2 report:
```
IMSPALOG DBUPDATE(PROGRAM,FORMAT2)
IMSPALOG EXECUTE
```

With filtering and uncommitted block update limit:
```
IMSPALOG DBUPDATE(
    [PROGRAM,
    FORMAT2,
```
EXCL(DATABASE(D*)),
INCL(IMSID(A*,(M,Z)))
IMSPALOG MAXBLOCK(12500)
IMSPALOG EXECUTE

Related reference: "Database Update Activity report and extract" on page 342

The Database Update Activity report can help you determine the cost of database calls. It indicates the number of purge writes at sync point time to a database and provides a count of actual updates made to each database in the time period being reported. If your database is a HALDB, you can also report on specific HALDB partitions because the name of the partition is found on the database name field of the various records used in this report.

**HISTGRAM: Region Histogram (Log) report**

The HISTGRAM operand of the IMSPALOG batch command requests the Region Histogram report.

**Format**

```
IMSPALOG HISTGRAM([REGION (pst1,pst2,...)]
REGJBN(name1,name2,...),]
[DDNAME(ddname),] default HISTDD
[FROM(date,time),]  TO(date,time),]
[INCL(IMSID(list))|EXCL(IMSID(list))])
```

The report options are:
- **REGION**
  List up to 13 Region (PST) IDs.
- **REGJBN**
  List up to 13 Region Jobnames.
- **DDNAME**
  DDname for the recap report output. The default is HISTDD.
- **INCL**, **EXCL**
  Selection criteria to filter (include or exclude) the report on IMS subsystem ID.

**Examples**

Taking defaults (the first 13 active regions in the report period):

```
IMSPALOG HIST
IMSPALOG EXECUTE
```

Report for regions 15 through 20, and 25:

```
IMSPALOG HISTGRAM(REGION(15-20,25),
FROM(2014/06/24,23:30),TO(2014/06/25,00:30))
IMSPALOG EXECUTE
```

**Related reference:** "Region Histogram report" on page 344

The Region Histogram report is a graphic display of region activity. It shows the times a region is active or idle and the patterns of transaction scheduling in each region.

**SB: OSAM Sequential Buffering report**

The SB operand of the IMSPALOG batch command requests the OSAM Sequential Buffering report.
Format

**IMSPALOG**

SB([ACTLOG,] [PROGSUM,]
  [DDNAME(ddname),] default SBDD
  [FROM(date,time),]
  [TO(date,time),]
  [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
  [INCL(DATABASE(list))|EXCL(DATABASE(list)),]
  [INCL(IMSID(list))|EXCL(IMSID(list))])

One or both of the following reports may be requested:

**ACTLOG**
- Activity Log:
  - Sequential Buffering Summary for Region
  - SB Detail Statistics

**PROGSUM**
- OSAM SB Program (PSB) Summary

Other report options are:

**DDNAME**
- DDname for the recap report output. The default is SBDD.

**INCL | EXCL**
- Selection criteria to filter the report on Program, Database, or IMS subsystem ID.

Examples

Taking defaults:

```
IMSPALOG SB
IMSPALOG EXECUTE
```

Activity Log for two IMS Subsystems, excluding the SALES database:

```
IMSPALOG SB(ACTLOG,
  FROM(2014/06/24,),TO(2014/06/25,),
  EXCL(DATABASE(SALES)),
  INCL(IMSID(IMSA,IMSB))
IMSPALOG EXECUTE
```

Related reference:

"OSAM Sequential Buffering report" on page 345

The OSAM Sequential Buffering report provides statistics on the usage of OSAM sequential buffers, by buffer pool and by PSB.

**DEADLOCK: Deadlock report**

The DEADLOCK operand of the IMSPALOG batch command requests the Deadlock report.

This report provides a comprehensive analysis of deadlock events, similar to DFSERA30. In addition the report summarizes deadlock activity to show at a glance:
- Associated winning transaction/database combinations
- Frequency of each losing transaction/database combination
The information provided is a useful aid for tuning applications and adjusting scheduling parameters to avoid this expensive overhead. Deadlocks involving DB2 are also reported.

**Format**

```
  IMSPALOG DEADLOCK(
    [LIST,]
    [SUMMARY,]
    [LISTDDN(ddname),] default DEADLOCK
    [SUMMDDN(ddname),] default DEADLOCK
    [FROM(date,time),]
    [TO(date,time),])
```

One or both of the following reports can be requested.

- **LIST** List report
- **SUMMARY** Summary report

Other report options are:

- **LISTDDN** DDname for the list report output. The default is DEADLOCK.
- **SUMMDDN** DDname for the summary report output. The default is DEADLOCK.

If both LIST and SUMMARY reports are selected, and their ddnames are the same, then only one report will be produced, containing both the List and Summary reports.

**Examples**

Taking defaults:

```
  IMSPALOG DEADLOCK
  IMSPALOG EXECUTE
```

Deadlock List report for a specified period:

```
  IMSPALOG DEADLOCK((LIST),
    LISTDDN(DEADLOCK),
    FROM(2014/06/24,),
    TO(2014/06/25,))
  IMSPALOG EXECUTE
```

**Related reference:**

“Deadlock report” on page 346

The Deadlock report provides a comprehensive analysis of deadlock events.

**CHECKPOINT: System Checkpoint report**

The CHECKPOINT operand of the IMSPALOG batch command requests the System Checkpoint report.

This report provides a detailed analysis of IMS internal checkpoint activity with details of your IMS resources, including:

- Databases, with system definition information
- Transactions, with system definition information and basic usage indicators
- Terminals, with system definition information and basic usage indicators

The report also provides a summary of checkpoint activity, including:
• Break-down of checkpoint records by type
• Frequency and overhead of internal checkpoint processing

**Format**

```plaintext
IMSPALOG CHECKPOINT( [DATABASE,] [TRANCODE,] [LTERM,] [PTERM,] [SUMMARY,] [EVENTS,] [DDNAME(ddname),] default CHECKPT [FROM(date,time),] [TO(date,time),] [INCL(DATABASE(list))|EXCL(DATABASE(list)),] [INCL(TRancode(list))|EXCL(TRancode(list)),] [INCL(LTERM(list))|EXCL(LTERM(list)),] [INCL(VTAMNODE(list))|EXCL(VTAMNODE(list)),] [INCL(LINETERM(list))|EXCL(LINETERM(list)),] [INCL(IMSId(list))|EXCL(IMSId(list))])

SYSCKPT DISTRIBUTION [LIMITS(value1,...,value9),] Checkpoint Duration [TITLE('text'),] [MULTIPLY(nnnn),] [EDITMASK('char.mask')|EDITMASK(hex.mask)]
```

Any combination of the following reports can be requested.

**DATABASE**
Database Definitions.

**TRANCODE**
Transaction Definitions.

**LTERM**
Terminals, sorted by LTERM.

**PTERM**
Terminals, sorted by PTERM.

**SUMMARY**
Record Summary. This is always produced.

**EVENTS**
Record Events. Print details of every checkpoint.

Note: VTAMNODE objects are either PTERM or NODE.

Other report options are:

**DDNAME**
DDname for the report output. The default is CHECKPT.

**INCL** | **EXCL**
Selection criteria to filter the report on Database, Transaction Code, LTERM, VTAM Node, Line/Terminal, or IMS subsystem ID.

**Examples**

Taking defaults:

```
IMSPALOG CHECKPOINT
IMSPALOG EXECUTE
```

Database and Transaction Definitions filtered by database and transaction code:
IMSPALOG CHECKPOINT(DATABASE,TRANCODE,
INCL(DATABASE(IPI*)),
EXCL(TRANCODE(X*)))
IMSPALOG EXECUTE

Related reference:
“System Checkpoint report” on page 347

The System Checkpoint report provides a detailed analysis of IMS internal checkpoint activity.

BMPCHKP: BMP Checkpoint report

The BMPCHKP operand of the IMSPALOG batch command requests the BMP Checkpoint report.

This report provides an analysis of BMP checkpoint frequency that can affect online performance and system restartability. The detailed List report provides a breakdown of individual BMP checkpoint activity. The Summary report provides an overview of each BMP program.

Format

```
IMSPALOG BMPCHKP(
  [LIST,]
  [SUMMARY,]
  [DDNAME(ddname),] default BMPCHKP
  [FROM(date,time),]
  [TO(date,time),]
  [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
  [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
  [INCL(IMSID(list))|EXCL(IMSID(list))])
```

One or both of the following reports can be requested.
LIST Detailed list report
SUMMARY Summary report (default)

Other report options are:
DDNAME
DDName for the report output. The default is BMPCHKP.
INCL|EXCL
Selection criteria to filter (include or exclude) the report on Transaction Code, Program, or IMS subsystem ID

Examples

Taking defaults:
```
IMSPALOG BMPCHKP
IMSPALOG EXECUTE
```

Summary report filtered by transaction code:
```
IMSPALOG BMPCHKP(SUMMARY,
  EXCL(TRANCODE(CSB*)))
IMSPALOG EXECUTE
```
that can affect online performance and system restartability.

**GAP: Gap Analysis report**
The GAP operand of the IMSPALOG batch command requests the Gap Analysis report.

This report looks for periods of time where log records are not being cut, potentially highlighting an external system event that may have caused IMS to slow down.

**Format**

```
IMSPALOG GAP([BYIMID|SYSPLEX|BOTH,] [THRESHOLD(s.thmiju),] default 5 seconds [IGNORE(6D),] [DDNAME(ddname),] default GAPS [FROM(date,time),] [TO(date,time),] [INCL(IMSID(list))|EXCL(IMSID(list))])
```

Report options are:

**BYIMID|SYSPLEX|BOTH**
- Select BYIMID to produce only the reports for each subsystem.
- Select SYSPLEX to produce only the total system-wide report.
- Select BOTH to produce one report for each subsystem followed by a total system wide report. This is the default.

**Note:** For log files with a single IMS subsystem, all report options are equivalent.

**THRESHOLD**
Threshold for the report output. The THRESHOLD defines the maximum elapsed time tolerated between records. Every gap longer than the threshold is reported.

The value of THRESHOLD must be within the range 0.000001 to 9.999999. The default is 5.000000 seconds.

**IGNORE(6D)**
Exclude IMS x"6D" records from the Gap Analysis report. If using FDBR there is an x"6D" record written every 1 second which may distort the report. Default: all records are included if option not specified.

**DDNAME**
DDname for the report output. The default is GAPS.

**FROM-TO**
The reporting interval, either a date-time range or a time slot. The time slot can span midnight. The date can be either a calendar date or a relative date. If both dates are specified, they must be in the same format.

**INCL|EXCL**
Selection criteria to filter (include or exclude) the report on IMS subsystem ID.

**Example**

Taking defaults:

```
IMSPALOG GAP
IMSPALOG EXECUTE
```
Related reference:

“Gap Analysis report” on page 350

The Log Gap Analysis report contains information on periods of time where log records are not being cut, potentially highlighting an external system event that may have caused IMS to slow down.

COLDSTART: Cold Start Analysis report

The COLDSTART operand of the IMSPALOG batch command requests the Cold Start Analysis report.

This report provides a point-in-time snapshot of in-train activity, answering the following questions in the event of a cold start:
- What input messages (transactions) are lost?
- What are the incomplete units-of-work, and what database changes did they make?

Format

```
IMSPALOG COLDSTART(
    [DDNAME(ddname),] default COLDSTAR
    [FROM(date,time),]
    [TO(date,time),]
    [UOW,]
    [MSG,]
    [AT(date,time),]
    [DETAIL,]
    [SUMMARY])
```

Report options are:

- **DDNAME**: DDname for the report output. The default is COLDSTAR.
- **UOW**: DETAIL report only. Include all incomplete units of work with database update or ESAF activity.
- **MSG**: DETAIL report only. Include all messages enqueued but not dequeued.
- **AT(date,time)**: Default: If not specified, the report is produced at the end of the input log. Produce the Cold Start Analysis report at the specified date and time.
- **DETAIL**: Produce a report of all incomplete units of work (UOWs) with database update or ESAF activity, and messages enqueued but not dequeued.
- **SUMMARY**: Produce a report with counts by transaction code, database and external subsystem only.

Example

Taking defaults:

```
IMSPALOG COLDSTART
IMSPALOG EXECUTE
```

Related reference:

“Cold Start Analysis report” on page 351

The Cold Start Analysis report provides a point-in-time snapshot of in-train activity, answering the following questions in the event of a cold start: “What input messages (transactions) are lost?” and “What are the incomplete units-of-work, and what database changes did they make?”
Fast Path Transit reports

This section contains the operands for Fast Path Transit log reports.

Fast Path (EMH) Transit Options

These operands of the IMSPALOG command define general control information for the Fast Path Transit reports.

The Fast Path Transit reports are:
- Fast Path Transit Analysis
- Fast Path Transit Log
- Fast Path Transit Extract by Interval
- Fast Path Transaction Exception

Format

The format of the operands is as follows:

```
IMSPALOG [FPPEAK(ppp)], default 90 %
[FPINTERVAL(nnmn)], default 15 minutes
[FPALIGN|FPNOALIGN,]
[FPQUALIFY(INCL(TC(list))|EXCL(TC(list)))]
```

- FPPEAK: Peak percentile
- FPINTERVAL: Time Interval in minutes
- FPALIGN: Align Time Interval to the even hour
- FPNOALIGN: Do not align Time Interval to the even hour
- FPQUALIFY: Transaction Codes to include or exclude

Example

Fast Path Transit Analysis and Log with peak transaction time percentage 95%, time interval 15 minutes, aligned to the hour.

```
IMSPALOG START(2014/01/13,07:15),STOP(2014/01/13,09:30),
INPUTDD(LOGIN),OUTPUTDD(RPTOUT),
PAGESIZE(60),PRINTAT(STOP)
IMSPALOG FPPEAK(95),
FPINTERVAL(15),FPALIGN,
FPQUALIFY(INCL(TC((DSFJ,DSFM),F*,K*,(MDB,MDK))))
IMSPALOG FPANALYSIS(TRANCODE,TIME)
```

Related reference:

“Fast Path Transit Options” on page 353

The IMS PA Fast Path Transit Options define control information that applies to the Fast Path Transit Reports within the Report Set.

FPANALYSIS: Fast Path Transit Analysis report

The FPANALYSIS operand of the IMSPALOG batch command requests the Fast Path Transit Analysis report.
Format

```
IMSPALOG  FPANALYSIS([TRANCODE,],
                      [ROUTCODE,]
                      [USERID,]
                      [TIME,]
                      [ALL,]
                      [DDNAME(ddname),]  default FPTTRPT
                      [FROM(date,time),]
                      [TO(date,time),]
                      [INCL(TRANCODE(list))]|EXCL(TRANCODE(list)),]
                      [INCL(ROUTCODE(list))]|EXCL(ROUTCODE(list)),]
                      [INCL(USERID(list))]|EXCL(USERID(list))])
```

Any combination of the following reports can be requested. If all four reports are required, either specify the four report operands, or ALL.

**TRANCODE**
By Transaction Code

**ROUTCODE**
By Routing Code

**USERID**
By User ID

**TIME**
By Time of Input

**ALL**
Produce all reports.

Other report options are:

**DDNAME**
DDname for the recap report output. The default is FPTTRPT.

**INCL|EXCL**
Selection criteria to filter (include or exclude) the report on Transaction Code, Routing Code, or IMS subsystem ID.

**Example**

Fast Path Transit Analysis by Transaction Code and by Time with report interval specified within global report interval, peak 95% (to check that 95% of transactions complete within a certain time), time interval 5 minutes, aligned to the hour, and filtering on Transaction Code.

```
IMSPALOG  START(2014/01/03,12:15),STOP(2014/01/04,12:15)
IMSPALOG  FPPEAK(95),FPINTERVAL(5),FPALIGN
IMSPALOG  FPANALYSIS(TRANCODE,
                      TIME,
                      FROM(2014/01/03,12:30),TO(2014/01/03,13:00),
                      INCL(TRANCODE((A,K),M*,P*))
IMSPALOG  EXECUTE
```

**Related reference:**
“Fast Path Transit Analysis report” on page 355

The Fast Path Transit Analysis report can show response time performance by transaction code, routing code, user id, and time of sync point.

**FPLOG: Fast Path Transit Log report**

The FPLOG operand of the IMSPALOG batch command requests the Fast Path Transit Log report.
Format

IMSPALOG FPLOG(
  [DDNAME(ddname),] default FPTTLOG
  [FROM(date,time),]
  [TO(date,time),]
  [INCL(TRANCODE(list))|EXCL(TRANCODE(list))])

Other report options are:
DDNAME
   DDname for the recap report output. The default is FPTTLOG.
INCL|EXCL
   Selection criteria to filter the report on Transaction Code.

Examples

Taking defaults:
IMSPALOG FPLOG
IMSPALOG EXECUTE

With report period and transaction code filtering:
IMSPALOG FPLOG(
  FROM(2014/01/14,07:15:00:00),
  TO(2014/01/14,08:00:00:00),
  INCL(TRANCODE((M,ZZZZZZZZ))),
  DDNAME(FPTTLOG))
IMSPALOG EXECUTE

Related reference:
“Fast Path Transit Log report” on page 356

The Fast Path Transit Log is a chronological listing of all IFP transactions processed during the reporting interval.

FPEXTRACT: Fast Path Transit Extract by Interval
The FPEXTRACT operand of the IMSPALOG batch command requests the Fast Path Transit Extract by Interval.

The extract processing merges previously extracted data in the input file, if it is specified, with data extracted in this run, and writes it to the output file. The output file contains records of data accumulated by time interval, for one or both of the following:
• Individual transaction codes within each time interval
• All transaction codes in each time interval

You need to extract the data at the level that you intend to export it.

The format of the extract data set is the same for both Message Queue and Fast Path transaction data, and if desired, both may reside in the same data set.
**Format**

```plaintext
IMSPALOG FPEXTRACT([TRANCODES,] [TCTOTALS,] [DDNAME(ddname),] default FPTTERPT [FROM(date,time),] [TO(date,time),] [INCL(TRANCODE(list))] EXCL(TRANCODE(list)))
IMSPALOG [FPAALIGN] [FPNOALIGN,] [FPINTERVAL(nnnn)]
IMSPALOG EXECUTE

/*
//IPIFPXTI DD DSN=input.extract.file,DISP=SHR
//IPIFPXTO DD DSN=output.extract.file,DISP=(,CATLG),
//               UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE),
//               DCB=(DSORG=PS,RECVD=VB,LRECL=4092,BLKSIZE=4096)
*/
```

Any combination of the following extracts may be requested:

**TRANCODES**
Accumulate data for each Transaction Code

**TCTOTALS**
Accumulate data for Transaction Code totals

Other options are:

**DDNAME**
DDname for the recap report output. The default is FPTTERPT.

**INCL | EXCL**
Selection criteria to filter the report on Transaction Code.

**FPALIGN**
Align Time Interval to the even hour.

**FPNOALIGN**
Do not align Time Interval to the even hour.

**FPINTERVAL**
Time Interval in minutes.

The input extract file IPIFPXTI is optional. The extract data set may be a generation data group (GDG).

**Example**

```plaintext
IMSPALOG START(,07:00:00:00),STOP(,10:30:00:00)
IMSPALOG FPINTERVAL(10),FPAALIGN
IMSPALOG FPEXTRACT(TRANCODES, TCTOTALS, DDNAME(FPTTERPT), FROM(,07:30:00:00),TO(,09:30:00:00), INCL(TRANCODE(T*)))
IMSPALOG EXECUTE

/*
//IPIFPXTI DD DSN=IMSPA.EXTRACT.INFILE,DISP=SHR
//IPIFPXTO DD DSN=IMSPA.EXTRACT.OUTFILE,DISP=(,CATLG),
//          UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE),
//          DCB=(DSORG=PS,RECVD=VB,LRECL=4092,BLKSIZE=4096)
*/
```

**Related reference:** "Fast Path Transit Extract by Interval" on page 357

The Fast Path Transit Extract by Interval creates extracts by time interval of Fast Path transaction transit time data.
FPTRNEX: Fast Path Transaction Exception report and extract

The FPTRNEX operand of the IMSPLAN batch command requests the Fast Path Transaction Exception reports.

The report has four sections:
- Transaction Exception Detail Log, optionally with any combination of the following details:
  - DEDB Calls
  - Buffer Usage
  - VSO
  - Shared EMHQ
- Summary by Transaction
- Synchronization Failure Summary
- Recap, always produced at the end to summarize the report and extract processing

Format

```
IMSPALOG  FPTRNEX([DETAIL,]
[CALLS,]
[BUFFER,]
[VSO,]
[SEMHQ,]
[SUMMARY,]
[SYNCFAIL,]
[OTHERFP,]
[EXPECT(expectation-set-name),]
[DDNAME(ddname),] default FPTTXLOG
[FROM(date,time),]
[TO(date,time)])
IMSPALOG  EXECUTE
/*
//IPIFXUT1 DD DSN=total.traffic.dataset,DISP=(,CATLG),
// UNIT=SYSDA,SPACE=(CYL,(5,5),RLSE)
//IPIFXUT2 DD DSN=exception.traffic.dataset,DISP=(,CATLG),
// UNIT=SYSDA,SPACE=(CYL,(5,5),RLSE)
//IPIEXPQ DD DSN=expect.sets.dataset,DISP=SHR

Any combination of the following reports may be requested:
DETAIL
  Exception Detail Log
CALLS
  DEDB Calls
BUFFER
  Buffer Usage
VSO
  VSO
SEMHQ
  Shared EMHQ
SUMMARY
  Summary by Transaction Code
SYNCFAIL
  Sync Failure Summary

Other report options are:
OTHERFP
  Include non-IFP transactions in Exception reporting.
```
EXPECT
   Expectation Set (member name in the Expectation Sets data set).
DDNAME
   DDname for the recap report output. The default is SBDD.

An Expectation Set may be specified so the report and extracts can identify
transactions performing outside “expectations”. If omitted, all transactions are
considered exceptions. IPIEXPQ is the ddname of the Expectation Sets data set.

Two extract data sets may be specified, to create the equivalent of the DBFULTA0
extract data sets:
   • IPIFXUT1 Total Traffic data set contains detail records of all transactions
   • IPIFXUT2 Exception Traffic data set contains only exception transactions

The Extract data sets may be GDGs.

Other report options are:
INCL | EXCL
   Selection criteria to filter the report on transaction code or IMS subsystem
   ID.

Example
   IMSPALOG  START(2014/01/15,),STOP(2014/01/15,)
   IMSPALOG  FPTNEX(DETAIL,
               SUMMARY,
               SYNCFAIL,
               EXPECT(EXPEXCEPT))
   IMSPALOG  EXECUTE
   /*
   //IPIFXUT1 DD  DSN=IMSPA.V440.TOTAL.TRAFFIC,DISP=MOD
   //IPIFXUT2 DD  DSN=IMSPA.V440.EXCEPT.TRAFFIC,DISP=(,CATLG),
   //       UNIT=SYSDA,SPACE=(CYL,(5,5),RLSE)
   //IPIEXPQ DD  DSN=IMSPA.V440.EXPECTDS,DISP=SHR

Related reference:
   “Fast Path Transaction Exception report and extract” on page 360
   The Fast Path Transaction Exception reports provide detailed and summary
   information about IFP transactions, as well as message queue transactions that use
   Fast Path databases.

Fast Path Resource Usage reports
   This section contains the operands for Fast Path Resource Usage log reports.

FPIRUC: Fast Path Resource Usage and Contention report
   The FPIRUC operand of the IMSPALOG batch command requests the Fast Path
   Resource Usage and Contention report or the Fast Path Buffer Usage report or
   both.
One or both of the following reports can be requested:

RESUSAGE
FP Resource Usage and Contention.

BUFFER
FP Buffer Usage.

The content of each report can take one of three forms:

BYIMID
One report for each IMS subsystem.

SYSPLEX
The total system wide report.

not specified
One report for each IMS subsystem followed by a total system wide report. This is the default.

Other report options are:

RESDDN
DDname for the FP Resource Usage and Contention report output.

BUFDDN
DDname for the FP Buffer Usage report output.

PEAK
Peak percentile for the FP Buffer Usage report.

INCL|EXCL
Selection criteria to filter the report on Transaction Code or IMS subsystem ID.

Example

Request both the FP Resource Usage and Contention report and the FP Buffer Usage report with peak percentile 85% and selection criteria.

```
IMSPALOG FPIRUC([BYIMID|SYSPLEX,]
[RESUSAGE,]
[BUFFER,]
[RESDDN(ddname),] default FPRUCRPT
[BUFDDN(ddname),] default FPBUFRPT
[PEAK(nnn),] default 90%
[FROM(date, time),]
[TO(date, time),]
[INCLUDN(TEXTCODE(list))|EXCLUDN(TEXTCODE(list))],
[INCLUDID(TEXTID(list))|EXCLUDID(TEXTID(list))]
```
FPDBCALL: Fast Path Database Call Statistics report
The FPDBCALL operand of the IMSPALOG batch command requests the Fast Path Database Call Statistics report.

Format

<table>
<thead>
<tr>
<th>Command</th>
<th>Syntax</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMSPALOG</td>
<td>FPDBCALL([BYIMID</td>
</tr>
<tr>
<td></td>
<td>[DDNAME(ddname),] default FPDBCRPT</td>
</tr>
<tr>
<td></td>
<td>[FROM(date,time),]</td>
</tr>
<tr>
<td></td>
<td>[TO(date,time),]</td>
</tr>
<tr>
<td></td>
<td>[INCL(TRANCODE(list))</td>
</tr>
<tr>
<td></td>
<td>[INCL(IMSID(list))</td>
</tr>
<tr>
<td>IMSPALOG</td>
<td>EXECUTE</td>
</tr>
</tbody>
</table>

The content of each report can take one of three forms:
- **BYIMID**
  - One report for each IMS subsystem.
- **SYSPLEX**
  - The total system wide report.
- **not specified**
  - One report for each IMS subsystem followed by a total system wide report.
  - This is the default.

Other report options are:
- **DDNAME**
  - DDname for the recap report output. The default is FPDBCRPT.
- **INCL|EXCL**
  - Selection criteria to filter the report on Transaction Code or IMS subsystem ID.

Example

<table>
<thead>
<tr>
<th>Command</th>
<th>Syntax</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMSPALOG</td>
<td>FPDBCALL(FPDBCRPT),</td>
</tr>
<tr>
<td></td>
<td>DDNAME(FPDBCRPT),</td>
</tr>
<tr>
<td></td>
<td>INCL(TRANCODE((A,K),M*)),</td>
</tr>
<tr>
<td></td>
<td>INCL(IMSID(IMSA,IMSB))</td>
</tr>
<tr>
<td>IMSPALOG</td>
<td>EXECUTE</td>
</tr>
</tbody>
</table>

Related reference:

“Fast Path Database Call Statistics report” on page 364
The Fast Path Database Call Statistics report provides a breakdown of DL/I call function codes by transaction code. If your database is a HALDB, you can also report on specific HALDB partitions because the name of the partition is found on the database name field of the various records used in this report.

FPRGNO: IFP Region Occupancy report
The FPRGNO operand of the IMSPALOG batch command requests the IFP Region Occupancy report.
Format

**IMSPALOG**  FPRGNO(
  [DDNAME(ddname)],
  default FPRGORPT
  [FROM(date,time),
  [TO(date,time),
  [INCL(REGION(list))|EXCL(REGION(list)),
  [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),
  [INCL(IMSID(list))|EXCL(IMSID(list))]])
  IMSPALOG  EXECUTE

Other report options are:
DDNAME
  DDname for the recap report output. The default is FPRGORPT.
FROM-TO
  The reporting interval, either a date-time range or a time slot. The time slot
can span midnight. The date can be either a calendar date or a relative
date. If both dates are specified, they must be in the same format.
INCL|EXCL
  Selection criteria to filter the report on Region ID, Program, or IMS
  subsystem ID.

Example

**IMSPALOG**  START(,10:00),STOP(,14:30)
**IMSPALOG**  FPRGNO(
  FROM(12:00),TO(14:00),
  INCL(IMSID(IMSA,IMSB)))
**IMSPALOG**  EXECUTE

Related reference:
[“IFP Region Occupancy report” on page 365](#)
The IFP Region Occupancy Report provides approximate region occupancy rates
for IFP regions.

**FPEMHQ: EMH Message Statistics report**
The FPEMHQ operand of the IMSPALOG batch command requests the EMH
Message Statistics report.

Format

**IMSPALOG**  FPEMHQ(
  [DDNAME(ddname)],
  default FPMSGRPT
  [FROM(date,time),
  [TO(date,time),
  [INCL(TRANCODE(list))|EXCL(TRANCODE(list))])

Report options are:
DDNAME
  DDname for the recap report output. The default is FPMSGRPT.
INCL|EXCL
  Selection criteria to filter the report on Transaction Code.
Example

```plaintext
IMSPALOG START(2014/01/15,),STOP(2014/01/16,)
IMSPALOG FPEMHQ(
  DDNAME(FPMSGRPT),
  EXCL(TRANCODE(IMS9)))
IMSPALOG EXECUTE
```

Related reference:

“EMH Message Statistics report” on page 366

The EMH Message Statistics report contains information on the number and length of EMH messages that are processed by balancing groups and shared EMH queues.

FPDBUPD: DEDB Update Activity report

The FPDBUPD operand of the IMSPALOG batch command requests the DEDB Update Activity report.

Format

```plaintext
IMSPALOG FPDBUPD([BYIMID|SYSPLEX,]
[DDNAME(ddname)], default FPDBURPT
[FROM(date,time),]
[TO(date,time),]
[INCL(DATABASE(list))|EXCL(DATABASE(list)),]
[INCL(AREA(list))|EXCL(AREA(list)),]
[INCL(IMSID(list))|EXCL(IMSID(list))])
```

The content of the report can take one of three forms:

not specified

One report for each IMS subsystem followed by a total system wide report. This is the default.

BYIMID

One report for each IMS subsystem.

SYSPLEX

The total system wide report.

Other report options are:

DDNAME

DDname for the recap report output. The default is FPDBURPT.

INCL | EXCL

Selection criteria to filter the report on Database, Area, or IMS subsystem ID.

Examples

Taking defaults:

```plaintext
IMSPALOG FPDBUPD
IMSPALOG EXECUTE
```

With filtering:

```plaintext
IMSPALOG FPDBUPD(
  EXCL(DATABASE(D+)),
  INCL(IMSID(A*,{M,Z})))
IMSPALOG EXECUTE
```

Related reference:
The DEDB Update Activity report can help you determine the cost of DEDB database calls, and shows the rate of processing against your DEDB databases.

**FPVS0: VSO Statistics report**

The FPVS0 operand of the IMSPALOG batch command requests the VSO Statistics report.

**Format**

```
IMSPALOG  FPVSO([BYIMID|SYSPLEX,]
    [DDNAME(ddname),] default FPVSORPT
    [FROM(date,time),]
    [TO(date,time),]
    [INCL(DATABASE(list))|EXCL(DATABASE(list)),]
    [INCL(AREA(list))|EXCL(AREA(list)),]
    [INCL(IMSID(list))|EXCL(IMSID(list))])
```

The content of the report can take one of three forms:

**BYIMID**

One report for each IMS subsystem.

**SYSPLEX**

The total system wide report.

**not specified**

One report for each IMS subsystem followed by a total system wide report. This is the default.

Other report options are:

**DDNAME**

DDname for the recap report output. The default is FPVSORPT.

**INCL1EXCL**

Selection criteria to filter the report on Database, Area, or IMS subsystem ID.

**Examples**

Taking defaults:

```
IMSPALOG  FPVSO
IMSPALOG  EXECUTE
```

For IMS subsystem IMSA, excluding the SALES database:

```
IMSPALOG  FPVSO(SYSPLEX,
    FROM(2014/01/14,),TO(2014/01/15,),
    EXCL(DATABASE(SALES)),
    INCL(IMSID(IMSA))
IMSPALOG  EXECUTE
```

**Related reference:**

“VSO Statistics report” on page 369

The VSO Statistics report provides detailed statistics on VSO resource usage.

**Trace reports**

This section contains the operands for Trace log reports.
**DCTRACE: DC Queue Manager Trace report**

The DCTRACE operand of the IMSPALOG batch command requests the DC Queue Manager Trace report.

**Format**

```plaintext
IMSPALOG DCTRACE(
  [LTERM,]
  [TRACKING,[UTCLOCAL|UTCGMT,]]
  [SAMEUOW,]
  [TEXTALL,]
  [DDNAME(ddname),] default DCTRDD
  [FROM(date,time),]
  [TO(date,time),]
  [INCL(LINETERM(list))|EXCL(LINETERM(list)),]
  [INCL(LTERM(list))|EXCL(LTERM(list)),]
  [INCL(VTAMNODE(list))|EXCL(VTAMNODE(list)),]
  [INCL(LOGCODES(list))|EXCL(LOGCODES(list)),]
  [INCL(MSGID(list))|EXCL(MSGID(list)),]
  [INCL(USERID(list))|EXCL(USERID(list)),]
  [INCL(IMSID(list))|EXCL(IMSID(list))])
```

You can request any combination of the following options:

- **LTERM**
  Print LTERM name, instead of Line or VTAM Node name

- **TRACKING**
  Print DC UOW Tracker report

- **UTCLOCAL**
  For DC UOW Tracker: Convert UTC time stamp to local time

- **UTCGMT**
  For DC UOW Tracker: Report UTC as it appears in the log record (GMT)

- **SAMEUOW**
  Print complete transactions (all messages), regardless of filtering

- **TEXTALL**
  Print entire message text; otherwise only the first part to fit on one line is printed

Other report options are:

- **DDNAME**
  DDname for the recap report output. The default is DCTRDD.

- **INCL | EXCL**
  Selection criteria to filter the report on Line/Terminal, LTERM, VTAM Node, Log Record Code, Message ID, User ID, or IMS subsystem ID.

**Tip:** When specifying selection criteria for Message IDs less than 8 characters (for example, transaction codes), append * to extend the length of the field to 8 characters.

**Examples**

Taking defaults:

```plaintext
IMSPALOG DCTRACE
IMSPALOG EXECUTE
```
Report for terminals 2 and 5 on line 10; exclude log records 01, 32, 34, and 39:

```
IMSPALOG  DCTRACE(INCL(LINETERM(10/2,10/5)),
                   EXCL(LOGCODES(01,32,34,39)))
IMSPALOG  EXECUTE
```

Report for transaction code TR1:

```
IMSPALOG  DCTRACE(INCL(MSGID(TR1*)), SAMEUOW, TRACKING, UTCGMT)
IMSPALOG  EXECUTE
```

Related reference:

“DC Queue Manager Trace report” on page 370

The DC Queue Manager Trace report provides a record of all DC-related activity for the specified time period.

**DBTRACE: Database Trace report**

The DBTRACE operand of the IMSPALOG batch command requests the Database Trace (Full Function) report.

**Format**

```
IMSPALOG  DBTRACE([INCL(DB)], database information only
                 [EXCL(TC)], database open/close only
                 [DDNAME(ddname)], default DBTRDD
                 [FROM(date,time)],
                 [TO(date,time)],
                 [INCL(TRancode(list))|EXCL(TRancode(list))],
                 [INCL(DATABASE(list))|EXCL(DATABASE(list))],
                 [INCL(PROGRAM(list))|EXCL(PROGRAM(list))],
                 [INCL(KEY(list))|EXCL(KEY(list))],
                 [INCL(BLOCKID(list))|EXCL(BLOCKID(list))],
                 [INCL(IMSID(list))|EXCL(IMSID(list))])
```

The content of the report can take one of three forms, with different filtering options available for each:

**INCLUDING(DB)**

- Database information only, with filtering on Key, Block ID, IMS Subsystem ID.

**EXCLUDING(TC)**

- Database Open/Close only, with filtering on IMS Subsystem ID.

**not specified**

- Database with transaction oriented information, with filtering on Transaction Code, Database, Key, Block ID, IMS Subsystem ID. This is the default.

Other report options are:

**DDNAME**

- DDname for the recap report output. The default is DBTRDD.

**INCL** | **EXCL**

- Selection criteria to filter the report on Transaction Code, Database, Program, Key, Block ID, or IMS subsystem ID.

**Examples**

Taking defaults:

```
IMSPALOG  DBT
IMSPALOG  EXECUTE
```
Report for the time period 3:00 p.m. to 5:00 p.m. for records with keys of BLD and DRF in the PARTFILE database:

```
IMSPALOG DBTRACE(
    FROM(15:00),TO(17:00),
    INCL(DATABASE(PARTFILE)),
    INCL(KEY(BLD,DRF)))
IMSPALOG EXECUTE
```

Related reference:
“Database Trace report” on page 372

The Database Trace report provides a record of all database changes by application programs as recorded on the IMS log. If your database is a HALDB, you can also report on specific HALDB partitions because the name of the partition is found on the database name field of the various records used in this report.

**FPDBTRC: DEDB Update Trace report**

The FPDBTRC operand of the IMSPALOG batch command requests the DEDB Update Trace report.

**Format**

```
IMSPALOG FPDBTRC([DEDBONLY|OPENCLOSE,]
    [DDNAME(ddname),] default FPDBUTRC
    [FROM(date,time),]
    [TO(date,time),]
    [INCL(REGION(list))|EXCL(REGION(list)),]
    [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
    [INCL(USERID(list))|EXCL(USERID(list)),]
    [INCL(DATABASE(list))|EXCL(DATABASE(list)),]
    [INCL AREA(list))|EXCL(Area(list)),]
    [INCL(IMSID(list))|EXCL(IMSID(list))])
```

The content of the report can take one of three forms:

- **DEDBONLY**
  - DEDB information only.

- **OPENCLOSE**
  - DEDB Open/Close only.

- **not specified**
  - DEDB information including related sync point entries. This is the default.

Other report options are:

- **DDNAME**
  - DDname for the recap report output. The default is FPDBUTRC.

- **INCL|EXCL**
  - Selection criteria to filter the report on Region ID, Program (PSB), User ID, Database, Area, or IMS subsystem ID.

**Examples**

Taking defaults:

```
IMSPALOG FPDBTRC
IMSPALOG EXECUTE
```

Report for the time period 3 p.m. to 5 p.m. for records in the PARTFILE database:
IMSPALOG FPDBTRC(
    FROM((15:00)),TO((17:00)),
    INCL(DATABASE(PARTFILE)))
IMSPALOG EXECUTE

Related reference:
“DEDB Update Trace report” on page 373

The DEDB Update Trace report provides a record of all DEDB changes by application programs as recorded on the IMS log.

**ESAF: ESAF Trace report**

The ESAF operand of the IMSPALOG batch command requests the External Subsystem Statistics report.

**Format**

```
IMSPALOG ESAF(
    [DDNAME(ddname),] default ESAFD
    [FROM(date,time),]
    [TO(date,time),]
    [INCL(ES(list))|EXCL(ES(list)),]
    [INCL(IMSID(list))|EXCL(IMSID(list))])
```

The report options are:

- **DDNAME**
  DDname for the recap report output. The default is ESAFDD.

- **INCL** | **EXCL**
  Selection criteria to filter the report on External subsystem ID or IMS subsystem ID.

**Example**

Taking defaults:

```
IMSPALOG ESAF
IMSPALOG EXECUTE
```

For External Subsystems SYST and XSYS, and IMS Subsystem IMSA:

```
IMSPALOG ESAF(
    INCL(ES(SYST,XSYS)),
    INCL(IMSID(IMSA)))
IMSPALOG EXECUTE
```

**User-written reports**

This section contains the operands for user-written log reports.

**USERPGM: User-Written Record Processors**

The USERPGM operand of the IMSPALOG batch command requests that a user-written program is to be run.
Up to 21 user-written programs can be specified in the one job.

The operands for the four user programs provided by IMS PA have the following format.

**Note:** User programs supplied with IMS PA have been superseded by the following reports:
- “DEADLOCK: Deadlock report” on page 444
- “CHECKPOINT: System Checkpoint report” on page 445
- “TRANRESU: Transaction Resource Usage report” on page 434

Specify the desired version of IMS by replacing the program name with one of the following:

**IPIU1C1**
For IMS V12

**IPIU1D1**
For IMS V13

**IPIU1E1**
For IMS V14

**IPIU1xx**, where xx is IMS version and release

**IPIPPGM2**, Object type TRAN

**IPIPPGM9**, Object type RGPST

**IPIERA30**, default SNAPTRAC
The IPIPPGM2 statistics-list allows a breakdown of transaction resource usage by up to 4 statistics. Any combination of the following may be specified:
- **DB** DB Call statistics
- **DC** DC Call statistics
- **DLI** Other DL/I Call statistics
- **ENQ** Enqueue statistics

Specify the desired version of IMS by replacing the program name with one of the following:
- **IPIU9C1**
  - For IMS V12
- **IPIU9D1**
  - For IMS V13
- **IPIU9E1**
  - For IMS V14

Other report options are:
- **INCL** | **EXCL**
  - Selection criteria to filter the report on transaction code or IMS subsystem ID. Up to five INCLUDE or EXCLUDE qualifiers can be specified for each program.

**Example**

Two supplied user programs:

```sql
IMSPALOG USERPGM(IPIPU1C1,
FROM(,10:00:00:00),TO(,18:00:00:00),
DDNAME(PGM1DD),
INCL(TRAN((A,K),M*)))
IMSPALOG USERPGM(IPIPPGM2)
IMSPALOG EXECUTE
```

Related reference:
- “User-written reports” on page 376
- “User programs” on page 725

The sample library SIPISAMP contains members with sample user programs that can run under IMS PA and associated JCL.

**Log Information report**

This section contains the operands for the Log Information report.

**LOGINFO: Log Information report**

The Log Information report provides a breakdown of the log record types in the input IMS log files. The LOGINFO operand allows users to produce a stand-alone Log Information report without running a report set. This is a batch-only command and is not generated by an IMS PA dialog.
Log Information report. The ddname for the report is LOGINFO.

Example

```plaintext
//IPICMD DD *
* IMSPALOG LOGINFO
* IMSPALOG EXEC
/*
```

Related reference:

"Log Information report" on page 394

The Log Information report provides a breakdown of the log record types in the input IMS log files. It shows record count, length, rates per second, and volume. Selected record types are broken down further to provide additional information about transaction arrival and processing throughput.
Part 6. Monitor reporting

IMS Performance Analyzer provides both an online dialog and a batch interface. This part describes how to request and run Monitor reports using the dialog and batch commands.
Chapter 22. Requesting Monitor reports

You can use the IMS PA ISPF dialog to specify and request reports generated from IMS Monitor or DB Monitor data.

Monitor Report Sets

Monitor reports are specified in a Report Set of type MON.

Report Sets are stored in a Reports Sets data set. If you have not specified a Report Sets data set, IMS PA will allocate a data set for you with default characteristics. To change the Report Sets data set, you can use Options in the action bar or option 0.4 IMS PA Control Data Sets from the IMS PA primary option menu.

To invoke the panel to specify Monitor Reports:
2. Define a new Monitor Report Set or edit an existing one using line action S. See "Maintaining Report Sets" on page 125 for information on how to do this.

Figure 228. Selecting a Monitor Report Set

A panel is then displayed for you to view or modify the description of the Report Set and the reports it contains. Figure 229 on page 472 shows the sample Monitor Report Set which IMS PA provides if there are no user-defined Report Sets in the Report Set data set.
The Report Set panels show the list of all available monitor reports options in a tree structure. See "Report Set menu tree" on page 123 for a description of the tree structure.

Each report can be activated (Active column value Yes) or deactivated (No). If any changes are made to a report, the dialog will mark the report as active automatically. Each Report Category can be activated or deactivated. Only active reports in active report categories are included in the Report Set at submit time. A Report Set can be submitted for processing only if there is at least one active report in an active report category.
However, you can also use the **RUN** line action to temporarily override the inactive status of a report or report category.

**Line actions**

The line actions that you can enter on the Monitor Report Set panel depend on the type of item that you enter the line action next to.

The available line actions depend on whether they are acting on either:
- The top of the Report Set menu tree (whole of Report Set)
- The Options Category
- A Report Category
- The Global Options
- Other Options
- A Report

**Reports**

The available line actions for **Reports** at the top of the menu tree are:

**/** Display the menu of line actions.

**S** Expand all categories that are not already expanded, or collapse all categories if they are all expanded.

**A** Activate all categories that contain one or more active reports. This does not affect the status of the individual reports. If there are no active reports in the category, it cannot be activated. Only the active reports in active report categories will be run when the Report Set is submitted.

**AA** Activate all categories, all reports, all options.

**D** Deactivate all categories. This does not affect the status of the individual reports. When a report category is deactivated, no reports in that category will be run when the Report Set is submitted.

**DD** Deactivate all categories, all reports, all options.

**RUN** Also **R**. Run the report category. Run-time options will display.

**Options Category**

The available line actions for the Options Category are:

**/** Display the menu of line actions.

**S** Expand or Collapse the options category.

**AA** Activate all the options within the category. The category is automatically active.

**DD** Deactivate all the options within the category, except the Monitor Global Options. The category is automatically active if Monitor Global is active. It cannot be explicitly activated or deactivated.

**Global Options**

The Monitor Global Options can be edited by selecting with line action **S**. They cannot be explicitly activated or deactivated.
Other Options

The other options are: Transactions by Time Period, Application Grouping, DDName Grouping, ESAF Integration, Alternate Sequencing. The available line actions for these options are:

I Display the menu of line actions.
S Select (Edit) the options. Not available for ESAF Integration.
A Activate the option (sets the Active column value to Yes). Alternatively, you can type Y in the Active column.
D Deactivate the option (sets the Active column value to No). Alternatively, you can type N in the Active column.

Report Categories

The available line actions for a Report Category are:

I Display the menu of line actions.
S Expand or Collapse the report category.
A Activate the report category (sets the Active column value to Yes). Alternatively, you can type Y in the Active column. This does not affect the status of the individual reports. If there are no active reports in the category, it cannot be activated. Only the active reports in active report categories will be run when the Report Set is submitted.
AA Activate the report category and all the reports and options within it.
D Deactivate the report category (sets the Active column value to No). Alternatively, you can type N in the Active column. This does not affect the status of the individual reports. When a report category is deactivated, no reports in that category will be run when the Report Set is submitted.
DD Deactivate the report category and all the reports and options within it.
RUN Also R. Run the report category. Run-time options will display.

Reports

The available line actions for a report are:

I Display the menu of line actions.
S Select (Edit) the report. Not available for the Region Activity Summary Reports as they have no specific report-level options.
A Activate the report (sets the Active column value to Yes). Alternatively, you can type Y in the Active column.
D Deactivate the report (sets the Active column value to No). Alternatively, you can type N in the Active column.
RUN Also R. Run the report. Run-time options will display.

RUN command

The RUN command runs the Report Set and prompts you for entry of runtime options, such as System Selection and Report Interval, before generating the JCL.
SUB, JCL, and JCM are special RUN requests that preset the Execution Mode (see Figure 231 on page 476) and allow you to bypass the runtime prompt:

- The SUBMIT or SUB command directly submits the Report Set for execution.
- The JCL command builds the JCL to execute the Report Set and allows you to edit the job before you submit it or save it in your JCL library.
- The JCLCMD or JCM command builds the JCL, converts the Report Set to a command stream, and allows you to edit the job before you submit it or save it in your JCL library.

The RUN command does not reset the Execution Mode. For example, if you SUB a Report Set, the Execution Mode is set to 1. If next time you RUN a Report Set, the Execution Mode will default to 1.

RUN is also available as a line action to run individual reports or report categories and override the Active status. When entered as a line action, only Execution Mode 3 is available. SUB, JCL, and JCM can be entered as a line action, however in this case they act the same as the RUN line action.

Specifying report options

The IMS PA dialog stores the report options that you specify in the Report Sets data set.

The remainder of this chapter describes the report options in terms of the dialog panels and fields. For additional information about the report options and examples of the reports, see the chapter “Analyzing Monitor reports” in the IMS Performance Analyzer for z/OS: Report Reference.

Saving your changes

If an active report is deactivated, its specified options are retained. To return to the default options for a report, Edit the report in the Report Set, then select File > Reset To Defaults from the action bar or enter DEFAULTS on the command line. To return to the default value for a single field (excluding flags, selection fields, or fields in a dependent set), just erase the value in the field.

Any changes to a Report Set’s options and activated reports are saved only by issuing a SAVE, SAVEAS, or EXIT (F3) command from the EDIT Report Set panel.

Note: Exit (F3) discards changes if Automatic Save on Exit in your IMS PA Profile Options is set to NO.

Saving of changes made on a subordinate panel is as follows:

- If Exit (F3) from the subpanel, then changes are retained pending SAVE, SAVEAS, or EXIT (F3) from the EDIT Report Set panel.
- If Cancel (F12) from the subpanel, then changes just entered on the subpanel are discarded.

Run Monitor Report Set

The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category, or individual reports.
About this task

One way to do this is shown in “Running Report Sets” on page 127.

Before IMS PA generates the JCL, the Run Report Set panel is displayed to prompt you to specify runtime options. You can request to bypass this prompt, except in the following circumstances:

- When the RUN command is used. The prompt for runtime options can only be bypassed if SUB, JCL, or JCM commands are used.
- When a Report Interval is specified.

Specify your desired runtime options. When the specification is complete, press Enter to proceed with JCL generation.

The options on the Run Report Set panel are:

**System Selection**

Specify the IMS Subsystem to run the Report Set against. IMS PA includes in the JCL the monitor data sets specified for this subsystem.

You can type the IMSID or press Prompt (F4) to select one from a list of available IMS subsystems.
If you want to change your system specification, you can link there by selecting **SysDefs** in the action bar, then select 1 from the pull-down menu:

1. System Definitions
2. Groups

### Report Interval

**Defaults:** None first time, thereafter as previously set.

Specify a date/time range. The date/time fields are optional, but if specified, they override the Global Report Interval set within the Report Set.

Date can be either an actual date specification with the same edit rules as the Global Report Interval (see "Monitor Global Options" on page 479), or it can be a relative date. Relative dates are specified as 0, -1, -2,... to signify a date relative to the current date. 0 represents today, -1 yesterday, -2 two days ago, and so on. If both From and To dates are specified, they must be in the same format.

Time is optional. If From time is not specified, it defaults to the start of the day. If To time is not specified, it defaults to the end of the day.

The specified date/time range is included as parameter input in the generated JCL under `//IPIOPTS DD *`

```plaintext
IMSPAMON START(yyyy/mm/dd,hh:mm:ss:th),
    STOP(yyyy/mm/dd,hh:mm:ss:th)
```

### Unresolved Data Sets Options

**Default:** Not selected.

This option allows you to control what IMS PA does when it strikes a problem with JCL generation because the system or file definitions for your System Selection are incomplete. Select one of the following actions:

1. **Issue error message.** IMS PA aborts JCL generation and reports the errors in a window titled Report Set JCL Generation Failure. This allows you to link to System Definitions and correct your file specifications.

2. **Edit unresolved JCL.** IMS PA proceeds with JCL generation creating DD statements with `DSN=<unresolved>` where the files are not known. Regardless of your JCL or SUB request, the JCL is edited to allow you to specify the DSNs before submission.

### Execution Mode

**Default:** According to the command entered.

Specify whether to execute the Report Set or generated commands, and whether you want to edit the JCL before submit. Editing JCL before submit will enable you to save the JCL in an external data set for automated job scheduling or ad hoc report requests.

The options are:

1. **Submit Report Set.** This is equivalent to the SUBMIT or SUB command.

   The Report Set JCL contains the statements:
   ```plaintext
   //IPIRSET DD DSN=ReportSets.DSN(ReportSetName),DISP=SHR
   //IPIOBJL DD DSN=ObjectLists.DSN,DISP=SHR
   //IPIDIST DD DSN=Distributions.DSN,DISP=SHR
   ```
2. Edit JCL before submit. This is equivalent to the JCL command. It
   generates the same JCL as SUBMIT, but allows you to edit it.

3. Edit JCL with command input. This is equivalent to the JCLCMD or
   JCM command.
   This generates JCL in which the Report Set, and any Object Lists and
   Distributions it uses, are converted to a stream of commands and
   displayed to allow you to edit them. The Monitor JCL contains the
   statements:
   //IPICMD DD *
   IMSPAMON ..., INCL|EXCL(...),...
   IMSPAMON EXECUTE
   Distname DISTRIBUTION
   Note that when you enter RUN at the report-level as a line action or
   override, option 3 is the only option available to you.

Bypass run-time options prompt
Default: Not selected.
This controls the display of the prompt for runtime options, the Run
Report Set panel.
Enter / to bypass the runtime options prompt. This is useful when you
have specified your System Selection and you want to run your Report
Sets from hereon using the SUB, JCL, or JCM commands without having
the prompt intervene each time. Note that the runtime prompt cannot be
bypassed if you use the RUN command to run your Report Set or you
have specified a Report Interval.

Related concepts:
“Report command format” on page 41
IMS PA provides both a dialog and batch interface. The IMS PA commands are
used to request reports and extracts. The dialog generates the JCL and commands
when you run (submit) a Report Set.

Related reference:
Chapter 23, “Monitor batch interface,” on page 515
The IMS PA dialog generates the JCL and commands for executing your report
requests in batch. The JCL and commands for Monitor report requests are
described here. Sample jobs are supplied in the SIPISAMP Library.
“Report Set JCL” on page 717
The sample library SIPISAMP contains members with sample JCL to generate IMS
PA reports and extracts. Also included are examples for Automated file selection
and BMP analysis.

Monitor Report Set Options

The Options category allows you to specify options that are common to more than
one monitor report in the Report Set.
- The Monitor Global options apply to all reports in the Report Set. It includes
  Distribution Options. Global Option cannot be explicitly activated or
deactivated. If any report in the Report Set is activated, then the Global Option
  is automatically activated.
- The Transactions by Time Period options apply to the two Transactions by Time
  Period subreports that can be selected within the Application Detail and Region
  Analysis reports. If either or both of these subreports are selected then this menu
  option is highlighted, as a reminder that its options are in use.
• **Application Grouping** options specify application groups to be reported in the Program Summary, Region Analysis and Application Detail reports. If **Application Grouping** is activated using line action A then the three reports will use the groupings it defines. If it is not activated (or is deactivated using D) then any groupings it defines are ignored. The Program Summary and Region Analysis reports will then show no grouping, and the Application Detail report will not be produced.

• **DDname Grouping** options specify DDname groups to be reported in the Database IWAIT Summary and Database IWAIT Analysis reports. If it is not activated using line action A, then any groupings it defines are ignored. The Database IWAIT reports will then show no grouping.

• **ESAF Integration** option specifies that External Subsystem calls are integrated into all Region and Program/Trancode reports and contribute to the total call and IWAIT counts for regions and program/trancodes.

• **Alternate Sequencing** options specify an alternate sort sequence (descending) for the summarized monitor reports. The default is to order by Name, such as Region ID, Program name, Transaction Code and Database name. Alternate Sequencing changes this to order by Occupancy, Calls (DL/I or other types), or Delay. A limit can also be specified to restrict the report to only the worst performers.

**Monitor Global Options**

The IMS PA Monitor Global Options define output data sets and general control information that apply to all active reports within a Report Set.

To view and edit Monitor Global Options for a Report Set:

1. [Select the Monitor Report Set](#)
2. Expand the Options category using line action S.
3. Select the Monitor Global category using line action S.
The options are as follows:

**Report Interval**

Default: Not specified. All records are included.

This allows you to specify a time period for selecting a subset of the input file data for passing to the report processors. Records with time stamps on or after the From Date/Time and before the To Date/Time are selected for processing. Reducing the time period can significantly reduce total processing time and virtual storage requirements for generating the reports in the Report Set.

A Report Interval can be specified for some individual reports, and is applied within the context of the Global Report Interval.

You can specify one of the following:

- Date/time pairs or dates only. This indicates a *date-time range* (for example, 2014/07/06 8:00 to 2014/07/08 17:00). Input records between the From Date/Time and To Date/Time are selected for report processing. Any records at the start or end of the input file that are outside the specified range are bypassed. The From Date/Time must be before the To Date/Time.
- Times only. This indicates a particular *time slot* (for example, 9:00 to 10:00 each day). Input records whose time stamp is within the specified time slot, irrespective of the date, are selected for report processing. Any records throughout the input file whose time of day is not within the specified time slot are bypassed. The From and To Times must be different. Specifying the From Time greater than the To Time indicates a time slot across midnight.
- Neither date/time pair. *All* input records are selected.
Rules governing the date:
- A date is expected in a format consistent with your **Preferred Date Format** specified in the online interface settings. See [Figure 12 on page 68](#).
- If the year of the date is specified as **** (four asterisks), the current year is substituted at the time the Report Set is executed.
- If the century of the year is omitted then, if the year is less than 73, century 2000 is assumed, otherwise century 1900 is assumed.
- If the From Date is omitted, it will default at run time to the start of the input file.
- If the To Date is omitted, it will default at run time to the end of the input file.

Rules governing the time:
- Time is expressed as \( hh:mm:ss:th \) for hours, minutes, seconds, tenths and hundredths of a second. Colon delimiters separate the parts of the time.
- If the From Time is omitted, it will default at run time to 00:00:00:00.
- If the To Time is omitted, it will default at run time to 23:59:59:99.

**Detail Report Output DDname**
Default: DETLRPT
Specify the DDname for the output of the following detail reports:
- Application Detail
- Region Analysis
- Database IWAIT Analysis
- Program Activity Detail

**Summary Report Output DDname**
Default: SUMMRPT
Specify the DDname to be used for the output of the following summary reports:
- Schedule/Transaction Summary
- Program (PSB) Summary
- Region Summary
- Database IWAIT Summary

**Monitor Source (Online or Batch)**
Default: 1. Online (IMS Monitor data is used).
Select 1 to specify that Online (IMS Monitor) data is to be used. Select 2 to specify that Batch (DB Monitor) data is to be used.

**Report Breaks by Region**
Default: Not selected; the reports are not produced by region.
Select with a / to specify that the following reports, if requested, are to be produced by region:
- Database IWAIT Analysis. See [“Database IWAIT Analysis report” on page 493.](#)
- PSB-TranCode Analysis. See [“Program Activity Detail reports” on page 500.](#)

**Override 'IWAIT for no-message'**
Default: IWAITs are not ignored.
Select with a / to ignore IWAITs for no messages.

**Report BMP Regions only**
Default: Not selected; all regions are reported.
Select with a / to report only BMP regions. This generates the BMPONLY global report operand.

Exclude BMP Regions
Default: Not selected; BMP regions are included.
Select with a / to exclude BMP regions from reports. This generates the NOBMP global report operand.

Include Distributions in Reports
Default: Not selected; distributions are not produced.
Select with a / to produce distribution graphs in the following reports, if activated:
- Region Summary
- Region Detail (in Region Analysis)
- PSB-TranCode Analysis (in Program Activity Detail)
- Program Trace

The particular distribution graphs to be produced are specified on the Distributions Options panel invoked by selecting Specify Distributions. If a Distribution is not specified, the corresponding distribution graph will not be produced.

Specify Distributions
Select with an S or E to display the Distributions Options panel. See "Distributions Options" on page 483 for further details.

Minimum VSAM IWAIT
Default: 0
Specify, in milliseconds, the minimum IWAIT elapsed time to be reported as VSAM IWAIT. IWAITs greater than this value are reported as VSAM IWAITs. IWAITs less than this value are reported as total system IWAIT. The maximum value is 999999999.

Note: Specify 0 to report all IWAITS as VSAM IWAITs. This is recommended because the IMS Monitor only records VSAM I/O IWAITs.

Report Break Points
Default: STOP
Specify when reports are to be written, as follows:
- HOUR Write reports every hour.
- STOP Write reports at the end of each trace.
- EOF Write reports at the end of the monitor input file, combining multiple trace intervals if present.
- nnnn Write reports every nnnn minutes. The maximum value is 9999.

All times refer to trace times.

Print Lines per Page
Default: 60
Specify the number of lines per page for all monitor reports, except the Schedule/Transaction Summary and Enqueue/Dequeue Trace reports which ignore this option. Valid values are from 1 to 255.

Trace Data Set
Default: None.
Specify the name of a data set to be used to write trace statistics records when the Report Set is executed for any active reports. The data set has
DDname IPISTOUT and can then be passed to the IMS Monitor or DB Monitor Report Print utilities DFSUTR20 and DFSUTR30 to format the statistics. If no data set name is specified then the trace statistics records are not written.

The Trace Data Set must be a sequential data set with a VB record format. The recommended LRECL is 2044 bytes with an appropriate BLKSIZE of 2048 or higher. If the specified data set does not exist, it is given default allocation attributes at the time the Report Set JCL is built. The default allocation details are specified using Reporting Allocation Settings from the action bar Options menu.

The following records are written to the Trace Data Set:

<table>
<thead>
<tr>
<th>Record code</th>
<th>Description</th>
<th>Monitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>90</td>
<td>Monitor start</td>
<td>DB or IMS</td>
</tr>
<tr>
<td>91</td>
<td>Monitor end</td>
<td>DB or IMS</td>
</tr>
<tr>
<td>80</td>
<td>Intent Failure</td>
<td>IMS only</td>
</tr>
<tr>
<td>82</td>
<td>Pool Space Failure</td>
<td>IMS only</td>
</tr>
<tr>
<td>86</td>
<td>FF Deadlock Detected</td>
<td>IMS only</td>
</tr>
</tbody>
</table>

Note: IMS PA provides all the reporting capability of DFSUTR20 and DFSUTR30.

Selection Criteria

Default: None specified; include all.

Records can be included or excluded based on their Program (PSB) name. This selection applies to all monitor reports, with the exception of the Total System IWAIT reports and the Region Histogram.

Include specifies that reporting is restricted to the listed PSBs and any activity associated with these PSBs. Exclude specifies that the listed PSBs and any activity associated with them are not to be included in the reports.

This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

Related reference:

“Monitor Global Options” on page 523

The Monitor Global Options define output and general control information for the monitor reports.

Distributions Options

The Distributions Options allow you to request up to four distribution graphs by specifying the names of Distributions which define the layout of the graphs.

This panel is invoked from the Monitor Global Options panel by selecting Specify Distributions.

You can use the sample Distributions provided with IMS PA, or other Distributions defined using option 7 Distributions from the IMS PA primary option menu (See Chapter 11, “Distributions,” on page 157).

The Distributions are applicable to the monitor reports as follows:
The Region Summary, Region Analysis, Region Detail, Program Activity Detail (PSB-TranCode Analysis), and Program Trace reports use the Elapsed Time per Schedule, Elapsed Time per Call, Elapsed Time per IWAIT, and IWAITs per Call Distributions.

The Program Trace report uses the Elapsed Time per Call, Elapsed Time per IWAIT, and IWAITs per Call Distributions. The Exception Listing also uses the upper limit of these Distributions as threshold values if they are not specified explicitly on the Performance Exceptions panel.

Other monitor reports produce distribution graphs, but the Distributions are specified on the particular report panels; for example, the Fast Path Analysis reports, Total System IWAIT reports, and the Database IWAIT Analysis report. See "Distribution and Report cross-reference" on page 161 for a summary of which Distributions are applicable to which reports.

The options are:

**Elapsed Time per Schedule Distribution**

Default: Not specified; graph is not produced.

Specify the name of a Distribution which defines the characteristics of the Elapsed Time per Schedule distribution graph for the Region Summary, Region Analysis, Region Detail, and Program Activity Detail (PSB-TranCode Analysis) reports.

The sample Distribution ELAPSCH is provided. It specifies:
- Ranges (Limits) = 1,5,10,30,50,100,300,500,1000
- Title = Sc Mil Mic (for seconds, millisecs, microsecs)
- Multiplier = 1000
- Edit Mask = ZZZ.ZZ9.999

**Elapsed Time per Call Distribution**

Default: Not specified; graph is not produced.

Specify the name of a Distribution that defines the characteristics of the Elapsed Time per Call distribution graph for the Region Summary, Region Analysis, Region Detail, Program Activity Detail (PSB-TranCode Analysis), and Program Trace reports. Also, the Exception Listing report uses the upper limit as the threshold for Call Elapsed exceptions if a value is not specified explicitly on the Performance Exceptions panel.

The sample Distribution ELAPCAL is provided. It specifies:
- Ranges (Limits) = 1,5,10,30,50,100,300,500,1000
- Title = Sc Mil Mic (for seconds, millisecs, microsecs)
- Multiplier = 1000
- Edit Mask = ZZZ.ZZ9.999
Edit Mask = ZZZ.ZZ9.999

**Elapsed Time per IWAIT Distribution**
Default: Not specified; graph is not produced.

Specify the name of a Distribution that defines the characteristics of the Elapsed Time per IWAIT distribution graph for the Region Summary, Region Analysis, Region Detail, Program Activity Detail (PSB-TranCode Analysis), and Program Trace reports. Also, the Exception Listing report uses the upper limit as the threshold for IWAIT Elapsed exceptions if a value is not specified explicitly on the Performance Exceptions panel.

The sample Distribution ELAPIWT is provided. It specifies:
- Ranges (Limits) = 1,5,10,30,50,100,300,500,1000
- Title = Sc Mil Mic (for seconds, millisecs, microsecs)
- Multiplier = 1000
- Edit Mask = ZZZ.ZZ9.999

**IWAITs per Call Distribution**
Default: Not specified; graph is not produced.

Specify the name of a Distribution that defines the characteristics of the IWAITs per Call distribution graph for the Region Summary, Region Analysis, Region Detail, Program Activity Detail (PSB-TranCode Analysis), and Program Trace reports. Also, the Exception Listing report uses the upper limit as the threshold for IWAITs per Call exceptions if a value is not specified explicitly on the Performance Exceptions panel.

The sample Distribution IWTSCAL is provided. It specifies:
- Ranges (Limits) = 1,2,3,4,5,6,7,8,10
- Title = Count
- Multiplier = 1
- Edit Mask = ZZZ,ZZZ,ZZ9

For all Distributions, you can enter the name directly, or to select from a list of available Distributions, position the cursor in the field and press **Prompt (F4)**.

Related reference:
"DISTRIBUTION: Distributions Options” on page 524

The Distributions Options describe the layout of distribution graphs which show the dispersion of the values of certain performance measures.

**Transactions by Time Period Options**

This panel maintains the time periods and other options used by the Transactions by Time Period report, which is optionally included in the Region Analysis and Application Detail reports.
The options are:

**Report Transactions as Count or Percent**
Default: 1 (report transaction counts)
Select with 1 to report transaction counts or with 2 to report as a percentage of total transactions.

**From and To Date/Time**
Defaults: Not specified
Specify the reporting interval. Within the context of Start and Stop Date/Time on the Monitor Global Options panel, records with time stamps on or after the From Date/Time and before the To Date/Time are included in the report.

You can specify one of the following:
- Date/time pairs or dates only. This indicates a *date-time range* (for example, 2000/07/06 7:00 to 2000/07/07 16:30). The From Date/Time must be before the To Date/Time.
- Times only. This indicates a particular *time slot* (for example, 9:00 to 10:00 each day). Specifying the From Time greater than the To Time indicates a time slot across midnight.
- Neither date/time pair. *All* input records are selected.

Rules governing the date:
- A date is expected in a format consistent with your *Preferred Date Format* specified in the online interface settings. See Figure 12 on page 68.
- If the year of the date is specified as **** (four asterisks), the current year is substituted at the time the Report Set is executed.
- If the century of the year is omitted then, if the year is less than 73, century 2000 is assumed, otherwise century 1900 is assumed.
- If the From Date is omitted, it will default at run time to the start of the input file after filtering by the Start Date.
- If the To Date is omitted, it will default at run time to the end of the input file after filtering by the Stop Date.

Rules governing the time:
- Time is expressed as *hh:mm:ss:th* for hours, minutes, seconds, tenths and hundredths of a second. Colon delimiters separate the parts of the time.
- If the From Time is omitted, it will default at run time to 00:00:00:00.
• If the To Time is omitted, it will default at run time to 23:59:59:99.

Time Ranges

Defaults:
1. 00:00  2. 07:00  3. 08:00  4. 09:00  
5. 10:00  6. 11:00  7. 12:00  8. 13:00  
9. 14:00  10. 15:00  11. 16:00  12. 17:00  
13. 18:00  14. 19:00

Specify up to 14 ascending times to be used as ranges for accumulating and reporting data. Only times are allowed, not dates. The format of the time is $hh:mm:ss$ for hours, minutes and seconds. Colon delimiters must be used to separate the parts of the time.

Related reference:
“TIMEREPORT: Transactions by Time Period Options” on page 524
The TIMEREPORT operand of the IMSPLAN batch command specifies control information for the Transactions by Time Period report, which is optionally produced by the Region Analysis and Application Detail reports.

Application Grouping Options

The Application Grouping Options define groups of records based on Program (PSB) name.

Application Grouping Options are applicable to the following reports:
• Program (PSB) Summary
• Application Detail
• Region Analysis

The reports contain one line item for each specified Program (PSB) group. Records not included in any specified group are summarized into the group category SYSTEM.

The grouping options are:

Application Groups

Default: No application grouping defined.

Object List specifies either the name of one Program (PSB) Object List which is to be reported as one group, or the name of an Application Group Object List that contains the names of many Program (PSB) or Application Group Object Lists to be reported as many groups. To select from a list of available Object Lists, position the cursor in the field and press Prompt (F4).
See Chapter 10, “Object Lists,” on page 147 for information on how to define an Object List.

**Note:** Ranges are not supported.

**Type** is automatically determined by IMS PA from the specified Object List name.

A **Validation Warning** is displayed if the **Type** is other than **PROG** or **APGRP**.

**Related reference:**

“APPLICATION: Application Grouping Options” on page 525
The Application Grouping Options specify one or more groups of Program (PSB) names to appear as line items in the Program Summary and Region Analysis reports, and in the heading of the Application Detail report.

“Program Summary report” on page 491
There are no panel options specific to this report. The report can only be activated or deactivated.

“Application Detail report” on page 492
The options of the Application Detail report are described here.

“Region Analysis report” on page 492
The options for the Region Analysis report are described here.

**DDname Grouping Options**

**DDname Grouping Options** define groups of records based on DDnames.

**DDname Grouping Options** are applicable to the following reports:

- Database IWAIT Summary
- Database IWAIT Analysis

The Database IWAIT Summary report contains one line item for each specified DDname group. The Database IWAIT Analysis report contains separate reports with the heading **IWAIT Analysis DDgrp = xxxxxxxx** for each specified DDname group **xxxxxxx**. Records not included in any specified group are summarized into the group category **SYSTEM**.

---

**File Options Help**

**Command ==>**

SAMPSON - DDname Grouping Options

Specify DDname Grouping options.

**DDname Group(s):**

Object List + Type  Validation Warning

---

**Note:** An Object List type of DDGRP is expected, or DD for a single group.

---

**Figure 236. DDname Grouping Options**

The grouping options are:

**DDname Groups**

Default: No DDname grouping defined.

**Object List** specifies either the name of one DDname Object List which is to be reported as one group, or the name of a DDname Group Object List that contains the names of many DDname or DDname Group Object Lists.
to be reported as many groups. To select from a list of available Object Lists, position the cursor in the field and press **Prompt** (F4).

See [Chapter 10, “Object Lists,” on page 147](#) for information on how to define an Object List.

**Note:** Ranges are not supported.

**Type** is automatically determined by IMS PA from the specified Object List name.

A **Validation Warning** is displayed if the **Type** is other than D0 or DDGRP.

**Related reference:**

[“DDGROUP: DDname Grouping Options” on page 526](#)

The DDname Grouping Options specify one or more groups of ddnames to appear as line items in the Database IWAIT Summary report and in the heading of the Database IWAIT Analysis (DDgroup) report.

[“Database IWAIT Summary report” on page 491](#)

There are no panel options specific to this report. The report can only be activated or deactivated.

[“Database IWAIT Analysis report” on page 493](#)

The options for Database IWAIT Analysis reports are described here.

### ESAF Integration Option

When the ESAF Integration Option is activated, ESAF call statistics are reported for each subsystem and contribute to the total call and IWAIT counts for regions and program/trancode.

External Subsystem calls can be integrated into the following reports:

- [“Region Summary report” on page 491](#)
- [“Program Summary report” on page 491](#)
- [“Region Analysis report” on page 492](#)
- [“Application Detail report” on page 492](#)
- [“Performance Exception reports” on page 494](#)
- [“Program Activity Detail reports” on page 500](#)
- [“Program Trace report” on page 502](#)

The ESAF Integration Option can only be activated or deactivated. There is no panel associated with this option.

**Related reference:**

[“ESAFOpts: ESAF Integration Option” on page 526](#)

The ESAF Integration Option controls whether External Subsystem calls are integrated into all Region and Program/Trancode reports.

### Alternate Sequencing Options

Alternate sequencing changes the default “name” order of a report (where the “name” field depends on the report; for example, Region ID, Program name, Transaction Code, or Database name) to descending order of one of the following: Occupancy, Calls, or Delay. You can also limit reporting to the worst performers.

An alternate sorting sequence can be specified for the following reports:

- Region Summary
- Program (PSB) Summary
- Application Detail
- Database IWAIT Analysis
The Alternate Sequencing options are:

**Sorting Sequence**

Default: 1 (sort by Name)

Specify one of the following alternate sort sequences:

- **Name**  
  The default order of the reports. For example, by Region ID, Program name, Transaction Code, or Database name.

- **Occupancy**  
  The elapsed time that the resource is scheduled or in use. For example, the busiest regions or programs.

- **Calls**  
  The time spent by the resource performing DL/I or other types of calls. For example, transactions with the most DL/I call activity.

- **Delay (IWAIT)**  
  The time spent by the resource waiting for IWAIT events to complete. For example, the databases which had to wait the longest for I/O to complete.

**Limit**  
Default: 100% (no limit)

Specify a limit on the number of resources reported. You can specify either a fixed number (for example, the 10 worst performing databases) or a percentage (for example, the top 10% busiest regions).

Related reference:

"ALTSEQ: Alternate Sequencing Options" on page 527

Summarized monitor reports can be ordered in an alternate sequence. By default, the reports are ordered by name, such as Region ID, Program, Transaction Code and Database.
Region Activity Summary reports

The options for Region Activity Summary reports are described here.

The reports in the Region Activity Summary Reports category are:
- Schedule/Transaction Summary
- Region Summary
- Program (PSB) Summary
- Database IWAIT Summary

Schedule/Transaction Summary report

There are no panel options specific to this report.

Restriction: This report is not produced for DB Monitor data.

Related reference:
“SCHEDTRAN: Schedule/Transaction Summary report” on page 528
The SCHEDTRAN operand of the IMSPAMON batch command requests the Schedule/Transaction Summary report.

Region Summary report

There are no panel options specific to this report. The report can only be activated or deactivated.

Related reference:
“ESAF Integration Option” on page 489 and “Alternate Sequencing Options” on page 489 are applicable to this report.

“REGSUM: Region Summary report” on page 528
The REGSUM operand of the IMSPAMON batch command requests the Region Summary report.

Program Summary report

There are no panel options specific to this report. The report can only be activated or deactivated.

Restriction: This report is not produced for DB Monitor data.

Related reference:
“ESAF Integration Option” on page 489 and “Alternate Sequencing Options” on page 489 are applicable to this report.

“PROGSUM: Program Summary report” on page 528
The PROGSUM operand of the IMSPAMON batch command requests the Program Summary report.

Database IWAIT Summary report

There are no panel options specific to this report. The report can only be activated or deactivated.

Related reference:
“Alternate Sequencing Options” on page 489 are applicable to this report.
Region Activity Analysis reports

The options for Region Activity Analysis reports are described here.

Region Analysis report

The options for the Region Analysis report are described here.

Restriction: Only the Database IWAIT Summary report is produced for DB Monitor data; however, the Region Detail report for region 1 can be produced.

The options are as follows:

<table>
<thead>
<tr>
<th>File Options Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command ==&gt; SAMPMON - Region Analysis</td>
</tr>
<tr>
<td>Specify report options.</td>
</tr>
<tr>
<td>Reports Required:</td>
</tr>
<tr>
<td>/ Region Detail</td>
</tr>
<tr>
<td>7 Program Summary</td>
</tr>
<tr>
<td>7 Database IWAIT Summary</td>
</tr>
<tr>
<td>- Transactions by Time Period</td>
</tr>
</tbody>
</table>

Figure 238. Region Analysis Report Options

Reports Required

Default: First three reports, Region Detail, Program Summary, Database IWAIT Summary

Select with a / to request any combination of reports. If none are selected, no reports are produced.

If Transactions by Time Period is selected, specify the time periods and other options on the "Transactions by Time Period Options" on page 485 panel.

The "ESAF Integration Option" on page 489 and "Alternate Sequencing Options" on page 489 are applicable to this report.

Related reference:

"Application Grouping Options" on page 487

The Application Grouping Options define groups of records based on Program (PSB) name.

"REGANAL: Region Analysis report" on page 529

The REGANAL operand of the IMSFAMON batch command requests the Region Analysis report.

Application Detail report

The options of the Application Detail report are described here.
Restriction: This report is not produced for DB Monitor data.

The options are as follows:

Reports Required

Default: Program Summary
Select with a / to request either or both reports. If neither is selected, no report is produced.

If Transactions by Time Period is selected, specify the time periods and other options on the Transactions by Time Period Options panel.

Note: To produce the report, the Application Grouping option must be activated and an Application Group or Program (PSB) Object List specified.

The "ESAF Integration Option" on page 489 is applicable to this report.

Related reference:
"Application Grouping Options" on page 487
The Application Grouping Options define groups of records based on Program (PSB) name.

"APPLGRP: Application Detail report" on page 530
The APPLGRP operand of the IMS?PAMON batch command requests the Application Detail report.

Database IWAIT Analysis report
The options for Database IWAIT Analysis reports are described here.
The options are as follows:

**Print Distributions**
Default: Not selected; distribution graphs are not printed.

Select with a `/` to print distribution graphs for this report. If selected, the Distribution specified for Elapsed Time per IWAIT is used, but if this is blank, the sample Distribution DDIWELAP is used by default at run time.

If **DDname Grouping** is activated, distribution graphs are always produced.

**Elapsed Time per IWAIT Distribution**
Default: Not specified; Sample Distribution DDIWELAP is used at run time if **Print Distributions** is selected.

Specify the name of a Distribution that defines the characteristics of the Elapsed Time Per IWAIT distribution graph to be produced by the report. To select from a list of available Distributions, position the cursor in the field and press **PROMPT** (F4).

You can specify the sample Distribution DDIWELAP or let this be taken as the default at run time. Otherwise, specify an alternate Distribution and define its attributes using **7 Distributions** from the IMS PA primary option menu.

The sample Distribution DDIWELAP specifies:
- Ranges (Limits) = 5,10,20,30,40,50,60,70,100
- Title =Sc Mil Mic (for seconds, millisecs, microsecs)
- Multiplier = 1000
- Edit Mask = ZZZ.ZZZ.ZZ9

The **"Alternate Sequencing Options" on page 489** are applicable to this report.

**Related reference:**
- **“DDname Grouping Options” on page 488**
  DDname Grouping Options define groups of records based on DDnames.
- **“IWAITANAL: Database IWAIT Analysis report” on page 531**
  The IWAITANAL operand of the IMSPAMON batch command requests the Database IWAIT Analysis report.

**Performance Exception reports**
The options for Performance Exception reports are described here.

**Restriction:** The three Summary reports are not produced for DB Monitor data.
The options are as follows:

**Reports Required**
Default: All selected.
Select with a / to request any combination of the following reports:

- **Exception Listing**
  A chronological listing of several types of exceptional occurrences including violations of performance thresholds for call elapsed time, IWAIT elapsed time, and number of IWAITs per call; and unusual occurrences such as BMP schedule failures, pseudo-schedules, transaction backouts inferred, and incomplete schedules.

- **Intent Failure Summary**
  For each PSB/DMB combination, the number of schedule failures due to intent conflict.

- **Pool Space Failure Summary**
  For each pool ID, the number of attempts that failed to reserve pool space due to unavailable storage.

- **Deadlock Event Summary**
  The number of deadlocks that occurred in the segments in DMB.

**Report Output DDname**
Default: EXCPTRPT
Specify the DDname to be used for the report output.

The following options apply only to the Exception Listing:

**Ignore Schedules**
Suppress printing of Specifically Created Schedule and Forced Schedule End lines in the Exception Listing report. Refer to the section “Performance Exception reports” in the *IMS Performance Analyzer for z/OS: Report Reference* for further details.
**Maximum Allowable**

Specify threshold values (in milliseconds) for the following measures. If an actual measure exceeds the threshold it is reported as an exception.

**Call Elapsed Time**

Default: None.

Specify the threshold value (in milliseconds) in the range 1–99999 for Call Elapsed exceptions. If the Elapsed Time per Call exceeds this threshold, it is reported as an exception.

If omitted, the upper limit of the Elapsed Time per Call Distribution is used as the threshold value if specified on the Distributions Options panel. If neither is specified, no Call Elapsed exceptions can be reported.

**IWAIT Elapsed Time**

Default: None.

Specify the threshold value (in milliseconds) in the range 1–99999 for IWAIT Elapsed exceptions. If the Elapsed Time per IWAIT exceeds this threshold, it is reported as an exception.

If omitted, the upper limit of the Elapsed Time per IWAIT Distribution is used as the threshold value if specified on the Distributions Options panel. If neither is specified, no IWAIT Elapsed exceptions can be reported.

**IWAITs per Call**

Default: None.

Specify the threshold value in the range 1–99999 for IWAITs per Call exceptions. If the number of IWAITs per Call exceeds this threshold, it is reported as an exception.

If omitted, the upper limit of the IWAITs per Call Distribution is used as the threshold value if specified on the Distributions Options panel. If neither is specified, no IWAITs per Call exceptions can be reported.

**Output Limit**

Default: 9

Specify the maximum number of pages to be produced for the Exception Listing. Reporting will terminate when this nth page is started.

The [“ESAF Integration Option” on page 489](#) is applicable to the Exception Listing.

**Related reference:**

[“EXCEPTION: Performance Exception reports” on page 531](#)

The EXCEPTION operand of the IMSPAMON batch command requests the suite of Performance Exceptions reports.

**Enqueue/Dequeue Trace report**

The IMS PA Enqueue/Dequeue Trace report traces a maximum of nine regions.

**Restriction:** This report is not produced for DB Monitor data.
The options are as follows:

**Reports Required**

Default: Summary by Database and Summary by Trancode

Select with a / to request any combination of the following reports:

- **Detailed Trace**
  
  A detailed trace of the database enqueue conflicts occurring during the reporting interval. A detail line is printed for each enqueue IWAIT interval recorded on the monitor data set. The PSB names active in the IMS region during the interval are displayed.

- **Summary by Database**
  
  A Summary of Waiting Transaction Codes by Database/Segment.

- **Summary by Trancode**
  
  A Summary of Database/Segments by Waiting Transaction Codes.

**Report Output DDname**

Default: ENQDD

Specify the DDname to be used for the report output.

The "Alternate Sequencing Options" on page 489 are applicable to this report.

**Related reference:**

"ENQTRACE: Enqueue/Dequeue Trace report" on page 533

The ENQTRACE operand of the IMSPAMON batch command requests the Enqueue/Dequeue Trace report.

**Region Histogram report**

**Restriction:** This report is not produced for DB Monitor data.
The options are as follows:

**Output Line Interval**
Default: 1000

Specify the number of milliseconds between output lines. The minimum value is 10 milliseconds and the maximum is 60000. Any value can be used, but it might be converted to a more efficient value. For example, 160 is converted to 200 to obtain 5 intervals per second. Any value over one second is converted to the nearest second.

**CPU/Transaction Limit**
Default: No limit.

Specify the maximum number of milliseconds of CPU time per transaction. If the average CPU time per transaction for the transactions processed during a schedule exceeds this value, it is flagged by appending an * (asterisk) to the number of messages enqueued at schedule end.

**Duplicate Line Limit**
Default: None.

Specify that all duplicate lines in excess of the given value are to be skipped. All activity on the lines must be identical for the output to be condensed. The maximum number of lines is 32767.

**Report Interval**
Defaults: Not specified.

Specify the reporting interval within that specified by the Monitor Global Report Interval. Standard rules apply to the date and time specification (see “Transactions by Time Period Options” on page 485).

**Report Output DDname**
Default: RGNHIST

Specify the DDname to be used for the report output.

**Regions to Include**
Default: First 13 active regions encountered in the input data.

Specify one PST Number, or the name of a Region ID by PST Object List (select **List** with a /), to nominate which regions to include in this report, up to a maximum of 13 regions. Masking is not supported. In the Object
List, ranges of values can be specified. If a requested region is not found in the input data, a report column will still be created for it. See Chapter 10, "Object Lists," on page 147 for information on how to define an Object List.

You can enter the name of an Object List directly, or to select from a list of available Object Lists, position the cursor in the field and press **Prompt (F4)**.

**Related reference:**

“HISTOGRAM: Region Histogram (Monitor) report” on page 533

The HISTOGRAM operand of the IMSFAMON batch command requests the Region Histogram report.

---

**System Analysis reports**

The options for System Analysis reports are described here.

The Monitor System Analysis reports are:

- **Total System IWAIT**

**Total System IWAIT reports**

The options for Total System IWAIT reports are described here.

---

The options are as follows:

**Reports Required:** Total System IWAIT Summary, Total System IWAIT Detail

Default: Both selected.

Select with a / to request either or both reports.

**Report Output DDname**

Default: IWTSUMMARY

Specify the DDname to be used for the report output.

**Elapsed Time per IWAIT Distribution**

Default: Not specified; graph is not produced.

Specify the name of a Distribution that defines the characteristics of the Elapsed Time per IWAIT distribution graph in the Total System IWAIT Summary and Detail reports. To select from a list of available Distributions, position the cursor in the field and press **Prompt (F4)**.
The sample Distribution IWTSUMMY is provided. It specifies:
- Ranges (Limits) = 1,5,10,30,50,100,300,500,1000
- Title = Sc Mil Mic (for seconds, millisecs, microsecs)
- Multiplier = 1000
- Edit Mask = ZZZ.ZZ9.999

The "Alternate Sequencing Options" on page 489 is applicable to the Total System IWAIT Detail report.

**Related reference:**
- "TSIWAIT: Total System IWAIT reports" on page 534

The TSIWAIT operand of the IMSPAMON batch command requests the Total System IWAIT reports.

### Program Analysis reports

The options for Program Analysis reports are described here.

The Program Analysis reports are:
- Program Activity Detail
- Program Trace
- Batch VSAM Statistics

### Program Activity Detail reports

The options for the Program Activity Detail reports are described here.

---

**Figure 245. Program Activity Detail Report Options**

The options are as follows:

**Report Format**

Default: 1. PSB Details

Select 1 or 3 to specify that the PSB Details reports are to be produced. Option 3 will produce the additional details of Transaction Code within PSB for all included PSBs. Both these reports have the heading PSB Details xxxxxxx where xxxxxxx is determined by the selection of Reports Required. The possible headings are:
**PSB Details PCB Totals**
Shows all calls by PCB.

**PSB Details by Function Code**
Shows all calls by the combination of PCB and function.

**PSB Details by Segment Name Feedback**
Shows all calls by the combination of PCB, function segment level, segment name, and status code.

**PSB Details by Function Code Segment Name**
Shows all calls by the combination of PCB, segment level, segment name, and status code.

**PSB Details PCB Totals (DD)**
Shows the calls that result in IWAITs, presented by PCB.

**PSB Details by DDname (DD)**
Shows the calls that result in IWAITs, presented by the combination of PCB and DDname.

**PSB Details by Function Code (DD)**
Shows the calls that result in IWAITs, presented by the combination of PCB and function.

**PSB Details by Function Code-DDname (DD)**
Shows the calls that result in IWAITs, presented by the combination of PCB, function, and DDname.

Select 2 to specify that PSB-TranCode Analysis reports are to be produced. They provide detailed information on program activities and calls that the program issues. The reports have the heading `Analysis of PSBname-TranCode for all Transaction Codes for the Included PSBs`. The subheadings of the reports are determined by the selection of **Reports Required**.

**Supplementary Report - DDname by PSB-TranCode**
Default: Not selected.

Select with a / to request the DDname by PSB-TranCode report. This report presents the analysis information on calls and IWAIT activities for each combination of DDname (major to minor), PSB name, transaction code, and PCB name. The report has the heading `DDname by PSB-Tran using`.

The **Reports Required** option is not applicable to this report.

**Reports Required (in Report Format)**
Default: None selected.

Select with a / to request any combination of reports to be produced in the format specified by the **Report Format** option.

Select **Function Code** to request “PCB Totals” and “by Function Code” reports.

Select **Segment Name** to request “PCB Totals” and “by Segname Feedbk” reports.

Select **DDname** to request “PCB Totals”, “PCB Totals(DD)”, and “by DDname IWTd On” reports.

Select **Function-Segment Name** to request “PCB Totals” and “by Functn-Segname” reports.
Select **Function-DDname** to request “PCB Totals”, “PCB Totals(DD)”, “by Function(DD)”, and “by Functn-DDname” reports.

**Note:** This option is not required for the Supplementary Report **DDname** by PSB-Trancode.

The "ESAF Integration Option" on page 489 is applicable to the **PSB Details** and **PSB-Trancode Analysis** reports.

**Related reference:**

"PSBREPORTS: Program Activity Detail report" on page 535

The PSBREPORTS operand of the IMSPAMON batch command requests the Program Activity Detail reports.

### Program Trace report

The options for Program Trace reports are described here.

![Program Trace Report Options](image)

Any number of separate traces can be requested, each defined by a set of the following parameters:

**Report Interval**

Defaults: Not specified.

Specify the reporting interval within that specified by the Monitor Global Report Interval. Standard rules apply to the date and time specification (see “Transactions by Time Period Options” on page 485).

Validation of the date and time might result in a warning message that will be displayed on the same row as the date/time to which the message relates.

**Note:** This option is not applicable to batch region traces. Instead, use the **Report Interval** on the Monitor Global Options panel.

**Trace Combination (Prog-Tran-Regn)**

The Trace Combination identifies the resource to be traced. You must specify one or more of the following three fields to identify the resource.
• For **Prog**, specify the PSB name to trace. For batch region traces, specify %PSB0001.
• For **Tran**, specify the Transaction Code to trace.
• For **Regn**, specify the Region PST number (1 to 999) to trace.

Each report can only trace one resource. You can request additional traces for other resources.

**Type**

Default: SUMM

Enter one of the following:

**SHORT** One line is to be printed per call. The one page summary is also produced.

**LONG** One line is to be printed per call, plus one line per IWAIT. The one page summary is also produced.

**SUMM** A one page summary is to be printed per trace.

**Limit**

Default: No limit.

Specify the maximum number of schedules to be processed in this trace.

**DDname**

Default: PGMTRACE

Specify the DDname for the trace. The DDname must be different for each trace.

**Line Actions:** The following line actions can be performed on a row of trace options:

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>/</td>
<td>Display the menu of line actions</td>
</tr>
<tr>
<td>I</td>
<td>Insert a null row after this row</td>
</tr>
<tr>
<td>R</td>
<td>Repeat this row</td>
</tr>
<tr>
<td>C</td>
<td>Copy this row</td>
</tr>
<tr>
<td>M</td>
<td>Move this row</td>
</tr>
<tr>
<td>A</td>
<td>(Move/Copy) After this row</td>
</tr>
<tr>
<td>B</td>
<td>(Move/Copy) Before this row</td>
</tr>
<tr>
<td>D</td>
<td>Delete this row</td>
</tr>
</tbody>
</table>

The “**ESAF Integration Option**” on page 489 is applicable to this report.

From the **Edit** menu on the action bar, or by direct entry on the command line, the following panel-level action is available:

**Reset (RES)**

Remove all line actions and delete any blank rows.

**Related reference:**

“**TRACE: Program Trace report**” on page 536

The TRACE operand of the IMSPAMON batch command requests Program Trace reports.

**Batch VSAM Statistics report**

The options for the Batch VSAM Statistics report are described here.
The options are as follows:

**Report Output DDname**

Default: VSAMRPT

Specify the DDname to be used for the report output.

**Related reference:**

“VSAMSTAT: Batch VSAM Statistics report” on page 538

The VSAMSTAT operand of the IMSPAMON batch command requests the Batch VSAM Statistics report. This report provides similar output to the DFSUTR30 VSAM Statistics report.

---

### Resource Usage reports

The options for Resource Usage reports are described here.

The Resource Usage reports are:

- Buffer Pool & Latch Statistics
- Communication reports
- MSC report
- ESAF report
- Synchronous Callout report

**Buffer Pool and Latch Statistics reports**

The options for the Buffer Pool and Latch Statistics reports are described here.
Note: The Buffer Pool and Latch Statistics reports are always produced when activated, regardless of the Report Interval specification, as they provide a summary of the monitor start (90) and monitor end (91) records.

Related reference:
“STATIS: Buffer Pool and Latch Statistics reports” on page 538

The STATIS operand of the IMSPAMON batch command requests the Buffer Pool and Latch Statistics reports.

Communication reports
The options for Communication reports are described here.

Restriction: This report is not produced for DB Monitor data.

The options are as follows:

Reports Required
Default: All selected.
Select with a / to request any combination of the following reports:

Communication Summary
Summary information on activities of teleprocessing lines or VTAM nodes.

Communication IWAIT
Detailed information on IWAITs occurring while dispatching communication subtasks to lines or VTAM nodes.

Line Functions
Information on functions of lines and VTAM nodes, including transmitted or received block sizes and turnaround intervals.

Report Output DDname
Default: COMMRPT
Specify the DDname to be used for the report output.
Communication Summary Distribution
Default: Not specified; graph is not produced.

Specify the name of a Distribution which defines the attributes of the Line Elapsed Time graph for the Communication Summary report. If not specified, the graph is not produced.

The sample Distribution COMMELP is provided. It specifies:
- Ranges (Limits) = 1,2,4,8,16,32,64,128,256
- Title = Sc Mil Mic (for seconds, millisecs, microsecs)
- Multiplier = 1000
- Edit Mask = ZZZ.ZZ9.999

Communication IWAIT Distribution
Default: Not specified; graph is not produced.

Specify the name of the Distribution to define the attributes of the Line IWAIT Elapsed Time graph for the Communication IWAIT report. The Distribution must be specified for the distribution graph to be produced.

The sample Distribution COMMIWE is provided. It specifies:
- Ranges (Limits) = 1,2,4,8,16,32,64,128,256
- Title = Sc Mil Mic (for seconds, millisecs, microsecs)
- Multiplier = 1000
- Edit Mask = ZZZ.ZZ9.999

Line Functions Distributions
Defaults: Not specified; graphs are not produced.

Specify the names of the Distributions to define the attributes of the graphs for the Line Functions report. A Distribution must be specified for the corresponding distribution graph to be produced.

For the Received Block Size per Block graph, the sample Distribution COMMLFR is provided. For the Transmitted Block Size per Block graph, the sample Distribution COMMLFT is provided. They specify:
- Ranges (Limits) = 10,20,40,60,100,200,400,800,1000
- Title = Block Size
- Multiplier = 1
- Edit Mask = ZZZ,ZZZ,ZZ9

For the Turnaround Interval graph, the sample Distribution COMMLFR is provided. It specifies:
- Ranges (Limits) = 1,10,100,200,500,800,1000,1500,2000
- Title = Sc Mil Mic (for seconds, millisecs, microsecs)
- Multiplier = 1000
- Edit Mask = ZZZ.ZZ9.999

You can enter the name of the Distributions directly, or to select from a list of available Distributions, position the cursor in the field and press Prompt (F4).

See Chapter 11, “Distributions,” on page 157 for information on how to define Distributions and their attributes.

The “Alternate Sequencing Options” on page 489 are applicable to this report.

Related reference:
“COMMS: Communication reports” on page 538
The COMMS operand of the IMSPAMON batch command requests the Communication reports.
MSC reports

The options for MSC reports are described here.

Restriction: These reports are not produced for DB Monitor data.

Reports Required

Default: All selected.

Select with a / to request any combination of the following reports:

- MSC Summary
  - Summary information on the number of cross-system messages.

- MSC Traffic
  - Detailed information on local system IDs and cross-system traffic.

- MSC Queueing
  - Detailed information on the cross-system message queue.

Report Output DDname

Default: MSCRPT

Specify the DDname to be used for the report output.

MSC Queuing Distributions

Defaults: Not specified; graphs are not produced.

Specify the names of the Distributions to define the attributes of the graphs for the MSC Queueing report. A Distribution must be specified for the corresponding distribution graph to be produced.

For the Queue Length per Message graph, the sample Distribution MSCQLEN is provided. It specifies:

- Ranges (Limits) = 1,2,3,4,5,10,15,30,90
- Title = Q Length
- Multiplier = 1
- Edit Mask = ZZZ,ZZZ,ZZ9

For the Queue Time per Message graph, the sample Distribution MSCQELP is provided. It specifies:

- Ranges (Limits) = 1,5,10,50,100,500,1000,5000,10000
- Title = Sc Mil Mic (for seconds, millisecs, microsecs)
Multiplier = 1000
Edit Mask = ZZZ.ZZ9.999

You can enter the name of the Distributions directly, or to select from a list of available Distributions, position the cursor in the field and press Prompt (F4).

See Chapter 11, “Distributions,” on page 157 for information on how to define Distributions and their attributes.

The “Alternate Sequencing Options” on page 489 are applicable to this report.

Related reference:
“MSC: MSC reports” on page 539
The MSC operand of the IMSPAMON batch command requests the MSC reports.

**ESAF report**

The options for the ESAF report are described here.

![File Options Help](image)

<table>
<thead>
<tr>
<th>Command</th>
<th>SAMPMON - ESAF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specify report options.</td>
<td></td>
</tr>
<tr>
<td>Report Output DDname</td>
<td>ESAFRPT</td>
</tr>
</tbody>
</table>

*Figure 251. ESAF (Monitor) Report Options*

The options are as follows:

**Report Output DDname**

Default: ESAFRPT

Specify the DDname to be used for the report output.

The “Alternate Sequencing Options” on page 489 are applicable to this report.

Related reference:
“ESAF: ESAF (Monitor) report” on page 540
The ESAF operand of the IMSPAMON batch command requests the External Subsystem report.

**Synchronous Callout report**

The Synchronous Callout report provides a detailed analysis of sync callout activity in regions and by application programs. Individual subsystem activity is broken down by Region and Program, with statistics of sync callout activity per Transaction.
The options are as follows:

**Report Output DDname**

Default: SYNCCOUT

Specify the DDname to be used for the report output.

**Related reference:**

"SYNCCOUT: Synchronous Callout report" on page 540

The SYNCCOUT operand of the IMSPAMON batch command requests the Synchronous Callout report.

---

**Fast Path Analysis reports**

The options for Fast Path Analysis reports are described here.

The Fast Path Analysis reports are:

- DEDB Resource Contention
- Fast Path Buffer Statistics
- BALG/Shared EMHQ Analysis
- OTHREAD Analysis
- VSO Summary

**DEDB Resource Contention report**

The options for the DEDB Resource Contention report are described here.

**Restriction:** This report is not produced for DB Monitor data.

---

**File Options Help**

---

**Figure 252. Synchronous Callout Report Options**

**Figure 253. DEDB Resource Contention Report Options**
**Graph Distributions**

Default: Not specified; graph is not produced.

Specify the name of a Distribution that defines the attributes of the **Lock IWAIT Elapsed Time** graph. A Distribution must be specified for the distribution graph to be produced. Note that this distribution graph is for all lock types.

The sample Distribution FPRCLIW is provided. It specifies:

- **Ranges (Limits)** = 1,2,4,8,16,32,64,128,256
- **Title** = Sc Mil Mic (for seconds, millisecs, microsecs)
- **Multiplier** = 1000
- **Edit Mask** = ZZZ.ZZ9.999

You can enter the name of the Distribution directly, or to select from a list of available Distributions, position the cursor in the field and press **Prompt** (F4).

See Chapter 11, “Distributions,” on page 157 for information on how to define Distributions and their attributes.

The “Alternate Sequencing Options” on page 489 are applicable to this report.

**Related reference:**
- “FPRSCONT: DEDB Resource Contention report” on page 541

The FPRSCONT operand of the IMSPAMON batch command requests the DEDB Resource Contention report.

**Fast Path Buffer Statistics report**

The options for the Fast Path Buffer Statistics report are described here.

**Restriction:** This report is not produced for DB Monitor data.

```
File Options Help

Command ===>

SAMPSON - Fast Path Buffer Statistics

Specify report options.

Report Output DDname FPBUFFER

Graph Distributions: Validation Warning

Buffer Statistics +
```

*Figure 254. FP Buffer Statistics Report Options*

The options are as follows:

**Report Output DDname**

Default: FPBUFFER

Specify the DDname to be used for the report output.

**Graph Distributions**

Default: Not specified; graph is not produced.

Specify the name of a Distribution which defines the attributes of the **Buffer Statistics** distribution graph for the Fast Path Buffer Statistics report. If not specified, the graph is not produced.
You can enter the name of the Distribution directly, or to select from a list of available Distributions, position the cursor in the field and press Prompt (F4).

The sample Distribution FPBSCNT is provided. It specifies:
- Ranges (Limits) = 100,200,300,400,500,600,700,800,900
- Title = Counts
- Multiplier = 1
- Edit Mask = ZZZ,ZZZ,ZZ9

See Chapter 11, “Distributions,” on page 157 for information on how to define Distributions and their attributes.

The [“Alternate Sequencing Options” on page 489] are applicable to this report.

Related reference:
- [“FPBUFFER: Fast Path Buffer Statistics report” on page 541](#)

The FPBUFFER operand of the IMSPAMON batch command requests the Fast Path Buffer Statistics report.

### BALG/Shared EMHQ Analysis report

The options for the BALG/Shared EMHQ Analysis report are described here.

**Restriction:** This report is not produced for DB Monitor data.

![Figure 255. BALG/Shared EMHQ Analysis Report Options](#)

The options are as follows:

- **Report Output DDname**
  - Default: FPBALG
  - Specify the DDname to be used for the report output.

- **Graph Distributions**
  - Defaults: Not specified; graphs are not produced.
  - Specify the names of the Distributions to define the attributes of the graphs for this report. If a Distribution is not specified, the corresponding distribution graph is not produced.
  - For the **Queue Length per Message** graph, the sample Distribution FPBGQLN is provided. It specifies:
    - Ranges (Limits) = 1,2,3,4,5,10,15,30,90
    - Title = Length
    - Multiplier = 1
    - Edit Mask = ZZZ,ZZZ,ZZ9
For the **Queue Time per Message** graph, the sample Distribution FPBGELP is provided. It specifies:
- Ranges (Limits) = 1,5,10,50,100,500,1000,5000,10000
- Title = Sc Mil Mic (for seconds, millisecs, microsecs)
- Multiplier = 1000
- Edit Mask = ZZZ.ZZ9.999

You can enter the name of the Distributions directly, or to select from a list of available Distributions, position the cursor in the field and press **Prompt** (F4).

See Chapter 11, “Distributions,” on page 157 for information on how to define Distributions and their attributes.

**Related reference:**

“FPBALG: BALG/Shared EMHQ report” on page 542

The FPBALG operand of the IMSPAMON batch command requests the BALG/Shared EMHQ report.

## OTHREAD Analysis report

The options for the OTHREAD Analysis report are described here.

**Restriction:** This report is not produced for DB Monitor data.

![Figure 256. OTHREAD Analysis Report Options](image)

The options are as follows:

**Report Output DDname**

Default: FPOTHRD

Specify the DDname to be used for the report output.

**Graph Distributions**

Defaults: Not specified; graphs are not produced.

Specify the names of the Distributions to define the attributes of the graphs for the OTHREAD Analysis report. A Distribution must be specified for the corresponding distribution graph to be produced.

For the **Active OTHREAD Counts** graph, the sample Distribution FPOTACT is provided. It specifies:
- Ranges (Limits) = 100,200,300,400,500,600,700,800,900
- Title = Counts
- Multiplier = 1
- Edit Mask = ZZZ.ZZZ.ZZ9
For the *Waiting Area* graph, the sample Distribution FPOTWTA is provided. For the *Buffers on Queue* graph, the sample Distribution FPOTBOQ is provided. They specify:

Ranges (Limits) = 10,20,30,40,50,60,70,80,90
Title = Counts
Multiplier = 1
Edit Mask = ZZZ,ZZZ,ZZZ

You can enter the name of the Distributions directly, or to select from a list of available Distributions, position the cursor in the field and press **Prompt** (F4).

See [Chapter 11, “Distributions,” on page 157](#) for information on how to define Distributions and their attributes.

**Related reference:**

“FPOTHRD: OTHREAD Analysis report” on page 543
The FPOTHRD operand of the IMSPAMON batch command requests the OTHREAD Analysis report.

**VSO Summary report**

The options for the VSO Summary report are described here.

**Restriction:** This report is not produced for DB Monitor data.

```
File Options Help

Command ===>

Specify report options.

Report Output DDname FPVSOSUM
```

*Figure 257. VSO Summary Report Options*

The options are as follows:

**Report Output DDname**

Default: FPVSOSUM

Specify the DDname to be used for the report output.

The "[Alternate Sequencing Options" on page 489](#) are applicable to this report.

**Related reference:**

“FPVSOSUM: VSO Summary report” on page 543
The FPVSOSUM operand of the IMSPAMON batch command requests the VSO Summary report.

**Monitor Data Analysis report**

The options for Monitor Data Analysis reports are described here.

The Monitor Data Analysis reports are:

- Monitor Record Trace
Monitor Record Trace report

The options for the Monitor Record Trace report are described here.

The options are as follows:

**Report Output DDname**
Default: SLOGTRC

Specify the DDname to be used for the report output.

**Output Limit**
Default: 100

Specify the maximum number of pages to be produced for this trace report.

**Monitor Records to Include**
Default: None specified; include all records.

Specify one monitor record code, or the name of an Object List of type RECCD (select List with a /), to nominate which record codes to include in this trace report. Monitor Record Codes are hexadecimal values of two characters. Masking is not supported. In the Object List, ranges of values can be specified.

You can enter the name of the Object List directly, or to select from a list of available Object Lists, position the cursor in the field and press **Prompt** (F4).

See Chapter 10, “Object Lists,” on page 147 for information on how to define an Object List.

**Related reference:**
[SLOGTRC: Monitor Record Trace report](page 544)
The SLOGTRC operand of the IMSPAMON batch command requests the Monitor Record Trace report.
Chapter 23. Monitor batch interface

The IMS PA dialog generates the JCL and commands for executing your report requests in batch. The JCL and commands for Monitor report requests are described here. Sample jobs are supplied in the SIPISAMP Library.

Related tasks:
- “Run Monitor Report Set” on page 475

The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category, or individual reports.

Monitor Report Set JCL

The JCL built by IMS PA for the batch execution of a Report Set via the SUBMIT or JCL (or RUN) commands is based on the sample library member IPIMONJC for a Monitor Report Set.

IMS PA builds the JCL to execute the program IPIMAIN using the following options specified using the dialog:

**JOB**
Job Statement Information in IMS PA Settings.

**IPI EXEC IPIMAIN,PARM='parameter list'**
IMS PA main program with parameters:

**UPPER**
if Reports in Upper Case is YES in IMS PA Settings.

**STEPLIB DD**
IMS PA Load Library In IMS PA Settings.

**TAPEDD DD**
For monitor input, this DD statement is generated when two or more tape (or cartridge) input data sets are specified. TAPEDD is only used to establish unit affinity for the tape files in the JCL, and is not used by IMS PA batch processing.

**MONITOR DD**
Monitor Data Set Name (DSN) From System Definitions. The Monitor Files specified for the IMS Subsystem.

**IPIRSET DD**
For DSN(member) where:

- **DSN** Report Sets Data Set in your IMS PA Profile.
- **member** Name of the Report Set being run.

**IPIOBJL DD**
Object Lists Data Set in your IMS PA Profile.

**IPIDIST DD**
Distributions Data Set in your IMS PA Profile.

**IPIOPTS DD ***
Report Interval This overrides the Report Set Global Report Interval within the IPIRSET or IPICMD DD statements.

It is the report period specified on the Run Report Set panel at run time. To display the runtime options, you can issue the RUN command for a Report, Report Category, or Report Set.
**IPISTOUT DD**

Trace Data Set From Monitor Global Options.

If the data set does not exist, IMS PA uses the Monitor Trace allocation details in Reporting Allocation Settings.

### Sample JCL: Monitor Report Set

```plaintext
//IMSPA JOB CLASS=A
//*
//IMSPA EXEC PGM=IPIMAIN
//STEPLIB DD DSN=IMSPA.V440.SIPILINK,DISP=SHR
//* Monitor Input data set
//MONITOR DD DSN=IMS.V141.MONITOR,DISP=SHR
//* IMSPA Messages
//SYSPRINT DD SYSOUT=* 
//SYSDUMP DD SYSOUT=* 
//* Report Set
//IPIRSET DD DSN=IMSPA.V440.RSET(MON01),DISP=SHR
//* Object Lists
//IPIOBJL DD DSN=IMSPA.V440.OBJL,DISP=SHR
//* Distributions
//IPIDIST DD DSN=IMSPA.V440.DIST,DISP=SHR
//* Report Time Range
//IPIOPTS DD *
IMSPAMON START(2014/01/13,12:15:00:00),STOP(2014/01/13,18:30:00:00)
```

Figure 259. JCL: Monitor Report Set

**Related reference:**

“Report Set JCL” on page 717

The sample library SIPSAMP contains members with sample JCL to generate IMS PA reports and extracts. Also included are examples for Automated file selection and BMP analysis.

---

**Monitor JCL with command input**

To generate JCL that contains commands in-stream, rather than referring to data sets, enter the dialog command JCLCMD, or its abbreviation, JCM; or, equivalently, enter RUN, and then specify the execution mode **Edit JCL with command input**.

By contrast, to generate JCL that builds commands at runtime from data sets, rather than containing commands in-stream, enter the dialog command JCL (or a RUN command that does not specify **Edit JCL with command input**). For details, see “Monitor Report Set JCL” on page 515.

The JCL generated by the JCLCMD command differs in the following ways from the JCL generated by the JCL command:

- The IPICMD DD statement contains the series of user modifiable commands built from the activated reports in the Report Set. A description of the Report Set appears as comments (* in column 1) preceding the commands. It replaces the IPIRSET DD statement generated by the JCL command.

- The command input stream contains INCL/EXCL command parameters built from the Object Lists used by the Report Set. They replace the IPIOBJL DD statement generated by the JCL command.

- The command input stream contains DISTRIBUTION command parameters built from the Distributions used by the Report Set. They replace the IPIDIST DD statement generated by the JCL command.

- The IMSPAMON command identifies monitor reports.
This facility allows you to build report JCL with command input once and store it into an external library for submitting at any time, independent of the original Report Set. Individual report options, such as Date/Time report intervals or object selection filters (such as Transaction Code, Program, Database) can then be modified in the JCL and submitted without making changes to the original Report Set.
Sample JCL with command input: Monitor Report Set

//IMSPA JOB (ACCOUNT), 'NAME'
//*
//* IMS PA Report Set SAMPMON - Sample Monitor Report Set
//*
//IPI EXEC PGM=IPIMAIN
//STEPLIB DD DSN=IMSPA.V440.SIPILINK,DISP=SHR
//* Input Data Sets
//MONITOR DD DSN=IMS.V141.MONITOR,DISP=SHR
//* Report Time Range
//IPIOPTS DD *
// IMSPAMON START(-1,),STOP(0,)
//*
// Sysout data set
//SYSPRINT DD SYSOUT=*  
//SYSPRINT DD SYSOUT=*  
//SYSDUMP DD SYSOUT=*  
//* Report Set Command Input
//IPICMD DD *
* IMS PA Monitor Report
* Report Set Name - SAMPMON
* Description - Sample Monitor Report Set
* Monitor Report Global Options
* Summary Report Output File - SUMMRPT
* Detail Report Output File - DETLRPT
* Trace Records Save Data Set Name - Not Specified
* Total System IWAIT Report Output File - IWTSUMMY
* Print Lines per Page - 60
* When Reports are written - STOP
* Minimum VSAM IWAIT Time (milliseconds) - 5
  IMSPAMON DDNAME(SUMMRPT),
  DETAILDDNAME(DETLRPT),
  PAGESIZE(60),
  PRINTAT(STOP),
  MINIWAIT(5)
* Schedule/Trancode Summary Report
  IMSPAMON SCHEDTRAN
* Region Summary Report
  IMSPAMON REGSUM
* Program Summary Report
  IMSPAMON PROGSUM
* Database IWAIT Summary Report
  IMSPAMON IWAITSUM
* Total System IWAIT Report
* Summary Report
* Detailed Report
* Report Output File - IWTSUMMY
  IMSPAMON TSIWAIT(
    SUMMARY,
    DETAIL,
    DDNAME(IWTSUMMY))  
* Buffer Pool and Latch Statistics
* Report Output DDname - STATRPT
  IMSPAMON STATIS(
    DDNAME(STATRPT))
  IMSPAMON EXECUTE
/*

Figure 260. JCL with command input: Monitor Report Set SAMPMON

IMSPAMON command

The IMSPAMON command requests a monitor report. Multiple monitor reports can be requested in the one batch job.
Format

The last IMSPAMON command in the batch job must include EXECUTE as its last operand. This informs IMS PA that all monitor reports have been requested, and processing of monitor input can commence.

For a description of the IMSPAMON operands, see “Monitor report operands” on page 521.

Example

```
IMSPAMON START(2013/08/12,10:00),STOP(2013/08/12,11:00)
IMSPAMON PROGSUM,REGSUM,IWAITSUM
IMSPAMON TSIWAIT(DETAIL, SUMMARY, DDNAME(IWAITRPT))
IMSPAMON EXECUTE
```

From this example, IMS PA will produce the following reports for the time period 10 a.m. to 11 a.m. on 12 August 2013:
- Program Summary
- Region Summary
- Database IWAIT Summary
- Total System IWAIT Detail and Summary

**DISTRIBUTION command**

The DISTRIBUTION command defines a Distribution to be used for monitor or log reporting. The Distribution describes the presentation and thresholds to be used by the report processors and presented in the report output.

For a detailed description of Distributions, see Chapter 11, “Distributions,” on page 157.

The DISTRIBUTION command does not invoke report processing. It works in conjunction with report processing that produces distribution report output.

**Format**

```
name DISTRIBUTION [LIMITS(value1,...,value9),]
[TITLE('text'),]
[MULTIPLY(nnnn),]
[EDITMASK('char.mask')|EDITMASK(hex.mask)]
```

**name** Specifies the name of the Distribution. This name associates the Distribution with a particular report or set of reports and must be one of the following: LOGIN, $IPDIST1, $IPDIST2, SYSCPT, ELAP/SCH, ELAP/CAL, ELAP/IWT, IMTS/CAL, INTSUMMY, DDIWELAP, FPBSCNT, FPBQCN, FPBQELP, FPOTACT, FPOTUTA, FPOTBQQ, FPQCLW, COMMELP, COMMAIE, COMMLFR, COMMLFT, COMMLFI, MSQLLEN, MSQLELP. See “Distribution and Report cross-reference” on page 161 for the list of these Distributions, their titles, and the reports they apply to.

DISTRIBUTION Identifies the attributes of the distribution graphs.
LIMITS
Defines the nine limits which define nine ranges for the distributions. The
nine limits must be in ascending sequence. When the distribution is
printed, the limit values are printed at the left up the vertical axis of the
graph. This operand is optional, and if omitted, the default limits are
1,5,10,30,50,100,300,500,1000.

TITLE Defines the unit of measure for the graph. Up to twelve (12) characters,
including blanks, can be specified as the title. The title is printed on the left
at the top of the vertical axis above the column of limit values. This
operand is optional, and if omitted, the default title is Sc Mil Mic for
seconds, milliseconds and microseconds respectively.

MULTIPLY
Specifies a numeric value (typically a multiple of 10) to be used to
multiply by each limit. This operand is optional, and if omitted, the default
is 1000.

EDITMASK
Specifies an edit mask to be used when printing the limit values. Two
formats can be used:
1. Eleven (11) character quoted string.
2. Twenty four (24) character string that represents twelve (12)
   hexadecimal values.

If less than the maximum number of characters allowed is specified, the
mask is right justified and padded on the left with blanks.

If the quoted string is used, any character can be specified, but some
characters have a special meaning, as follows:
Z  Zero suppression
9  Digit mask
S  Trigger start

Any other character is used in the result as is. The number of digit select
characters (Z, 9, S) must be odd, otherwise the low-order digit of the result
will not be formatted.

If the hexadecimal string is used, up to twelve (12) hexadecimal values (24
hex characters) can be represented. The hexadecimal string is the actual
edit mask as used by the edit (ED and EDMK) assembler instructions. The
mask can include any valid hexadecimal value, but some have a special
meaning, as follows:
20  Digit selector
21  Significance starter
22  Field separator

This operand is optional, and if omitted, the default edit mask is
'ZZZ.ZZ9.999' or 402020204B2021204B20202020.

Example
ELAP/CAL DISTRIBUTION LIMITS(1,5,10,30,50,100,300,500,1000),
MULTIPLY(1000),
TITLE('Sc Mil Mic'),
EDITMASK('ZZZ.ZZ9.999')

In this example, the Distribution ELAP/CAL is used to produce distributions of DL/I
call elapsed time. The time ranges are the limit values multiplied by the multiplier
and would be 0-1000, 1001-5000, 5001-10000, 10001-30000, 30001-50000,
50001-100000, 100001-300000, 300001-500000, 500001-1000000, over 1000000. When
formatted by the edit mask, they are printed as 1.000, 5.000, 10.000, ..., 1.000.000 where 1.000 represents 1 millisecond and 1.000.000 represents 1 second.

**COPY command**

The COPY command reads one or more members of the command library. The command library must be a partitioned data set defined by the **CMDBLIB DD** statement.

COPY puts precoded commands from the command library into the input stream.

**Format**

```
COPY member1[,member2,...]
```

The only operands for the COPY command are one or more member names in the command library. Each member may in turn contain COPY commands. The EXECUTE operand may be within or following the last COPY command.

Member names are scanned from left to right, and members are read in the order specified. Copied members may themselves employ the COPY command. To prevent COPY loops, any request for a member currently queued for read causes an error and the member is not processed. An error message is issued for any member not found in the command library.

COPY allows users to retrieve precoded commands and include them in the input stream. Precoded commands would usually include production level command data, or static command input like Distributions, Include and Exclude lists, or commonly used reports.

**Example**

In this example, *MONREPS* contains a common set of monitor report commands, and *MONDISTS* contains the Distributions used by monitor reporting.

```
IMSPAMON    START(2014/01/12,10:00),STOP(2014/01/12,11:00)
COPY        MONREPS
IMSPAMON    EXECUTE
COPY        MONDISTS
```

**Monitor report operands**

The IMSPAMON command has two categories of operand: the reports and their specific options, and the general options (Global, Distributions, Transactions by Time Period, Application Grouping, DDname Grouping, ESAF Integration, Alternate Sequencing) that apply to multiple reports.

The IMSPAMON operands that produce reports are:

- **TIMEREPOR**
  - Transactions by Time Period
- **APPLICATION**
  - Application Group
- **DDGRP**
  - DDgroup
For further details of the operands and their default values, see the description of the corresponding dialog options in Chapter 22, “Requesting Monitor reports,” on page 471.
Monitor Global Options

The Monitor Global Options define output and general control information for the monitor reports.

Format

```
IMSPAMON [START(date,time),]
[STOP(date,time),]
[DDNAME(ddname),] default SUMMRPT
[DETAILDDNAME(ddname),] default DETLRPT
[STATSDDNAME(IP1STOUT),]
[DISTRIBUTIONS,]
[REGIONS,]
[MINSWAIT(nnmmnnnnnn),] default 0 msec
[BMPONLY|NOBMP,]
[PAGESIZE(nnn),] default 60 lines
[PRINTAT(HOUR|STOP|EOF|nnnn),]
[SELECT(psbname,...)|NOSELECT(psbname,...)]
[IMSPAMON ALTSCHED]
IMSPAMON EXECUTE[(NEW|BATCH)]
```

START
  Global Start date and time
STOP  Global Stop date and time
DDNAME
  Monitor Input File ddname
DETAILDDNAME
  Summary reports output ddname
STATSDDNAME
  Trace data set file name
DISTRIBUTIONS
  Include Distributions in reports
REGIONS
  Break down reports by Region
BMPONLY
  Only include BMP regions in reports
NOBMP
  Exclude BMP regions from reports
MINIWAIT
  Minimum VSAM IWAIT elapsed time, in milliseconds
PAGESIZE
  Number of print lines per page
PRINTAT
  Report break point specifies when reports are written
SELECT or NOSELECT
  Program (PSB) names to include or exclude
ALTSCHED
  IWAITs for ‘No Message’ are ignored
BATCH
  Input data is DB Monitor

Example

Total System IWAIT Summary and Detail Reports for an IMS DB System:
**DISTRIBUTION: Distributions Options**

The Distributions Options describe the layout of distribution graphs which show the dispersion of the values of certain performance measures.

**Format**

```plaintext
name DISTRIBUTION [LIMITS(value1,...,value9),]
[TITLE('text'),]
[MULTIPLY(nnnn),]
[EDITMASK('char.mask')|EDITMASK(hex.mask)]
```

where the Distribution `name` is either: ELAP/SCH, ELAP/CAL, ELAP/IWT, IWTS/CAL, IWTSUMMY, DDIWELAP, FPBSCNT, FPBGQLN, FPBGELP, FPOTACT, FPOTWTA, FPOTBQ, FPRCLW, COMMLEP, COMMMIE, COMMLFR, COMMLFT, COMMLFI, MSCQLEN, MSCQELP.

See [“Distribution and Report cross-reference” on page 161](#) for the list of these Distributions, their titles, and the reports they apply to.

**Example**

Database IWAIT Analysis Report by Region with Distributions:

```
IMSPAMON DISTRIBUTIONS,
REGIONS
IMSPAMON DBIWAITANAL(DISTRIBUTIONS)
IMSPAMON EXECUTE
DDIWELAP DISTRIBUTION LIMITS(1,5,10,30,50,100,300,500,1000),
TITLE('Sc Mil Mic'),
MULTIPLY(1000),
EDITMASK('ZZZ.ZZ9.999')
```

**Related reference:**

[“Distributions Options” on page 483](#)
Format

IMSPAMON TIMEREPORT(
    TIMES(t1,t2,t3,...,t14),
    [PERCENT|COUNT],
    [REGION],
    [FROM(date,time),],
    [TO(date,time)])

TIMES List of fourteen (14) comma separated, ascending times in the format
hh:mm:ss to be used as report time ranges

PERCENT Report transaction counts as a percentage of total transactions

COUNT Report transaction counts as a number

REGION Break down reports by Region

Examples

Region Analysis Report:

IMSPAMON TIMEREPORT(
    TIMES(00:00,07:00,08:00,09:00,10:00,11:00,12:00,
    13:00,14:00,15:00,16:00,17:00,18:00,19:00),
    COUNT,
    FROM(2013/08/13,),TO(2013/08/14,))
IMSPAMON REGANAL(TIMEREPORT)
IMSPAMON EXECUTE

Application Detail Report with Application Grouping:

IMSPAMON APPLICATION(PSB2,(PSB2R*,PSB2T*,PSB2A*))
IMSPAMON TIMEREPORT(
    TIMES(09:25,09:25:10,09:25:20,09:25:30,
    09:25:40,09:25:50,09:26,),
    PERCENT,
    FROM(2014/06/19,09:25:00:00),
    TO(2014/06/19,09:30:00:00))
IMSPAMON APPLGRP(TIMEREPORT)
IMSPAMON EXECUTE

Related reference:

"Transactions by Time Period Options" on page 485

This panel maintains the time periods and other options used by the Transactions
by Time Period report, which is optionally included in the Region Analysis and
Application Detail reports.

APPLICATION: Application Grouping Options

The Application Grouping Options specify one or more groups of Program (PSB)
names to appear as line items in the Program Summary and Region Analysis
reports, and in the heading of the Application Detail report.

Format

IMSPAMON APPLICATION(grpname1,(a1,a2,...),
    grpname2,(b1,b2,...),...)
**Example**

Program Summary Report with Application Grouping:

```
IMSPAMON APPLICATION(PROGAGRP,(A*),PROGBGRP,(B*,C*,D*))
IMSPAMON PROGSUM
IMSPAMON EXECUTE
```

**Related reference:**

"Application Grouping Options" on page 487

The Application Grouping Options define groups of records based on Program (PSB) name.

**DDGROUP: DDname Grouping Options**

The DDname Grouping Options specify one or more groups of ddnames to appear as line items in the Database IWAIT Summary report and in the heading of the Database IWAIT Analysis (DDgroup) report.

**Format**

```
IMSPAMON DDGROUP(grpname1,(a1,a2,...),
                 grpname2,(b1,b2,...),...)
```

**Example**

Database IWAIT Analysis Report with DDname Grouping, no Distributions:

```
IMSPAMON DDGROUP(DD1,(A*),DD2,(B*,C*,D*))
IMSPAMON DBIWAITANAL
IMSPAMON EXECUTE
```

**Related reference:**

"DDname Grouping Options" on page 488

DDname Grouping Options define groups of records based on DDnames.

**ESAFOpt: ESAF Integration Option**

The ESAF Integration Option controls whether External Subsystem calls are integrated into all Region and Program/Trancode reports.

**Format**

```
IMSPAMON ESAFOpts(CALLs|NOCALLs)
```

**Example**

Program Summary with ESAF Integration:

```
IMSPAMON ESAFO(CALL)
IMSPAMON PROGSUM
IMSPAMON EXECUTE
```
**Related reference:**

“ESAF Integration Option” on page 489

When the ESAF Integration Option is activated, ESAF call statistics are reported for each subsystem and contribute to the total call and IWAIT counts for regions and program/trancodes.

**ALTSEQ: Alternate Sequencing Options**

Summarized monitor reports can be ordered in an alternate sequence. By default, the reports are ordered by name, such as Region ID, Program, Transaction Code and Database.

Alternate Sequencing changes this sequence to order (in descending sequence) by any one of the following:

- **Occupancy**
  - The elapsed time that the resource is scheduled or in use. For example, the busiest regions or programs.

- **Calls**
  - The time spent by the resource performing DL/I or other types of calls. For example, transactions with the most DL/I call activity.

- **Delay**
  - The time spent by the resource waiting for IWAIT events to complete. For example, the databases which had to wait the longest for I/O to complete.

When Alternate Sequencing is used, a limit can also be specified to restrict the number of resources reported. You can specify a fixed number, for example the 10 worst performing databases, or you can specify a percentage, for example the top 10% busiest regions.

**Format**

```
IMSPAMON ALTSEQ([NAME|OCCupancy|CALLs|DELAY,]
[LIMit(nnn[%])]) default 100%
```

- **NAME**
  - Order the report by name.

- **OCCUPANCY**
  - Order the report by the elapsed time scheduled or in use.

- **CALLS**
  - Order the report by the volume of DL/I activity (or other types of calls).

- **DELAY**
  - Order the report by the time spent waiting for IWAITs to complete.

- **LIMIT**
  - Report only the first `nnn` or `nnn%` of the resource.

**Example**

Region Summary with sorting by occupancy and limited to the 5 worst regions:

```
IMSPAMON ALTSEQ(OCC,LIMIT(5))
```

**Related reference:**

Chapter 23. Monitor batch interface
Alternate sequencing changes the default "name" order of a report (where the "name" field depends on the report; for example, Region ID, Program name, Transaction Code, or Database name) to descending order of one of the following: Occupancy, Calls, or Delay. You can also limit reporting to the worst performers.

**SCHEDTRAN: Schedule/Transaction Summary report**

The SCHEDTRAN operand of the IMSPAMON batch command requests the Schedule/Transaction Summary report.

**Format**

```
IMSPAMON  SCHEDTRAN
```

**Example**

```
IMSPAMON  DDNAME(SUMMRPT)
IMSPAMON  SCHEDTRAN
IMSPAMON  EXECUTE
```

**Related reference:**

[“Schedule/Transaction Summary report” on page 491](#)

There are no panel options specific to this report.

**REGSUM: Region Summary report**

The REGSUM operand of the IMSPAMON batch command requests the Region Summary report.

**Format**

```
[IMSPAMON  REGSUM
IMSPAMON  EXECUTE
[name  DISTRIBUTION [LIMITS(value1,...,value9),]
[TITLE('text'),]
[MULTIPLY(nn),]
[EDITMASK('char.mask')|EDITMASK(hex.mask)]
]
```

Specify up to 4 Distributions with name either: ELAP/SCH, ELAP/CAL, ELAP/IWT, IWTS/CAL.

**Example**

```
IMSPAMON  DDNAME(SUMMRPT)
IMSPAMON  REGSUM
IMSPAMON  EXECUTE
```

**Related reference:**

[“Region Summary report” on page 491](#)

There are no panel options specific to this report. The report can only be activated or deactivated.

**PROGSUM: Program Summary report**

The PROGSUM operand of the IMSPAMON batch command requests the Program Summary report.
Format

IMSPAMON  PROGSUM

Example

IMSPAMON  DDNAME(SUMMRPT)
IMSPAMON  PROGSUM
IMSPAMON  EXECUTE

Related reference:
“Program Summary report” on page 491
There are no panel options specific to this report. The report can only be activated or deactivated.

IWAITSUM: Database IWAIT Summary report

The IWAITSUM operand of the IMSPAMON batch command requests the Database IWAIT Summary report.

Format

IMSPAMON  IWAITSUM

Example

IMSPAMON  DDNAME(SUMMRPT)
IMSPAMON  IWAITSUM
IMSPAMON  EXECUTE

Related reference:
“Database IWAIT Summary report” on page 491
There are no panel options specific to this report. The report can only be activated or deactivated.

REGANAL: Region Analysis report

The REGANAL operand of the IMSPAMON batch command requests the Region Analysis report.

Format

IMSPAMON  REGANAL([REGDETL,]
[PROGSUM,]
[IWAITSUM,]
[TIMEREPORT])

[name] IMSPAMON  DISTRIBUTION  EXECUTE
[LIMITS(value1,...,value9),]
[TITLE('text'),]
[MULTIPLY(nnmm),]
[EDITMASK('char.mask')|EDITMASK(hex.mask)]

Specify up to 4 Distributions with name either: ELAP/SCH, ELAP/CAL, ELAP/IWT, IWT/CAL

Any combination of the following reports can be requested.
REGDETL
Region Detail
Related reference:

"Region Analysis report" on page 492

The options for the Region Analysis report are described here.

**APPLGRP: Application Detail report**

The APPLGRP operand of the IMSPAMON batch command requests the Application Detail report.

**Format**

```plaintext
IMSPAMON APPLGRP([PROGSUM,] [TIMEREPORT])
IMSPAMON APPLICATION(grpname1,(a1,a2,...),
                       grpname2,(b1,b2,...),...)
```

One or both of the following reports can be requested:

- **PROGSUM**
  Program Summary

- **TIMEREPORT**
  Transactions by Time Period. See also “TIMEREPORT: Transactions by Time Period Options” on page 524.

Application Groups must be specified for the report to be produced.

**Example**

Both reports, and Application Grouping:

```plaintext
IMSPAMON DETAILDDNAME(DETLRPT)
IMSPAMON APPLGRP((A*,B*,K*))
IMSPAMON TIMEREPORT(COUNT,
                      TIMES(00:00,07:00,08:00,09:00,10:00,11:00,12:00,
                      13:00,14:00,15:00,16:00,17:00,18:00,19:00))
IMSPAMON APPLGRP([PROGSUM,TIMEREPORT])
IMSPAMON EXECUTE
```

Related reference:
**IWAITANAL: Database IWAIT Analysis report**

The IWAITANAL operand of the IMSPAMON batch command requests the Database IWAIT Analysis report.

**Format**

```
IMSPAMON  IWAITANAL([DISTRIBUTIONS])
IMSPAMON  EXECUTE
[D DIWELAP  DISTRIBUTION [LIMITS(value1,...,value9),]
 [TITLE('text'),]
 [MULTIPLY(nnnn),]
 [EDITMASK('char.mask')][EDITMASK(hex.mask)]
```

DISTRIBUTIONS
Include distributions in the report

**Examples**

No Distributions:
```
IMSPAMON  DETAILDDNAME(DETLRPT)
IMSPAMON  IWAITANAL
IMSPAMON  EXECUTE
```

By Region, with Distribution taking defaults:
```
IMSPAMON  DETAILDDNAME(DETLRPT),
 REGIONS,
 DISTRIBUTIONS
IMSPAMON  IWAITANAL(DISTRIBUTIONS)
IMSPAMON  EXECUTE
```

**Related reference:**

“Database IWAIT Analysis report” on page 493

The options for Database IWAIT Analysis reports are described here.

**EXCEPTION: Performance Exception reports**

The EXCEPTION operand of the IMSPAMON batch command requests the suite of Performance Exceptions reports.
**Format**

```plaintext
IMSPAMON   EXCEPTION([LISTING,] [INTENT,] [POOL,] [DEADLOCK,]
                     [IGNSCHED,]
                     [CALLELAP(nnmn),] msecs
                     [IWTELAP(nnmn),] msecs
                     [IWTCALL(nnmn),] msecs
                     [PAGES(nn)],   default 9 lines
                     [DDNAME(ddname)]) default EXCPTRPT
IMSPAMON   EXECUTE

[name] DISTRIBUTION [LIMITS(value1,...,value9),]
                      [TITLE('text'),]
                      [MULTIPLY(nn)],
                      [EDITMASK('char.mask')|EDITMASK(hex.mask)]
```

Specify up to 3 Distributions with `name` either: ELAP/CAL, ELAP/IWT, IWTS/CAL

Any combination of the following reports may be requested:

- **LISTING**: Exception Listing
- **INTENT**: Intent Failure Summary
- **POOL**: Pool Space Failure Summary
- **DEADLOCK**: Deadlock Event Summary

Other report options for the Exception Listing:

- **IGNSCHED**: Suppress printing of Specifically Created Schedule and Forced Schedule. End lines in the Exception Listing report. Refer to the section “Performance Exception reports” in the *IMS Performance Analyzer for z/OS: Report Reference* for further details.
- **CALLELAP**: Maximum allowable DL/I Call elapsed time
- **IWTELAP**: Maximum allowable IWAIT elapsed time
- **IWTCALL**: Maximum allowable number of IWAITs per DL/I Call
- **PAGES**: Maximum number of pages for the Exception Listing

The Distributions are used to provide the threshold values if CALLELAP, IWTELAP, or IWTCALL are not specified.

**Examples**

Exception Listing (taking defaults) and Deadlock Event Summary:

```plaintext
IMSPAMON   EXCEPTION(LISTING,DEADLOCK)
IMSPAMON   EXECUTE
```

All reports, with threshold values and page limit specified for the Exception Listing:

```plaintext
IMSPAMON   EXCEPTION([LISTING,] [INTENT,] [POOL,] [DEADLOCK,]
                     [IGNSCHED,]
                     [CALLELAP(nnmn),] msecs
                     [IWTELAP(nnmn),] msecs
                     [IWTCALL(nnmn),] msecs
                     [PAGES(nn)],   default 9 lines
                     [DDNAME(ddname)]) default EXCPTRPT
IMSPAMON   EXECUTE
```

(name) DISTRIBUTION [LIMITS(value1,...,value9),]
                      [TITLE('text'),]
                      [MULTIPLY(nn)],
                      [EDITMASK('char.mask')|EDITMASK(hex.mask)]
```
ENQTRACE: Enqueue/Dequeue Trace report

The ENQTRACE operand of the IMSPAMON batch command requests the Enqueue/Dequeue Trace report.

Format

```
IMSPAMON ENQTRACE([TRACE,]
  [SUMMDB,]
  [SUMMTC,]
  [DDNAME(ddname)])
```  

Any combination of the following reports can be requested:

- TRACE: Detailed Trace
- SUMMDBC: Summary by Database
- SUMMTC: Summary by Transaction Code

Examples

Taking defaults. Produces the two Summary reports:

```
IMSPAMON ENQTRACE
IMSPAMON EXECUTE
```

Detailed Trace report:

```
IMSPAMON ENQTRACE(TRACE)
IMSPAMON EXECUTE
```

Related reference:

“Enqueue/Dequeue Trace report” on page 496

The IMS PA Enqueue/Dequeue Trace report traces a maximum of nine regions.

HISTOGRAM: Region Histogram (Monitor) report

The HISTOGRAM operand of the IMSPAMON batch command requests the Region Histogram report.
Format

```
IMSPAMON HISTOGRAM([REGIONS (r1,r2,r5-r8,...),]
[INTERVAL(nnпппппппп),] default 1000 msec
[CPULIMIT(нппппппппппппппппп),] msec
[SKIPPRINT(нппппппппп),]
[FROM(date,тиме),]
[TO(date,тиме),]
[DDNAME(ddname)]) default RGNHIST
```

**REGIONS**
List of up to 13 Region (PST) IDs

**INTERVAL**
Number of milliseconds between output lines

**CPULIMIT**
CPU Time Limit (milliseconds) before a transaction is flagged

**SKIPPRINT**
Number of duplicate lines before printing is skipped

**Example**

```
IMSPAMON HISTOGRAM(REGIONS(1-5,7,13),
INTERVAL(1000),
CPULIMIT(20),
SKIPPRINT(5),
FROM(2014/05/27,12:10:00:00),
TO(2014/05/27,12:12:00:00))
```

**Related reference:**
“Region Histogram report” on page 497

**TSIWAIT: Total System IWAIT reports**

The TSIWAIT operand of the IMSPAMON batch command requests the Total System IWAIT reports.

**Format**

```
IMSPAMON TSIWAIT([SUMMARY,]
[DETAIL,]
[DDNAME(ddname)]) default IWTSUMMY
```

One or both of the following reports can be requested:

**SUMMARY**
Total System IWAIT Summary

**DETAIL**
Total System IWAIT Detail

A Distribution can optionally be specified for the Detail report.
Examples

Taking defaults:

```
IMSPAMON TSIWAIT
IMSPAMON EXECUTE
```

Summary Report:

```
IMSPAMON TSIWAIT(SUMMARY, DDNAME(IWTSUMMY))
IMSPAMON EXECUTE
```

Detail report with a user-specified Distribution:

```
IMSPAMON TSIWAIT(DETAIL)
IMSPAMON EXECUTE
IWTSUMMY DISTRIBUTION LIMITS(1, 10, 50, 100, 250, 350, 600, 800),
               TITLE('Sc Mil Mic'), MULTIPLY(1000),
               EDITMASK('ZZZ.ZZ9.999')
```

Summary and Detail reports, no Distribution:

```
IMSPAMON TSIWAIT(SUMMARY, DETAIL, DDNAME(IWTSUMMY))
IMSPAMON EXECUTE
```

Related reference:

"Total System IWAIT reports" on page 499
The options for Total System IWAIT reports are described here.

PSBREPORTS: **Program Activity Detail report**

The PSBREPORTS operand of the IMSPAMON batch command requests the Program Activity Detail reports.

**Format**

```
IMSPAMON PSBREPORTS(
    [BYPREPORT|BYPSSB|(BYPREPORT,BYPSSB),]
    [FUNCTION,]
    [SEGNAME,]
    [DDNAME,]
    [FUNC-SEGNAME,]
    [FUNC-DDNAME,]
    [DDNAME-PSB])
IMSPAMON EXECUTE

[name] DISTRIBUTION [LIMITS(value1,...,value9),]
    [TITLE('text'),]
    [MULTIPLY(nnnn),]
    [EDITMASK('char.mask')|EDITMASK(hex.mask)]
```

for up to 4 Distributions with name ELAP/SCH, ELAP/CAL, ELAP/IWT, or IWTS/CAL

The report formats are:

*BYREPORT*
- PSB Details

*BYPSB*
- PSB-Transaction Code Analysis

(BYREPORT,BYPSB)
- PSB Details with PSB-Transaction Code data

*DDNAME-PSB*
- DDname by PSB-Transaction Code

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If either BYREPORT or BYPSB or both are specified, at least one type of report must be specified. The report types can be specified in any combination. Note that the PSB Details PCB Totals report is always produced. The report types are:

FUNCTION
- PSB Details PCB Totals
- PSB Details by Function Code

SEGNAME
- PSB Details PCB Totals
- PSB Details by Segment Name Feedback

DDNAME
- PSB Details PCB Totals
- PSB Details PCB Totals (DD)
- PSB Details by ddname IWAITed On

FUNC-SEGNAME
- PSB Details PCB Totals
- PSB Details by Function Code-Segment Name

FUNC-DDNAME
- PSB Details PCB Totals
- PSB Details PCB Totals (DD)
- PSB Details by Function Code (DD)
- PSB Details by Function Code-ddname

Example

PSB Details by Function Code and by Segment Name Feedback, and ddname by PSB-Transaction Code:

```
IMSPAMON DETAILDDNAME(DETLRPT)
IMSPAMON PSBREPORTS(
  BYREPORT,
  FUNCTION,
  SEGNAME,
  DDNAME-PSB)
IMSPAMON EXECUTE
```

Related reference:

“Program Activity Detail reports” on page 500
The options for the Program Activity Detail reports are described here.

**TRACE: Program Trace report**

The TRACE operand of the IMSPAMON batch command requests Program Trace reports.
Format

```plaintext
IMSPAMON TRACE([PSBNAME(name)],) [TRANCODE(code),] [REGION(PST number),] [FROM(date, time),] [TO(date, time),] [SUMMARY|SHORT|LONG,] [LIMIT(99999999),] [DDNAME(ddname)]) default PGMTRACE
IMSPAMON EXECUTE
[name DISTRIBUTION [LIMITS(value1,...,value9),] [TITLE('text'),] [MULTIPLY(nn),] [EDITMASK('char.mask')|EDITMASK(hex.mask)]
```

Specify up to 3 Distributions with name ELAP/CAL, ELAP/IWT, or IWTS/CAL.

Any number of traces can be requested as long as a unique ddname is used for each trace. For each trace, any combination of PSBNAME, TRANCODE, or REGION can be specified, but at least one must be specified.

PSBNAME
Program (PSB) name

TRANCODE
Transaction Code

REGION
Region PST ID

Other report options:
SUMMARY
One page summary per trace
SHORT
One report line per DL/I Call
LONG One report line per DL/I Call, plus one line per IWAIT
LIMIT Maximum number of schedules to be processed in this trace

Example

Two traces, the first for region 13, the second for PSB PMENU and transaction code STOCK:

```plaintext
IMSPAMON TRACE(REGION(13), FROM(2014/06/25,02:00:00:00), SHORT, LIMIT(50), DDNAME(trace1))
IMSPAMON TRACE(PSBNAME(PMENU), TRANCODE(STOCK), FROM(2014/06/25,02:00:00:00), TO(2014/06/25,02:15:00:00), LONG, LIMIT(100), DDNAME(trace2))
IMSPAMON EXECUTE
```

Related reference:
“Program Trace report” on page 502
The options for Program Trace reports are described here.
**VSAMSTAT: Batch VSAM Statistics report**

The VSAMSTAT operand of the IMSPAMON batch command requests the Batch VSAM Statistics report. This report provides similar output to the DFSUTR30 VSAM Statistics report.

**Format**

<table>
<thead>
<tr>
<th>Command</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMSPAMON</td>
<td>VSAMSTAT(DDNAME(ddname))) default VSAMRPT</td>
</tr>
</tbody>
</table>

**Example**

```
IMSPAMON  VSAMSTAT
IMSPAMON  EXECUTE
```

**Related reference:**

[“Batch VSAM Statistics report” on page 503](#)

The options for the Batch VSAM Statistics report are described here.

**STATIS: Buffer Pool and Latch Statistics reports**

The STATIS operand of the IMSPAMON batch command requests the Buffer Pool and Latch Statistics reports.

The Buffer Pool and Latch Statistics reports are:

- Message Queue Pool
- Database Buffer Pool
- VSAM Buffer Pool
- Message Format Buffer Pool
- Latch Statistics

**Format**

<table>
<thead>
<tr>
<th>Command</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMSPAMON</td>
<td>STATIS(DDNAME(ddname))) default STATRPT</td>
</tr>
</tbody>
</table>

**Example**

```
IMSPAMON  STATIS
IMSPAMON  EXECUTE
```

**Related reference:**

[“Buffer Pool and Latch Statistics reports” on page 504](#)

The options for the Buffer Pool and Latch Statistics reports are described here.

**COMMS: Communication reports**

The COMMS operand of the IMSPAMON batch command requests the Communication reports.
**Format**

```
IMSPAMON COMMS([SUMMARY,])
    [IWAIT,]
    [LINEFUNC,]
    [DDNAME(ddname)]
IMSPAMON EXECUTE
[name] DISTRIBUTION [LIMITS(value1,...,value9),] [TITLE('text'),] [MULTIPLY(nn),] [EDITMASK('char.mask')|EDITMASK(hex.mask)]
```

Specify up to 5 Distributions with `name` either: COMMELP, COMMIE, COMMLFR, COMMLFT, COMMLFI.

Any combination of the following reports can be requested:
- **SUMMARY**
  Communication Summary
- **IWAIT** Communication IWAIT
- **LINEFUNC**
  Line Functions

**Example**

All reports requested, and Distributions specified for the first two reports:
```
IMSPAMON COMMS(SUMMARY,IWAIT,LINEFUNC)
IMSPAMON EXECUTE
COMMELP DISTRIBUTION LIMITS(1,2,4,8,16,32,64,128,256),MULT(1000),
    TITLE('Sc Mil Mic'),EDITMASK('ZZZ.ZZ9.999')
COMMIE DISTRIBUTION LIMITS(1,2,4,8,16,32,64,128,256),MULT(1000),
    TITLE('Sc Mil Mic'),EDITMASK('ZZZ.ZZ9.999')
```

**Related reference:**
“Communication reports” on page 505
The options for Communication reports are described here.

**MSC: MSC reports**

The MSC operand of the IMSPAMON batch command requests the MSC reports.

**Format**

```
IMSPAMON MSC([SUMMARY,])
    [TRAFFIC,]
    [QUEUING,]
    [DDNAME(ddname)]
IMSPAMON EXECUTE
[MSCQLEN DISTRIBUTION [LIMITS(value1,...,value9),] [TITLE('text'),] [MULTIPLY(nn),] [EDITMASK('char.mask')|EDITMASK(hex.mask)]]
[MSCQELP DISTRIBUTION [LIMITS(value1,...,value9),] [TITLE('text'),] [MULTIPLY(nn),] [EDITMASK('char.mask')|EDITMASK(hex.mask)]]
```

Any combination of the following reports can be requested:
- **SUMMARY**
  MSC Summary
TRAFFIC
MSC Traffic
QUEUING
MSC Queuing

**Example**

All reports, both Distributions:

```plaintext
IMSPAMON MSC(SUMMARY,TRAFFIC,QUEUING)
IMSPAMON EXECUTE
MSCQLEN DISTRIBUTION LIMITS(1,2,3,4,5,10,15,30,90),
TITLE('Q Length'),EDITMASK('ZZZ,ZZZ,ZZ9')
MSCQELP DISTRIBUTION LIMITS(1,5,10,50,100,500,1000,5000,10000),
MULT(1000),
TITLE('Sc Mil Mic'),EDITMASK('ZZZ.ZZ9.999')
```

Related reference:

“MSC reports” on page 507

The options for MSC reports are described here.

**ESAF: ESAF (Monitor) report**

The ESAF operand of the IMSPAMON batch command requests the External Subsystem report.

**Format**

```plaintext
IMSPAMON ESAF(DDNAME(ddname)) default ESAFRPT
```

**Example**

```plaintext
IMSPAMON ESAF
IMSPAMON EXECUTE
```

Related reference:

“ESAF report” on page 508

The options for the ESAF report are described here.

**SYNCCOUT: Synchronous Callout report**

The SYNCCOUT operand of the IMSPAMON batch command requests the Synchronous Callout report.

**Format**

```plaintext
IMSPAMON SYNCCOUT(DDNAME(ddname)) default SYNCCOUT
```

**Example**

```plaintext
IMSPAMON SYNCCOUT
IMSPAMON EXECUTE
```

Related reference:
FPRSCONT: DEDB Resource Contention report

The FPRSCONT operand of the IMSPAMON batch command requests the DEDB Resource Contention report.

Format

```
IMSPAMON   FPRSCONT
          [DDNAME(ddname))]   default FPRSCONT
IMSPAMON   EXECUTE
[FPRCGLIW DISTRIBUTION [LIMITS(value1,...,value9]),
[TITLE('text'),],
[MULTIPLY(nnn)],
[EDITMASK('char.mask')|EDITMASK(hex.mask)]]
```

Examples

Taking defaults, no distributions:

```
IMSPAMON   FPRSCONT
IMSPAMON   EXECUTE
```

With distributions:

```
IMSPAMON     FPRSCONT(DDNAME(FPRSCONT))
IMSPAMON     EXECUTE
[FPRCGLIW DISTRIBUTION LIMITS(1,2,4,8,16,32,64,128,256),
[TITLE('Sc Mi Mi'),
[MULTIPLY(1000)],
[EDITMASK('ZZZ.ZZ9.999')]
```

Related reference:

“DEDB Resource Contention report” on page 509

The options for the DEDB Resource Contention report are described here.

FPBUFFER: Fast Path Buffer Statistics report

The FPBUFFER operand of the IMSPAMON batch command requests the Fast Path Buffer Statistics report.

Format

```
IMSPAMON     FPBUFFER
            [DDNAME(ddname))]   default FPBUFFER
IMSPAMON     EXECUTE
[FPBCNT DISTRIBUTION [LIMITS(value1,...,value9)],
[TITLE('text'),],
[MULTIPLY(nnn)],
[EDITMASK('char.mask')|EDITMASK(hex.mask)]]
```

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Examples

Taking defaults, no distributions:
```
imspamon fpbuffer
nimspamon execute
```

With distributions:
```
imspamon fpbuffer(ddname(fpbuffer))
imspamon execute
fpbscnt distribution limits(100,200,300,400,500,600,700,800,900),
title('counts'),
multiply(1),
editmask('zzz,zzz,zz9')
```

Related reference:
"Fast Path Buffer Statistics report" on page 510
The options for the Fast Path Buffer Statistics report are described here.

FPBALG: BALG/Shared EMHQ report

The FPBALG operand of the IMSPAMON batch command requests the BALG/Shared EMHQ report.

Format
```
imspamon fpbalg(
    [ddname(ddname)])
    default fpbalg
nimspamon execute
[name distribution limits(value1,...,value9),]
    [title('text'),]
    [multiply(nnnn),]
    [editmask('char.mask')|editmask(hex.mask)]
```

for up to 2 Distributions with name either FPBGQLN or FPBGELP

Examples

Taking defaults, no distributions:
```
imspamon fpbalg
nimspamon execute
```

With both distributions:
```
imspamon fpbalg(ddname(fpbalg))
imspamon execute
fpbgqln distribution limits(1,2,3,4,5,10,15,30,90),
title('length'),
multiply(1),
editmask('zzz,zzz,zz9')
fpbgelp distribution limits(1,5,10,50,100,500,1000,5000,10000),
title('sc mi 1 mic'),
multiply(1000),
editmask('zzz.zzz9.999')
```

Related reference:
"BALG/Shared EMHQ Analysis report" on page 511
The options for the BALG/Shared EMHQ Analysis report are described here.
FPOTHRD: OTHREAD Analysis report

The FPOTHRD operand of the IMSPAMON batch command requests the OTHREAD Analysis report.

**Format**

```
IMSPAMON FPOTHRD
[DDNAME(ddname)] default FPOTHRD
IMSPAMON EXECUTE

[name DISTRIBUTION]
[LIMITS(value1,...,value9),]
[TITLE('text'),]
[MULTIPLY(nn),]
[EDITMASK('char.mask')|EDITMASK(hex.mask)]]
```

for up to three Distributions with name FPOTACT, FPOTWTA, or FPOTBOQ

**Examples**

Taking defaults, no distributions:

```
IMSPAMON FPOTHRD
IMSPAMON EXECUTE
```

With all three distributions:

```
IMSPAMON FPOTHRD
IMSPAMON EXECUTE
FPOTACT DISTRIBUTION LIMITS(100,200,300,400,500,600,700,800,900)
TITLE('Counts'),
MULTIPLY(1),
EDITMASK('ZZZ,ZZZ,ZZ9')
```

Related reference:

"OTHREAD Analysis report" on page 512

The options for the OTHREAD Analysis report are described here.

FPVSOSUM: VSO Summary report

The FPVSOSUM operand of the IMSPAMON batch command requests the VSO Summary report.

**Format**

```
IMSPAMON FPVSOSUM
[DDNAME(ddname)] default FPVSOSUM
IMSPAMON EXECUTE
```

**Example**

Taking defaults:
Related reference: [“VSO Summary report” on page 513](#)
The options for the VSO Summary report are described here.

**SLOGTRC: Monitor Record Trace report**
The SLOGTRC operand of the IMSPAMON batch command requests the Monitor Record Trace report.

**Format**

```
IMSPAMON SLOGTRC(
    CODES('list'),] default '01-99'
    [PAGES(number),] default 100 pages
    [DDNAME(ddname)] default SLOGTRC
)
```

Figure 261. Monitor Trace Report Options

**CODES**
Record code selection list. '01-99' for all monitor record codes. A subset of monitor record codes can be selected.

**PAGES**
Page limit.

**Examples**

Taking defaults:

```
IMSPAMON SLOGTRC
IMSPAMON EXECUTE
```

Selecting only IWAIT records:

```
IMSPAMON SLOGTRC(
    CODES('14-39,56-57,66-69,72-73,94'),
    PAGES(10))
IMSPAMON EXECUTE
```

Related reference: [“Monitor Record Trace report” on page 514](#)
The options for the Monitor Record Trace report are described here.
Part 7. IMS Connect reporting

This part describes how to request and run IMS Connect reports and extracts using the dialog and batch commands. From a Connect Report Set you can also request Form-based transit reporting for a group that combines IMS and Connect systems to get a complete end-to-end picture of IMS Connect transactions.
Chapter 24. Requesting IMS Connect reports

IMS PA provides a comprehensive set of reports from the IMS Connect performance data collected by IBM IMS Connect Extensions for z/OS (5655-S56). The reports provide a summary and detailed analysis of IMS Connect transaction transit time, resource usage and resource availability, and exception events.

Before you begin

Prior to using IMS PA for IMS Connect reporting, you must implement IMS Connect Extensions Event Collection. For information about how to set up and activate Event Collection, see the IBM IMS Connect Extensions for z/OS: User’s Guide (SC19-3632). IMS PA analyzes and reports against the Event Collection data contained in Journal data sets, archive or active.

Procedure

To generate IMS Connect reports and extracts:

1. Specify the IMS Connect Extensions Definitions Data Set.
   a. Select option 0 IMS PA Profile from the IMS PA primary option menu
   b. Select option 5 IMS Connect Extensions Definitions data set to specify the name of the data set.

   The IMS Connect Extensions Definitions Data Set is allocated as part of your implementation of IMS Connect Extensions. It contains the definitions for your IMS Connect systems and their Journal data sets.

2. Specify your report requests.
   IMS Connect reports are requested in the same way as the Log and Monitor reports, via Report Sets. Connect reports are denoted by CEX (Connect Extensions).
   a. Select option 3 Report Sets from the Primary Option Menu to specify your report requests.
   b. Use the NEW command to define a new Connect Report Set.
   c. Submit the Report Set in the usual way. You will be prompted to specify the required IMS Connect system and the date/time range to be reported. IMS PA will use the IMS Connect Extensions Automated File Selection utility to automatically select the required Journal data sets for the specified reporting interval. This is similar to how DBRC Log Selection automatically selects Log files for Log reporting.

   For further information on running Report Sets, see “Running Report Sets” on page 127.

   a. Select option 9 IMS Connect from the IMS PA primary option menu to view the IMS Connect systems defined in the IMS Connect Extensions Definitions Data Set.
   b. From here, you can request IMS Connect reports in two ways:
      • When you request reporting for an IMS Connect System, IMS PA uses the IMS Connect Extensions Automated File Selection utility to automatically select the required Journal data sets for the specified reporting interval.
When you select an IMS Connect System, the list of Journal data sets is displayed. Select the required data set for reporting.

Connect Report Sets

IMS Connect reports are specified in a Report Set of type CEX.

Report Sets are stored in a Reports Sets data set. If you have not specified a Report Sets data set, IMS PA will allocate a data set for you with default characteristics. To change the Report Sets data set, use option 0.4 IMS PA Control Data Sets from the IMS PA primary option menu, or you can use the Options menu in the action bar.

To specify Connect reports:
2. Define a new Connect Report Set or edit an existing one. Figure 262 shows how to:
   - Enter the NEW command to define a new Connect Report Set (type CEX). For further information, see "Creating new Report Sets" on page 126.
   - Enter line action S to select a Report Set for edit.

A panel is then displayed for you to view or modify the description of the Report Set and the reports it contains. Figure 158 on page 284 shows an example of a Connect Report Set.

The list of reports in the Report Set is presented in a tree structure (folder style). The reports are grouped by category.
The Report Set panels show the list of all available Connect reports in a tree structure. See “Report Set menu tree” on page 123 for a description of the tree structure.

Each report can be activated (Active=Yes) or deactivated (Active=No). If any changes are made to a report, the dialog will mark the report as active automatically. Each Report Category can be activated or deactivated. Only active reports in active report categories are included in the Report Set at submit time. A Report Set can be submitted for processing only if there is at least one active report in an active report category.

However, you can also use the RUN line action to temporarily override the inactive status of a report or report category.

**Line actions**

The line actions that you can enter on the IMS Connect Report Set panel depend on the type of item that you enter the line action next to.

The available line actions depend on whether they are acting on either:

- The top of the Report Set menu tree (whole of Report Set)
- A Report or Option Category
- The Global Options
- A Report or Extract

**Reports**

The available line actions for **Reports** at the top of the menu tree are:
Display the menu of line actions.

S
Expand all categories that are not already expanded, or collapse all categories if they are all expanded.

A
Activate all categories that contain one or more active reports. This does not affect the status of the individual reports. If there are no active reports in the category, it cannot be activated. Only the active reports in active report categories will be run when the Report Set is submitted.

AA
Activate all categories, all reports, all options.

D
Deactivate all categories. This does not affect the status of the individual reports. When a report category is deactivated, no reports in that category will be run when the Report Set is submitted.

DD
Deactivate all categories, all reports, all options.

RUN
Also R. Run the report category. Run-time options will display.

Report Categories

The available line actions for a Report Category are:

Display the menu of line actions.

S
Expand or Collapse the report category.

A
Activate the report category (Active=Yes). Alternatively, you can type Y in the Active column. This does not affect the status of the individual reports. If there are no active reports in the category, it cannot be activated. Only the active reports in active report categories will be run when the Report Set is submitted.

AA
Activate the report category and all the reports and options within it.

D
Deactivate the report category (Active=No). Alternatively, you can type N in the Active column. This does not affect the status of the individual reports. When a report category is deactivated, no reports in that category will be run when the Report Set is submitted.

DD
Deactivate the report category and all the reports and options within it.

RUN
Also R. Run the report category. Run-time options will display.

Options

There is one set of Options: Connect Global Options. The Options can be edited by selecting with line action S. They cannot be explicitly activated or deactivated.

Reports

The available line actions for a report are:

Display the menu of line actions.

S
Select (Edit) the report.

A
Activate the report (Active=Yes). Alternatively, you can type Y in the Active column.

D
Deactivate the report (Active=No). Alternatively, you can type N in the Active column.

RUN
Also R. Run the report. Run-time options will display.
RUN command

The RUN command runs the Report Set and prompts you for entry of runtime options, such as System Selection and Report Interval, before generating the JCL.

- **SUB**, **JCL**, and **JCM** are special RUN requests that preset the Execution Mode (see Figure 264 on page 552):
  - The **SUBMIT** or **SUB** command directly submits the Report Set for execution.
  - The **JCL** command builds the JCL to execute the Report Set and allows you to edit the job before you submit it or save it in your JCL library.
  - The **JCLCMD** or **JCM** command builds the JCL, converts the Report Set to a command stream, and allows you to edit the job before you submit it or save it in your JCL library.

The RUN command does not reset the Execution Mode. For example, if you SUB a Report Set, the Execution Mode is set to 1. If next time you RUN a Report Set, the Execution Mode will default to 1.

RUN is also available as a line action to run individual reports or report categories and override the Active status. When entered as a line action, only Execution Mode 3 is available. **SUB**, **JCL**, and **JCM** can be entered as a line action, however in this case they act the same as the RUN line action.

Specifying report options

You can specify IMS Connect report options using dialog panels and fields.

For additional information about the report options and examples of the reports, see “Analyzing IMS Connect reports and extracts” in the *IMS Performance Analyzer for z/OS: Report Reference*.

Saving your changes

If an active report is deactivated, its specified options are retained. To return to the default options for a report, Edit the report in the Report Set, then select **File > Reset To Defaults** from the action bar or enter **DEFAULTS** on the command line. To return to the default value for a single field (excluding flags, selection fields, or fields in a dependent set), just erase the value in the field.

Any changes to a Report Set’s options and activated reports are saved only by issuing a **SAVE**, **SAVEAS**, or **EXIT** (F3) command from the EDIT Report Set panel.

**Note**: Exit (F3) discards changes if **Automatic Save on Exit** in your IMS PA Profile Options is set to **NO**.

Saving of changes made on a subordinate panel is as follows:
- If Exit (F3) from the subpanel, then changes are retained pending SAVE, SAVEAS, or EXIT (F3) from the EDIT Report Set panel.
- If Cancel (F12) from the subpanel, then changes just entered on the subpanel are discarded.

Run Connect Report Set

The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category, or individual reports.
About this task

One way to do this is shown in Figure 263 on page 549.

At the time of report submission, but before IMS PA generates the JCL, the Run Report Set panel is displayed to prompt you to specify runtime options.

Specify your desired runtime options. When the specification is complete, press Enter to proceed with JCL generation.

Note that the selected Report Set is already specified for you. Specify the System that you want to report against. Press Prompt (F4) from the System or Group field to select from a list of available IMS Connect Systems or Groups defined in the IMS Connect Extensions Definitions Data Set.

The fields on the Run Report Set panel are:

**System Selection**

Enter the name or press Prompt (F4) to select from a list of available systems or groups.

A group can specify both IMS and Connect systems for combined end-to-end Form-based reporting. Depending on your File Selection Options, IMS PA builds the JCL using the files from System Definitions or the system details from the IMS Connect Extensions Definitions Data Set specified in your profile options (dialog option 0.5 IMS Connect Extensions Definitions Data Set).

If files are not explicitly included in the JCL, IMS PA uses Automated File Selection to locate the Connect journal data sets and if requested, the IMS Log data sets, relevant to the specified report interval.

**Report Interval**

When reporting on an IMS Connect System, the Report Interval is required so that Automated File Selection can locate the data sets that are relevant to that time period. If you select Use specified journal files, then the Report Interval is optional.
The Report Interval allows selection of a subset of the input data for passing to the report processors. Records with time stamps on or after the From date/time and before the To date/time are selected for processing. Reducing the time period can significantly reduce processing time for generating the reports.

Date can be either a calendar date or a relative date. Calendar dates must conform to your **Preferred Date Format** in your Profile Options. Relative dates are specified as 0, -1, -2,... to signify a date relative to the current date. 0 represents today, -1 yesterday, -2 two days ago, and so on. If both From and To dates are specified, they must be in the same format.

Time is optional. If From time is not specified, it defaults to the start of the day. If To time is not specified, it defaults to the end of the day. Time is expressed as `hh:mm:ss:th` for hours, minutes, seconds, tenths and hundredths of a second using the colon delimiter.

The date/time range is generated as parameter input in the JCL:

- For IMS Connect Extensions Journal File Selection:

  ```
  //IPIPARM DD *
  FROM=(yyyy/mm/dd, hh:mm:ss:th)
  TO=(yyyy/mm/dd, hh:mm:ss:th)
  
  or
  //IPIPARM DD *
  FROM=(-nnn, hh:mm:ss:th)
  TO=(-nnn, hh:mm:ss:th)
  ```

- For IMS Connect Extensions Journal File Selection and Report Set processing:

  ```
  //IPIOPTS DD *
  IMSPACEX START(yyyy/mm/dd, hh:mm:ss:th),
  STOP(yyyy/mm/dd, hh:mm:ss:th)
  
  or
  //IPIOPTS DD *
  IMSPACEX START(-nnn, hh:mm:ss:th),
  STOP(-nnn, hh:mm:ss:th)
  ```

**File Selection Options**

There are two ways to specify the Journal Data Sets for reporting:

1. Select **Use specified journal files** to use the files specified in dialog option 1 **System Definitions** for the system or group. Select this option when you are reporting on orphaned data sets or you do not have an active IMS Connect system. The Report Interval is optional.

2. Select **Automated file selection** to instruct IMS PA to use IMS Connect Extensions Automated File Selection to locate the relevant Journal data sets, and if requested, IMS Log data sets, for the specified System and Report Interval. Select this option when you have specified an IMS Connect Extensions Definitions Data Set (dialog option 0.5 **IMS Connect Extensions Definitions Data Set**).

**Execution Mode**

Specify whether to execute the Report Set or generated commands, and whether you want to edit the JCL before submit. Editing JCL before submit will enable you to save the JCL in an external data set for automated job scheduling or ad hoc report requests.

Default: Set by the command (RUN, SUB, JCL, JCM) that invoked this panel.
The options are:

1. Submit the Report Set. Same as the SUBMIT or SUB command. This directly submits a batch job to execute the Report Set. The Report Set JCL contains the statements:

   //IPIRSET DD DSN=ReportSets.DSN(ReportSetName),DISP=SHR
   //IPIOBJL DD DSN=ObjectLists.DSN,DISP=SHR
   //IPIFORM DD DSN=ReportForms.DSN,DISP=SHR

2. Edit JCL before submit. Same as the JCL command. This generates the same JCL as SUBMIT, but allows you to edit it.

3. Edit JCL with command input. Same as the JCLCMD or JCM command. This generates JCL in which the Report Set, and any Object Lists and Distributions it uses, are converted to a stream of commands and displayed to allow you to edit them. For an IMS Connect Report Set, the JCL contains the statements:

   //IPICMD DD *
   IMSPACEX .... INCL|EXCL(...),....
   IMSPACEX EXECUTE

Note that when you enter RUN at the report-level as a line action or override, option 3 is the only option available to you.

Related concepts:
“Report command format” on page 41
IMS PA provides both a dialog and batch interface. The IMS PA commands are used to request reports and extracts. The dialog generates the JCL and commands when you run (submit) a Report Set.

Related reference:
Chapter 25, “IMS Connect batch interface,” on page 581
The IMS PA dialog generates the JCL and commands for executing your report requests in batch. The JCL and commands for IMS Connect report requests are described here. Sample jobs are supplied in the SIPISAMP Library.

“Report Set JCL” on page 717
The sample library SIPISAMP contains members with sample JCL to generate IMS PA reports and extracts. Also included are examples for Automated file selection and BMP analysis.

**Connect Global Options**

The IMS Connect Global Options define general control information that applies to all reports within the Report Set.

To view and edit Connect Global Options for a Report Set:

1. Select the Connect Report Set
2. Expand the Options category using line action S.
3. Select the Connect Global category using line action S.
The options are:

**Print Lines per Page**
- Default: 60
  - Specify the number of print lines per page. The specified value applies to all IMS Connect reports in the Report Set.
  - Valid values are from 1 to 255.
  - This option generates the `PAGESIZE(nnn)` global operand.

**Print "%" sign in Report output**
- Print the percent sign (%) in percentage values in report output. This is the default, and applies only to some form-based reporting output.
  - If not selected, this option generates the `NOPCTSIGN` global operand.

**Activate inflight processing**
- Default: Not selected; Inflight processing is not activated.
  - Select with a `/` to ensure that all transactions are reported with complete details across journal switches.
  - IMS Connect Extensions cuts event records to its active journal. At journal switch time, some transactions may be in the middle of processing and incomplete. Without inflight processing activated, reporting against the archive journal will result in these incomplete transactions being lost or reported with incomplete details.
  - Inflight processing requires both an input and output data set, either consecutive generations of a generation data group (GDG), or two explicitly-named data sets:
    - **Inflight DSN**
      - The name of the input data set that contains incomplete transactions from the previous run. The inflight data set is read at
the start of report processing. Incomplete transactions will resume and presumably complete within the current journal.

**Outflight DSN**

The name of the output data set that is to contain incomplete transactions from the current run. The outflight data set is written at the end of report processing and automatically becomes the inflight data set for the next run.

Optionally, select **Print the discarded transactions report** to produce a report of incomplete transactions in the inflight data set that have no activity in the current journal and are not written to the outflight data set.

**Tip:** After you commence running the Report Set with inflight processing activated, you should not change the selection of reports. If you wish to run a different set of reports, define them in a new Report Set with a different pair of inflight and outflight data sets.

**Selection Criteria**

Selection Criteria enable you to filter the IMS Connect data so that your report contains only the information that you are interested in. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Global selection criteria provide a filter for all reports in the Report Set. Selection Criteria specified for an individual report override the global specification.

Specify field values to be included in or excluded from all IMS Connect reports in the Report Set. The fields you can filter on are:

- Transaction Code
- User ID
- Datastore (IMS ID)
- Client ID
- Tpipe
- TCP/IP Port Number

This option generates the `INCL|EXCL(field(values))` global operand.

**Related reference:**

[“Connect Global Options” on page 586](#)

The Connect Global Options define output and general control information for the IMS Connect reports.

---

**Transaction Transit reports**

The Connect Transaction Transit reports provide performance statistics to measure the performance of your IMS Connect transactions.

Transaction Transit (response) time is broken down into its components; Input, Processing (by OTMA), Acknowledgement from the client, and Output. They can help identify any bottlenecks in transaction flow, and are used for monitoring system performance, gathering diagnostic information, and tuning IMS.

The Connect Transaction Transit reports are:

- Analysis
- Log
- Extract
Connect Transit Analysis report

The IMS Connect Transit Analysis report provides a summary of IMS Connect transaction performance.

Performance data can be summarized by one or two sort keys including Time of Day, Transaction Code, User ID, Datastore (original and target), Port number, and Connect Client ID.

Performance statistics are provided as averages, and optionally, peak percentiles. For example, you can specify 90 to report the elapsed time within which 90% of transactions completed.

IMS PA generates the report command:

IMSPACEX ANALYSIS(...)

<table>
<thead>
<tr>
<th>File</th>
<th>Options</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CEXAMPLE - Transit Analysis</td>
<td></td>
</tr>
<tr>
<td>Command ==&gt;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Specify report options.

Reports Required:

<table>
<thead>
<tr>
<th>Ordering Operands</th>
<th>Time</th>
<th>Peak</th>
<th>Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level-1 + Level-2 + Interval</td>
<td></td>
<td></td>
<td>DDName</td>
</tr>
<tr>
<td>1. TRancode</td>
<td>TIME</td>
<td>00:15:00</td>
<td>85</td>
</tr>
<tr>
<td>2. TIME</td>
<td>CLIENTID</td>
<td>00:30:00</td>
<td>ANAL0002</td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td>ANAL0003</td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td>ANAL0004</td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td>ANAL0005</td>
</tr>
</tbody>
</table>

Selection Criteria:

<table>
<thead>
<tr>
<th>Object Type</th>
<th>Inc/Exc</th>
<th>Object + List</th>
<th>Validation Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transaction Code</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User ID</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Datastore (IMS ID)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Client ID</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TCP/IP Port Number</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 266. Connect Transit Analysis Report Options

You can specify up to five different reports with the following options:

**Ordering Operands**

Default: One report sorted by TRancode

You can request multiple reports. For each report, specify the name of one or two fields that you want the report ordered by.

Press **Prompt (F4)** to select from a list of available fields. The order of the fields defines the sort order of the report; the level-1 ordering operand is the primary sort field.

If you specify TIME as a sort field, then specify the time interval.

This option generates the **BY(field1)** or **BY(field1,field2)** operand.

**Time Interval**

Default: 00:01:00 (1 minute)
When TIME is an ordering operand, specify the time interval over which you want details summarized.

Specify a value in the range 00:00:01 (1 second) to 24:00:00 (24 hours). A time interval under an hour must fit evenly into the hour. IMS PA will round it down to the nearest interval that aligns to the hour. For example, 1.35 is reduced to 00:01:30 minutes which will produce 40 interval records for each hour of data. A time interval over an hour must fit evenly into the day. IMS PA will round it down to the nearest interval that aligns to the day. For example, 10.30.23 is reduced to 08:00:00 hours which will produce 3 interval records for each day of data. Minutes take precedence for an abbreviated entry. For example:

1 becomes 00:01:00
1.1 becomes 00:01:00 (rounded down from 00:01:01)
1.1.1 becomes 01:00:00 (rounded down from 01:01:01)

This option generates the INTERVAL(hh:mm:ss) operand.

**Peak**

Default: Not specified; peak percentiles are not reported.

Specify a percentage nnn between 50 and 100.

The IMS Connect Transit Analysis report provides a statistical estimate of the peak percentile for each elapsed time component that makes up transaction transit time. For example, specify 95 to report an estimate of the transit time within which 95% of the transactions completed processing. Calculations assume a normal distribution.

If Peak is specified, averages and peak percentiles are reported. If Peak is not specified, only averages are reported.

This option generates the PEAK(nnn) operand.

**Report DDname**

Default: ANAL0001 to ANAL0005

Specify the DDname to be used for the report output. You can request more than one report. To separate the output, specify a different DDname for each.

This option generates the DDNAME(ddname) operand.

**Selection Criteria**

Specify Selection Criteria to apply to all (up to five) Analysis reports.

Selection Criteria enable you to filter the IMS Connect data so that your report contains only the information that you are interested in. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147, for information on how to define Object Lists.

Global Selection Criteria provide a filter for all reports in the Report Set. Selection Criteria specified for an individual report override the global specification.

Specify field values to be included in or excluded from the report. The fields you can filter on are:

- Transaction Code
- User ID
- Datastore (IMS ID)
- Client ID
- TCP/IP Port Number

This option generates the INCL|EXCL(field(values)) report operand.
Related reference:
“ANALYSIS: Transit Analysis report” on page 587

The ANALYSIS operand of the IMSPACEX batch command requests the IMS Connect Transit Analysis report.

**Connect Transit Log report**

The IMS Connect Transit Log provides performance details about every transaction processed by IMS Connect.

Information from IMS Connect Extensions event records is collected to provide a complete picture of transaction processing. The order of transactions in the report is based on when they end, and not when they start.

IMS PA generates the report command:
IMSPACEX LOG(...)

```plaintext
File Options Help

Command ==> CEXAMPLE - Transit Log

Specify report options.

Report Options: Report Output DDname LOG
- Additional identification

Selection Criteria:
  Object Type Inc/Exc Object + List Validation Warning
  Transaction Code
  User ID
  Datastore (IMS ID)
  Client ID
  TCP/IP Port Number

Figure 267. Connect Transit Log Report Options
```

The options are:

**Additional identification**

Default: Not selected; report one line of details per message.

For each IMS Connect message, the following primary identification details are reported:
- Transaction Code
- Target Datastore
- Port Number

Select with a / to report additional identification details:
- User ID
- Original Datastore
- Client ID

The additional details exceed the page width so appear on a second report line immediately below the primary details.

If selected, this option generates the ADDIDENT operand.
If not selected, this option generates the NOADDIDENT operand.
Report Output DDname
Default: LOG

Specify the DDname to be used for the report output.

This option generates the DDNAME(ddname) operand.

Selection Criteria
Selection Criteria enable you to filter the IMS Connect data so that your report contains only the information that you are interested in.

Global Selection Criteria provide a filter for all reports in the Report Set. Selection Criteria specified for an individual report override the global specification.

Specify field values to be included in or excluded from the report. The fields you can filter on are:
- Transaction Code
- User ID
- Datastore (IMS ID)
- Client ID
- TCP/IP Port Number

The corresponding Object Lists that can be used are of type TRAN, USERID, IMSID, CLIENT, and PORT. Press Prompt (F4) to select from a list of available Object Lists. Then select List with a/ to denote that you have specified an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

This option generates the INCL|EXCL(field(values)) report operand.

Related reference:
“LOG: Transit Log report” on page 588

The LOG operand of the IMSPACEX batch command requests the IMS Connect Transit Log report.

Connect Transit Extract
The IMS Connect Transit Extract provides performance details about every transaction processed by IMS Connect. You can request a List or Summary Extract, or both. The List Extract provides similar details to the Connect Transit Log report, while the Summary Extract summarizes these details over a specified time interval.

The extract data is suitable for exporting to DB2 for further manipulation and analysis. For a description of the List data, refer to “Connect List extract” on page 744 and for the Summary data, refer to “Connect Summary extract” on page 740. Sample DB2 jobs are supplied in the SIPISAMP library to help you define and load the DB2 tables and run queries:
- For the List Extract:
  - Sample DDL job IPICLDDL
  - Sample Load job IPICLLOD
  - Sample SQL queries IPICQML1 and IPICQML2
- For the Summary Extract:
  - Sample DDL job IPICSDDL
  - Sample Load job IPICSLOD
  - Sample SQL queries IPICQMS1 and IPICQMS2

IMS PA generates the report command:
IMSPACEX TRANEXTR(…)

560  IMS Performance Analyzer User's Guide
The options are:

**Extract Recap DDname**
Default: TRANEXTR

Specify the DDname to be used for the Extract Recap report output.

This option generates the DDNAME(ddname) operand.

**Extract DSNs:**
Defaults: Not specified; DSN is required if the extract is requested.

You can request a List Extract, a Summary Extract, or both:

- To produce the List Extract, select **List Extract DSN** with a / and specify the name of the extract data set.
- To produce the Summary Extract, select **Summary Extract DSN** with a / and specify the name of the extract data set. Also specify the time interval to use for summarizing the data.

If the data set does not exist, IMS PA will create it at the time the extract is run using the corresponding allocation details specified in Reporting Allocation Settings in your Profile Options.

If the data set exists, the new extract records will be appended to the end (DISP=MOD). To overwrite the contents of the data set, edit the JCL before submission and specify DISP=OLD.

You can specify the extract data set as a generation of a generation data group (GDG) and thereby avoid the need to update the specification between runs.

**Extended Format**
Default: Not selected; no additional fields will be processed.

Select with a / to have additional fields appended to the record of the requested extracts. For example, an additional field is the IMS Connect Extensions exit name (form field EXITNAME). Specify a new data set for the
initial extract as the DCB and record layout are incompatible with the existing record format. If the resultant data is being used as input to DB2, or other load function, then the load process must be modified to account for the additional data.

Contact your local IBM support office for details of maintenance associated with new fields and updated record formats.

This option generates the EXTENDED operand.

**Time Interval**

Default: 00:15:00 (15 minutes)

If requesting a Summary Extract, specify the time interval by which you want the data summarized. It is not applicable to the List Extract.

Specify a value in the range 00:00:01 (1 second) to 24:00:00 (24 hours). A time interval under an hour must fit evenly into the hour. IMS PA will round it down to the nearest interval that aligns to the hour. For example, 1.35 is reduced to 00:01:30 minutes which will produce 40 interval records for each hour of data. A time interval over an hour must fit evenly into the day. IMS PA will round it down to the nearest interval that aligns to the day. For example, 10.30.23 is reduced to 08:00:00 hours which will produce 3 interval records for each day of data. Minutes take precedence for an abbreviated entry. For example:

- **1** becomes **00:01:00**
- **1.1** becomes **00:01:00** (rounded down from **00:01:01**)
- **1.1.1** becomes **01:00:00** (rounded down from **01:01:01**)

This option generates the INTERVAL(hh:mm:ss) operand.

**Selection Criteria**

Selection Criteria enable you to filter the IMS Connect data so that your extract data set contains only the information that you are interested in.

Global Selection Criteria provide a filter for all reports in the Report Set. Selection Criteria specified for an individual report override the global specification.

Specify field values to be included in or excluded from the extract. The fields you can filter on are:

- Transaction Code
- User ID
- Datastore (IMS ID)
- Client ID
- TCP/IP Port Number

The corresponding Object Lists that can be used are of type TRAN, USERID, IMSID, CLIENT, and PORT. Press **Prompt (F4)** to select from a list of available Object Lists. Then select **List** with a / to denote that you have specified an Object List. See **Chapter 10, “Object Lists,” on page 147** for information on how to define Object Lists.

This option generates the INCL|EXCL(field(values)) report operand.

Related reference:

“TRANEXTR: Transit Extract” on page 589

The TRANEXTR operand of the IMSPACEX batch command requests the IMS Connect Transit Extract. This creates extract data sets of performance details about every transaction processed by IMS Connect.
Transaction Transit reports (Form-based)

The Transaction Transit reports and extracts use the IMS Connect Extensions journal as input. In addition to producing Connect Transaction Transit reports, the Report Set can be used to request combined Connect and IMS reports by merging IMS Connect Extensions journal and IMS log file data. This merged data provides an end-to-end picture of the Connect transaction life cycle.

Transaction Transit List report and extract

The Form-based Transit List in the CEX Report Set is similar to the Form-based Transit List in the Log Report Set.

Like the Form-based Transit List in the LOG Report Set, the Form-based Transit List in the CEX Report Set has three views. The extract and transit option views are the same for both LOG and CEX. For a description of these, see “Transaction Transit List report and extract” on page 316.

Most of the options are the same for both LOG and CEX. The Transaction Mix LOG report option is not available for CEX reports. Other report option differences are:

**Match Required**

Default: NO

Only applicable in combined Connect/IMS Form-based reporting:

YES Report only Connect and IMS transactions for which full end-to-end data is available.
**NO** Report all Connect transactions and if any, their associated IMS transaction activity.

**Note:** The specified completion levels (COMPLVLC and COMPLVL) determine which transactions are available for selection.

**Selection Criteria**
Default: Not specified.
Records can be included in or excluded from the report based on their Transaction Code, LTERM, User ID, Datastore (IMS ID), Client ID, and TCP/IP Port Number values. This enables you to report only the information of interest. You can specify a single value, a masking pattern (except Port Number), or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

The extract options are:

```
<table>
<thead>
<tr>
<th>File Options Help</th>
</tr>
</thead>
</table>
| Command ===>
|                  |
| Specify required view: Report Interval |
| 2. Extract From |
| 3. Transit options To |
| Extract Data Sets: |
| 1. REPORT |
| 2. EXTRACT |
| 3. |
| 4. |
| 5. |
| Extract Options: |
| Include Delimiter Delimiter . . . (blank is valid) |
| Include Field Labels |
| Numeric Fields in Float Format |
```

*Figure 270. CEX Transaction Transit List (View 2 of 3): Extract options*

The transit options are:
The differences for transit options are:

**CEX Completion Level**

Default: 2

Enter a value between 0 and 4 to specify the minimum Connect transaction completion level for reporting.

IMS PA assigns a completion level to every transaction. Form-based reporting can specify a minimum completion level, instructing IMS PA to report only those transactions that have reached this level of completion.

The Connect transaction completion levels are:

- 0  IMS Connect non-transactional message initialized. Use to analyze all activity.
- 1  IMS Connect transactional message initialized. Use to analyze messages rejected by the message exit.
- 2  IMS Connect Message Sent to OTMA for processing.
- 3  IMS Connect Message Received from OTMA. This level may also indicate an OTMA Timeout/Error.
- 4  Transaction has completed Connect processing.

**Note:** For combined reporting, you have completion levels for both Connect and IMS transactions to consider.

**Related concepts:**

"LIST Report Form" on page 244

The LIST Report Form can be used to tailor the format and content of the Transaction Transit List report or extract in a Log or Connect Report Set.

**Related reference:**

"LIST: Transaction Transit List report and extract (Form-based)" on page 591

The LIST operand of the IMSPACEX batch command requests the Transaction Transit List report or extract for IMS or Connect fields.
Transaction Transit Summary report and extract

The Form-based Transit Summary report is similar to the Form-based Transit List report.

Like the Form-based List, the Form-based Summary has three views. The extract and transit option views are the same for the List and the Summary. Most of the report options are the same for the List and Summary. For a description of these, see "Transaction Transit List report and extract" on page 563.

The report options that are different for the Summary report are:

**Form**

Default: Not specified.

The name of a SUMMARY Report Form used to tailor the format and content of the extract. If a Form is not specified, an internally defined default Form will be used.

**Time Interval**

Default: 00:01:00

The time interval applies when you want to summarize activity over time. It is used when you specify a SUMMARY Report Form which has one or both sort fields STARTIMS or STARTCON included. When reporting, IMS PA accumulates the data for each interval in the report period and writes a report line for each.

Specify a value in the range 00:00:01 (1 second) to 24:00:00 (24 hours). A time interval under an hour must fit evenly into the hour. IMS PA will round it down to the nearest interval that aligns to the hour. For example, 1.35 is reduced to 00:01:30 minutes which will produce 40 interval records for each hour of data. A time interval over an hour must fit evenly into the day. IMS PA will round it down to the nearest interval that aligns...
to the day. For example, 10.30.23 is reduced to 08:00:00 hours which will produce 3 interval records for each day of data. Minutes take precedence for an abbreviated entry. For example:
1   becomes 00:01:00
1.1 becomes 00:01:00 (rounded down from 00:01:01)
1.1.1 becomes 01:00:00 (rounded down from 01:01:01)

Totals Level
Default: 0
Specify the grand total and subtotal levels required for reporting as follows:
Blank   No totals.
0       Grand totals only, no subtotals.
1–7     Grand total and subtotals to the corresponding key level.

Precision
Time   Default: 3
The precision of numeric fields. Numeric fields can be formatted to either 3, 4, 5, or 6 decimal places.
For example, if the field value is 10.123456 seconds:
• 3 decimal places is 10.123 precision
• 4 decimal places is 10.1235 precision
• 5 decimal places is 10.12346 precision
• 6 decimal places is 10.123456 precision

Note: Rounding occurs for elapsed and CPU time values.
Precision and Digit Grouping affect how the field values are represented in the report. Precision and Digit Grouping can be specified in the Report Form and the Report Set. The Report Set takes precedence.
An indicator shows whether the options you select in the Report Set make the report width different from the Report Form width. The > symbol indicates that the report precision is less than the Report Form precision. The > symbol indicates that the report precision is greater than the Report Form precision.

Count   Default: 0
Specifies the precision of count fields, applicable only when reported as average, from 0 to 2 decimal places.

Extract Data Set Name
Default: Not specified.
The name of the data set where the extract records are written. If IMS PA is to create the data set at run time, the default allocation attributes specified for Summary (CPU Usage, Database Update Activity and Connect) Extracts in Reporting Allocation Settings will be used when generating the JCL. If the data set is already cataloged, then IMS PA will use DISP=OLD or DISP=MOD according to your request to overwrite or append to the existing data set. Alternatively, you can use a generation data group (GDG) to create a new data set each time the extract is run. When generating the JCL, IMS PA assigns a default DDname of SUMXnnnn where nnnn is a sequential number 0001–9999 to ensure DDnames are unique.
When specifying the data set name, standard TSO conventions apply. For example, if the TSO option PROFILE PREFIX is in effect, the prefix will be appended as the high-level qualifier unless the data set name is enclosed in quotes.

**DDname**

Default: IMS PA assigns a default DDname of `SUMMnnnn` where `nnnn` is a sequential number 0001–9999 to ensure each report has a unique DDname.

The DDname for the report output. Specify 1–8 alphanumeric characters starting with an alphabetic character. The DDname is mandatory and should be unique to separate the output of multiple reports. Multiple reports of the same type can use the same DDname without consequence, however a mix of reports using the same DDname may interleave the print lines.

In the event of the output being an extract file, the DDname is used for the Extract Recap report output. The Extract Recap report contains information regarding the extract output including extract file name and record count.

**Related concepts:**

"SUMMARY Report Form" on page 248

The SUMMARY Report Form defines the format and content of the Transaction Transit Summary report and extract.

**Related reference:**

"SUMMARY: Transaction Transit Summary report and extract (Form-based)" on page 593

The SUMMARY operand of the IMSPACEX batch command requests a Transaction Transit Summary Report or Extract for IMS and Connect fields.

### IMS Connect Transaction Index

The IMS Connect Transaction Index is a specialized extract file created by IMS Performance Analyzer batch reporting. Each record in the index represents an IMS transaction and contains cumulative information from the IMS Connect Extensions journal about that transaction.

**Creating an IMS Connect Transaction Index**

The IMS Connect Transaction Index is requested from an IMS Performance Analyzer CEX report set and associated INDEX batch command.

**Procedure**

1. On the IMS PA primary option menu, select option 3 Report Sets.
2. Select or create a CEX report set.
3. In the Transaction Transit Reports (Form-based) category, select Transaction Index.
4. Specify the IMS Connect Transaction Index data set name and disposition.

```
File Options Help

EDIT Report Set - SAMPCEX Line 1 of 8
Command ===> Scroll ===> PAGE

Description ... Sample CEX Report Set

Enter "/" to select action.

** Reports **     Active
  + Options No
  + Transaction Transit Reports No
  - Transaction Transit Reports (Form-based) No
  - List No
  - Summary No
  $ Transaction Index No
  + Resource Usage Reports No
  + Trace Reports No
** End of Reports **
```

Figure 273. IMS PA CEX Report Set: Select Transaction Index

5. Enter RUN to run the report set, including the IMS Connect Transaction Index request. The generated command is IMSPACEX INDEX.

6. Specify report set run-time options, and then press Enter to submit the job.

Related reference:
“INDEX: IMS Connect Transaction Index” on page 598

The INDEX operand of the IMSPACEX batch command requests the IMS Connect Transaction Index.

Using the index with IMS Problem Investigator to diagnose transaction problems

After creating an IMS Connect Transaction Index with IMS Performance Analyzer, you can use it in IMS Problem Investigator to diagnose problem transactions.

The IMS Connect Transaction Index can be analyzed on its own, or in conjunction with the IMS Connect Extensions journals and IMS log files used to create it. The index is a useful diagnostic mechanism that provides a summary insight into the dynamics of the transaction and provides a shortcut to the cause of the problem.

Processing the IMS Connect Transaction Index:

Select the IMS Connect Transaction Index together with the IMS Connect Extensions journals used to create the index. The files are merged and displayed as if they are a single data source.
In the following example, a CA20 filter is specified to display just the index records, hiding all other records from display until they are required.

The following browse panel is the list of all transactions contained in the index, matching the initial filter setting of CA20.

Locate a record of interest. In this example, we have entered a FIND command to locate the PART transaction.

**Tracking the problem transaction:**

When you have located the problem transaction, you can use tracking to view all event records associated with the transaction.

Use the TX line action against the relevant IMS Connect Transaction Index record to start tracking that transaction.
All Connect event records associated with that transaction are displayed.

<table>
<thead>
<tr>
<th>Code Description</th>
<th>Date</th>
<th>Time (Local)</th>
</tr>
</thead>
<tbody>
<tr>
<td>tx CA20 Connect Transaction TranCode=PART</td>
<td>09.30.08.996476</td>
<td></td>
</tr>
<tr>
<td>CA20 Connect Transaction TranCode=PART</td>
<td>09.30.09.279825</td>
<td></td>
</tr>
<tr>
<td>CA20 Connect Transaction TranCode=PART</td>
<td>09.30.09.368052</td>
<td></td>
</tr>
<tr>
<td>CA20 Connect Transaction TranCode=PART</td>
<td>09.30.09.464258</td>
<td></td>
</tr>
<tr>
<td>CA20 Connect Transaction TranCode=PART</td>
<td>09.30.09.554185</td>
<td></td>
</tr>
<tr>
<td>CA20 Connect Transaction TranCode=DSPALLI</td>
<td>09.30.09.930922</td>
<td></td>
</tr>
<tr>
<td>CA20 Connect Transaction TranCode=DSPALLI</td>
<td>09.30.10.089499</td>
<td></td>
</tr>
<tr>
<td>CA20 Connect Transaction TranCode=DSPALLI</td>
<td>09.30.10.200529</td>
<td></td>
</tr>
<tr>
<td>CA20 Connect Transaction TranCode=ADDINV</td>
<td>09.30.11.979000</td>
<td></td>
</tr>
<tr>
<td>CA20 Connect Transaction TranCode=ADDINV</td>
<td>09.30.12.125252</td>
<td></td>
</tr>
<tr>
<td>CA20 Connect Transaction TranCode=ADDINV</td>
<td>09.30.12.477113</td>
<td></td>
</tr>
<tr>
<td>CA20 Connect Transaction TranCode=ADDINV</td>
<td>09.30.12.570718</td>
<td></td>
</tr>
<tr>
<td>CA20 Connect Transaction TranCode=ADDINV</td>
<td>09.30.12.651367</td>
<td></td>
</tr>
</tbody>
</table>

Figure 277. IMS Problem Investigator: Start transaction tracking against the index

Figure 278. IMS Problem Investigator: Track against the index to see the Connect events for the transaction
Problem detection can be done with the IMS Connect Transaction Index on its own or merged with the associated IMS Connect Extensions journals and IMS log files.

## Resource Usage reports

The Connect Resource Usage reports contain detailed and summary information on the use and availability of various IMS Connect resources including TCP/IP Ports and Tpipes.

The IMS Connect Resource Usage reports are:
- Port Usage
- Resume Tpipe
- ACK/NAK
- Exception Events
- Gap Analysis

### Connect Port Usage report

The IMS Connect Port Usage Report provides a summary of the TCP/IP ports used by the IMS Connect system.

For each Port, summary statistics are provided for port depth, message processed count, and ACCEPT, READ, and WRITE Socket counts.

The report can optionally be summarized by time interval.

IMS Performance Analyzer generates the report command:

```
IMSPACEX PORT(...) 
```

![Figure 279. Connect Port Usage Report Options](image)

The options are:

- **Report DDname**
  - Default: PORT
  - Specify the DDname to be used for the report output.

  This option generates the DDNAME(ddname) operand.
Time Interval
Default: 00:01:00 (1 minute) but not selected; report is not summarized by time.

To summarize the information by time interval, select with a / and specify the time interval.

Specify a value in the range 00:00:01 (1 second) to 24:00:00 (24 hours). A time interval under an hour must fit evenly into the hour. IMS PA will round it down to the nearest interval that aligns to the hour. For example, 1.35 is reduced to 00:01:30 minutes which will produce 40 interval records for each hour of data. A time interval over an hour must fit evenly into the day. IMS PA will round it down to the nearest interval that aligns to the day. For example, 10.30.23 is reduced to 08:00:00 hours which will produce 3 interval records for each day of data. Minutes take precedence for an abbreviated entry. For example:
1  becomes 00:01:00
1.1 becomes 00:01:00 (rounded down from 00:01:01)
1.1.1 becomes 01:00:00 (rounded down from 01:01:01)

This option generates the INTERVAL(hh:mm:ss) operand.

Peak
Default: 90

Specify a percentage nnn between 50 and 100.

The IMS Connect Port Usage report provides a statistical estimate of the peak percentile for Input READ time and ACK/NAK READ time. For example, specify 95 to report an estimate of the time within which 95% of the READs completed. Calculations assume a normal distribution.

This option generates the PEAK(nnn) operand.

Selection Criteria
Selection Criteria enable you to filter the IMS Connect data so that your report contains only the information that you are interested in.

Specify TCP/IP Port Number values to be included in or excluded from the report. This report-level filter applies to the subset of records after the global filter (if specified) has been applied.

Valid TCP/IP Port Numbers are in the range 1 to 65535. Masking (*) is not supported.

An Object List of type PORT can be used to specify a list or range of values. Press Prompt (F4) to select from a list of available Object Lists. Then select List with a / to denote that you have specified an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

This option generates the INCL|EXCL(PORT(values)) report operand.

Related reference:
PORT: Port Usage report” on page 598
The PORT operand of the IMSPACEX batch command requests an IMS Connect Port Usage report.

Connect Resume Tpipe report
The IMS Connect Resume Tpipe report provides a summary of Resume Tpipe command activity.
The report provides command statistics, including command count, and a
downbreak by command type: Auto (with timeout), No Auto and Single.
Command statistics include count of commands issued, IMS messages received,
Negative responses (Tpipe queue empty), NAK and timeout interval.

The report can optionally be summarized by time interval.

IMS Performance Analyzer generates the report command:
IMSPACEX TPIPE(...)
Specify Tpipe values to be included in or excluded from the report. The Tpipe values are 1–8 alphanumeric character names and masking (*) is supported.

An Object List of type TPIPE can be used to specify a list or range of values. Press Prompt (F4) to select from a list of available Object Lists. Then select List with a / to denote that you have specified an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

Global Selection Criteria provide a filter for all reports in the Report Set. Selection Criteria specified for an individual report override the global specification.

This option generates the INCL|EXCL(TPIPE(values)) report operand.

Related reference:
“TPIPE: Resume Tpipe report” on page 599

The TPIPE operand of the IMSPACEX batch command requests the IMS Connect Resume Tpipe report.

Connect ACK/NAK report

The IMS Connect ACK/NAK Report provides a summary of acknowledgement activity for transactions that use Sync Level=CONFIRM.

Positive acknowledgement (ACK) and negative acknowledgement (NAK) statistics are reported for each transaction code. NAK is further broken down as negative acknowledgement from either OTMA (NAK sense code) or from the Client.

The report can optionally be summarized by time interval.

IMS Performance Analyzer generates the report command:
IMSPACEX ACKN(…)

Figure 281. Connect ACK/NAK Report Options

The options are:

Report Output DDname
Default: ACKNAK
Specify the DDname to be used for the report output.

This option generates the DDNAME(ddname) operand.

**Time Interval**

Default: 00:01:00 (1 minute) but not selected; report is not summarized by time.

To summarize the information by time interval, select with a / and specify the time interval.

Specify a value in the range 00:00:01 (1 second) to 24:00:00 (24 hours). A time interval under an hour must fit evenly into the hour. IMS PA will round it down to the nearest interval that aligns to the hour. For example, 1.35 is reduced to 00:01:30 minutes which will produce 40 interval records for each hour of data. A time interval over an hour must fit evenly into the day. IMS PA will round it down to the nearest interval that aligns to the day. For example, 10.30.23 is reduced to 08:00:00 hours which will produce 3 interval records for each day of data. Minutes take precedence for an abbreviated entry. For example:

1 becomes 00:01:00
1.1 becomes 00:01:00 (rounded down from 00:01:01)
1.1.1 becomes 01:00:00 (rounded down from 01:01:01)

This option generates the INTERVAL(hh:mm:ss) operand.

**Selection Criteria**

Selection Criteria enable you to filter the IMS Connect data so that your report contains only the information that you are interested in.

Global Selection Criteria provide a filter for all reports in the Report Set. Selection Criteria specified for an individual report override the global specification.

Specify field values to be included in or excluded from the report. The fields you can filter on are:

- Transaction Code
- User ID
- Datastore (IMS ID)
- Client ID
- TCP/IP Port Number

The corresponding Object Lists that can be used are of type TRAN, USERID, IMSID, CLIENT, and PORT. Press **Prompt (F4)** to select from a list of available Object Lists. Then select **List with a / to denote that you have specified an Object List.** See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

This option generates the INCL|EXCL(field(values)) report operand.

**Related reference:**

[“ACKN: ACK/NAK report” on page 599](#)

The ACKN operand of the IMSFACEX batch command requests the IMS Connect ACK/NAK report.

**Connect Exception Events report**

The IMS Connect Exception Events Report provides details about events that cause transactions to fail or that signal critical resources are no longer available.
The List report provides a list (in chronological order) of all exception events. The Summary report provides a recap of each exception event encountered and a count of the number of times it occurred.

IMS Performance Analyzer generates the report command:

IMSPACEX EXCEPT(...)

---

File Options Help

Command => CEXAMPLE - Exception Events

Specify report options.

Reports Required: Report Output DDname EXCEPT

List

Summary

Figure 282. Connect Exception Events Report Options

The options are:

**Report DDname**

Default: EXCEPT

Specify the DDname to be used for the report output.

This option generates the DDNAME(ddname) operand.

**Reports Required**

Default: Summary

Select with a / to request one or both of the reports that analyze IMS Connect exceptions:

**List**

Provides a list (in chronological order) of all exception events.

This option generates the LIST operand.

**Summary**

Provides a recap of each exception event encountered and a count of the number of times it occurred. This is the default report.

This option generates the SUMMARY operand.

There are two types of Connect exceptions. The first type is an event that causes a transaction to fail, for example a non-zero return code from a READ EXIT or a NAK response. The second type is when a critical IMS Connect resource becomes unavailable, for example Datastore unavailable or Tpipe stopped.

All exception events are reported; there is no filtering capability via Selection Criteria.

**Related reference:**

[“EXCEPTION: Exception Events report” on page 600](#)

The EXCEPTION operand of the IMSPACEX batch command requests the IMS Connect Exception Events report.
Connect Gap Analysis report

The IMS Connect Gap Analysis report looks for periods of time where journal records are not being cut, potentially highlighting an external system event that may have caused IMS Connect to slow down.

IMS Performance Analyzer generates the report command:

```
IMSPACEX GAP(...)
```

### File Options Help

<table>
<thead>
<tr>
<th>Command</th>
<th>CEXAMPLE - Gap Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specify report options.</td>
<td>—— Report Interval ——</td>
</tr>
<tr>
<td>Report Output DDname</td>
<td>GAPS</td>
</tr>
<tr>
<td>From</td>
<td>YYYY/MM/DD HH:MM:SS:TH</td>
</tr>
<tr>
<td>To</td>
<td></td>
</tr>
<tr>
<td>Processing Options:</td>
<td></td>
</tr>
<tr>
<td>Gap Threshold</td>
<td>... 5.000000 seconds (s.thmiju)</td>
</tr>
</tbody>
</table>

**Figure 283. Connect Gap Analysis Report Options**

The options are:

**Report Output DDname**

Default: GAPS

Specify the DDname to be used for the report output.

This option generates the DDNAME(ddname) operand.

**Report Interval**

Default: Not specified.

Specify the reporting interval. Within the context of the Global Report Interval, records with time stamps on or after the **From** Date/Time and to the **To** Date/Time are included in the report.

You can specify either:

- Date/time pairs or dates only. This indicates a *date-time range* (for example, 2014/06/25 7:00 to 2014/06/25 16:30). The **From** Date/Time must be before the **To** Date/Time.
- Times only. This indicates a particular *time slot* (for example, 9:00 to 10:00 each day). Specifying the **From** Time greater than the **To** Time indicates a time slot across midnight.
- Neither date/time pair. *All* input records are selected.

**Gap Threshold**

Default: 5.000000 seconds

Specify a threshold interval in the range 0.000001 to 9.999999 seconds. This defines the maximum elapsed time tolerated between log records. Every gap longer than the threshold is reported.

**Related reference:**

“GAP: IMS Connect Gap Analysis report” on page 601

The GAP operand of the IMSPACEX batch command requests the IMS Connect Gap Analysis report.
Trace reports

The Connect Trace reports provide detailed analyses of individual IMS Connect event records.

Trace reports are typically used to investigate point in time performance problems because they provide all available information. To focus on the desired problem area or to minimize the size of the report, specify date/time range and/or Selection Criteria.

Connect Transit Event Trace report

The IMS Connect Trace provides a list of transactions, each with detailed information about every event in the life of that transaction.

At a glance, you can see when a transaction starts, followed by all the events associated with the transaction in the order they occurred.

IMS PA generates the report command:

IMSPACEX TRACE(...)

CEX - Transit Event Trace

Command ==> __________________________________________________________________

Specify report options.

Report Output DDname TRACE___

Selection Criteria:

<table>
<thead>
<tr>
<th>Object Type</th>
<th>Inc/Exc</th>
<th>Object + List</th>
<th>Validation Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transaction Code</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User ID</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Datastore (IMS ID)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Client ID</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TCP/IP Port Number</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 284. Connect Transit Event Trace Report Options

The options are:

Report DDname

Default: TRACE

Specify the ddname to be used for the report output.

This option generates the DDNAME(ddname) operand.

Selection Criteria

Selection Criteria enable you to filter the IMS Connect data so that your report contains only the information that you are interested in.

Global Selection Criteria provide a filter for all reports in the Report Set. Selection Criteria specified for an individual report override the global specification.

Specify field values to be included in or excluded from the report. The fields you can filter on are:

- Transaction Code
- User ID
- Datastore (IMS ID)
• Client ID
• TCP/IP Port Number

The corresponding Object Lists that can be used are of type TRAN, USERID, IMSID, CLIENT, and PORT. Press **Prompt (F4)** to select from a list of available Object Lists. Then select **List with a /** to denote that you have specified an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

This option generates the INCL/EXCL(field(values)) report operand.

**Related reference:**

“TRACE: Transit Event Trace report” on page 602

The TRACE operand of the IMSPACEX batch command requests the IMS Connect Transit Event Trace report.
Chapter 25. IMS Connect batch interface

The IMS PA dialog generates the JCL and commands for executing your report requests in batch. The JCL and commands for IMS Connect report requests are described here. Sample jobs are supplied in the SIPISAMP Library.

Related tasks:
“Run Connect Report Set” on page 551

The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category, or individual reports.

IMS Connect Report Set JCL

The JCL built by IMS PA for the batch execution of an IMS Connect Report Set via the SUBMIT or JCL (or RUN) commands is based on the sample library member IPICEXJC.

IMS PA builds the JCL to execute the program IPIMAIN using the following options specified using the dialog:

**JOB**

Job Statement Information in IMS PA Settings.

**IPI EXEC PGM=IPIMAIN,PARM='parameter list'**

IMS PA main program with parameters:

- **UPPER**
  Print reports in upper case if Reports in Upper Case is YES in IMS PA Settings.

**STEPLIB DD**

IMS PA Load Library In IMS PA Settings.

**CEXIN DD**

Connect Journal Data Set Selected data set.

**SYSPRINT DD**

IPIDBRC utility message output file.

**IPIOPTS DD **

Report Interval This is the Global Report Interval.

It is the report period specified on the Run Report Set panel at run time. To display the runtime options, you can issue the RUN command for a Report, Report Category, or Report Set.

**IPICTRLS DD**

Transit List Extract Data Set From the Connect Transit Extract panel.

If the output data sets do not exist, IMS PA uses the Transit Total Traffic allocation details in Reporting Allocation Settings. IMS PA may set or adjust the DCB attributes at Extract run time.

**IPICTRLSU DD**

Transit Summary Extract Data Set From the Connect Transit Extract panel.

If the output data set does not exist, IMS PA uses the Summary Extracts allocation details in Reporting Allocation Settings.

**IPIRSET DD**

For *DSN(member)* where *DSN* is the Report Sets Data Set in your IMS PA Profile and *member* is the name of the Report Set being run.
IPIOBJL DD
Object Lists Data Set in your IMS PA Profile.

IPIFORM DD
Report Forms Data Set in your IMS PA Profile.

Sample JCL: IMS Connect Report Set

```
//CEXUSER1 JOB (ACCOUNT), 'NAME'
/**
//IP1 EXEC PGM=IPIMAIN
//STEPLIB DD DSN=IMSPA.V440.SIPILINK,DISP=SHR
// Input data sets
//CEXIN DD DISP=SHR,
// Sysout data sets
//IPRPT DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
// Report time range
//PLOPTS DD *
// IMSPACEX START(2014/04/19,14:45:08.55),STOP(2014/04/19,15:03:38.55)
// IMS Connect List extract file
//PICTRLS DD DISP=SHR, DSN=IPI.CEXLIST.EXTRCT
// IMS Connect Summary extract file
//PICTRSU DD DISP=SHR, DSN=IPI.CEXSUMM.EXTRCT
// Report Set member
//PIRSET DD DSN=PREFIX.IMSPA.RSET(CEX01),DISP=SHR
// Object Lists data set
//PIOBJL DD DSN=PREFIX.IMSPA.OBJL,DISP=SHR
// Report Forms data set
//PIIFORM DD DSN=PREFIX.IMSPA.FORM,DISP=SHR
```

Figure 285. JCL: IMS Connect Report Set

Related reference:
["Report Set JCL" on page 717]

The sample library SIPISAMP contains members with sample JCL to generate IMS PA reports and extracts. Also included are examples for Automated file selection and BMP analysis.

Connect JCL with command input

To generate JCL that contains commands in-stream, rather than referring to data sets, enter the dialog command JCLCMD, or its abbreviation, JCM; or, equivalently, enter RUN, and then specify the execution mode Edit JCL with command input.

By contrast, to generate JCL that builds commands at runtime from data sets, rather than containing commands in-stream, enter the dialog command JCL (or a RUN command that does not specify Edit JCL with command input). For details, see ["IMS Connect Report Set JCL" on page 581].

The JCL generated by the JCLCMD command differs in the following ways from the JCL generated by the JCL command:

- The IPICMD DD statement contains the series of user-modifiable batch commands built from the activated reports in the Report Set. A description of the Report Set appears as comments (* in column 1) preceding the commands. It replaces the IPIRSET DD statement generated by the JCL command.
• The command input stream contains INCL/EXCL command parameters built from the Object Lists used by the Report Set. They replace the IPIOBJL DD statement generated by the JCL command.
• The command input stream contains FIELDS command parameters built from the Report Forms used by the Form-based reports and extracts in the Report Set. They replace the IPIFORM DD statement generated by the JCL command.
• The IMSPACEX command identifies IMS Connect reports.

This facility allows you to build report JCL with command input once and store it into an external library for submitting at any time, independent of the original Report Set. Individual report options, such as Date/Time report intervals or object selection filters (such as Transaction Code, Connect Client ID, TCP/IP Port) can then be modified in the JCL and submitted without making changes to the original Report Set.
Sample JCL with command input: IMS Connect Report Set

```
//SEC1 JOB (ACCOUNT),'NAME'
//IPI EXEC PGM=IPIMAIN
//STEPLIB DD DSN=IMSPA.V440.SIPILINK,DISP=SHR
//* Input Data Sets
//CEXIN DD DISP=SHR,
//      DSN=Journal.Data.Set
//* Sysout data set
//SYSPRINT DD SYSOUT=* 
//SYSUDUMP DD SYSOUT=* 
//* Report time range
//IPIOPTS DD *,
//         IMMSPACEX START(-1,10:00:00.00),STOP(-1,12:00:00.00)
//* Report Set Command Input
//IPICMD DD *
* IMS PA Connect Report
* Report Set Name - CEXEXAMP
* Description - Connect Report Set Example
* Connect Report Global Options
IMSPACEX PAGESIZE(60)
* Transit Time Analysis Report
IMSPACEX ANALYSIS(DDNAME(ANAL0001),
BY(TRANCODE,TIME),
INTERVAL(00:05:00),
PEAK(95))
* Transit Log Report
IMSPACEX LOG(DDNAME(LOG))
* Port Report
IMSPACEX PORT(DDNAME(PORT),
INTERVAL(00:01:00),
PEAK(90))
* TPipe Report
IMSPACEX TPIPE(DDNAME(TPIPE),
INTERVAL(00:01:00))
* ACK/NAK Report
IMSPACEX ACKN(DDNAME(ACKNAK),
INTERVAL(00:01:00))
* Exception Report
IMSPACEX EXCEPT(DDNAME(EXCEPT),
LIST,
SUMMARY)
* Trace Report
IMSPACEX TRACE(DDNAME(TRACE))
IMSPACEX EXECUTE
```

Figure 286. JCL with command input: IMS Connect reporting

**IMSPACEX command**

The IMSPACEX command requests an IMS Connect report. Multiple Connect reports can be requested in the one batch job.

**Format**

```
IMSPACEX operands
```

The last IMSPACEX command in the batch job must include EXECUTE as its last operand. This informs IMS PA that all Connect reports have been requested, and processing of IMS Connect data can commence.
See “IMS Connect report operands” on page 586 for a description of the IMSPACEX operands.

**Tip:** Multiple reports of the same type can be requested. For example:

```
IMSPACEX ANAL(BY(TC)), ANAL(BY(TIME))
```

**Example**

```
IMSPACEX START(2014/03/13, 10:00), STOP(2014/03/13, 11:00)
IMSPACEX ANALYSIS(BY(TRANCODE, TIME), INTERVAL(00:15:00), PEAK(B5))
IMSPACEX LOG, ACKN, PORT, TPIPE, EXCEPT, GAP, TRACE
IMSPACEX EXECUTE
```

From this example, IMS PA will produce the following reports for the time period 10:00 a.m. to 11:00 a.m. on March 13, 2014:

- Transit Analysis
- Transit Log
- ACK/NAK
- Port Usage
- Resume Tpipe
- Exception Events
- Gap Analysis
- Transit Event Trace

**COPY command**

The COPY command reads one or more members of the command library. The command library must be a partitioned data set defined by the CMDLIB DD statement.

COPY puts pre-coded commands from the command library into the input stream.

**Format**

```
COPY member1[, member2, ...]
```

The only operands for the COPY command are one or more member names in the command library. Each member may in turn contain COPY commands. The EXECUTE operand may be within or following the last COPY command.

Member names are scanned from left to right, and members are read in the order specified.Copied members may themselves employ the COPY command. To prevent COPY loops, any request for a member currently queued for read causes an error and the member is not processed. An error message is issued for any member not found in the command library.

COPY allows users to retrieve pre-coded commands and include them in the input stream. Pre-coded commands would usually include production level command data, or static command input like Include and Exclude lists, or commonly used reports.

**Example**

In this example, CEXREPS contains a common set of IMS Connect report commands.
IMS Connect report operands

The IMSPACEX command has two categories of operand: the reports and their specific options, and the general options (Global options) that apply to multiple reports.

The IMSPACEX operands that produce the IMS Connect reports are:

- ANALYSIS
  - Transit Analysis
- LOG
  - Transit Log
- TRANEXTR
  - Transit Extract
- LIST
  - Transaction Transit List (Form-based)
- SUMMARY
  - Transaction Transit Summary (Form-based)
- INDEX
  - IMS Connect Transaction Index
- PORT
  - Port Usage
- TPIPE
  - Resume Tpipe
- ACKN
  - ACK/NAK
- EXCEPT
  - Exception Events
- GAP
  - Gap Analysis
- TRACE
  - Transit Event Trace

For further details of the operands and their default values, see the description of the corresponding dialog options in Chapter 24, “Requesting IMS Connect reports,” on page 547.

Connect Global Options

The Connect Global Options define output and general control information for the IMS Connect reports.

Format

```
IMSPACEX [PAGESIZE(nn),] default 60 lines
[NOPTSIGN,] default print % sign
[DISCARDS,]
[INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
[INCL(USERID(list))|EXCL(USERID(list)),]
[INCL(DATASTORE(list))|EXCL(DATASTORE(list)),]
[INCL(CLIENT(list))|EXCL(CLIENT(list)),]
[INCL(TPIPE(list))|EXCL(TPIPE(list)),]
[INCL(PORT(list))|EXCL(PORT(list)),]
```

- PAGESIZE
  - Number of print lines per page.
- NOPTSIGN
  - Do not print % sign in report output.
DISCARDS
When inflight transaction processing is requested, print the discarded
transactions report.

INCL|EXCL
Selection Criteria. If individual reports specify Selection Criteria, then it
overrides this Global specification.

Example
IMSPACEX PAGESIZE(120),
EXCL(TRANCODE(MM*)),
INCL(DATASTORE(IMT*,IMP*))

Related reference:
“Connect Global Options” on page 554
The IMS Connect Global Options define general control information that applies to
all reports within the Report Set.

ANALYSIS: Transit Analysis report
The ANALYSIS operand of the IMSPACEX batch command requests the IMS
Connect Transit Analysis report.

The Analysis report provides a summary of IMS Connect transaction performance.
Performance data can be summarized by one or two sort keys including Time of
Day, Transaction Code, User ID, Datastore (original destination and target) and
Port number.

Performance statistics are provided as averages, and optionally, peak percentiles.
For example, you can specify 90 to report the elapsed time within which 90% of
transactions completed.

Format

IMSPACEX ANALYSIS{
[BY(order1)]
[BY(order1,order2),] default BY(TRANCODE)
[DDNAME(ddname),] default ANAL0001, ANAL0002,...
[INTERVAL(hh:mm:ss),] default 00:01:00 (1 minute)
[PEAK(nnn),] 50-100%, default no peak
[INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
[INCL(USERID(list))|EXCL(USERID(list))],
[INCL(CLIENT(list))|EXCL(CLIENT(list))],
[INCL(PORT(list))|EXCL(PORT(list))]}
DSORIG
    Original Datastore
DSTARG
    Target Datastore
CLIENTID
    Connect Client ID
TIME
    Time Interval

Other report operands are:

DDNAME
    The ddname for the recap report output. The default is ANAL0001, ANAL0002, ...

INTERVAL
    Summarization time interval when report is ordered by TIME
PEAK
    Peak percentile, optional
INCL | EXCL
    Selection criteria to filter (include or exclude) the report on Transaction Code, User ID, Datastore, Client, or Port number

Example

Two Analysis reports, the first ordered by Transaction Code and Time over 5 minute time intervals and filtered on Transaction Code, and the second ordered by Connect Client ID and filtered on Connect Client ID. 95% peak percentile is requested for both to check that 95% of transactions completed within a certain time.

```sql
IMSPACEX ANALYSIS(BY(TRANCODE,TIME),
    DDNAME(ANAL0001),
    INTERVAL(00:05:00),
    PEAK(95),
    INCLUDE(TRANCODE(A*,P*,T*)))

IMSPACEX ANALYSIS(BY(CLIENTID),
    DDNAME(ANAL0002),
    PEAK(95),
    EXCLUDE(CLIENT(MP1*,XP1*,ZP1*)))
```

Related reference:

“Connect Transit Analysis report” on page 557
The IMS Connect Transit Analysis report provides a summary of IMS Connect transaction performance.

**LOG: Transit Log report**

The LOG operand of the IMSPACEX batch command requests the IMS Connect Transit Log report.

The Log report provides performance details about every transaction processed by IMS Connect. Information from IMS Connect Extensions event records is collected to provide a complete picture of transaction processing. The order of transactions in the report is based on when they end, and not when they start.
Format

IMSPACEX  LOG(
[DDNAME(ddname),]
  default LOG
[NOADDIDENT|ADDIDENT,]
[INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
[INCL(USERID(list))|EXCL(USERID(list)),]
[INCL(DATASTORE(list))|EXCL(DATASTORE(list)),]
[INCL(CLIENT(list))|EXCL(CLIENT(list)),]
[INCL(PORT(list))|EXCL(PORT(list))])

Report operands are:

DDNAME
  The DDname for the recap report output. The default is LOG.

NOADDIDENT
  For each input message, report the primary identification details:
  Transaction Code, Target Datastore, and Port Number. This is the default.

ADDIDENT
  For each input message, report the primary identification details:
  Transaction Code, Target Datastore, and Port Number. Immediately
  underneath, report additional identification details: User ID, Original
  Datastore, and Client ID.

INCL|EXCL
  Selection criteria to filter (include or exclude) the report on Transaction
  Code, User ID, Datastore, Client, or Port Number.

Example

IMSPACEX  LOG(
  INCL(TRANCODE((M*,Z*)),
  INCL(USERID(SC*,SK*,AS*,JH*,PC*,SP*)),
  DDNAME(LOG))

Related reference:

“Connect Transit Log report” on page 559

The IMS Connect Transit Log provides performance details about every transaction
processed by IMS Connect.

TRANEXTR: Transit Extract

The TRANEXTR operand of the IMSPACEX batch command requests the IMS
Connect Transit Extract. This creates extract data sets of performance details about
every transaction processed by IMS Connect.

You can request a List or Summary Extract, or both. The List Extract provides
similar details to the Connect Transit Log report, while the Summary Extract
summarizes these details over a specified time interval. The format of the List
Extract record is shown in “Connect List extract” on page 744, and the Summary
Extract record is shown in “Connect Summary extract” on page 740.

The extract data is suitable for exporting to DB2 for further manipulation and
analysis. Sample DB2 jobs are supplied in the SIPISAMP library to help you create
and load DB2 tables and run SQL queries:

- For the List Extract:
  - Sample DDL job IPICLDDL
  - Sample Load job IPICLLOD
  - Sample SQL queries IPICQML1 and IPICQML2
For the Summary Extract:
- Sample DDL job IPICSDDL
- Sample Load job IPICSLOD
- Sample SQL queries IPICQMS1 and IPICQMS2

Format

```
IMSPACEX TRANEXTR(
    [DDNAME(ddname),] default TRANEXTR
    [LIST,]
    [SUMMARY,]
    [EXTENDED,]
    [INTERVAL(hh:mm:ss),] default 00:15:00 (15 minutes)
    [INCL(TRancode(list))|EXCL(TRancode(list))],
    [INCL(USERID(list))|EXCL(USERID(list))],
    [INCL(DATASTORE(list))|EXCL(DATASTORE(list))],
    [INCL(CLIENT(list))|EXCL(CLIENT(list))],
    [INCL(PORT(list))|EXCL(PORT(list))])
```

One or both of the following extracts can be requested.
LIST  Transit List extract.
SUMMARY Transit Summary extract. INTERVAL is required.

Other extract options are:
DDNAME The ddname for the recap extract output. The default is TRANEXTR.
EXTENDED Extend the extract record format to include additional fields, such as IMS Connect Extensions exit name (form field EXITNAME). Refer to the Chapter 41, “Glossary of Report Form field names,” on page 753 for the list of available fields.
INTERVAL Summarization time interval.
INCL|EXCL Selection criteria to filter (include or exclude) the report on Transaction Code, User ID, Datastore, Client, or Port number.

Example

```
IMSPACEX TRANEXTR(LIST,SUMMARY,
    INTERVAL(00:15:00),
    INCL(TRancode((M*,Z*)),
    INCL(USERID(SC*,SK*,AS*,JH*,PC*,SP*)�
    DDNAME(TRANEXTR))
```

Related reference:
“Connect Transit Extract” on page 560

The IMS Connect Transit Extract provides performance details about every transaction processed by IMS Connect. You can request a List or Summary Extract, or both. The List Extract provides similar details to the Connect Transit Log report, while the Summary Extract summarizes these details over a specified time interval.
LIST: Transaction Transit List report and extract (Form-based)

The LIST operand of the IMSPACEX batch command requests the Transaction Transit List report or extract for IMS or Connect fields.

Format

```
IMSPACEX LIST(
    [DDNAME(ddname),] default LISTnnnn
    [FROM(date,time),]
    [TO(date,time),]
    [EXTRACT(ddname),] default LIXnnnn
    [MATCH|NOMATCH,]
    [STARTLVL(n),] default 2
    [COMPLVL(n),] default 3
    [COMPLVLC(n),] default 2
    [PRECISION(n),] default 3
    [GROUP|NOGROUP|SECGROUP,]
    [OUTPUTMSG|NOUTPUTMSG,]
    [INCLTRANCODE(list)]\texttt{EXCL(TRANCODE(list)),}
    [INCLTERM(list)]\texttt{EXCL(TERM(list)),]
    [INCLUDERID(list)]\texttt{EXCLUDERID(list),]
    [INCLUDATASTORE(list)]\texttt{EXCLUDATASTORE(list),]
    [INCLCLIENT(list)]\texttt{EXCLUDERID(list),]
    [INCLPORT(list)]\texttt{EXCLUDERID(list),]
    [DELIMIT(field-delimiter)]\texttt{NODELIMIT,] default , (comma)
    [FLOAT|NOFLOAT,]
    [LABELS|NOLABELS,]
    [FIELDS(field1,...)])
```

DDNAME
DDname for the report output. The default is LISTnnnn where nnnn is a sequential number in the range 0001–9999.

FROM-TO
The reporting interval, either a date-time range or a time slot. The time slot can span midnight. The date can be either a calendar date or a relative date. If both dates are specified, they must be in the same format.

EXTRACT
DDname for the extract output. The default is LIXnnnn where nnnn is a sequential number in the range 0001–9999.

MATCH | NOMATCH

MATCH
For combined reporting, include only Connect and IMS transactions for which full end-to-end data is available. Note that the Completion Level influences which transactions are available for selection.

NOMATCH
For combined reporting, include all Connect and IMS transactions.

STARTLVL
Specify a value in the range 1–3 to specify the minimum transaction start level for reporting.

COMPLVL
Specify a value in the range 0–6 to specify the minimum IMS transaction completion level for reporting.
COMPLVLCl
Specify a value in the range 0–4 to specify the minimum Connect transaction completion level for reporting.

PRECISION
The precision of numeric fields. Numeric fields can be formatted to 3, 4, 5, or 6 decimal places, where 3 is millisecond precision and 6 is microsecond precision.

GROUP | NOGROUP | SECGROUP
GROUP
Indicates that a 1000’s separator in time and count fields is to be included in the output. The separator will be a comma for count fields and a decimal point for time fields.

NOGROUP
Indicates that a 1000’s separator in time and count fields will not be included in the output.

SECGROUP
Indicates that the separator character will delineate the decimal point only. Applies to time fields only and assumes GROUP for count fields.

OUTPUTMSG | NOOUTPUTMSG
OUTPUTMSG
Report all output messages from the transaction.

NOOUTPUTMSG
Report only the first output message for the transaction.

INCL | EXCL
Selection criteria to filter (include or exclude) the report on Transaction Code, LTERM, User ID, Datastore (IMS ID), Client ID, TCP/IP Port number.

DELIMIT | NODELIMIT
DELIMIT
The field delimiter, enclosed in quotes, to be used to separate each data field in the extract data set.

NODELIMIT
A field delimiter is not to be used to separate each data field in the extract data set.

LABELS | NOLABELS
LABELS
The first record to be written to the extract data set is to be a field labels record.

NOLABELS
Field labels are to be omitted from the extract data set.

FLOAT | NOFLOAT
FLOAT
Write numeric fields in the extract in FLOAT format. Specify FLOAT if you plan to import the extract into a DB2 table. When the DB2 load utility is used, it will interpret all numerical fields.
reliably and consistently in FLOAT format. Time fields are in units of seconds and count fields are real numbers.

NOFLOAT

Numeric fields in the extract will be written in character format according to the Precision and Digit Grouping options. This is suitable when importing the extract data into spreadsheets that expect character-based data.

FIELDS

Specifies which fields are included in the report or extract, their order, and format. Refer to Chapter 41, “Glossary of Report Form field names,” on page 753 for the list of available fields. If the FIELDS operand is omitted, the default report or extract is produced.

Example

IMSPACEX LIST(FIELDS(USERID,
       CONNLTOK,
       TIMEOUT,
       TRANCODE,
       USERID,
       XMITEXIT))

Related concepts:

“LIST Report Form” on page 244

The LIST Report Form can be used to tailor the format and content of the Transaction Transit List report or extract in a Log or Connect Report Set.

Related reference:

“Transaction Transit List report and extract” on page 563

The Form-based Transit List in the CEX Report Set is similar to the Form-based Transit List in the Log Report Set.

SUMMARY: Transaction Transit Summary report and extract (Form-based)

The SUMMARY operand of the IMSPACEX batch command requests a Transaction Transit Summary Report or Extract for IMS and Connect fields.
**Format**

```
IMSPACEX SUMMARY(
    [DDNAME(ddname),]  default SUMMnnnn
    [FROM(date,time),] 
    [TO(date,time),]  
    [INTERVAL(hh:mm:ss),]  default 00:01:00
    [EXTRACT(ddname),]  default SUMXnnnn
    [MATCH|NOMATCH,] 
    [STARTLVL(n),]  default 2  
    [COMPLVL(n),]  default 3  
    [COMPLVLC(n),]  default 2  
    [PRECISION(n1,n2),]  default 3,0  
    [GROUP|NOGROUP|SEGGROUP,] 
    [TOTALS(n)|NOTOTALS,]  default 0  
    [INCL(TRancode(list))][EXCL(TRancode(list)),]  
    [INCL(LTERM(list))][EXCL(LTERM(list)),]  
    [INCL(USERID(list))][EXCL(USERID(list)),]  
    [INCL(DATASTORE(list))][EXCL(DATASTORE(list)),]  
    [INCL(CLIENT(list))][EXCL(CLIENT(list)),]  
    [INCL(PORT(list))][EXCL(PORT(list)),]  
    [DELIMIT(field-delimiter)][NODELIMIT],  
    [FLOAT|NOFLOAT,]  
    [LABELS|NOLABELS,]  
    [FIELDS(field1[(options)],...)]
)
```

**DDNAME**

DDname for the report output. The default is `SUMMnnnn` where `nnnn` is a sequential number in the range 0001–9999.

**FROM-TO**

The reporting interval, either a date-time range or a time slot. The time slot can span midnight. The date can be either a calendar date or a relative date. If both dates are specified, they must be in the same format.

**EXTRACT**

DDname for the extract output. The default is `SUMXnnnn` where `nnnn` is a sequential number in the range 0001–9999.

**INTERVAL**

Applies when you want to summarize activity over time. It is used when the SUMMARY Report Form has one or both of the sort fields STARTIMS or STARTCON included. When reporting, IMS PA accumulates the data for each interval in the report period and writes a report line for each.

**MATCH | NOMATCH**

**MATCH**

For combined reporting, include only Connect and IMS transactions for which full end-to-end data is available. Note that the Completion Level influences which transactions are available for selection.

**NOMATCH**

For combined reporting, include all Connect and IMS transactions.

**STARTLVL**

Specify a value in the range 1–3 to specify the minimum transaction start level for reporting.
COMPLVL
Specify a value in the range 0–6 to specify the minimum transaction completion level for reporting.

COMPLVLC
Specify a value in the range 0–4 to specify the minimum Connect transaction completion level for reporting.

PRECISION
The precision of numeric form fields. Default: PRECISION(3,0)
The first value \(n_1\) specifies the precision of time-based fields, from 3 (millisecond precision) to 6 (microsecond precision).
The second value \(n_2\) specifies the precision of count fields, applicable only when reported as average, from 0 to 2 decimal places.

GROUP | NOGROUP | SECGROUP
GROUP
Indicates that a 1000's separator in time and count fields is to be included in the output. The separator will be a comma for count fields and a decimal point for time fields.

NOGROUP
Indicates that a 1000's separator in time and count fields will not be included in the output.

SECGROUP
Indicates that the separator character will delineate the decimal point only. Applies to time fields only and assumes GROUP for count fields.

TOTALS | NOTOTALS
TOTALS
The grand total and the level of subtotaling required. A totals level of 0 will produce grand totals only in the report. Specify a totals level in the range 1–7 to produce both a grand total and subtotals to the corresponding key level.

NOTOTALS
No grand totals or subtotals will be included in the report.

INCL | EXCL
Selection criteria to filter (include or exclude) the report on Transaction Code, LTERM, User ID, Datastore (IMS ID), Client ID, TCP/IP Port number.

DELIMIT | NODELIMIT
DELIMIT
The field delimiter, enclosed in quotes, to be used to separate each data field in the extract data set.

NODELIMIT
A field delimiter is not to be used to separate each data field in the extract data set.

LABELS | NOLABELS
LABELS
The first record to be written to the extract data set is to be a field labels record.
NOLABELS
Field labels are to be omitted from the extract data set.

FLOAT | NOFLOAT

FLOAT
Write numeric fields in the extract in FLOAT format. Specify FLOAT if you plan to import the extract into a DB2 table. When the DB2 load utility is used, it will interpret all numerical fields reliably and consistently in FLOAT format. Time fields are in units of seconds and count fields are real numbers.

NOFLOAT
Numeric fields in the extract will be written in character format according to the Precision and Digit Grouping options. This is suitable when importing the extract data into spreadsheets that expect character-based data.

FIELDS
Specifies which fields are included in the report or extract, the order in which they appear in the report, and the statistical functions used to summarize the data. Refer to the Chapter 41, “Glossary of Report Form field names,” on page 753 for the list of available fields. If the FIELDS operand is omitted, the default report or extract is produced.

Up to 8 sort key fields can be specified, and at least one must be specified. The order of the key fields in the list defines the sort precedence, with the first key field being the major sort field. For each key field, the report can be ordered in ascending (ASCEND) or descending (DESCEND) sequence. The default is ASCEND. Sort key fields identify the grouping required for summarization, and can be STARTIMS, STARTCON, or any character field.

The sort key fields must be specified first in the list ahead of the numeric fields. The only field that can appear ahead of a key field is TRANCNT.

In addition to the sort key fields, one numeric field can be selected as ascending or descending to activate Alternate Sequencing. This will change the order of report lines from sort key to numeric field sequence. For example, specify RESPON(DESCEND) to see the transactions with the highest response time at the top of the report. Note that grouping by sort key remains unaffected by alternate sequencing.

TRANCNT is a special field computed by IMS PA. It reports the number of Connect transactions. TRANCNT can be reported anywhere on the print line by including it in the FIELDS specification.

Key fields must be specified first in the FIELDS list.

All numeric fields (except TRANCNT) are summarized using any number of the following statistical functions:

AVER Average value (this is the default if a field is specified without a function)
COUNT Number of transactions with a value
DATE STARTIMS or STARTCON field: date in the format yyyy-mm-dd
DEV Standard deviation
HIDE Include field in key but don’t print
ISO STARTIMS or STARTCON field: date and time in the format yyyy-mm-dd hh.mm.ss
MAX Maximum value
MIN Minimum value
TIME
STARTIMS or STARTCON field: time in the format hh.mm.ss (this is the default if format is not specified)

TOTAL
Sum total

nnn
Peak percentile value in the range 50%-100%

RNGPERC
Distribution: Percentage of values from a specified limit value or within a range. Specify one of the following options:

\text{RNGPERC}(\text{operator value})

Specify a reporting limit. Use this parameter report a distribution by splitting the values reported by a single field into different columns. The following values of \text{operator} are valid: =, >, >=, <, and <=.

Character ranges: Specify a character range with character-based fields. Where a blank or null value is valid for a particular field, use a hyphen (-).

\text{RNGPERC}(\text{from} - \text{to})

Report on a range of values greater than or equal to the value of \text{from}, and less than (but not equal) to the value of \text{to}.

A character range can not be specified using this option.

RNGCOUNT
Distribution: Count of values from a specified limit value or within a range. Specify one of the following options:

\text{RNGCOUNT}(\text{operator value})

Specify a reporting limit. The following values of \text{operator} are valid: =, >, >=, <, and <=.

Character ranges: Specify a character range with character-based fields. Where a blank or null value is valid for a particular field, use a hyphen (-).

\text{RNGCOUNT}(\text{from} - \text{to})

Report on a range of values greater than or equal to the value of \text{from}, and less than (but not equal) to the value of \text{to}.

A character range can not be specified using this option.

Example
IMSPACEX SUMMARY(FIELDS(STARTCON(ASCEND),
TRANCODE(ASCEND),
TRANCNT,
RESPCON(AVE),
RESPCON(80),
PREDTMA(AVE)))

Related concepts:
“SUMMARY Report Form” on page 248
The SUMMARY Report Form defines the format and content of the Transaction Transit Summary report and extract.

Related reference:
“Transaction Transit Summary report and extract” on page 566
The Form-based Transit Summary report is similar to the Form-based Transit List report.
INDEX: IMS Connect Transaction Index

The INDEX operand of the IMSPACEX batch command requests the IMS Connect Transaction Index.

The IMS Connect Transaction Index is a specialized extract file created by IMS Performance Analyzer batch reporting. Each record in the index represents an IMS transaction and contains cumulative information from the IMS Connect Extensions about that transaction. It is used by IMS Problem Investigator for tracking transactions involving IMS Connect to assist with problem determination. For more information, see “IMS Connect Transaction Index” on page 568.

Format

```
IMSPACEX  INDEX
IMSPACEX  EXECUTE
```

Related tasks:

“Creating an IMS Connect Transaction Index” on page 568

PORT: Port Usage report

The PORT operand of the IMSPACEX batch command requests an IMS Connect Port Usage report.

This report provides a summary of the TCP/IP ports used by the IMS Connect system. For each port, average and other summary statistics are provided for port depth, message processed count, and ACCEPT, READ and WRITE Socket counts.

The report can optionally be summarized by time interval.

Format

```
IMSPACEX  PORT(
  [DDNAME(ddname),],  default PORT
  [INTERVAL(hh:mm:ss),]  default 00:01:00 (1 minute)
  [PEAK(nnn),]  50-100%, default 90%
  [INCL(PORT(list))|EXCL(PORT(list))])
```

Report operands:

**INTERVAL**

Summarization time interval, optional.

**PEAK**

Peak percentile, default 90%.

Other report options are:

**DDNAME**

The ddname for the report output. The default is PORT.

**INCL** | **EXCL**

Selection criteria to filter (include or exclude) the report on port number.
**Example**

```
IMSPACEX PORT(DDNAME(PORT),
             INTERVAL(00:30:00),
             PEAK(95),
             INCLUDE(PORT((101,200),(301,999))))
```

**Related reference:**
“Connect Port Usage report” on page 572

The IMS Connect Port Usage Report provides a summary of the TCP/IP ports used by the IMS Connect system.

**TPIPE: Resume Tpipe report**

The TPIPE operand of the IMSPACEX batch command requests the IMS Connect Resume Tpipe report.

This report provides a summary of Resume Tpipe command activity. The report provides command statistics, including command count, and a breakdown by command type: Auto (with timeout), No Auto, and Single. Command statistics include count of commands issued, IMS messages sent, Negative responses (Tpipe queue empty), NAK, and timeout interval.

The report can optionally be summarized by time interval.

**Format**

```
IMSPACEX TPIPE(DDNAME(ddname),
               INTERVAL(hh:mm:ss),
               INCL(TPIPE(list))|EXCL(TPIPE(list)))
```

Report operands are:
DDNAME
   The ddname for the report output. The default is TPIPE.
INTERVAL
   Summarization time interval, optional. The default is 1 minute.
INCL|EXCL
   Selection criteria to filter (include or exclude) the report on Tpipe.

**Example**

```
IMSPACEX TPIPE(INTERVAL(00:20:00),
               DDNAME(TPIPE),
               INCLUDE(TPIPE(A*,P*,T*)))
```

**Related reference:**
“Connect Resume Tpipe report” on page 573

The IMS Connect Resume Tpipe report provides a summary of Resume Tpipe command activity.

**ACKN: ACK/NAK report**

The ACKN operand of the IMSPACEX batch command requests the IMS Connect ACK/NAK report.

This report provides a summary of acknowledgement activity for transactions that use Sync Level=CONFIRM. Positive acknowledgement (ACK) and negative
acknowledgement (NAK) statistics are reported for each transaction code. NAK is further broken down as negative acknowledgement from either OTMA (NAK sense code) or from the Client.

The report can optionally be summarized by time interval.

**Format**

```
  IMSPACEX ACKN(
    [DDNAME(ddname),] default ACKNAK
    [INTERVAL(hh:mm:ss),] default 00:01:00 (1 minute)
    [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
    [INCL(USERID(list))|EXCL(USERID(list)),]
    [INCL(DATASTORE(list))|EXCL(DATASTORE(list)),]
    [INCL(CLIENT(list))|EXCL(CLIENT(list)),]
    [INCL(PORT(list))|EXCL(PORT(list))])
```

Report operands are:
- **DDNAME**
  - The ddname for the report output. The default is ACKNAK.
- **INTERVAL**
  - Summarization time interval. The default is 1 minute.
- **INCL|EXCL**
  - Selection criteria to filter (include or exclude) the report on Transaction Code, User ID, Datastore, Client, or Port number.

**Example**

```
  IMSPACEX ACKN(DDNAME(ACKNAK),
    INTERVAL(00:05:00),
    INCLUDE(TRANCODE(A*,P*,T*)),
    EXCLUDE(CLIENT(MP1*,XP1*,ZP1*)))
```

Related reference:

"Connect ACK/NAK report" on page 575

The IMS Connect ACK/NAK Report provides a summary of acknowledgement activity for transactions that use Sync Level=CONFIRM.

**EXCEPTION: Exception Events report**

The EXCEPTION operand of the IMSPACEX batch command requests the IMS Connect Exception Events report.

This report provides details about events that cause transactions to fail or that signal critical resources are no longer available. The Exception List report provides a list (in chronological order) of all exception events. The Exception Summary report provides a recap of each exception event encountered and a count of the number of times it occurred.

**Format**

```
  IMSPACEX EXCEPT(
    [DDNAME(ddname),] default EXCEPT
    [LIST,]
    [SUMMARY]
```

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One or both of the following reports can be requested.

**LIST**  Exception List report

**SUMMARY**  Exception Summary report (default)

Other report options are:

**DDNAME**  The ddname for the report output. The default is EXCEPT.

**Examples**

Taking defaults (the Summary report):

```sh
IMSPACEX EXCEPT
```

Both reports:

```sh
IMSPACEX EXCEPTION(LIST,SUMMARY,DDNAME(EXCEPT))
```

**Related reference:**

“Connect Exception Events report” on page 576

The IMS Connect Exception Events Report provides details about events that cause transactions to fail or that signal critical resources are no longer available.

**GAP: IMS Connect Gap Analysis report**

The GAP operand of the IMSPACEX batch command requests the IMS Connect Gap Analysis report.

This report looks for periods of time where records are not being cut, potentially highlighting an external system event that may have caused IMS Connect to slow down.

**Format**

```sh
IMSPACEX GAP(

[THRESHOLD(s.thmiJu),] default 5 seconds

[DDNAME(ddname),] default GAPS

[FROM(date,time),]

[TO(date,time)])
```

Report options are:

**THRESHOLD**

Threshold for the report output. The THRESHOLD defines the maximum elapsed time tolerated between records. Every gap longer than the threshold is reported.

The value of THRESHOLD must be within the range 0.000001 to 9.999999. The default is 5.000000 seconds.

**DDNAME**

DDname for the report output. The default is GAPS.

**FROM-TO**

The reporting interval, either a date-time range or a time slot. The time slot can span midnight. The date can be either a calendar date or a relative date. If both dates are specified, they must be in the same format.
Example

Taking defaults:

```
IMSPACEX TRACE
```

Related reference:

"Connect Gap Analysis report" on page 578

The IMS Connect Gap Analysis report looks for periods of time where journal records are not being cut, potentially highlighting an external system event that may have caused IMS Connect to slow down.

**TRACE: Transit Event Trace report**

The TRACE operand of the IMSPACEX batch command requests the IMS Connect Transit Event Trace report.

This trace report provides a list of transactions, each with detailed information about every event in the life of that transaction.

At a glance, you can see when a transaction starts, followed by all the events associated with the transaction in the order they occurred.

**Format**

```
IMSPACEX TRACE( [DDNAME(ddname),] default TRACE [INCL(TRANCODE(list)),] [EXCL(TRANCODE(list)),] [INCL(USERID(list)),] [EXCL(USERID(list)),] [INCL(DATASTORE(list)),] [EXCL(DATASTORE(list)),] [INCL(CLIENT(list)),] [EXCL(CLIENT(list)),] [INCL(PORT(list)),] [EXCL(PORT(list))])
```

The report options are:

**DDNAME**
- The ddname for the report output. The default is TRACE.

**INCL** | **EXCL**
- Selection criteria to filter (include or exclude) the report on Transaction Code, User ID, Datastore, Client, or Port number.

**Examples**

Taking defaults:

```
IMSPACEX TRACE
```

With filtering:

```
IMSPACEX TRACE(DDNAME(TRACE), EXCL(TRANCODE(Z+)), INCL(USERID(A+)), INCL(DATASTORE(A+)), INCL(CLIENT(A+)), INCL(PORT((101,300),(501,800),999)))
```

Related reference:

"Connect Transit Event Trace report" on page 579

The IMS Connect Trace provides a list of transactions, each with detailed information about every event in the life of that transaction.
Part 8. OMEGAMON TRF reporting

IMS PA provides both an online dialog and a batch interface. This part describes how to request and run OMEGAMON TRF reports using the dialog and batch commands.
Chapter 26. Requesting OMEGAMON TRF reports

IMM Performance Analyzer (IMS PA) complements IBM Tivoli OMEGAMON XE for IMS on z/OS Version 4.1 (program number 5698-A34) or later by reporting transaction accounting statistics written to the IMS log by the Transaction Reporting Facility (TRF).

OMEGAMON TRF data

The OMEGAMON Transaction Reporting Facility (TRF) provides detailed transaction accounting by collecting performance and resource utilization data for every IMS transaction.

TRF collects the following data for all transactions within IMS:
1. Transaction response time breakdown, CPU time, and other resource usage statistics
2. Full Function and Fast Path database DL/I call count and elapsed time
3. DB2 database call count and elapsed time

Event statistics are collected by OMEGAMON subsystems with the TRF Trace running. You can control the type of data collected (BMP, DBD, DB2, DLI, FP), the destination to which the TRF data is written (LOGS=IMS or SMF, but IMS Performance Analyzer only supports IMS), and the record ID (RECID=160 to 255 decimal, ensuring that it is different to the record ID of other applications that write to the log). The format of the TRF Collector log records is mapped by the Tivoli-supplied macro OMTRF560. IMS Performance Analyzer does not report from TRF Collector log records.

You can then run the TRF post-processor to extract the TRF records from the IMS log data sets. The format of the TRF Extractor output records is mapped by the Tivoli-supplied macro KI2TRFDS. IMS Performance Analyzer reports TRF Extractor output records. See Chapter 35, “OMEGAMON TRF records,” on page 713 for the list of supported TRF record types.

IBM IMS Problem Investigator for z/OS (IMS PI) reports both record formats.

TRF Files for an IMS subsystem

To associate TRF Extractor data sets with an IMS subsystem, use View 5 of the IMS Subsystem panel.
Specify the OMEGAMON TRF Extractor data set names and attributes in a similar way to IMS log and monitor data sets.

See “Log Files for an IMS Subsystem” on page 174 for a description of the fields, available line actions, and action bar choices.

**Note:**
- TRF files, like Monitor files, have no repository or register, and so no automated file selection based on start and stop time is available.
- Extractor files may contain data from multiple systems in an IMSPLEX. The system name in the System Definition is not used for JCL generation.
- OMEGAMON TRF Collector records are in the IMS log and as such, the IMS log data sets are specified in the usual way on the IMS log files panel. TRF Collector records can be analyzed by IMS Problem Investigator.

**TRF Report Set**

IMS PA reports for the OMEGAMON Transaction Reporting Facility (TRF) are specified in a Report Set of type TRF.

To specify TRF report requests:
2. Define a new TRF Report Set or edit an existing one using line action S. For information on how to do this, see “Maintaining Report Sets” on page 125.
Entering NEW on the command line displays a window which prompts you to specify the name and type of Report Set or model on an existing one.

![Figure 287. Defining a new TRF Report Set](image)

You can bypass this prompt window if you enter the command in full, such as:

```
NEW TRFDFLT TRF
```

A panel is then displayed for you to edit the description of the Report Set and specify your report requests.
The Report Set panel shows the list of all available TRF reports and global options in a tree structure (folder style). See “Report Set menu tree” on page 123 for a description of the tree structure.

Each report can be activated (sets the Active column value to Yes) or deactivated (No). If any changes are made to a report, the dialog will mark the report as active automatically. Each Report Category can be activated or deactivated. Only active reports in active report categories are included in the Report Set at submit time. A Report Set can be submitted for processing only if there is at least one active report in an active report category.

However, you can also use the RUN line action to temporarily override the inactive status of a report or report category.

The operation of the TRF Report Set edit panel, such as the commands, line actions, action bar, and PF keys, is similar to that for the other types of Report Set. For example, see Chapter 22, “Requesting Monitor reports,” on page 471.

Related concepts:
“Report command format” on page 41

IMS PA provides both a dialog and batch interface. The IMS PA commands are used to request reports and extracts. The dialog generates the JCL and commands when you run (submit) a Report Set.

Related reference:
Chapter 27, “OMEGAMON TRF batch interface,” on page 629

The IMS PA dialog generates the JCL and commands for executing your report requests in batch. The JCL and commands for TRF report requests are described here.

TRF Global Options

The IMS PA TRF Global Options define general control information that applies to more than one report within the TRF Report Set.
IMS PA automatically activates the TRF Global Options if at least one report in the Report Set is active. Conversely, the TRF Global Options are deactivated if no reports are active. You cannot activate or deactivate the TRF Global Options yourself.

To view and edit TRF Global Options for a Report Set:
1. Select the TRF Report Set
2. Expand the Options category using line action S.
3. Select the TRF Global category using line action S.

<table>
<thead>
<tr>
<th>Command</th>
<th>TRFDFLT - TRF Global Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specify TRF Global options.</td>
<td></td>
</tr>
<tr>
<td>Report Options:</td>
<td></td>
</tr>
<tr>
<td>Print Lines per Page . . 60_ (1-255)</td>
<td></td>
</tr>
<tr>
<td>/ Print &quot;%&quot; sign in Report output</td>
<td></td>
</tr>
</tbody>
</table>

Figure 290. TRF Global Options

The TRF global options are:

**Print Lines per Page**

Default: 60

Specify the number of print lines per page. The specified value applies to all reports in the TRF Report Set.

Valid values are from 1 to 255.

This option generates the PAGESIZE(nnn) global operand.

**Print "%" sign in Report output**

Print the percent sign % in percentage values in report output. This is the default, and applies only to some form-based reporting output.

If not selected, this option generates the NOPCTSIGN global operand.

**TRF Database Usage reports**

OMEGAMON TRF Database Usage reports provide performance statistics to measure IMS and DB2 database activity.

**DLI Call List report**

The OMEGAMON TRF DLI Call List report provides a list of IMS Database calls.

There is one record for each database call. A single transaction could have numerous records.

At a glance, you can see when a transaction starts, followed by all the database calls associated with the transaction in the order they occurred.

The report provides statistics on DL/I call elapsed time for both Fast Path and Full Function databases.
To specify the report options, select the Database Usage DLI Call List report in the TRF Report Set.

```
TRFDFLT - DLI Call List

Command ===>

Specify report options.

Report Output DDname DLICALL__

Selection Criteria:

<table>
<thead>
<tr>
<th>Object Type</th>
<th>Inc/Exc</th>
<th>Object + List</th>
<th>Validation Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transaction Code</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User ID</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMS Subsystem ID</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Database</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 291. TRF DLI Call List report options
```

The options are as follows:

**Report Output DDname**

Default: DLICALL

Specify the DDname to be used for the report output.

This option generates the DDNAME(ddname) operand.

**Selection Criteria**

Default: None specified; include all records.

Selection Criteria can be specified to filter the input data on one or more of the following:

- Transaction Code
- User ID
- IMS Subsystem ID
- Program
- Database (DBD)

Specify field values to be included in or excluded from the report. Specify a single value, a masking pattern, or an Object List.

You can enter the name of the Object List directly, or to select from a list of available Object Lists, position the cursor in the field and press **Prompt** (F4). Select **List** with a / to identify it as an Object List not a value.

See Chapter 10, “Object Lists,” on page 147 for information on how to define an Object List.

This option generates the INCL|EXCL(field(values)) report operand.

**DLICALL(LIST, ...): DLI Call List report**

The DLICALL(LIST, ...) operand of the IMSPATRF batch command requests the DLI Call List report.
DLI Call Summary report

The OMEGAMON TRF DLI Call Summary report provides a summary of IMS Database calls for both Fast Path and Full Function databases. By default, the report is summarized by Transaction Code.

Data can be ordered by one or two sort keys including Time of Day, Transaction Code, User ID, IMS Subsystem ID, Program (PSB) name, and Database (DBD) name.

To specify the report options, select the Database Usage DLI Call Summary report in the TRF Report Set.

The options are as follows:

**Ordering Operands**

Default: One report sorted by TRANCODE

You can request multiple reports in the one run. For each report, specify the name of one or two fields that you want the report ordered by.

Press **Prompt (F4)** to select from a list of available fields. The order of the fields defines the sort order of the report; the level-1 ordering operand is the primary sort field.

If you specify TIME as a sort field, then specify the time interval.
This option generates the BY(field1) or BY(field1,field2) operand.

**Time Interval**

Default: 00:01:00 (1 minute)

When TIME is an ordering operand, specify the time interval over which you want details summarized.

Specify a value in the range 00:00:01 (1 second) to 24:00:00 (24 hours).

A time interval under an hour must fit evenly into the hour. IMS PA will round it down to the nearest interval that aligns to the hour. For example, 1.35 is reduced to 00:01:30 minutes which will produce 40 interval records for each hour of data.

A time interval over an hour must fit evenly into the day. IMS PA will round it down to the nearest interval that aligns to the day. For example, 10.30.23 is reduced to 08:00:00 hours which will produce three interval records for each day of data.

Minutes take precedence for an abbreviated entry. For example:

- 1 becomes 00:01:00
- 1.1 becomes 00:01:00 (rounded down from 00:01:01)
- 1.1.1 becomes 01:00:00 (rounded down from 01:01:01)

This option generates the INTERVAL(hh:mm:ss) operand.

**Report Output DDname**

Default: DLISUMM1 to DLISUMM5

Specify the DDname to be used for the report output. You can request more than one report. To separate the output, specify a different DDname for each.

This option generates the DDNAME(ddname) operand.

**Selection Criteria**

Default: None specified; include all records.

Selection Criteria can be specified to filter the input data for all DLI Call Summary reports on one or more of the following:

- Transaction Code
- User ID
- IMS Subsystem ID
- Program
- Database (DBD)

Specify field values to be included in or excluded from the report. Specify a single value, a masking pattern, or an Object List.

You can enter the name of the Object List directly, or to select from a list of available Object Lists, position the cursor in the field and press **Prompt** (F4). Select **List** with a / to identify it as an Object List not a value.

See Chapter 10, “Object Lists,” on page 147 for information on how to define an Object List.

This option generates the INCL|EXCL(field(values)) report operand.

**DLICALL(SUMMARY, ...): DLI Call Summary report**

The DLICALL(SUMMARY, ...) operand of the IMSPATRF batch command requests the DLI Call Summary report.
Format

```
IMSPATRF DLICALL(SUMMARY,
    [BY(order1)],
    [BY(order1,order2)], default BY(TRANCODE)
    [DDNAME(ddname)], default DLISUMM1,DLISUMM2,...
    [INTERVAL(hh:mm:ss)], default 00:01:00 (1 minute)
    [INCL(TRANCODE(list))|EXCL(TRANCODE(list))],
    [INCL(USERID(list))|EXCL(USERID(list))],
    [INCL(IMSID(list))|EXCL(IMSID(list))],
    [INCL(PROGRAM(list))|EXCL(PROGRAM(list))],
    [INCL(DATABASE(list))|EXCL(DATABASE(list))])
```

IMSPATRF EXECUTE

You can request multiple DLI Call Summary reports in the one job. The sort order of each report is according to the order of the fields in the BY operand. The sort fields are the first one or two columns of the report, and can be any one or two of the following fields:

- **TRANCODE**: Transaction Code (default)
- **USERID**: User ID
- **PROGRAM**: Program (PSB)
- **IMSID**: IMS Subsystem ID
- **TIME**: Time Interval
- **DATABASE**: Database (DBD)

**DB2 Call List report**

The OMEGAMON TRF DB2 Call List report provides statistics on calls to DB2 subsystems.

For IMS DB/DC or DCCTL environments (not DBCTL), the OMEGAMON TRF DB2 Call List report provides a list of DB2 SQL calls. There is one record for each SQL call. A single transaction could have numerous records.

At a glance, you can see when a transaction starts, followed by all the DB2 SQL calls associated with the transaction in the order they occurred.

To specify the report options, select the Database Usage DB2 Call List report in the TRF Report Set.

```
TRFDFLT - DB2 Call List

Command ==> __________________________________________________________________
```

Specify report options.

```
Report Output DDname  DB2CALL__
```

<table>
<thead>
<tr>
<th>Selection Criteria:</th>
<th>Inc/Exc</th>
<th>Object + List</th>
<th>Validation Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transaction Code</strong></td>
<td>___</td>
<td>___</td>
<td>-</td>
</tr>
<tr>
<td><strong>User ID</strong></td>
<td>___</td>
<td>___</td>
<td>-</td>
</tr>
<tr>
<td><strong>IMS Subsystem ID</strong></td>
<td>___</td>
<td>___</td>
<td>-</td>
</tr>
<tr>
<td><strong>Program</strong></td>
<td>___</td>
<td>___</td>
<td>-</td>
</tr>
<tr>
<td><strong>DB2 Subsystem ID</strong></td>
<td>___</td>
<td>___</td>
<td>-</td>
</tr>
</tbody>
</table>

*Figure 293. TRF DB2 Call List report options*
The options are as follows:

**Report Output DDname**
- Default: DB2CALL
  - Specify the DDname to be used for the report output.
  - This option generates the DDNAME(ddname) operand.

**Selection Criteria**
- Default: None specified; include all records.
  - Selection Criteria can be specified to filter the input data on one or more of the following:
    - Transaction Code
    - User ID
    - IMS Subsystem ID
    - Program
    - DB2 Subsystem ID (ESSID)
  - Specify field values to be included in or excluded from the report. Specify a single value, a masking pattern, or an Object List.
  - You can enter the name of the Object List directly, or to select from a list of available Object Lists, position the cursor in the field and press Prompt (F4). Select List with a / to identify it as an Object List not a value.
  - See Chapter 10, “Object Lists,” on page 147 for information on how to define an Object List.
  - This option generates the INCL|EXCL(field(values)) report operand.

**DB2CALL(LIST, ...): DB2 Call List report**
The DB2CALL(LIST, ...) operand of the IMSPATRF batch command requests the DB2 Call List report.

**Format**
```
IMSPATRF  DB2CALL(LIST,
[DDNAME(ddname),]  default DB2CALL
[INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
[INCL(USERID(list))|EXCL(USERID(list)),]
[INCL(IMSID(list))|EXCL(IMSID(list)),]
[INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
[INCL(ESSID(list))|EXCL(ESSID(list)))]
IMSPATRF  EXECUTE
```

**DB2 Call Summary report**
The OMEGAMON TRF DB2 Call Summary report provides statistics on SQL calls to DB2 subsystems.

A transaction will have one summary record per correlation ID. By default, the report is summarized by Transaction Code.

Data can be ordered by one or two sort keys including Time of Day, Transaction Code, User ID, IMS Subsystem ID, Program (PSB) name, and DB2 Subsystem ID.

To specify the report options, select the Database Usage DB2 Call Summary report in the TRF Report Set.
The options are as follows:

**Ordering Operands**

Default: One report sorted by TRANCODE

You can request multiple reports in the one run. For each report, specify the name of one or two fields that you want the report ordered by.

Press **Prompt (F4)** to select from a list of available fields. The order of the fields defines the sort order of the report; the level-1 ordering operand is the primary sort field.

If you specify TIME as a sort field, then specify the time interval.

This option generates the **BY(field1)** or **BY(field1,field2)** operand.

**Time Interval**

Default: 00:01:00 (1 minute)

When TIME is an ordering operand, specify the time interval over which you want details summarized.

Specify a value in the range 00:00:01 (1 second) to 24:00:00 (24 hours).

A time interval under an hour must fit evenly into the hour. IMS PA will round it down to the nearest interval that aligns to the hour. For example, 1.35 is reduced to 00:01:30 minutes which will produce 40 interval records for each hour of data.

A time interval over an hour must fit evenly into the day. IMS PA will round it down to the nearest interval that aligns to the day. For example, 10.30.23 is reduced to 08:00:00 hours which will produce three interval records for each day of data.

Minutes take precedence for an abbreviated entry. For example:

- 1 becomes 00:01:00
- 1.1 becomes 00:01:00 (rounded down from 00:01:01)
- 1.1.1 becomes 01:00:00 (rounded down from 01:01:01)

This option generates the **INTERVAL(hh:mm:ss)** operand.
Report Output DDname
Default: DB2SUMM1 to DB2SUMM5

Specify the DDname to be used for the report output. You can request more than one report. To separate the output, specify a different DDname for each.

This option generates the DDNAME(ddname) operand.

Selection Criteria
Default: None specified; include all records.

Selection Criteria can be specified to filter the input data for all DB2 Call Summary reports on one or more of the following:
• Transaction Code
• User ID
• IMS Subsystem ID
• Program
• DB2 Subsystem ID (ESSID)

Specify field values to be included in or excluded from the report. Specify a single value, a masking pattern, or an Object List.

You can enter the name of the Object List directly, or to select from a list of available Object Lists, position the cursor in the field and press Prompt (F4). Select List with a / to identify it as an Object List not a value.

See Chapter 10, “Object Lists,” on page 147 for information on how to define an Object List.

This option generates the INCL|EXCL(field(values)) report operand.

DB2CALL(SUMMARY, ...): DB2 Call Summary report
The DB2CALL(SUMMARY, ...) operand of the IMSPATRF batch command requests the DB2 Call Summary report.

Format

IMSPATRF  DB2CALL(SUMMARY,
  [BY(order1)  default BY(TRANCODE)
  [BY(order1,order2),] default BY(TRANCODE)
  [DDNAME(ddname),] default DB2SUMM1, DB2SUMM2, ...
  [INTERVAL(hh:mm:ss),] default 00:01:00 (1 minute)
  [INCL(TRANCODE(list))|EXCL(TRANCODE(list))],
  [INCL(USERID(list))|EXCL(USERID(list))],
  [INCL(IMSID(list))|EXCL(IMSID(list))],
  [INCL(PROGRAM(list))|EXCL(PROGRAM(list))],
  [INCL(ESSID(list))|EXCL(ESSID(list))])
IMSPATRF EXECUTE

You can request multiple DB2 Call Summary reports in the one job. The sort order of each report is according to the order of the fields in the BY operand. The sort fields are the first one or two columns of the report, and can be any one or two of the following fields:

TRANCODE  Transaction Code (default)
USERID  User ID
PROGRAM  Program (PSB)
IMSID  IMS Subsystem ID
TIME  Time Interval
DB2ID  DB2 Subsystem ID
**TRF Message Queue reports (Form-based)**

Form-based reports give you flexibility in message queue reporting. By using Report Forms, you can tailor the format and content of your reports.

You can request just the fields of interest, and control the presentation order and format. You can create Form-based extracts and load them into DB2 tables.

The Message Queue reports provide performance detail about every transaction processed by OMEGAMON TRF extract records.

**Form-based Message Queue List report and extract**

The Form-based Message Queue List is a detailed list of message queue records.

You can request multiple reports or extracts in a single run. They enable comprehensive, flexible analysis of message queue information giving you a good insight into different facets of response tuning.

You can tailor the format and content of the reports and extracts by specifying Report Forms, the data Precision, what Digit Grouping to use, and the Selection Criteria for filtering the input records. Additional extract options are delimiters, field labels, and whether to format numeric fields for DB2 or spreadsheet analysis.

To specify the report options, select the Message Queue List report in the TRF Report Set.

**Report options**

![Figure 295. TRF Form-based Message Queue List (View 1 of 2): Report options](image)

The report options are as follows:

**Specify required view**

**Default:** 1
To request Form-based reports and extracts, there are too many details for a single view. Scroll Left (F10) or Right (F11) to switch between views, or select a view by number:

1 The Report view is used to specify details of your report request. These details are relevant for both REPORT and EXTRACT requests.

2 The Extract view is used to specify additional details for an EXTRACT request.

**Report Interval**

Default: Not specified.

Specify the reporting interval. Within the context of the Global Report Interval, records with time stamps on or after the **From** Date/Time and to the **To** Date/Time are included in the report.

You can specify one of the following:

- Date/time pairs or dates only. This indicates a *date-time range* (for example, 2008/06/25 7:00 to 2008/06/25 16:30). The From Date/Time must be before the To Date/Time.
- Times only. This indicates a particular *time slot* (for example, 9:00 to 10:00 each day). Specifying the From Time greater than the To Time indicates a time slot across midnight.
- Neither date/time pair. *All* input records are selected.

**Type**

Default: REPORT

Specify whether the output is to be a REPORT or an EXTRACT data set.

**Form**

Default: Not specified.

The name of a LIST Report Form used to tailor the format and content of the report or extract. Press **Prompt (F4)** to select from a list of available Forms. If a Form is not specified, an internally defined default Form will be used.

**DDname**

Default: IMS PA assigns a default DDname of LISTnnnn where nnnn is a sequential number 0001–9999 to ensure each report has a unique DDname.

The DDname for the report output. Specify 1–8 alphanumeric characters starting with an alphabetic character. The DDname is mandatory and should be unique to separate the output of multiple reports. Multiple reports of the same type can use the same DDname without consequence, however a mix of reports using the same DDname may interleave the print lines.

In the event of the output being an extract file, the DDname is used for the Extract Recap report output. The Extract Recap report contains information regarding the extract output including extract data set name and record count.

**Precision**

Default: 6

The precision of numeric fields. Numeric fields can be formatted to either 3, 4, 5, or 6 decimal places.

For example, if the field value is 10.123456 seconds:

- 3 decimal places is 10.123 precision
- 4 decimal places is 10.1235 precision
- 5 decimal places is 10.12346 precision
- 6 decimal places is 10.123456 precision

**Note:** Rounding occurs for elapsed and CPU time values.

Precision and Digit Grouping affect how the field values are represented in the report. Precision and Digit Grouping can be specified in the Report Form and the Report Set. The Report Set takes precedence.

**Digit Group.**
Default: SEC

Digit Grouping affects the formatting of time and count fields. Specify the digit grouping as follows:

YES  Digit grouping will include the separator character to delineate each group of three digits, aligned to milliseconds for time and 1000 for count. For time fields, the separator is . (period). For count fields, the separator is , (comma).

NO   No digit grouping.

SEC   The separator character will delineate the decimal point only. SEC applies to time fields only and assumes YES for count fields. Use SEC for extracts when time fields must be in seconds and fractions of seconds when importing data into a spreadsheet or database.

**Report Width**

Report Forms allow you to request reports wider than the standard 132 character page width. The width of the report depends on the fields requested in the Form. The default format of the report is no more than 132 characters wide, but the report width is impacted by changes to the Report Form, Precision, or Digit Grouping. The Report Form defines the fields in the report. Precision and Digit Grouping affect how the field values are represented in the report. Precision and Digit Grouping can be specified in the Report Form and the Report Set. The Report Set takes precedence.

An indicator shows whether the options you select in the Report Set make the report width different from the Report Form width. The < symbol indicates that the report width is less than the Report Form width as calculated at EOR. The > symbol indicates that the report width is greater than the Report Form width as calculated at EOR.

Note that you can view reports in full using SDSF, but when you print wide reports, data that exceeds the maximum printer page width will be truncated.

For an extract, report width is not an issue and is not displayed.

**Selection Criteria**
Default: None specified; include all records.

Records can be included in or excluded from all the Form-based Message Queue List reports based on their Transaction Code, User ID, IMS Subsystem ID, and Program name. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

This option generates the INCL|EXCL(field(values)) report operand.
The additional extract options are as follows:

**Extract Data Set Name**
Default: Not specified.

The name of the data set where the extract records are written. If IMS PA is to create the data set at run time, the default allocation attributes specified for **Transaction (MSGQ/FP/Connect) Transit Total Traffic** in Reporting Allocation Settings will be used when generating the JCL. If the data set is already cataloged, then IMS PA will use **DISP=OLD** or **DISP=MOD** according to your request to overwrite or append to the existing data set. Alternatively, you can use a generation data group (GDG) to create a new data set each time the extract is run. When generating the JCL, IMS PA assigns a default DDname of LISXnmmm where mmmm is a sequential number 0001–9999 to ensure DDnames are unique.

When specifying the data set name, standard TSO conventions apply. For example, if the TSO option **PROFILE PREFIX** is in effect, the prefix will be appended as the high-level qualifier unless the data set name is enclosed in quotes.

**Disp**
Default: Not specified

Specify a disposition of **OLD** to overwrite the data set contents with the new extract data or **MOD** to append the new extract data.

**Include Delimiter**
Default: /

Select / to use your specified delimiter to separate fields in the extract records. Leave this option blank if you do not want to use a delimiter to separate fields in the extract records.

**Delimiter**
Default: , (comma)
The field delimiter used to separate the data fields in the extract records. The same delimiter is used to separate the field labels, if present.

**Include Field Labels**
**Default:** /
Select / to include field labels as the first record written to the extract data set. Use field labels when importing extracts into spreadsheets, to identify the columns and to aid reporting. Leave this option blank if you do not want field labels.

**Numeric Fields in Float Format**
**Default:** Not specified.
Select / to write numeric fields in the extract in FLOAT format. Use FLOAT format if you plan to import the extract into a DB2 table. When the DB2 Load Utility is used, it will interpret all numerical fields reliably and consistently in FLOAT format.
- Time fields are in units of seconds. For example, 1.234567 represents 1.234567 seconds.
- Count fields are real numbers. For example, average message length is 100.23 characters.

Leave this option blank if you want numerical fields in the extract to be written in character format according to the **Precision** and **Digit Grouping** options. This is suitable for importing into spreadsheets that expect character-based data.

**LIST: Message Queue List report or extract**
The LIST operand of the IMSPATRF batch command requests the Message Queue List report or extract.

**Format**

```plaintext
IMSPATRF LIST(
    [DDNAME(ddname),] default LISTnnnn
    [FROM(date,time),]
    [TO(date,time),]
    [EXTRACT(ddname),] default LISXnnnn
    [PRECISION(n),] default 6
    | [GROUP|NOGROUP|SECGROUP,]  
    | [INCL(TRANCODE(TTTT))|EXCL(TRANCODE(list)),]
    | [INCL(USERID(list))|EXCL(USERID(list)),]
    | [INCL(IMSID(list))|EXCL(IMSID(list)),]
    | [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
    | [DELIMIT(field-delimiter)|NODELIMIT,] default , (comma)
    | [LABELS|NOLABELS,]
    | [FLOAT|NOFLOAT,]
    | FIELDS([field1[(options)],...])
) IMSPATRF EXECUTE
```

For the field names, descriptions, and column headings, see the [Chapter 41](#) "Glossary of Report Form field names," on page 753.

**Form-based Message Queue Summary report and extract**
The Form-based Message Queue Summary provides a summary of transaction performance.
You can request multiple reports and extracts in a single run. They enable comprehensive, flexible analysis of message queue information giving you a good insight into different facets of response tuning.

You can tailor the format and content of the reports and extracts by specifying Report Forms, the Time Interval for summarizing activity over time, the Totals Level to include the grand total and optional subtotals, the data Precision, what Digit Grouping to use, and the Selection Criteria for filtering the input records. Additional extract options are delimiters, field labels, and whether to format numeric fields for DB2 or spreadsheet analysis.

To specify the report options, select the Message Queue Summary report in the TRF Report Set.

![NEWTRF - Message Queue Summary](image)

The report options are as follows:

**Specify required view**

Default: 1

To request Form-based reports and extracts, there are too many details for a single view. Scroll Left (F10) or Right (F11) to switch between views, or select a view by number:

1. The Report view is used to specify details of your report request. These details are relevant for both REPORT and EXTRACT requests.
2. The Extract view is used to specify additional details for an EXTRACT request.

**Report Interval**

Default: Not specified.

Specify the reporting interval. Within the context of the Global Report Interval, records with time stamps on or after the From Date/Time and to the To Date/Time are included in the report.
You can specify either:

- Date/time pairs or dates only. This indicates a date-time range (for example, 2008/06/25 7:00 to 2008/06/25 16:30). The From Date/Time must be before the To Date/Time.
- Times only. This indicates a particular time slot (for example, 9:00 to 10:00 each day). Specifying the From Time greater than the To Time indicates a time slot across midnight.
- Neither date/time pair. All input records are selected.

**Type**
Default: REPORT

Specify whether the output is to be a REPORT or an EXTRACT data set.

**Form**
Default: Not specified.

The name of a SUMMARY Report Form used to tailor the format and content of the report or extract. Press **Prompt (F4)** to select from a list of available Forms. If a Form is not specified, an internally defined default Form will be used.

**DDname**
Default: IMS PA assigns a default DDname of SUMMnnnn where nnnn is a sequential number 0001–9999 to ensure each report has a unique DDname.

The DDname for the report output. Specify 1–8 alphanumeric characters starting with an alphabetic character. The DDname is mandatory and should be unique to separate the output of multiple reports. Multiple reports of the same type can use the same DDname without consequence, however a mix of reports using the same DDname may interleave the print lines.

In the event of the output being an extract file, the DDname is used for the Extract Recap report output. The Extract Recap report contains information regarding the extract output including extract data set name and record count.

**Time Interval**
Default: 00:01:00

The time interval applies when you want to summarize activity over time. It is used when you specify a SUMMARY Report Form which has one or both sort fields STARTIMS or STARTCON included. When reporting, IMS PA accumulates the data for each interval in the report period and writes a report line for each. Specify a value in the range 00:00:01 (1 second) to 24:00:00 (24 hours). A time interval under an hour must fit evenly into the hour. IMS PA will round it down to the nearest interval that aligns to the hour. For example, 1.35 is reduced to 00:01:30 minutes which will produce 40 interval report lines for each hour of data. A time interval over an hour must fit evenly into the day. IMS PA will round it down to the nearest interval that aligns to the day. For example, 10:30:23 is reduced to 08:00:00 hours which will produce 3 interval report lines for each day of data.

Minutes take precedence for an abbreviated entry. For example: 1 becomes 00:01:00, 1.1 becomes 00:01:00 (rounded down from 00:01:01) 1.1.1 becomes 01:00:00 (rounded down from 01:01:01).

**Totals Level**
Default: 0

Specify the grand total and subtotal levels required for reporting as follows:

- **Blank** No totals.
0  Grand totals only, no subtotals.
1–7  Grand total and subtotals to the corresponding key level.

**Precision**
- Default: 6
- The precision of numeric fields. Numeric fields can be formatted to either
  3, 4, 5, or 6 decimal places.
- For example, if the field value is 10.123456 seconds:
  - 3 decimal places is 10.123 precision
  - 4 decimal places is 10.1235 precision
  - 5 decimal places is 10.12346 precision
  - 6 decimal places is 10.123456 precision

**Note:** Rounding occurs for elapsed and CPU time values.

Precision and Digit Grouping affect how the field values are represented in
the report. Precision and Digit Grouping can be specified in the Report
Form and the Report Set. The Report Set takes precedence.

**Digit Group.**
- Default: SEC
- Digit Grouping affects the formatting of time and count fields. Specify the
digit grouping as follows:
  - YES  Digit grouping will include the separator character to delineate
each group of three digits, aligned to milliseconds for time and
1000 for count. For time fields, the separator is . (period). For
  count fields, the separator is , (comma).
  - NO   No digit grouping.
  - SEC  The separator character will delineate the decimal point only. SEC
  applies to time fields only and assumes YES for count fields. Use
  SEC for extracts when time fields must be in seconds and fractions
  of seconds when importing data into a spreadsheet or database.

**Report Width**
- Report Forms allow you to request reports wider than the standard 132
character page width. The width of the report depends on the fields
requested in the Form. The default format of the report is no more than
132 characters wide, but the report width is impacted by changes to the
Report Form, Precision, or Digit Grouping. The Report Form defines the
fields in the report. Precision and Digit Grouping affect how the field
values are represented in the report. Precision and Digit Grouping can be
specified in the Report Form and the Report Set. The Report Set takes
precedence.

An indicator shows whether the options you select in the Report Set make
the report width different from the Report Form width. The < symbol
indicates that the report width is less than the Report Form width as
calculated at EOR. The > symbol indicates that the report width is greater
than the Report Form width as calculated at EOR.

Note that you can view reports in full using SDSF, but when you print
wide reports, data that exceeds the maximum printer page width will be
truncated.

For an extract, report width is not an issue and is not displayed.
Selection Criteria

Default: None specified; include all records.

Records can be included in or excluded from all the Form-based Message Queue Summary reports based on their Transaction Code, User ID, IMS Subsystem ID, and Program name. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

This option generates the INCL|EXCL(field(values)) report operand.

<table>
<thead>
<tr>
<th>Command ==&gt;&gt;</th>
<th>TRFDFLT - Message Queue Summary</th>
<th>More: &lt; &gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specify required view:</td>
<td>----- Report Interval ------</td>
<td></td>
</tr>
<tr>
<td>2. Extract</td>
<td>From _______ _______</td>
<td></td>
</tr>
<tr>
<td></td>
<td>To _______ _______</td>
<td></td>
</tr>
</tbody>
</table>

Extract Data Sets:

<table>
<thead>
<tr>
<th>Type</th>
<th>Form +</th>
<th>Extract Data Set Name</th>
<th>Disp</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. REPORT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. EXTRACT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Extract Options:

/ Include Delimiter Delimiter . . . (blank is valid)
7 Include Field Labels
- Numeric Fields in Float Format

Figure 298. TRF Form-based Message Queue Summary (View 2 of 2): Extract options

The additional options for the Form-based Summary extract are the same as for the Form-based List extract. See Figure 296 on page 620

SUMMARY: Message Queue Summary report or extract

The SUMMARY operand of the IMSPATRF batch command requests the Message Queue Summary report or extract.
**Format**

```
IMSPATRF SUMMARY(
  [DDNAME(ddname),] default SUMMnnnn
  [FROM(date,time),]
  [TO(date,time),]
  [INTERVAL(hh:mm:ss),] default 00:01:00
  [EXTRACT(ddname),] default SUMXnnnn
  [PRECISION(n),] default 6
  [GROUP|NOGROUP|SECGROUP,]
  [TOTALS(n)|NOTOTALS,] default 0
  [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
  [INCL(USERID(list))|EXCL(USERID(list)),]
  [INCL(IMSID(list))|EXCL(IMSID(list)),]
  [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
  [DELIMIT(field-delimiter)|NODELIMIT,] default , (comma)
  [LABELS|NOLABELS,]
  [FLOAT|NOFLOAT,]
  FIELDS(field1[(options)],...))
```

IMSPATRF EXECUTE

The level of summarization can be varied depending on the number of key fields. You can specify up to 8 key fields to summarize and sort by, and you can request up to 7 levels of subtotaling.

For the field names, descriptions, and column headings, see the [Chapter 41, “Glossary of Report Form field names,” on page 753.](#)

**TRF Trace reports**

The Trace reports provide detailed analyses of OMEGAMON TRF Extractor output records. These reports provide detailed information about every event in the life of a transaction.

**TRF Record Trace report**

The OMEGAMON TRF Trace report provides a list of transactions, each with detailed information about every event in the life of that transaction. At a glance, you can see when a transaction starts, followed by all the events associated with the transaction in the order they occurred.

To specify the report options, select the Trace Reports Record Trace in the TRF Report Set.
The options are as follows:

**Report Output DDname**
Default: TRACE

Specify the DDname to be used for the report output.

This option generates the `DDNAME(ddname)` operand.

**Selection Criteria**
Default: None specified; include all records.

Selection Criteria can be specified to filter the input data on one or more of the following:
- Transaction Code
- User ID
- IMS Subsystem ID
- Program
- Record Codes

Specify field values to be included in or excluded from the report. Specify a single value, a masking pattern, or an Object List.

You can enter the name of the Object List directly, or to select from a list of available Object Lists, position the cursor in the field and press **Prompt (F4)**. Select **List** with a / to identify it as an Object List not a value.

See Chapter 10, “Object Lists,” on page 147 for information on how to define an Object List.

This option generates the `INCL|EXCL(field(values))` report operand.

**TRACE: TRF Record Trace report**
The `TRACE` operand of the `IMSPATRF` batch command requests the TRF Record Trace report.
**Format**

```plaintext
IMSPATRF TRACE( [DDNAME(ddname),] default TRACE [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),] [INCL(USERID(list))|EXCL(USERID(list)),] [INCL(IMSID(list))|EXCL(IMSID(list)),] [INCL(PROGRAM(list))|EXCL(PROGRAM(list))],] [INCL(CODE(list))|EXCL(CODE(list))])
IMSPATRF EXECUTE
```
Chapter 27. OMEGAMON TRF batch interface

The IMS PA dialog generates the JCL and commands for executing your report requests in batch. The JCL and commands for TRF report requests are described here.

Related concepts:
"TRF Report Set" on page 606
IMS PA reports for the OMEGAMON Transaction Reporting Facility (TRF) are specified in a Report Set of type TRF.

TRF Report Set JCL

The JCL built by IMS PA for the batch execution of a Report Set via the SUBMIT or JCL (or RUN) commands is similar to the sample library member IPILOGJC for a Log Report Set.

IMS PA builds the JCL to execute the program IPIMAIN using the following options specified using the dialog:

**JOB**  
Job Statement Information in IMS PA Settings.

**IPI EXEC IPIMAIN,PARM='parameter list'**  
IMS PA main program with parameters:

- **UPPER**  
  if Reports in Upper Case is YES in IMS PA Settings.

**STEPLIB DD**  
IMS PA Load Library In IMS PA Settings.

**TAPEDD DD**  
For TRF input, this DD statement is generated when two or more tape (or cartridge) input data sets are specified. TAPEDD is only used to establish unit affinity for the tape files in the JCL, and is not used by IMS PA batch processing.

**TRFIN DD**  
TRF Extractor Data Set Name (DSN) From System Definitions. The TRF files specified for the IMS Subsystem.

**IPIRSET DD**  
For **DSN(member)** where:

- **DSN**  
  Report Sets Data Set in your IMS PA Profile.
- **member**  
  Name of the Report Set being run.

**IPIOBJL DD**  
Object Lists Data Set in your IMS PA Profile.

**IPIDIST DD**  
Distributions Data Set in your IMS PA Profile.

**IPIFORM DD**  
Report Forms Data Set in your IMS PA Profile.

**IPIOPTS DD ***  
Report Interval specified on the Run Report Set panel at run time. The format of the statement is:

```
IMSPATRF START(yyyy/mm/dd,hh:mm:ss:th),STOP(yyyy/mm/dd,hh:mm:ss:th)
```
Sample JCL with Report Set input

```
//IMSPA JOB (ACCOUNT), 'NAME'
//*
//IPI  EXEC PGM=IPIMAIN
//STEPLIB DD DSN=IMSPA.V440.SIPILINK,DISP=SHR
//*  Monitor Input data set
//TRFIN DD DSN=IMS.V141.OMEGTRFX,DISP=SHR
//*  IMS PA Messages
//SYSRPRNT DD SYSOUT=* 
//SYSPRINT DD SYSOUT=* 
//*  Report Set
//IPIRSET DD DSN=PREFIX.IMSPA.RSET(TRFDFLT),DISP=SHR 
//*  Object Lists 
//IPIOBJL DD DSN=PREFIX.IMSPA.OBJL,DISP=SHR 
//*  Distributions 
//IPIDIST DD DSN=PREFIX.IMSPA.DIST,DISP=SHR 
//*  Report Forms 
//IPIFORM DD DSN=PREFIX.IMSPA.FORM,DISP=SHR 
//*  Reporting Time Range
//IPIOPTS DD *
//IMSPATRF START(2013/01/13,12:15:00:00),STOP(2013/01/13,18:30:00:00)
```

Figure 300. JCL: TRF Report Set

Sample JCL with command input

To generate JCL that contains commands in-stream, rather than referring to data sets, enter the dialog command JCLCMD, or its abbreviation, JCM; or, equivalently, enter RUN, and then specify the execution mode Edit JCL with command input.

By contrast, to generate JCL that builds commands at runtime from data sets, rather than containing commands in-stream, enter the dialog command JCL (or a RUN command that does not specify Edit JCL with command input). For details, see “TRF Report Set” on page 606.

The JCL generated by the JCLCMD command differs in the following ways from the JCL generated by the JCL command:

- The IPICMD DD statement contains the series of user-modifiable commands built from the activated reports in the Report Set. A description of the Report Set appears as comments (* in column 1) preceding the commands. It replaces the IPIRSET DD statement.

- The command input stream contains INCL/EXCL command parameters built from the Object Lists used by the Report Set. They replace the IPIOBJL DD statement.

- The command input stream contains FIELDS command parameters built from the Report Forms used by the Form-based reports and extracts. They replace the IPIFORM DD statement.

- The IMSPATRF command identifies OMEGAMON TRF reports.

This facility allows you to build report JCL with command input once and store it into an external library for submitting at any time, independent of the original Report Set. Individual report options, such as Date/Time report intervals or object selection filters (such as Transaction Code, Program, Database) can then be modified in the JCL and submitted without making changes to the original Report Set.
Sample JCL with command input: TRF Report Set

//IMSPA JOB (ACCOUNT), 'NAME'
//*
//** IMS PA Report Set TRFDFT - OMEGAMON TRF basics
//**
//IPI EXEC PGM=IPIMAIN
//STEPLIB DD DSN=IMSPA.V440.SIPILINK,DISP=SHR
//** Input Data Sets
//TRFIN DD DSN=IMS.V141.OMEGTRFX,DISP=SHR
//** Report Time Range
//IPIOPTS DD *
//IMSPATRF START(-1,),STOP(0,)
//** Sysout data set
//SYSPRINT DD SYSOUT=* 
//SYSUDUMP DD SYSOUT=* 
//** Report Set Command Input
//IPICMD DD *
* IMS PA OMEGAMON TRF Report
* Report Set Name - TRFDFT
* Description - OMEGAMON TRF basics
* TRF Report Global Options
* Print Lines per Page - 60
IMSPATRF PAGESIZE(60)
* IMS Database Activity Report
* List 
* List Output File - DLICALL
* Transaction Code Include List:
* ROBUST
IMSPATRF DLICALL( 
    LIST, 
    DDNAME(DLICALL), 
    INCL(TRANCODE(ROBUST)))
* DB2 Database Activity Report
* List 
* List Output File - DB2CALL
* DB2 Subsystem ID Include List:
* DB2I
IMSPATRF DB2CALL( 
    LIST, 
    DDNAME(DB2CALL), 
    INCL(ESSID(DB2I)))
* IMS Database Activity Report
* Summary 
* Ordering by 1 - TRANCODE
* Report Output File - DLISUMM1
IMSPATRF DLICALL( 
    SUMMARY, 
    BY( 
        TRANCODE), 
    DDNAME(DLISUMM1))
* DB2 Database Activity Report
* Summary 
* Ordering by 1 - TRANCODE
* Report Output File - DB2SUMM1
IMSPATRF DB2CALL( 
    SUMMARY, 
    BY( 
        TRANCODE), 
    DDNAME(DB2SUMM1))

Figure 301. JCL with command input: TRF reports (1 of 2)
* Form-based Transit List Report
  * Report Form - default
  * Report Output File - LIST0001
  * Beginning Time - 2013/12/12
  * No Digit Grouping
  * Precision - 3
    
    IMSPATRF LIST(
      DDNAME(LIST0001),
      FROM(2012/12/25,),
      NOGROUP,
      PRECISION(3),
      FIELDS(LTERM, TRancode, PROGRAM, PSTID, CLASS, STARTIMS(TIME), CPUTIME, USERID, INPUTQ, PROCESS, OUTPUTQ, TOTALTM, RESPIMS, RECTOKEN))

* Form-based Transit Summary Report
  * Report Form - default
  * Report Output File - SUMM0001
  * No Digit Grouping
  * Totals Level - 0
  * Time Interval (hh:mm:ss) - 00:01:00
  * Precision - 3
    
    IMSPATRF SUMMARY(
      DDNAME(SUMM0001),
      NOGROUP,
      TOTALS(0),
      INTERVAL(00:01:00),
      PRECISION(3),
      FIELDS(TRancode(ASCEND), TRANCNT, INPUTQ(AVE), PROCESS(AVE), OUTPUTQ(AVE), TOTALTM(AVE), INPUTQ(90), PROCESS(90), OUTPUTQ(90), TOTALTM(90), CPUTIME(AVE)))

* Trace Report
  * Report Output File - TRACE
    
    IMSPATRF TRACE(
      DDNAME(TRACE))

    IMSPATRF EXECUTE
  
/*

Figure 302. JCL with command input: TRF reports (2 of 2)

IMSPATRF command and report operands

The IMSPATRF command requests OMEGAMON TRF reports and extracts. Any number of TRF reports can be requested in the one batch job.
Format

The last command in the batch job must be IMSPATRF EXECUTE to inform IMS PA that all TRF reports have been requested and processing of TRF input can commence.

The IMSPATRF report operands are:

**DLICALL(LIST)**
- DLI Call List

**DLICALL(SUMMARY)**
- DLI Call Summary

**DB2CALL(LIST)**
- DB2 Call List

**DB2CALL(SUMMARY)**
- DB2 Call Summary

**LIST(...,FIELDS(...))**
- Message Queue List (Form-based)

**SUMMARY(...,FIELDS(...))**
- Message Queue Summary (Form-based)

**TRACE**
- Record Trace

For further about the report operands, their meaning, and default values, refer to the description of the corresponding dialog options in Chapter 26, “Requesting OMEGAMON TRF reports,” on page 605.
Part 9. OMEGAMON ATF reporting

This part describes how to request and run OMEGAMON ATF reports using the dialog and batch commands.
Chapter 28. Requesting OMEGAMON ATF reports

OMEGAMON ATF data

OMEGAMON Application Tracing Facility (ATF) complements the summary-level transaction data collected by the Transaction Reporting Facility (TRF).

OMEGAMON ATF provides the following data:
- Application-level detailed monitoring:
  - DLI calls, including SSA, KFBA, and IO area.
  - DB2 calls.
- DLI call times and CPU utilization (in each IMS region).

See Chapter 36, “OMEGAMON ATF records,” on page 715 for the list of ATF record codes.

The analysis of the data collected by ATF can be used to:
- Identify transaction response-time components.
- Fine-tune applications.
- Understand how application programs operate.

When monitoring, OMEGAMON ATF writes near-term history records to active journals. For IMS Performance Analyzer reporting, it is recommended to use the journals when ATF is offline (and not actively recording) or copy the journals to offline data sets before reporting.

ATF journals for an IMS subsystem

To associate OMEGAMON ATF journal data sets with an IMS subsystem, use View 6 of the IMS Subsystem panel. This data is used by the IMS PA dialog in the generation of JCL to run ATF Report Sets.

Specify the data set names of the OMEGAMON ATF journal files in a similar way to IMS Connect journal files.
The data sets must be cataloged. For a description of the fields, available line actions, and action bar choices, see “Journal Files for a Connect System” on page 182.

ATF Report Set

ATF reports are specified in a Report Set of type ATF.

To specify ATF report requests:
2. Define a new ATF Report Set or edit an existing one using line action S. See “Maintaining Report Sets” on page 125 for information on how to do this.

Enter NEW on the command line to display a window which prompts you to specify the name and type of Report Set or model on an existing one.
You can bypass the prompt window if you specify the report set type ATF in the command as shown in the previous figure, or if you specify a model in the command. For example:

NEW ATFDAILY MODEL ATF WEEK

or

A panel is then displayed for you to edit the description of the Report Set and specify your report requests.

The ATF Report Set provides three reports and an extract, with global options that apply to most or all of them:

1. List report – lists all transaction event data in chronological sequence.
3. Trace report – with three levels of detail for application-level analysis of DLI and external subsystem (DB2 SQL and MQ adapter) calls.
4. Exception transaction extract – to extract exception records from the online OMEGAMON ATF journals, based on two criteria, ABEND and long response time.

The operation of the ATF Report Set edit panel, such as the commands, line actions, action bar, and PF keys, is similar to that for the other types of Report Set. For example, see Chapter 22, “Requesting Monitor reports,” on page 471.

Related concepts:
“Report command format” on page 41

IMS PA provides both a dialog and batch interface. The IMS PA commands are used to request reports and extracts. The dialog generates the JCL and commands when you run (submit) a Report Set.

Related reference:
Chapter 29, “OMEGAMON ATF batch interface,” on page 651

The IMS PA dialog generates the JCL and commands for running your report requests in batch. The JCL and commands for ATF report requests are described here.
**ATF Global Options**

The IMS PA ATF Global Options define general control information that applies to more than one report within the ATF Report Set.

IMS PA automatically activates the ATF Global Options if at least one report in the Report Set is active. Conversely, the ATF Global Options are deactivated if no reports are active. You cannot activate or deactivate the ATF Global Options yourself.

To view and edit ATF Global Options for a Report Set:
1. Select the ATF Report Set.
2. Expand the **Options** category using line action S.
3. Select the **ATF Global** category using line action S.

The ATF global options are:

**Print Lines per Page**
- Default: 60
  - Specify the number of print lines per page. The specified value applies to all reports in the ATF Report Set.
  - Valid values are from 1 to 255.
  - This option generates the `PAGESIZE(nnn)` global operand.

**Exception criteria for transactions**
- Default: None selected; no filtering on exception criteria.
  - Select one or both of the exception criteria to filter the ATF data to be processed. If both are selected, transactions that satisfy either or both criteria are processed. The criteria apply to all reports in the Report Set. At least one must be specified to request an Exception Transaction Extract.
  - **Abended**
    - Default: Not selected; all transactions are processed.
Select with a / to limit exception processing to those transactions that abended.

This option generates the ABEND global operand.

**Exceeded elapsed time threshold nnnn**

Default: Not selected; all transactions are processed.

Select with a / to limit exception processing to those transactions with an elapsed time that exceeds the specified elapsed time threshold.

Specify a threshold in the range 0.01 to 9999 seconds. Default: 1.00 second.

This option generates the ELAPSE(s.th) or ELAPSE(ssss) global operand.

**Activate inflight processing**

Default: Not selected; Inflight processing is not activated.

Select with a / to ensure that all transactions are reported with complete details across journal switches.

OMEGAMON ATF cuts event records to its active journal. At journal switch time, some transactions may be in the middle of processing and incomplete. Without inflight processing activated, reporting against the archive journal will result in these incomplete transactions being lost or reported with incomplete details.

Inflight processing requires both an input and output data set, either consecutive generations of a generation data group (GDG), or two explicitly-named data sets:

**Inflight DSN**

The name of the input data set that contains incomplete transactions from the previous run. The inflight data set is read at the start of report processing. Incomplete transactions will resume and presumably complete within the current journal.

The inflight data set name is specified in the JCL in the ATFINFLT DD statement.

**Outflight DSN**

The name of the output data set that is to contain incomplete transactions from the current run. The outflight data set is written at the end of report processing and automatically becomes the inflight data set for the next run.

The outflight data set name is specified in the JCL in the ATFOTFLT DD statement.

**Print the discarded transactions report**

Select this option to produce a report of incomplete transactions in the inflight data set that have no activity in the current journal and are not written to the outflight data set. This option generates the DISCARDS global operand. The discarded transaction report output is assigned to the DISCARDS DD statement.

For more information about allocating and using inflight data sets, see "ATF inflight data sets" on page 653.
Tip: Once you commence running the Report Set with inflight processing activated, you should not change the selection of reports. If you wish to run a different set of reports, define them in a new Report Set with a different pair of inflight and outflight data sets.

ATF Transaction Transit reports

The OMEGAMON ATF Transaction Transit reports are List and Summary.

ATF Transit List report

The OMEGAMON ATF Transit List report provides a list of transactions with their processing and CPU times.

To specify the report options, select the Transaction Transit List report in the ATF Report Set.

```
File Options Help
Command ===>

ATFRSET - List

Specify report options.

Report Interval
YYYY/MM/DD HH:MM:SS:TH

From

To

Report Output DDname LIST0001

Selection Criteria:

Object Type Inc/Exc Object + List Validation Warning
Transaction Code
User ID
IMS Subsystem ID
Program
```

Figure 306. ATF Transit List report options

The options are as follows:

Report Interval
Default: Not specified.

Specify the reporting interval. Records with time stamps on or after the From Date/Time and to the To Date/Time are included in the report.

You can specify one of the following:
- Date/time pairs or dates only. This indicates a date-time range (for example, 2013/06/25 7:00 to 2013/06/25 16:30). The From Date/Time must be before the To Date/Time.
- Times only. This indicates a particular time slot (for example, 9:00 to 10:00 each day). Specifying the From Time greater than the To Time indicates a time slot across midnight.
- Neither date/time pair. All input records are selected.

Report Output DDname
Default: LIST0001

Specify the DDname to be used for the report output.
This option generates the DDNAME(ddname) operand.

**Selection Criteria**
Default: None specified; include all records.

Selection Criteria can be specified to filter the input data on one or more of the following:
- Transaction Code
- User ID
- IMS Subsystem ID
- Program

Specify field values to be included in or excluded from the report. Specify a single value, a masking pattern, or an Object List.

You can enter the name of the Object List directly, or to select from a list of available Object Lists, position the cursor in the field and press **Prompt** (F4). Select **List** with a / to identify it as an Object List not a value.

See [Chapter 10, “Object Lists,” on page 147](#) for information on how to define an Object List.

This option generates the INCL|EXCL(field(values)) report operand.

**LIST: ATF Transit List report**
The LIST operand of the IMSPAATF batch command requests the ATF Transit List report.

**Format**

```
IMSPAATF LIST(
    [DDNAME(ddname),] default LIST0001
    [FROM(date,time),]
    [TO(date,time),]
    [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
    [INCL(USERID(list))|EXCL(USERID(list)),]
    [INCL(IMSID(list))|EXCL(IMSID(list)),]
    [INCL(PROGRAM(list))|EXCL(PROGRAM(list))]
) IMSPAATF EXECUTE
```

**ATF Transit Summary report**
The OMEGAMON ATF Transit Summary report provides a statistical summary of transaction performance with average and maximum processing and CPU times.

To specify the report options, select the Transaction Transit Summary report in the ATF Report Set.
The options are as follows:

**Totals Level**
- Default: 0 (grand total only)
- Specify the summarization level:
  - 0 for grand total, no subtotals. This generates the \texttt{TOTALS(0)} operand.
  - Blank for no totals. This generates the \texttt{NOTOTALS} operand.

**Report Interval**
As for “ATF Transit List report” on page 642.

**Report Output DDname**
- Default: \texttt{SUMM0001}
- Specify the DDname to be used for the report output.
- This option generates the \texttt{DDNAME(ddname)} operand.

**Selection Criteria**
As for “ATF Transit List report” on page 642.

**SUMMARY: DLI Call Summary report**
The \texttt{SUMMARY} operand of the \texttt{IMSPAATF} batch command requests the DLI Call Summary report.

**Format**

```
IMSPAATF SUMMARY(
    [TOTALS(n)|NOTOTALS,] default TOTALS(0)
    [DDNAME(ddname),] default SUMM0001
    [FROM(date,time),]
    [TO(date,time),]
    [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
    [INCL(USERID(list))|EXCL(USERID(list)),]
    [INCL(IMSID(list))|EXCL(IMSID(list)),]
    [INCL(PROGRAM(list))|EXCL(PROGRAM(list))])
IMSPAATF EXECUTE
```
**ATF Trace reports**

The OMEGAMON ATF Trace reports provide detailed application DLI, DB2, and WebSphere MQ call analysis for selected transactions.

**ATF Record Trace report**

There are three levels of trace that provide increasing level of detail: (1) Trace Overview, (2) Trace Detail, and (3) Trace Detail (Expanded).

To specify the report options, select the Trace Reports Record Trace in the ATF Report Set.

---

**ATFRSET - Record Trace**

```plaintext
Command ===>

Specify report options.

Reports Required: Report Output DDnames:

/ Trace Overview TRACE001
   Trace Detail TRACE002
   Trace Detail (Expanded) TRACE003

Report Options:
- Include Monitor events

Selection Criteria:

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Inc/Exc</th>
<th>Object + List</th>
<th>Validation Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transaction Code</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User ID</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMS Subsystem ID</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 308. OMEGAMON ATF Record Trace report options
```

The options are as follows:

**Reports Required**

Select one or more of the following trace reports:

- **Trace Overview (level 1)**
  
  This report lists summary statistics for each transaction, including a breakdown by event type. Details for each event type include event type and subtype, for example, DLI CALL (DB); GHU or DB2 SQL; FETCH and Total, Average and Maximum elapsed times.

  Trace Overview (level 1) is the default option.

  This option generates the LEVEL(1) batch operand.

- **Trace Detail (level 2)**

  This report lists statistics for each event within a transaction. This includes a time stamp, call duration, call verb and return code.

  This option generates the LEVEL(2) batch operand.

- **Trace Detail (Expanded) (level 3)**

  This report lists statistics for each event within a transaction. In addition, for each DLI and DB2 call, detailed information captured by ATF is provided. For DLI calls, this includes key feedback, I/O area and unqualified SSA. For DB2 calls this includes statement number and program name.
This option generates the LEVEL(3) batch operand.

**Report Output DDnames**

For each report, specify a unique DDname to separate the output of multiple reports. A DDname is 1–8 alphanumeric characters starting with an alphabetic character.

The default DDnames provided are TRACE001, TRACE002, and TRACE003 for level 1, 2, and 3 respectively.

This option generates the DDNAME(ddname) batch operand.

**Include Monitor events**

Select this option to include Monitor events and additional transaction identification and performance characteristics in the trace level 2 and 3 detailed reports. This option is not applicable to the trace level 1 overview report.

By default, the Monitor option is not selected.

This option generates the MONITOR batch operand.

**Selection Criteria**

As for ATF “ATF Transit List report” on page 642

**TRACE: ATF Record Trace report**

The TRACE operand of the IMSPAATF batch command requests the ATF Record Trace report.

**Format**

```
IMSPAATF TRACE(
  [LEVEL(1|2|3),] default 1
  [MONITOR,]
  [DDNAME(ddname),] default TRACE001
  [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
  [INCL(USERID(list))|EXCL(USERID(list)),]
  [INCL(IMSID(list))|EXCL(IMSID(list)),]
  [INCL(PROGRAM(list))|EXCL(PROGRAM(list))]
)
IMSPAATF EXECUTE
```

**ATF Extracts**

The Exception Transaction Extract file contains exception records extracted from the OMEGAMON ATF journals based on two criteria, ABEND and long response time.

IMS PA extracts all the records (such as DLI, DB2, MQ) associated with an exception transaction, even though the exception is not determined until the final summary record is read. It does this by queuing records based on their IMS recovery token.

**ATF Exception Transaction extract**

The Exception Transaction Extract is an ATF data reduction process. It creates a new ATF journal data set that contains only those records associated with transactions that generated an exception.
Select Exception Transaction Extract in the ATF Report Set.

<table>
<thead>
<tr>
<th>File</th>
<th>Options</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command ===&gt;</td>
<td>ATFRSET - Exception Transaction Extract</td>
<td></td>
</tr>
</tbody>
</table>

Specify the extract options:

Extracts required:
- ATF Journal (KSDS)
- REPRO file

Extract data set names:
ATF Journal: 'IMSP.ATF.JOURNAL.EXCEPT'
REPRO file : 'IMSP.ATF.JOURNAL.REPRO(+1)' Disp: NEW

Exception criteria for transactions (Global options):
/ Abended
Exceeded elapsed time threshold... 1.00 seconds

Figure 309. ATF Exception Transaction extract options

The extract options are as follows:

**Extracts required**

Default: None.

You can extract to two types of data set. Select either or both:

- **ATF Journal.** A pre-allocated KSDS with the same attributes as a normal ATF journal. This option generates the JOURNAL operand. Advantage: IMS PA and IMS PI can report against the data set without any functional change.

- **REPRO file.** A sequential data set. This option generates the REPRO operand. Advantage: This is suitable for longer-term archival (using a generation data group (GDG)). Then when required, you can IDCAMS REPRO the file into an empty ATF Journal for reporting.

**Extract data set names**

Default: None.

When specifying the data set name, standard TSO conventions apply. For example, if the TSO option PROFILE PREFIX is in effect, the prefix will be appended as the high-level qualifier unless the data set name is enclosed in quotes.

- **ATF Journal.** If you request this extract, specify the name of the VSAM KSDS to be used for the exception extract records. This data set must be pre-allocated using the same attributes as a normal ATF journal. The JCL assigns DName ATF0UT1 to the Journal extract data set.

- **REPRO file.** If you request this extract, specify the name of the data set to which the exception extract records are to be written. If IMS PA is to create the data set at run time, the default allocation attributes specified for Summary Extracts in Reporting Allocation Settings will be used when generating the JCL. If the data set is already cataloged, then IMS PA will use DISP=OLD or DISP=MOD according to your request to overwrite.
or append to the existing data set. Alternatively, you can use a GDG to create a new data set each time the extract is run.

The JCL assigns DDname ATFOUT2 to the REPRO extract data set.

Disp  Default: Not specified

This option applies if the extract data set you specified is already cataloged. Specify a disposition of OLD or SHR to overwrite the data set contents with the new extract data or MOD to append the new extract data. If the data set is not cataloged then DISP=NEW will be used regardless of this setting.

Exception criteria for transactions

The exception criteria are displayed here for reference purposes, and to prompt you to set them in ATF Global Options. See Exception criteria for transactions in Figure 305 on page 640.

Exception records are extracted from the ATF journals based on two criteria, ABEND or long response time, or both:

Abended

If selected with a /, the extract includes transactions that abended.

This option generates the ABEND global operand.

Exceeded elapsed time threshold... nnnn

If selected with a /, the extract includes transactions that exceed the specified elapsed time threshold.

The threshold is in the range 0.01 to 9999 seconds. Default: 1.00 second.

This option generates the ELAPSE(s.th) or ELAPSE(ssss) global operand.

EXTRACT: Exception Transaction extract

The EXTRACT operand of the IMSPAATF batch command requests the Exception Transaction extract.

Format

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMSPAATF</td>
<td>[ABEND.] [ELAPSE(ssss)]</td>
</tr>
<tr>
<td>IMSPAATF</td>
<td>EXTRACT( [JOURNAL.] [REPRO])</td>
</tr>
<tr>
<td>*</td>
<td>IMSPAATF EXECUTE</td>
</tr>
<tr>
<td>DDname ATFOUT1</td>
<td>Default 1.00 second</td>
</tr>
<tr>
<td>DDname ATFOUT2</td>
<td></td>
</tr>
<tr>
<td>DDname ATFRECAP</td>
<td>For Recap report</td>
</tr>
</tbody>
</table>

Note:

1. Reports can be run during the extract process, and they will honor the exception criteria ABEND and ELAPSE(ssss).
2. If no exception criteria are specified, an error message is issued and the extract does not proceed.
3. A recap report is written to ATFRECAP DD showing how many exceptions occurred.

Recoverability

In the event of an IMS PA extract failure, the job can be restarted.
ATF Journal
When the extract file is a KSDS ATF journal, IMS PA will detect when records have already been written and continue.

REPRO file
When the extract file is a sequential data set, IMS PA will open the file and write each record, either at the end of the data set (DISP=MOD) or from the beginning (DISP=NEW or OLD). When restarting an extract with DISP=MOD, duplicate records may be written. However, REPRO can support this by ignoring duplicate record keys (specify NOREPLACE option). Prior to restarting an extract to a generation data group (GDG), first delete the most recent generation that failed to compete successfully.

Predefining the ATF extract journal
If you are extracting to an ATF journal KSDS data set, then you must first define it using IDCAMS. Ensure that you make the data set large enough for your needs by specifying the appropriate size (CYLINDERS) and volumes to extend to (VOLUMES).

Note that while standard OMEGAMON ATF journals must only have a single extent, this is not a restriction for IMS PA ATF extract journals. They can utilize the entire 123 extent limit of VSAM.

```
//IMSPA JOB (ACCOUNT), 'NAME'
//*
//IDCAMS EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=* 
//SYSIN DD *
DEFINE CLUSTER(NAME(IMSP.ATF.JOURNAL.EXCEPT) -
   INDEXED -
   CYLINDERS(<pri> <sec>) -
   SHR(3,3) -
   FREESPAC (0 0) -
   SPANNED -
   VOLUMES(<volser>) -
   DATACLASS(<dataclass>) -
   DATA(NAME(IMSP.ATF.JOURNAL.EXCEPT.DATA) -
      KEYS(10 0) -
      CISIZE(26624) -
      RECORDSIZE(27228 32756) -
      INDEX(NAME(IMSP.ATF.JOURNAL.EXCEPT.INDEX))
/*
```

Figure 310. JCL: Predefine the ATF extract journal

Defining the data class for the ATF extract journal
To reduce the size of the ATF extract journal, you can use an extended format VSAM KSDS with compaction.

To do this, first define a data class with Data Set Name Type Ext and Compaction Y, as follows:
Reporting the ATF extract journal

The ATF Exception Extract journal can be input to IMS PA reporting in the same way as standard ATF journals.

The following example JCL demonstrates using an ATF Exception Extract journal as input to IMS PA reporting.

```
//IMSPAATF JOB (ACCOUNT),'NAME'
//*
//IPI EXEC PGM=IPIMAIN,REGION=100M
//STEPLIB DD DSN=IMSPA.V440.SIPILINK,DISP=SHR
//* ATF journals
//ATFIN001 DD DISP=SHR,DSN=IMS.ATF.JOURNAL.EXCEPT
//IPIOPTS DD *
* Reporting time range
IMSPAATF START(2013/04/20,10:00:00:00),STOP(2013/04/20,11:00:00:00)
/*
//SYSPRINT DD SYSOUT=* 
//* Report Set command input
//IPIOMD DD *
* IMS PA OMEGAMON ATF Reports
* ATF Report Global Options
IMSPAATF PAGESIZE(60)
IMSPAATF LIST
IMSPAATF SUMMARY
IMSPAATF TRACE(LEVEL(3))
IMSPAATF EXECUTE
/*
```

Figure 312. JCL: Reporting the extract ATF journal

Note that IMS PA does not support reporting against the sequential REPRO extract data set.
Chapter 29. OMEGAMON ATF batch interface

The IMS PA dialog generates the JCL and commands for running your report requests in batch. The JCL and commands for ATF report requests are described here.

Related concepts:
"ATF Report Set" on page 638
ATF reports are specified in a Report Set of type ATF.

ATF Report Set JCL

IMS PA uses options that you specify in the dialog to generate JCL that runs a Report Set.

```bash
//IMSPAATF JOB (ACCOUNT),'NAME'
// IMS PA Report Set - OMEGAMON ATF Reports and Extract
//IPI EXEC PGM=IPIMAIN
//STEPLIB DD DSN=IMSPA.V440.SIPILINK,DISP=SHR
//* ATF Journal input data sets
//ATFIN001 DD DISP=SHR,DSN=IMS.ATF.JOURNAL1
//ATFIN002 DD DISP=SHR,DSN=IMS.ATF.JOURNAL2
//IPIOPTS DD *
* Reporting time range
IMSPAATF START(2013/10/19,10:00:00:00),STOP(2013/10/19,10:05:00:00)
/*
//* ATF Exception Extract processing
//ATFOUT1 DD DISP=SHR,DSN=ATF.JOURNAL.EXTRACT
//ATFOUT2 DD DSN=ATF.REPRO.EXTRACT,
// DISP=(NEW,CATLG),
// UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE)
//ATFRECAP DD SYSOUT=*"*/

Figure 313. JCL: ATF command input (part 1 of 2)
ATF Report Set JCL statements are:

**JOB**
Job Statement Information
In IMS PA Settings.

**IPI EXEC IPIMAIN,PARM='parameter list'**
IMS PA main program with parameters:

**UPPER** if Reports in Upper Case is YES in IMS PA Settings.

**STEPLIB DD**
IMS PA Load Library
In IMS PA Settings.

---

```plaintext
// Command input
//IPICMD DD *
* IMS PA OMEGAMON ATF Reports
* ATF Report Global Options
  IMSPAATF PAGESIZE(60),
  ABEND,
  ELAPSE(1.00),
  DISCARDS

* List Report
  IMSPAATF LIST(
    Ddbname('LIST0001'),
    EXCL('TRANCODE(TRANX)'),
    INCL('USERID(USRX)'),
    INCL('IMSID(IMSX)'),
    INCL('PROGRAM(PROGX)'))

* Summary Report
  IMSPAATF SUMMARY(
    Ddbname('SUMM0001'),
    TOTALS(0))

* ATF Trace Reports
  IMSPAATF TRACE(
    LEVEL(1),
    Ddbname('TRACE001'))
  IMSPAATF TRACE(
    LEVEL(2),
    Ddbname('TRACE002'))
  IMSPAATF TRACE(
    LEVEL(3),
    Ddbname('TRACE003'))

* ATF Exception Extracts
* JOURNAL - VSAM KSDS: ATFOUT1 DD
* REPRO - Sequential data set: AFTOUT2 DD
  IMSPAATF EXTRACT(
    JOURNAL,
    REPRO)

IMSPAATF EXECUTE
/*
/* Switch Inflight transaction data sets
//RENAME EXEC PGM=IDCAMS,(COND=0,NE,IPI)
//SYSPRINT DD SYSOUT=*.
//SYSPRINT DD SYSOUT=*.
/*
/* Switch Inflight transaction data sets
//RENAME EXEC PGM=IDCAMS,(COND=0,NE,IPI)
//SYSPRINT DD SYSOUT=*.
//SYSPRINT DD SYSOUT=*.
/*.**

Figure 314. JCL: ATF command input (part 2 of 2)

ATF Report Set JCL statements are:

**JOB**
Job Statement Information
In IMS PA Settings.

**IPI EXEC IPIMAIN,PARM='parameter list'**
IMS PA main program with parameters:

**UPPER** if Reports in Upper Case is YES in IMS PA Settings.

**STEPLIB DD**
IMS PA Load Library
In IMS PA Settings.
```
ATFIN001 DD
ATF Journal Data Set Name
From System Definitions. The ATF files specified for the IMS Subsystem.

ATFINFLT DD
ATF Inflight Data Set Name
From ATF Global Options. The name of the input data set that contains incomplete transactions from the previous run. For more information, see “ATF inflight data sets.”

ATFOTFLT DD
ATF Outflight Data Set Name
From ATF Global Options. The name of the output data set that is to contain any incomplete transactions from the current run. For more information, see “ATF inflight data sets.”

DISCARDS DD
Print discarded transactions report
From ATF Global Options. The name of the output data set that is to contain any incomplete transactions from the current run.

IPIRSET DD
For DSN(member) where:
DSN Report Sets Data Set in your IMS PA Profile.
member Name of the Report Set being run.

IPIOBJL DD
Object Lists Data Set in your IMS PA Profile.

IPIOPTS DD *
Report Interval specified on the Run Report Set panel at run time. The format of the statement is:
IMSPAATF START/yyyy/mm/dd,hh:mm:ss:th),STOP/yyyy/mm/dd,hh:mm:ss:th)
or
IMSPAATF START(-9999,hh:mm:ss:th),STOP(-9999,hh:mm:ss:th)

ATF inflight data sets
OMEGAMON writes its ATF records to VSAM journals. When a journal becomes full, ATF switches to the next available journal. However, one or more transactions may be in progress and hence incomplete (inflight) when the journal is switched. In this case, the transaction's records will span multiple journals.

IMS PA will report or extract these inflight transactions with incomplete details. Important information is lost.

IMS PA ATF processing must report and extract complete transaction details wherever possible, even those that are inflight at journal end-of-file.

IMS PA ATF reporting supports an (optional) pair of inflight data sets to ensure that all transactions can be accurately and completely reported, even those that are incomplete at journal end-of-file:
• ATFINFLT data set is input into reporting, and contains incomplete transactions that were inflight at the end of the previous journal.
• ATFOTFLT data set is output from reporting, and contains incomplete transactions that are inflight at the end of the current journal.

Restrictions:
• Inflight transactions must complete or incur some activity during the processing of the next journal, otherwise they are reported as incomplete and are not recorded back to the out-flight data set again.

• ATF journals must be processed in strict chronological order, ideally as a post step to the journal archive process.

There are two options for inflight data sets. Both ensure that you will never have to change your report JCL (since ATFOTFLT needs to be the ATFINFLT for the next run):

**Generation Data Set Group (GDG)**

Use the following IDCAMS command to define the GDG base:

```
DEFINE GDG (NAME('IPI.ATF.INFLIGHT') NOEMPTY SCRATCH LIMIT(3))
```

Notice the GDG limit is set to 3, even though only 2 inflight data sets are required. This ensures that, in the event of a reporting failure, corrective action can be taken (delete the generation 0 data set and rerun the job).

**Fixed data set names**

The ATFINFLT and ATFOTFLT data sets are switched in an IDCAMS post step after reporting has completed successfully (RC=0).

**Sample JCL using GDG inflight data sets**

This JCL illustrates the use of inflight and outflight generation data group (GDG) data sets.

To create a GDG initially, see sample JCL in "Allocate ATF inflight data sets” on page 721.

```
//IMSPAATF JOB (ACCOUNT),'NAME'
//IPI EXEC PGM=IPIMAIN
//STEPLIB DD DISP=SHR,DSN=IMSPA.V440.SIPILINK
//ATFIN001 DD DISP=SHR,DSN=OMEGAMON.ATF.JOURNAL1
//ATFOUT1 DD DISP=SHR,DSN=IPI.ATF.EXTRACT
//ATFRECAP DD SYSPRINT DD SYSOUT=*"..'*
//ATFINFLT DD DSN=IPI.ATF.INFLIGHT(0),DISP=SHR
//ATFOTFLT DD DSN=IPI.ATF.OUTFLOW(0),DISP=SHR
//DCB=(RECFM=VB,BLKSIZE=32760,LRECL=32756)
//SYSPRINT DD SYSOUT=*"..'*
//IPICMD DD *
IMSPAATF ABEND,
ELAPSE(5.00),
DISCARDS
IMSPAATF EXTRACT(JOURNAL)
IMSPAATF EXECUTE
/*
```

**Sample JCL using fixed inflight data set names**

This JCL illustrates the use of explicitly named inflight and outflight data sets.

At the end of the job, the data sets are switched in preparation for the next run. The outflight from this run is the inflight for the next. To allocate the data sets initially, see the sample JCL in "Allocate ATF inflight data sets” on page 721.
IMSPAATF command and report operands

The IMSPAATF batch command requests OMEGAMON ATF reports and extracts. Any number of ATF reports can be requested in the one batch job.

Format

```
IMSPAATF operands
```

The last command in the batch job must be IMSPAATF EXECUTE to inform IMS PA that all ATF reports have been requested and processing of ATF input can commence.

The ATF report operands are:

- **LIST**
  - Transaction Transit List

- **SUMMARY**
  - Transaction Transit Summary

- **TRACE**
  - Record Trace

- **EXTRACT**
  - Exception Transaction extract

For further information about the report operands, their meaning, and default values, see the description of the corresponding dialog options in Chapter 28, “Requesting OMEGAMON ATF reports,” on page 637.
Part 10. Troubleshooting

This part provides a list of the messages produced by the batch interface and technical references to help you troubleshoot and diagnose IMS Performance Analyzer problems.
Chapter 30. IMS Performance Analyzer messages

Batch messages issued by IMS Performance Analyzer are listed here.

The batch messages listed here include messages issued by:
• The batch report processors for Log, Monitor, IMS Connect, OMEGAMON TRF and ATF input data
• The Automated File Selection utility, incorporating DBRC Log Selection and IMS Connect Extensions Journal File Selection

Messages issued exclusively by the dialog (and that do not have a message number) are not listed here. Instead, refer to the online help.

Message format

Each IMS PA batch processor message begins with a unique message identifier, followed by message text.

IPInnnnx Message Text variable

The message identifier has the following format:

IPI The program identifier identifies the message as an IMS PA message. All IMS PA messages begin with IPI.

nnnn The message identification number is a four-digit number that uniquely identifies each message.

x The severity level is a letter that indicates the return code (RC), the purpose of the message and the type of response required. As they are issued from batch processes which are possibly running unattended, no messages are of a nature which require immediate action from the user. The severity levels, from least to most severe, are:

I Information. RC=00. Requires no action. This message is used only for advisory purposes.

W Warning. RC=04. A possible error has occurred but processing continues. You should evaluate results. Action is required if results are not as expected.

E Error (or Eventual Action). An error has occurred which requires eventual action by the user. Depending on the nature of the error, the associated report either continues accepting input records (RC=04), or stops accepting input but still reports processing until the error (RC=08), producing a partial reporting before processing stops.

The Message Text provides concise information about an event or condition of interest to the user, and may include variable text to identify system components or to provide other detailed information about the specific circumstance which caused the message.

An IMS PA message may contain the text of an IMS Connect Extensions functional support message identified by the prefix FUN. For an explanation of the IMS
Connect Extensions functional support messages, refer to the “Messages and Codes” in the IBM IMS Connect Extensions for z/OS: User’s Guide.

Message descriptions

This section contains descriptions of all IMS PA batch processing messages. The messages are listed in message number order, all with the prefix IPI.

An IMS PA message may contain the text of an IMS Connect Extensions functional support message. For an explanation of the IMS Connect Extensions functional support messages identified by the prefix FUN, refer to the “Messages and Codes” in the IBM IMS Connect Extensions for z/OS: User’s Guide.

<table>
<thead>
<tr>
<th>Message Code</th>
<th>Message Text</th>
<th>Explanation</th>
<th>System action</th>
<th>User response</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPI0001I</td>
<td>IMS Started</td>
<td>The first record with a time stamp has been read from the log input.</td>
<td>Processing continues.</td>
<td>None required.</td>
</tr>
<tr>
<td>IPI0002I</td>
<td>Reporting starts within specified time range</td>
<td>The first record with a time stamp equal to or after the global Start time has been read from the log input.</td>
<td>Processing continues.</td>
<td>None required.</td>
</tr>
<tr>
<td>IPI0003I</td>
<td>Reporting stopped: elapsed time is hhh:mm:ss.thmiju</td>
<td>The first record with a time stamp after the global Stop time has been read from the log input. Reading of the log is complete.</td>
<td>IMS PA proceeds to end of file processing.</td>
<td>None required.</td>
</tr>
<tr>
<td>IPI0004I</td>
<td>End of File signalled to Report Processors</td>
<td>Either the global Stop time has been reached, or end of file on the log input has occurred.</td>
<td>All active report processors are notified so that they can complete their processing.</td>
<td>None required.</td>
</tr>
<tr>
<td>IPI0005I</td>
<td>IMS Stopped</td>
<td>End of file has been reached on the log input.</td>
<td>IMS PA proceeds to end of file processing.</td>
<td>None required.</td>
</tr>
<tr>
<td>IPI0006I</td>
<td>Trace assumed Stopped, Hit Start Record</td>
<td>A Monitor Trace Start record was encountered during monitor processing.</td>
<td>IMS PA posts end of file to the active monitor reports, then restarts monitor processing.</td>
<td>None required.</td>
</tr>
<tr>
<td>IPI0007I</td>
<td>An HSB Takeover</td>
<td>The log input file was closed by DFSFDLU0 for an HSB takeover.</td>
<td>IMS PA continues processing.</td>
<td>None required.</td>
</tr>
<tr>
<td>IPI0008I</td>
<td>IMS stopped for RSR Takeover</td>
<td>IMS has stopped for RSR plan takeover.</td>
<td>IMS PA continues processing.</td>
<td>None required.</td>
</tr>
<tr>
<td>IPI0009I</td>
<td>Emergency Restart detected</td>
<td>The log input file was closed by DFSFDLU0 for an Emergency Restart.</td>
<td>IMS PA continues processing.</td>
<td>None required.</td>
</tr>
<tr>
<td>IPI0010I</td>
<td>IMS Restarted</td>
<td>IMS has started.</td>
<td>Processing continues.</td>
<td>None required.</td>
</tr>
<tr>
<td>IPI0011I</td>
<td>Large gap was found in Log Sequence after seqnum, End of Data Set assumed</td>
<td>A large gap was detected in the log. The</td>
<td>IMS PA proceeds to end of file processing.</td>
<td>None required.</td>
</tr>
</tbody>
</table>
end of data set was assumed; the remaining records will be skipped until the next checkpoint. *seqnum* was the sequence number of the log record before the gap.

**System action:** Processing continues.

**User response:** None required.

---

**IPI0012E** Line/PTERM has invalid status, Rec=xx, Reas=nn

**Explanation:** Rec=xx specifies the record code of the IMS log record that caused the problem. Reas=nn specifies an error reason code for diagnostics.

**System action:** If Rec=31 and Reas=13, IMS PA has encountered a Communications Get Unique whose destination is not known; IMS PA ignores the record and continues processing. Otherwise, IMS PA terminates the Resource Availability report.

**User response:** This may be an IMS or IMS PA error. Contact your IBM representative for help.

---

**IPI0013E** Resource Availability Reporting stopped due to error

**Explanation:** A Resource Availability Report processor has either abended or detected a condition it cannot recover from.

**System action:** Processing of log records is terminated for the Resource Availability report.

**User response:** Check the output with DD statement IPIDIAGS to identify the reason for the error. This may be an IMS or IMS PA error. Contact your IBM representative for help.

---

**IPI0014E** SMB has invalid status, Rec=xx

**Explanation:** An invalid value was encountered in a field of a log record. Rec=xx specifies the record code of the IMS log record that caused the problem.

**System action:** Processing terminates for the Resource Availability report.

**User response:** This may be an IMS error. Contact your IBM representative for help.

---

**IPI0015E** Region has invalid status, Rec=xx

**Explanation:** An invalid value was encountered in a field of a log record. Rec=xx specifies the record code of the IMS log record that caused the problem.

**System action:** Processing terminates for the Resource Availability report.

**User response:** This may be an IMS error. Contact your IBM representative for help.

---

**IPI0016E** PSB has invalid status, Rec=xx

**Explanation:** An invalid value was encountered in a field of a log record. Rec=xx specifies the record code of the IMS log record that caused the problem.

**System action:** Processing terminates for the Resource Availability report.

**User response:** This may be an IMS error. Contact your IBM representative for help.

---

**IPI0017E** DBD has invalid status, Rec=xx

**Explanation:** An invalid value was encountered in a field of a log record. Rec=xx specifies the record code of the IMS log record that caused the problem.

**System action:** Processing terminates for the Resource Availability report.

**User response:** This may be an IMS error. Contact your IBM representative for help.

---

**IPI0018E** LTERM not defined to IMS PA, Rec=xx

**Explanation:** An LTERM that has not been defined to IMS PA via a type 40 log record was encountered during transaction processing. Rec=xx specifies the record code of the IMS log record that caused the problem.

**System action:** Processing continues.

**User response:** Contact your IBM representative for help.

---

**IPI0019E** First segment missing

**Explanation:** A continuation segment was encountered without a first segment to go with it.

**System action:** The record is skipped. Processing continues.

**User response:** This may be an IMS problem. Contact your IBM representative for help.

---

**IPI0020E** Record segments exceed indicated size

**Explanation:** A work area was allocated based on the length of the command buffer, as specified in the first segment of the record. However, as later segments were encountered, the work area was too small for the actual data.

**System action:** The program processes the data that it has.

**User response:** This is an IMS PA error. Contact your IBM representative for help.
### IPI0021E  Invalid record

**Explanation:** An invalid condition was detected in a type 02 log record.

**System action:** Processing continues.

**User response:** This may be an IMS problem. Contact your IBM representative for help.

### IPI0022E  Error – input DRRN already in use

**Explanation:** A type 01 or 03 log record specified a DRRN that was already in use.

**System action:** Processing terminates for this report.

**User response:** Contact your IBM representative for help.

### IPI0023E  Unknown DC Trace record

**Explanation:** An unknown DC trace record (type 67 log record) was encountered.

**System action:** Processing continues.

**User response:** This may be an IMS problem. Contact your IBM representative for help.

### IPI0024E  Statistics record has an invalid length

**Explanation:** A sub-section for the type 45 log record had an unsupported length. The record was bypassed. This condition might be caused by log records produced by an unsupported release (or maintenance level) of IMS. It might also occur when the format of the log input records does not match the specified IMS release.

**System action:** Processing continues.

**User response:** Ensure that the PARM= parameter on the EXEC statement matches the IMS version (VRM) of the logs being reported on. If the logs are from a sysplex with IMS systems at different release levels, ensure each system is listed in the IPIOPTS DD statement in the format `IMSPALOG SYSTEM(name,VRM)`, for example `IMSPALOG SYSTEM(IMSB, V121)`. Correct the VRM and rerun the job. If unresolved, contact IBM Software Support.

### IPI0025E  Unsupported statistics record found

**Explanation:** An unknown subtype for the type 45 log record was detected. The record was bypassed. This condition might be caused by log records produced by an unsupported release (or maintenance level) of IMS.

**System action:** Processing continues.

**User response:** This may be an IMS problem. Contact your IBM representative for help.

### IPI0026E  Unknown Latch statistic ID found, ID=xxxx

**Explanation:** An unknown latch ID was detected in the type 45, subtype 06, log record. The statistics associated with this ID were ignored.

**System action:** Processing continues.

**User response:** A change to the IMS log record may have occurred. Contact your IBM representative for help.

### IPI0027E  Unknown DL/I Calls Flags

**Explanation:** The Database Update Activity report encountered a database update log record (X'50') whose DL/I application call was not known.

**System action:** The database update is treated as an insert (ISRT) DL/I call.

**User response:** None required.

### IPI0028E  LTERM not found in table

**Explanation:** An LTERM that has not been defined to IMS PA via a type 40 log record was encountered.

**System action:** Processing terminates for this report.

**User response:** Contact your IBM representative for help.

### IPI0029E  DC Queue Manager Trace Report stopped due to error

**Explanation:** The DC Queue Manager Trace report has been stopped due to an error in Log processing.

**System action:** Processing terminates for this report.

**User response:** Check previous error message for reason.

### IPI0030E  Block Id length exceeds present capacity

**Explanation:** The Database Update Activity report encountered a database update log record (type 50) whose key data length was greater than 178 bytes.

**System action:** IMS PA ignores the log record and continues processing.

**User response:** Contact your IBM representative for help.

### IPI0031E  Block Id length changed

**Explanation:** Block ID lengths (from the type 50 log record) have changed. This would usually be due to an online change. Eight bytes were dumped with the message. The first four bytes contain the address of the VQ data element, the next two bytes are the saved ID length, and the last two bytes are the new ID length.
System action: Processing continues.
User response: This may be an IMS problem. Contact your IBM representative for help.

IPI0032E  Unknown Prefix change
Explanation: An unknown record identifier was detected in the type 30 log record.
System action: Processing continues.
User response: This may be an IMS problem. Contact your IBM representative for help.

IPI0033E  Invalid length in type 36 record
Explanation: The length of the type 36 log record was invalid.
System action: Processing continues.
User response: This may be an IMS problem. Contact your IBM representative for help.

IPI0034E  Invalid length in type 37 record
Explanation: The length of the type 37 log record was invalid.
System action: Processing continues.
User response: This may be an IMS problem. Contact your IBM representative for help.

IPI0036W  No data in specified time range. Graph ignored
Explanation: No records were selected from the log for processing.
System action: IMS PA does not print the Graph report.
User response: Make sure the global and report-level Report Interval dates and times are within those on the log being processed. Then rerun the job.

IPI0037E  TCODE not found in table
Explanation: Region Histogram transaction termination processing cannot find the associated transaction start point.
System action: The Region Histogram report is stopped.
User response: Contact your IBM representative for help.

IPI0038E  Histogram reporting stopped due to error
Explanation: The Region Histogram report has been stopped due to an error in Log processing.

IPI0041E  Logic error processing 03 record
Explanation: An output transaction was detected while processing the type 03 log record. Another output message with the same DRRN was found on the temporary output queue.
System action: Processing continues.
User response: Contact your IBM representative for help.

IPI0042I  Unknown reason code in type 10 record
Explanation: An unknown reason code was encountered in a type 10 record.
System action: Processing continues.
User response: Include an IPIDIAGS DD statement in the JCL then rerun the job to get a snap of the problem record. Contact IBM Software Support with this information.

IPI0043E  Unknown error code in type 24 record
Explanation: A VSAM database I/O error record contained an error code other than read or write.
System action: Processing continues.
User response: Include an IPIDIAGS DD statement in the JCL then rerun the job to get a snap of the problem record. Contact your IBM representative with this information.
IPI0044E  Missing Enqueue Record for Tran xxxxxxxx back from suspend queue

**Explanation:** Transaction xxxxxxxx returned from the suspend queue, and a log record was missing from the input data set. The enqueue from the suspend queue back to the SMB queue was not detected.

**System action:** Processing continues. However, the output for this transaction may be incorrect.

**User response:** Contact your IBM representative for help.

---

IPI0045E  DRRN/CNT conflict

**Explanation:** The origin CNT does not match the optional destination name due to missing log records.

**System action:** The queue entry in error is deleted, and processing continues.

**User response:** Contact your IBM representative for help.

---

IPI0046E  Logic error processing 31 record

**Explanation:** A GU call from DL/I was encountered, either:
- When a GU from communications was expected, or
- With no QLGUOPDN field

**System action:** Processing continues.

**User response:** Contact your IBM representative for help.

---

IPI0047E  Missing Suspend Record for Tran xxxxxxxx back from Suspend Queue

**Explanation:** Transaction xxxxxxxx returned from the suspend queue, and a log record was missing from the input data set. The enqueue to the suspend queue was not detected.

**System action:** Processing continues. However, the output for this transaction may be incorrect.

**User response:** Contact your IBM representative for help.

---

IPI0048E  Logic error processing 35 record

**Explanation:** An output transaction was detected while processing the type 35 log record. A message queue record contained a still active input message when revised by output.

**System action:** Processing continues.

**User response:** Contact your IBM representative for help.

---

IPI0049E  Incomplete 01/03 message found

**Explanation:** An incomplete or deleted message was represented by a type 01 or 03 log record. This might be caused by incorrect time control parameters, or incomplete logs may have been mounted.

**System action:** Processing continues.

**User response:** This may be an IMS problem. Contact your IBM representative for help.

---

IPI0050E  Uncommitted update count nnnnnn for database xxxxxxxx exceeds available storage

**Explanation:** The maximum number of uncommitted block updates was reached. See “Database Update Activity report and extract” on page 342.

**System action:** The block update queue for database xxxxxxxx is deleted, and IMS PA reports ******** for the block update count for that database. Processing continues.

**User response:** Change the limit specified for the Uncommitted Block Updates option on the Database Update Activity panel, and resubmit the Report Set.

---

IPI0051W  IMS Log Sequence numbers lose continuity after seqnum, End of Data Set assumed

**Explanation:** The sequence numbers of each successive log record should increase by one or more. A break in this pattern was detected.

**System action:** The end of data set was assumed; the remaining records will be skipped until the next checkpoint.

**User response:** None required.

---

IPI0052E  Invalid RQ chain off a TQ

**Explanation:** When trying to delete a previously cancelled message, IMS PA did not find a response queue entry for the message.

**System action:** Processing terminates for this report.

**User response:** Contact your IBM representative for help.

---

IPI0053E  Conflicting Transaction codes in 01 and 08 records

**Explanation:** The transaction codes located in the transaction queue and region queue should be the same.

**System action:** The offending transaction is discarded and processing continues.
User response: Contact your IBM representative for help.

IPI0054E Timestamp not found in Message Record – Record ignored
Explanation: The record was skipped because there was no time stamp in it.
System action: Processing continues.
User response: If you think the record should have had a time stamp, contact your IBM representative for help.

IPI0055E Transit Internal error, Rec=xx, Reas=nn
Explanation: Transit Report processing has detected an error. Rec=xx specifies the record code of the IMS log record that caused the problem. Reas=nn specifies an error reason code for diagnostics.
System action: Processing continues.
User response: None required.

IPI0056E Conflicting Transaction codes in 01 and 07 records
Explanation: A type 07 log record was processed for which no corresponding type 01 log record exists.
System action: Processing continues.
User response: Contact your IBM representative for help.

IPI0057E Processing time is not greater than zero seconds
Explanation: The transaction time between the type 08 and 07 log records was negative.
System action: Processing continues.
User response: Contact your IBM representative for help.

IPI0059E Transit Reporting stopped due to error
Explanation: The Transaction Transit reports have been stopped due to an error in log processing.
System action: Transit processing terminates.
User response: Check the previous error message for the reason.

IPI0060E Unknown LTERM xxxxxxx in 03 record; Message ignored
Explanation: Transit report processing encountered an output message log record (type 03) whose output destination was not defined.

System action: IMS PA ignores the log record and continues processing.
User response: None required.

IPI0061W report subreport Transit Report ignored, no data was filtered from Log
Explanation: No records were selected from the log for processing the specified report (for example, Analysis or Statistics) and subreport (for example, by Transaction or by LTERM).
System action: Processing continues.
User response: Make sure the global and report-level dates and times are within those on the log being processed, or that the Include/Exclude Qualifiers or other filtering options are correctly specified. Then resubmit the Report Set.

IPI0062E Error encountered building xxx Control Blocks, record subtype nn
Explanation: An error occurred while building the IMS PA control block tables for the CLB, CNT, PSB, or SMB.
System action: The remaining records were skipped until the next checkpoint. Processing continues.
User response: None required.

IPI0063E Error encountered building ETO CNT table
Explanation: IMS PA has encountered an error processing an ETO LTERM checkpoint record.
System action: Record is ignored, processing continues.
User response: IMS PA error. Contact your IBM representative for help.

IPI0064E Duplicate CNT name xxxxxxx in checkpoint
Explanation: Multiple checkpoint records contain the same CNTNAME.
System action: Processing continues.
User response: If many of these messages are received (usually followed by a severe error), it probably indicates that the log is from a different IMS release level than that specified. Make sure that the IMS version specified in System Definitions corresponds to the IMS version of the log input files specified for that subsystem. Then rerun the job.
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Explanation</th>
<th>System action</th>
<th>User response</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPI0065E</td>
<td>Logic error – CTB to CNT link failed</td>
<td>IMS PA could not determine the physical terminal for an LTERM.</td>
<td>Record is ignored, processing continues.</td>
<td>IMS PA error. Contact your IBM representative for help.</td>
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<tr>
<td>IPI0066E</td>
<td>Time difference negative - unusual sequence, record ignored</td>
<td>A record processor detected a negative time difference for a DL/I call.</td>
<td>The record is ignored, and processing continues.</td>
<td>None required. This is a warning message indicating an irregular sequence found in the monitor trace. For further details, see “Nonstandard Monitor Record Sequences” in the IMS Performance Analyzer for z/OS: Report Reference.</td>
</tr>
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<tr>
<td>IPI0067W</td>
<td>Q Entry for Region Totals created</td>
<td>IMS PA could not find the Region Totals Q entry.</td>
<td>The entry is built and processing continues.</td>
<td>None required.</td>
</tr>
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<tr>
<td>IPI0068E</td>
<td>No HISTOGRAM control specified, report not run</td>
<td>The monitor Histogram processing modules determined that Histogram control was not specified in the control table IPIATBLE.</td>
<td>The Histogram is omitted, and processing continues.</td>
<td>None required. This is a warning message indicating an irregular sequence found in the monitor trace. For further details, see “Nonstandard Monitor Record Sequences” in the IMS Performance Analyzer for z/OS: Report Reference.</td>
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<tr>
<td>IPI0069E</td>
<td>Monitor file has record out of place, waiting for trace start</td>
<td>IMS PA was expecting a trace start monitor record.</td>
<td>The record is ignored and processing continues.</td>
<td>None required.</td>
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<tr>
<td>IPI0072E</td>
<td>Call records out of sequence, record ignored</td>
<td>In a monitor trace, a type 61 (DL/I call ended) record was found when no call was started.</td>
<td>The record is ignored, and processing continues.</td>
<td>None required.</td>
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<tr>
<td>IPI0073E</td>
<td>Invalid schedule start (end of prior), record ignored</td>
<td>The explanation depends on the IMS system in use, as follows:</td>
<td>The trace record is not used, and processing continues.</td>
<td>None required. This is a warning message indicating an irregular sequence found in the monitor trace. For further details, see “Nonstandard Monitor Record Sequences” in the IMS Performance Analyzer for z/OS: Report Reference.</td>
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<tr>
<td>IPI0074E</td>
<td>IWAIT ignored, no IWAIT start or not in a call</td>
<td>In a monitor trace, one of the following occurred:</td>
<td>Processing continues, and the record is ignored.</td>
<td>None required. This is a warning message indicating an error in the monitor formatting module. For further details, see “Nonstandard Monitor Record Sequences” in the IMS Performance Analyzer for z/OS: Report Reference.</td>
</tr>
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<td></td>
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</tbody>
</table>
IPI0075E Call records out of sequence, this record overrides

Explanation: In a monitor trace, two successive type 60 (DL/I call started) records were found without an intervening call end record.

System action: Processing continues, using the last record.

User response: None required. This is a warning message indicating an error in the monitor formatting module. For further details, see “Nonstandard Monitor Record Sequences” in the IMS Performance Analyzer for z/OS: Report Reference.

IPI0076E ITask ID does not match expected, record ignored

Explanation: In a monitor trace, an unexpected ITask sequence number was found on a trace record.

System action: The record is ignored, and processing continues.

User response: None required. This is a warning message indicating an irregular sequence found in the monitor trace. For further details, see “Nonstandard Monitor Record Sequences” in the IMS Performance Analyzer for z/OS: Report Reference.

IPI0077E ITask ID does not match expected, ITask ID reset

Explanation: In a monitor trace, an unexpected ITask sequence number was found on a trace record.

System action: The record is ignored, and processing continues.

User response: None required. This is a warning message indicating an irregular sequence was found in the monitor trace. For further details, see “Nonstandard Monitor Record Sequences” in the IMS Performance Analyzer for z/OS: Report Reference.

IPI0078E Additional Buffer Prime Call required for schedule

Explanation: During region scheduling, more than one buffer priming call was made to the input message queue to obtain a message.

System action: Processing continues.

User response: None required. This is an unusual IMS occurrence. A large number of such occurrences may indicate a problem in message region scheduling.

IPI0079E Trancode with PSBNAME xxxxxxxx scheduled, no call resulted

Explanation: Specified PSB was scheduled, but no database calls resulted.

System action: Processing continues.

User response: None required.

IPI0080E Processing aborted since DCB failed to open

Explanation: IMS PA was unable to open the data control block for the data set that was to receive the statistics records from the monitor trace.

System action: Processing continues, and this function is skipped.

User response: Correct the data set name specified for Trace Data Set on the Monitor Global Options panel. Check the DD statement for IPISTOUT. Then resubmit the Report Set.

IPI0081E SYSPRINT DD statement missing - run halted

Explanation: SYSPRINT DD statement is missing from the JCL.

System action: Processing terminates.

User response: Add the SYSPRINT DD statement to the JCL and resubmit the job.

IPI0082E IPIRSET DD statement missing - run halted

Explanation: The Report Set data set is not allocated.

System action: Report Set processing terminates.

User response: Add the Report Set data set to the JCL and resubmit the job.

IPI0083E Member xxxxxxx not in Report Set format

Explanation: The specified member is not in IMS PA Report Set format.

System action: Report Set processing terminates.

User response: Verify the specified Report Set name is a valid Report Set.

IPI0084I Report Set xxxxxxx read successfully

Explanation: The specified Report Set has been read without error.

System action: Processing continues.

User response: None required.
IPI0085W  No required report options are set

**Explanation:** The Report Set has an activated report, but the report has no required report options set.

**System action:** IMS PA ignores this report, but continues processing the rest of the Report Set.

**User response:** Select the report you require and resubmit the job.

IPI0086E  No reports active in Report Set

**Explanation:** The Report Set has no active reports.

**System action:** IMS PA does not process the Report Set.

**User response:** Activate the reports you require and resubmit the job.

IPI0087E  Object List read error, reason

**Explanation:** IMS PA failed to read an Object List from file IPIOBJL. Typical reasons include that the DDname IPIOBJL is not in the JCL, or the required Object List is not found in the PDS specified by IPIOBJL.

**System action:** IMS PA does not process the Report Set.

**User response:** Correct the problem and resubmit the job.

IPI0088E  Distribution read error, reason

**Explanation:** IMS PA failed to read a Distribution from file IPIDIST. Typical reasons include that the DDname IPIDIST is not in the JCL, or the required Distribution is not found in the PDS specified by IPIDIST.

**System action:** IMS PA does not process the Report Set.

**User response:** Correct the problem and resubmit the job.

IPI0089E  User Program module xxxxxxxx could not be found

**Explanation:** The specified User Program module name could not be found in the STEPLIB libraries.

**System action:** IMS PA continues processing. The User Program will not be run.

**User response:** Ensure the User Program module resides in the User Program Load Library. This library is specified in the User Program Load Library option on the IMS PA Settings panel, and is used as a STEPLIB library at report submit time. See “IMS PA Settings” on page 67.

IPI0090E  System module xxxxxxxx could not be found

**Explanation:** IMS PA could not find the specified module in the STEPLIB. If the module name is DFSVC000, IMS PA was loading it to determine your IMS release.

**System action:** Report Set processing terminates immediately.

**User response:** If the module name is DFSVC000, either specify the IMS version in the JCL PARM specification as ‘Vnnn’, where nnn is either 121, 131, or 141, or add the IMS RESLIB data set to the STEPLIB concatenation.

If it is an IMS PA module, check that your IMS PA load library was specified correctly. This library is specified in the IMS PA Load Library option on the IMS PA Settings panel, and is used as a STEPLIB library at report submit time. See “IMS PA Settings” on page 67. Correct the entries, then resubmit the job. If the problem persists, contact your IBM representative for help.

IPI0091E  Report Set xxxxxxxx at level nnn not supported by IMS PA level mmm

**Explanation:** The Report Set specified for processing was built at a higher level of IMS PA than is currently processing.

**System action:** Report Set processing terminates immediately.

**User response:** If you have recently upgraded your level of IMS PA, ensure that the JCL you are submitting specifies the new IMS PA load library.

IPI0092I  Management Exception Transaction Averages saved into DSN datasetname

**Explanation:** The Management Exception report has built the specified Averages Data Set with Transaction Transit information from the log input files.

**System action:** IMS PA continues processing.

**User response:** Averages Data Sets can be viewed from option 5 Averages of the dialog.

IPI0093I  Management Exception Transaction Averages merged into DSN datasetname

**Explanation:** The Management Exception report has built the specified Averages Data Set by merging Transaction Transit information from the log input files, together with an old Averages Data Set.

**System action:** IMS PA continues processing.

**User response:** Averages Data Sets can be viewed from option 5 Averages of the dialog.
IPI0094E Transit Log Report file allocation failed

Explanation: The Transaction Transit Log report processor failed to dynamically allocate the specified output file. IMS PA attempts to allocate the Log output file like the SYSPRINT file.

System action: The Transaction Transit Log report is ignored.

User response: Specify the Transaction Transit Log output file DD directly in the JCL, avoiding the need for the Log report processor to dynamically allocate it.

IPI0095E IMS PA has failed ABENDxxxx-xxxxxxx, recovery attempt in progress

Explanation: IMS PA has abended with the specified abend code.

System action: IMS PA attempts to recover from the abend condition. All input file processing is stopped. Incomplete reports are written with the available data. However, if IMS PA abends a second time during this attempt, then no further recovery is attempted and the job step immediately abends.

User response: The abend code may indicate a user or environmental error. Common abend codes are:

<table>
<thead>
<tr>
<th>Abend code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S002</td>
<td>Input file I/O error, check that the log input file contains valid data.</td>
</tr>
<tr>
<td>S0C7</td>
<td>Sometimes caused by an incorrect IMS version specification, check the EXEC PARM='Vnnn' specification.</td>
</tr>
<tr>
<td>S80A</td>
<td>Short of storage condition, increase the REGION size.</td>
</tr>
<tr>
<td>S878</td>
<td>Short of storage condition, increase the REGION size.</td>
</tr>
<tr>
<td>S913</td>
<td>Security violation, check with your security administrator.</td>
</tr>
</tbody>
</table>

Other abend codes, for example S0C4, may indicate a problem with IMS PA. Rerun the job with EXEC PARM='Vnnn,NOSTAE' and a SYSUDUMP DD to collect the dump. For more information on the required JCL, see "Obtaining dumps" on page 695. Then contact IBM.

IPI0096E Report Form read error, reason

Explanation: IMS PA was unable to find or decode a Report Form specified in a Report Set. Typical reasons include that the DDname IPIFORM is not in the JCL, or the specified Report Form is not found in the Report Forms data set.

System action: IMS PA does not process the Report Set.

User response: Correct the problem if it relates to the specification of a Report Forms data set or member, then resubmit the report request. Otherwise, contact your IBM representative for help.

IPI0097I nnnnnnnnn records written to IMS Transaction Index

Explanation: The number of records written to the IMS Transaction Index data set. The IMS Transaction Index is created from IMS log files and contains one record of accumulated information for each transaction on the input logs.

System action: IMS PA continues processing.

User response: None required. The IMS Transaction Index is available for reporting.

IPI0098I Premature End of File, reports may be incomplete

Explanation: End of file was reached for the monitor data set, but no SLOG 91 (monitor stop) event was detected. Monitor file creation may have ended with ABENDx37 due to a data set size constraint.

System action: Reporting terminates. All the reports are written using the available data. The Buffer Pool & Latch Statistics report, if requested, will be incomplete.

User response: Ensure the size of the monitor data set is large enough to contain the volume of data you need to collect.

IPI0100W Command is ignored - command name

Explanation: During conversion of IMSPARS or IMSASAP commands to Report Set format, IMS PA encountered an unsupported command.

System action: The command is ignored and processing continues.

User response: Verify that the command has no impact on IMS PA processing of a Report Set. If it does, contact your IBM representative for help; otherwise the command can be ignored.

IPI0101E Report Set file IPIRSET not allocated

Explanation: IPIRSET DD statement is missing from the JCL.

System action: Processing terminates.

User response: Add the required DD statement to the JCL and resubmit. During conversion of IMSPARS or IMSASAP commands to Report Set format, IMS PA creates the new Report Set in the PDS specified with DDname IPIRSET. A member name must be specified.
IPI0102W  Operand is ignored - operand name

Explanation: During conversion of IMSPARS or IMSASAP commands to Report Set format, IMS PA encountered an operand where it was not expected.

System action: The operand is ignored and processing continues.

User response: Check that the operand does not impact the use of the new Report Set. If it does, you may be able to activate the operand from the IMS PA dialog. Otherwise, contact your IBM representative for help.

IPI0103W  Operand is unsupported - operand name

Explanation: The specified operand is not supported by IMS PA.

System action: IMS PA ignores the operand (and its suboperands) and continues processing.

User response: Verify that the Report Set performs the required functions.

IPI0104E  Operand out of context - operand name

Explanation: During conversion of IMSPARS or IMSASAP commands to Report Set format, IMS PA encountered an operand used out of context.

System action: Processing terminates.

User response: Check that the operand does not impact the use of the new Report Set. If it does, you may be able to activate the operand from the dialog. If so, remove the operand and rerun the job. Otherwise, contact your IBM representative for help.

IPI0105E  Report Set build has failed

Explanation: During conversion of IMSPARS or IMSASAP commands to Report Set format, IMS PA encountered an error. A previous error message will have described the error condition.

System action: Processing terminates.

User response: Identify any previous error messages issued and check the reason for the errors.

IPI0106I  Report Set Report Set name built successfully

Explanation: IMS PA has successfully converted IMSPARS or IMSASAP commands to an IMS PA Report Set.

System action: Processing continues.

User response: None required.

IPI0107E  Object List build failed, reason = failure reason

Explanation: During conversion of IMSPARS or IMSASAP commands to Report Set format, IMS PA could not create an Object List for the reason specified; for example, DDname missing.

System action: References to the Object List name in the Report Set are set to *ERROR, and processing continues.

User response: Correct the reason for the failure and rerun the job.

IPI0108I  Object List Object List name connected, status = status

Explanation: During conversion of IMSPARS or IMSASAP commands to Report Set format, IMS PA created an Object List that is used by the Report Set.

System action: Processing continues.

User response: None required.

IPI0109E  Distribution build failed, reason = failure reason

Explanation: During conversion of IMSPARS or IMSASAP commands to Report Set format, IMS PA could not create a Distribution for the reason specified; for example, DDname missing.

System action: References to the Distribution name in the Report Set are set to *ERROR, and processing continues.

User response: Correct the reason for the failure and rerun the job.

IPI0110I  Distribution Distribution name connected, status = status

Explanation: During conversion of IMSPARS or IMSASAP commands to Report Set format, IMS PA created a Distribution that is used by the Report Set.

System action: Processing continues.

User response: None required.

IPI0111E  Report Set File IPIRSET does not include a member name

Explanation: IPIRSET DD does not include a member name. IMS PA identifies the Report Set name from the member name specification.

System action: Processing terminates.

User response: Add a member name to the IPIRSET DD statement and rerun the job.
IPI0120I  Expectation Set name built successfully
Explanation:  IMS PA has successfully converted an IMSPARS expectation file to the new IMS PA Expectation Set format.
System action:  Processing continues.
User response:  None required.

IPI0121E  Expectation Set build has failed, reason = error reason
Explanation:  IMS PA has failed to convert an IMSPARS expectation file to the new IMS PA Expectation Set format.
System action:  Processing terminates.
User response:  If possible, correct the error and rerun the conversion. Otherwise, contact your IBM representative for help.

IPI0130E  Error in Parameter parameter number
Explanation:  The IMS PA Export/Graph module has detected an error in the EXEC PARM.
System action:  Processing terminates.
User response:  If the job was submitted from the IMS PA dialog, an error constructing the parameter has occurred. Contact your IBM representative for help.

IPI0131E  Extract Input File ddname not allocated
Explanation:  The IMS PA Export/Graph module required the Extract Data Set to be allocated.
System action:  Processing terminates.
User response:  If the job was submitted from the IMS PA dialog, check the JCL built by the SUB or JCL command to ensure that the Extract Data Set was properly included.

IPI0132E  Export Output File ddname not allocated
Explanation:  The IMS PA Export/Graph module required the Export Data Set to be allocated.
System action:  Processing terminates.
User response:  If the job was submitted from the IMS PA dialog, check the JCL built by the SUB or JCL command to ensure that the Export Data Set was properly included.

IPI0133E  Error converting Extract Record, reason
Explanation:  The IMS PA Export/Graph module failed to convert an Extract record into an Export or Graph record.
System action:  Processing terminates.
User response:  Verify that the Extract Data Set was created successfully from the Extract report process. If it was, contact your IBM representative for help.

IPI0134E  Extract data set does not contain valid extract data
Explanation:  The IMS PA Export/Graph module detected a record in the Extract Data Set that is not in Extract format.
System action:  Processing terminates.
User response:  Ensure that an Export Data Set was not inadvertently specified as the Extract Data Set. Verify that the Extract Data Set was created successfully from the Extract report process; if it was, contact your IBM representative for help.

IPI0135E  Extract data set is empty
Explanation:  The IMS PA Export/Graph module detected that the Extract Data Set is empty.
System action:  Processing terminates.
User response:  Run an Extract report to populate the Extract Data Set.

IPI0136E  No Extract records selected
Explanation:  The IMS PA Export/Graph module could not find any records in the Extract Data Set that matched the selected filtering options. The reason can be:
- Range From Date/Time - To Date/Time. The specified date/time range does not fall within the date/time range of the extract. The date/time range included in the message is that of the Extract Data Set.
- Interval data not collected. Interval data was requested for the export/graph request, but interval data is not contained in the Extract Data Set.
- Transaction data not collected. Transaction data was requested for the export/graph request, but transaction data is not contained in the Extract Data Set.
- Transaction Trancode data not collected. The specified transaction code was requested for the export/graph request, but the Extract Data Set does not include data for that transaction code.
- Check filtering options. An unknown reason caused no extract records to be selected.
System action:  Processing terminates.
User response:  Ensure the requested date/time range falls within the date/time range of the data in the Extract Data Set, or that the selected transaction code is in the Extract Data Set. If you want to export or graph the data by Interval or by Transaction, ensure the data in the Extract Data Set was extracted according to that same criteria. Correct the offending options and retry.
the request. If the reason for the problem cannot be established, contact your IBM representative for help.

**IPI0137E**  
GDDM has failed to display/print graph, RC=return code

**Explanation:** The IMS PA Graph module failed to display (or print) a graph using GDDM.

**System action:** Processing terminates.

**User response:** Check the previous error message for the failure reason. Correct the problem and retry the request.

**IPI0138E**  
Graph/Export request has failed, RC=8

**Explanation:** The IMS PA Export/Graph module has failed to perform the request.

**System action:** Processing terminates.

**User response:** Check the previous error message for the failure reason. Correct the problem and retry the request.

**IPI0139I**  
Graph/Export request completed successfully, RC=0

**Explanation:** The IMS PA Export/Graph module has completed successfully. The Export Data Set or GDDM graphs have been successfully built.

**System action:** None required.

**User response:** The Export Data Set is now ready for processing, or the GDDM graphs are ready for viewing.

**IPI0140E**  
Peak Percentage invalid - percentage

**Explanation:** The IMS PA Export/Graph module detected that the peak percentage specification is not within the range 50 to 100.

**System action:** Processing terminates.

**User response:** Correct the Peak Percentage specification and retry the request. This error should not occur in the IMS PA dialog. If it was, contact your IBM representative for help.

**IPI0141E**  
GDDM is not available

**Explanation:** The IMS PA Export/Graph module detected that the GDDM interface program (ADMASPLT) was not available.

**System action:** Processing terminates and no graphs are produced.

**User response:** Make the GDDM interface program accessible to IMS PA by adding the GDDM execution library to the load module search path of your job.

**IPI0142W**  
Graphs terminated via End or Cancel

**Explanation:** The display of multiple graphs has been interrupted by the user pressing the End or Cancel key.

**System action:** If there are more graphs beyond this point, they are not displayed, and the user is returned to the invoking panel.

**User response:** None required.

**IPI0143E**  
GDDM abnormal termination abend code

**Explanation:** GDDM terminated abnormally giving an abend code such as S806.

**System action:** The extract graphing process terminates.

**User response:** Check your GDDM and GDDM-PGF installation. If the reason for the problem cannot be established, contact your IBM representative for help.

**IPI0144E**  
Printer name ’printer ID’ is not a valid GDDM nickname

**Explanation:** The specified Printer ID is unknown to GDDM.

**System action:** The extract graphing print process terminates.

**User response:** Specify a valid GDDM nickname for the Printer ID and resubmit the print request.

**IPI0145E**  
Extract and Export DSNs cannot be the same data set

**Explanation:** The name of the Extract Data Set specified on the Extract Graphing & Export panel is the same as that specified for the Export Data Set on the Extract Export panel.

**System action:** IMS PA terminates export processing.

**User response:** Ensure the Extract Data Set has been created from a Transit Extract by Interval report and the Export Data Set has a different name.

**IPI0250E**  
GETDSAB macro error, Ret=xx, Reas=nn

**Explanation:** IMS PA received a bad return code from the GETDSAB macro.

**System action:** IMS PA processing terminates.

**User response:** IMS PA error. Contact your IBM representative for help.

**IPI0251E**  
No log input files specified in the JCL

**Explanation:** IMS PA could not find any DD statements referring to log input files in the JCL.

**System action:** IMS PA processing terminates.
User response: IMS PA generates unique DDnames for the log input files for the specified system or group of systems. Check your System Definitions, then rebuild your JCL from the dialog.

IPI0252E  ATTACH macro error, Ret=xx
Explanation: IMS PA received a bad return code from the ATTACH macro.
System action: IMS PA processing terminates.
User response: IMS PA error. Contact your IBM representative for help.

IPI0253E  Pre-Merge Subtask Abended, DD=xxxxxxxx, Abend Code=yyyyyyyyy, Reason Code=nnnnnnnn
Explanation: IMS PA pre-merge copy processing has abended while copying required log records from the shared queue log input file on tape to the DASD merge work file.
System action: IMS PA processing terminates.
User response: If the abend code is 80x37000 (Sx37 abend), then the merge work file specified is probably too small. On the Shared Queue Settings panel, increase the space allocation settings in the Shared Queue Merge Work File Allocation Details, then resubmit the job. Otherwise, contact your IBM representative for help.

IPI0254E  Merge Work File DD xxxxxxxx statement missing
Explanation: IMS PA pre-merge copy processing required the specified merge work file DD to be allocated when processing a shared message queue log file.
System action: IMS PA processing terminates.
User response: Ensure that the merge work file allocation settings are correct in the Shared Queue Settings option in the dialog. Rebuild your JCL from the dialog.

IPI0255I  xxxxxxxx Input File xxxxxxxx Pre-Merge Copy from Tape to DASD has Started
Explanation: IMS PA pre-merge copy processing has started to process the specified file.
System action: IMS PA continues processing.
User response: None required.

IPI0256I  xxxxxxxx Input File xxxxxxxx Pre-Merge Copy Start of Time Range
Explanation: IMS PA pre-merge copy processing has detected the first log record in the specified input file that falls within the requested date/time range of the Report Set.
System action: IMS PA commences to copy required records from the input file on tape to the DASD merge work file.
User response: None required.

IPI0257I  xxxxxxxx Input File xxxxxxxx Pre-Merge Copy End of Time Range
Explanation: IMS PA pre-merge copy processing has detected the last record in the specified input file that falls within the requested date/time range of the Report Set.
System action: IMS PA stops processing the current input file, and continues onto the next.
User response: None required.

IPI0258I  xxxxxxxx Input File xxxxxxxx Pre-Merge Copy from Tape to DASD has Ended
Explanation: IMS PA pre-merge copy processing has completed processing the specified input file.
System action: IMS PA continues processing.
User response: None required.

IPI0259I  Recs/Bytes In=numrecs/numbytes, Out=numrecs/numbytes
Explanation: The current log input file specified in the previous IPI0258I message has completed pre-merge copy processing. This message details how many records and bytes were read in from the shared queue log input file, and how many records and bytes were written out to the merge work file.
System action: IMS PA continues processing.
User response: None required.

IPI0300I  System xxx Log Started, DDname=ddname
Explanation: IMS PA has commenced processing log records from log input files for the specified IMS subsystem.
System action: IMS PA continues processing.
User response: None required.
<table>
<thead>
<tr>
<th>IPI0301I</th>
<th>System xxxx Start of Time Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explanation:</td>
<td>IMS PA has reached the first log record within the user-specified time range.</td>
</tr>
<tr>
<td>System action:</td>
<td>IMS PA continues processing.</td>
</tr>
<tr>
<td>User response:</td>
<td>None required.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IPI0308I</th>
<th>System xxxx Restarted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explanation:</td>
<td>Specified IMS subsystem has been restarted.</td>
</tr>
<tr>
<td>System action:</td>
<td>Processing continues.</td>
</tr>
<tr>
<td>User response:</td>
<td>None required.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IPI0312W</th>
<th>Transit processing ended, no Transaction Sets were processed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explanation:</td>
<td>IMS PA Transit Report processing did not detect any complete Transaction Sets. Transit reports will not be produced.</td>
</tr>
<tr>
<td>System action:</td>
<td>IMS PA continues processing other selected reports.</td>
</tr>
<tr>
<td>User response:</td>
<td>Verify that the log input file data falls within the date-time range you specified for reporting. For shared message queue log input, ensure that all IMS subsystems in the sysplex have log input for the specified time range of the report.</td>
</tr>
</tbody>
</table>
IPI0313I  Log input for System xxx contains a Checkpoint for system yyy

**Explanation:** IMS PA detected log input where the IMS subsystem ID specified in the DDname does not match the IMS subsystem ID in the Checkpoint log record.

**System action:** IMS PA continues processing and reporting for that subsystem with the subsystem ID specified in the log input DDname, and ignores the subsystem ID in the Checkpoint log record.

**User response:** If you wish to correct the IMS subsystem ID for future reports, rename the subsystem in System Definitions in the dialog.

IPI0314I  Transit processing detected mmmn Shared Queue Transactions with missing Log records

**Explanation:** At the completion of transit processing, mmmn shared queue transactions were not reported because some log data for the transactions was not available. The missing log data may be from another IMS subsystem in the sysplex.

**System action:** Shared queue transactions with missing log data are not reported by IMS PA.

**User response:** Ensure log data from all IMS subsystems in the sysplex is specified in the IMS PA System Definitions. Minimize the number of unprocessed transactions and reduce IMS PA processing time by specifying a global Report Interval that intersects the log input from all IMS subsystems in the sysplex.

IPI0315I  Transit processing detected mmmn Transactions that were not completed

**Explanation:** At the completion of transit processing, mmmn transactions were not reported because they had not completed within the time range or by the end of the log input.

**System action:** Incomplete transactions are not reported by IMS PA.

**User response:** None required.

IPI0316I  xxxxxxx Input File ddname lost continuity. Rec=mmmmmm Seq=seq1/seq2

**Explanation:** A sequence error was detected in the specified input file at record mmmmm. The sequence numbers of successive log records should increase. The sequence numbers seq1 and seq2 caused the discontinuity condition. xxxxxxx is the type of file, for example, Log.

**System action:** Reporting continues. This message is only issued once and subsequent conditions are ignored.

**User response:** None required, although you might investigate why the input file contains sequence errors. To ignore log sequencing errors and suppress this message, specify Log global option IGNORSEQ.

IPI0317I  xxxxxxx Input File ddname lost continuity. Rec=mmmmmm Seq=seq1/seq2

**Explanation:** A sequence error was detected in the specified input file at record mmmmmn. The sequence numbers of successive log records should increase. The sequence numbers seq1 and seq2 caused the discontinuity condition. xxxxxxx is the type of file, for example, Log.

**System action:** Reporting continues. This message is only issued once and subsequent conditions are ignored.

**User response:** None required, although you might investigate why the input file contains sequence errors. To ignore log sequencing errors and suppress this message, specify Log global option IGNORSEQ.

IPI0318I  Log input for System xxx sequence IMS PA interruption detected, End of Data Set assumed

**Explanation:** IMS PA encountered a log record sequence gap or continuity problem. Message IPI0316I or IPI0317E will precede this message detailing the nature and location of the problem.

**System action:** IMS PA performs end of data set processing, then resumes record processing from the start of the sequence interruption.

**User response:** None required.

IPI0319W  Transit processing deleted mmmn incomplete Transactions older than mm.th mins

**Explanation:** During Transaction Transit processing, IMS PA was forced to delete some incomplete transactions because more than 25,000 incomplete transactions were outstanding. The time specified (mm.th) is the age of the youngest incomplete transaction that was deleted. This message draws attention to the case where IMS PA has discarded transaction messages because its buffers are full. Transactions are not clearing because all the log records for the transaction are either not available or have not been processed yet.

**System action:** Incomplete transactions are discarded and not reported by IMS PA.

**User response:** For IMS shared queue users, ensure log data from all IMS subsystems in the sysplex is specified in the IMS PA System Definitions. Also, you
can minimize the number of transactions purged and reduce IMS PA processing time by specifying a global Report Interval that intersects the log input from all IMS subsystems in the sysplex.

IPI0320E  Transaction History File IPITHIST DD statement missing
Explanation: The Transaction History File was requested in your report request, but the Transaction History File DD name is missing from the JCL.
System action: The request is aborted.
User response: Specify the Transaction History File DD in the JCL and resubmit the request.

IPI0321I  Transaction History File Collection completed successfully
Explanation: Transaction History File data was successfully written to the data set.
System action: Processing continues.
User response: Use DB2 to analyze the data contained in the Transaction History File.

IPI0322E  Transaction History File Collection aborted due to previous error
Explanation: The Transaction History File request failed due to a previous error.
System action: The request is aborted.
User response: Identify and action the previous error message that caused this request to fail.

IPI0323W  Transaction History File Collection detected that no data was filtered from Log
Explanation: The Transaction History File request failed because there was no log data for the requested reporting period.
System action: The request is aborted.
User response: Verify that log data is available in the required reporting period.

IPI0330E  Load Failed for Transaction Substitution Exit, TRANEXT=exitname
Explanation: IMS PA could not load the specified Transaction Substitution Exit.
System action: Reporting continues without Transaction Substitution.
User response: Verify that the Transaction Substitution Exit module resides in the STEPLIB library.

IPI0331I  System info

IPI0332E  Unsupported IMS version ver input detected, processing terminated

IPI0340I  Loginfo report processing abandoned, increase REGION parameter and re-run

IPI0351E  INFLIGHT data set processing failed: Reason=reas info

IPI0352E  INFLIGHT data set processing failed: Reason=info info info

IPI0353E  OUTFLIGHT data set processing failed: Reason=info info info

IPI0354I  Inflight processing is disabled because no transit reports were requested

IPI0355I  info caused override of transit option to -info

IPI0356E  Merging of shared queue logs is not supported for Inflight
Explanation: Inflight processing only supports input from a single system.
System action: The request is aborted.
User response: Resubmit the job with input from a single system.

IPI0357I  report not produced, no data available
Explanation: The specified report was not produced because the monitor file did not contain records required to build this report.
System action: IMS PA does not produce the specified report.
User response: If the specified report is a Fast Path Analysis report and report output is expected, then verify that records for the report were requested in the /TRACE MONITOR FP command.

IPI0400I  FP Resource Contention Summary detected unsupported resource type ‘xx’
System action: The record is ignored and processing continues.
User response: Contact your IBM representative.
IPI0402E MSC Report failed to process monitor record

Explanation: The MSC report encountered a record that it could not process because of an unusual condition.

System action: The record is ignored and processing continues.

User response: Contact your IBM representative.

IPI0403E Communication Report failed to process monitor record

Explanation: The Communication report encountered a record that it could not process because of an unusual condition.

System action: The record is ignored and processing continues.

User response: Contact your IBM representative.

IPI0404E Fast Path Analysis detected monitor record extension error

Explanation: A Fast Path Analysis report detected a monitor record extension that it could not interpret.

System action: The record is ignored and processing continues.

User response: Contact your IBM representative.

IPI0405E Monitor record extension not supported

Explanation: IMS PA encountered a monitor record extension with an unknown DFSSLOG code.

System action: The extension is not processed by IMS PA, and processing is resumed at the next monitor record.

User response: Contact your IBM representative.

IPI0406I Monitor constraints: xxxx xxxx

Explanation: xxxx xxxx is a list of the monitor /TRACE parameters in effect when the monitor input file was created.

System action: Processing continues.

User response: None required.

IPI0422E Command error ***** IMS PA terminated due to previous errors. Command module detecting error is xxxxxxx

Explanation: IMS PA encountered an error in the Report Set or command input.

System action: Processing terminates.

User response: Message IPI0424E will have been issued previously. Correct the problem described in that message and resubmit the job.

IPI0423I Command info ***** reason

Explanation: IMS PA encountered a condition in the Report Set or command input that caused an override, or a minor syntax error was ignored.

System action: Processing continues.

User response: None required.

IPI0424E Command error ***** reason

Explanation: IMS PA encountered the specified error in the Report Set or command input, usually an unsupported command/operand or incorrect operand specification.

System action: Processing terminates.

User response: Check your Report Set specification, or correct the problem with the command input and resubmit the job. If the reason for the problem cannot be established, contact your IBM representative for help.

IPI0425E Syntax error ***** reason

Explanation: IMS PA encountered the specified error in the construction of the command input, such as unmatched quotes or parentheses.

System action: Processing terminates.

User response: Correct the problem with the command input and resubmit the job. If the reason for the problem cannot be established, contact your IBM representative for help.

IPI0500I Input file selection processing completed, RC=xx

Explanation: IMS PA has completed automated file selection processing, and issues the following return codes:

- 00 Processing completed successfully
- 04 Processing completed, warning message issued
- 08 Processing failed, error message issued
- 16 Operand specification error

System action: If the return code is 0 or 4, automated file selection completed successfully, and the IMS PA report JCL has been submitted. If the return code is 8 or 16, automated file selection has failed. Previous error messages explain the reason for the error.

User response: None required. If the return code is 8 or 16, respond to the previous message.
<table>
<thead>
<tr>
<th>IPI0501E</th>
<th>FROM operand not specified</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong> The automated file selection utility FROM time operand was not specified, but is required.</td>
<td></td>
</tr>
<tr>
<td><strong>System action:</strong> Automated file selection processing terminates.</td>
<td></td>
</tr>
<tr>
<td><strong>User response:</strong> Ensure the FROM operand is specified in the command input, then resubmit the job.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IPI0502E</th>
<th>TO operand not specified</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong> The automated file selection utility TO time operand was not specified, but is required.</td>
<td></td>
</tr>
<tr>
<td><strong>System action:</strong> Automated file selection processing terminates.</td>
<td></td>
</tr>
<tr>
<td><strong>User response:</strong> Ensure the TO operand is specified in the command input, then resubmit the job.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IPI0503E</th>
<th>Duplicate IMS subsystem ID specified, IMSID=ssss</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong> The automated file selection utility detected an IMSID operand with a duplicate subsystem ID. A subsystem ID can only be specified once in the input.</td>
<td></td>
</tr>
<tr>
<td><strong>System action:</strong> Automated file selection processing terminates.</td>
<td></td>
</tr>
<tr>
<td><strong>User response:</strong> Correct the duplicated subsystem ID specification, then resubmit the job.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IPI0504E</th>
<th>Operand specified at column xx is invalid, &quot;yyyyyyyy&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong> The automated file selection utility encountered an invalid operand starting at column xx. yyyyyyyyy is the first 8 characters of the invalid operand.</td>
<td></td>
</tr>
<tr>
<td><strong>System action:</strong> Automated file selection processing terminates.</td>
<td></td>
</tr>
<tr>
<td><strong>User response:</strong> Remove or correct the invalid operand, then resubmit the job.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IPI0505E</th>
<th>IMSID operand has invalid character at column xx</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong> The automated file selection utility encountered an invalid character in the IMSID operand specification starting at column xx.</td>
<td></td>
</tr>
<tr>
<td><strong>System action:</strong> Automated file selection processing terminates.</td>
<td></td>
</tr>
<tr>
<td><strong>User response:</strong> Correct the IMSID specification, then resubmit the job.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IPI0506E</th>
<th>xxxxxxxx operand has invalid syntax</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong> The automated file selection utility detected that the specified operand had a syntax error.</td>
<td></td>
</tr>
<tr>
<td><strong>System action:</strong> Automated file selection processing terminates.</td>
<td></td>
</tr>
<tr>
<td><strong>User response:</strong> Correct the syntax error, then resubmit the job.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IPI0507E</th>
<th>Date specified in xxxxxxxx operand invalid, RSN=nnn</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong> The automated file selection utility has found an invalid date specified in the xxxxxxxx operand, and issues one of the following reason codes:</td>
<td></td>
</tr>
<tr>
<td>001</td>
<td>Date specification is wrong length</td>
</tr>
<tr>
<td>002</td>
<td>Year specification is zero or wrong length</td>
</tr>
<tr>
<td>003</td>
<td>Ordinal day specification is zero or wrong length</td>
</tr>
<tr>
<td>004</td>
<td>Hour specification is zero or wrong length</td>
</tr>
<tr>
<td>005</td>
<td>Minute specification is invalid</td>
</tr>
<tr>
<td>006</td>
<td>Second specification is zero or wrong length</td>
</tr>
<tr>
<td>007</td>
<td>Fraction of second specification is wrong length</td>
</tr>
<tr>
<td>008</td>
<td>Month is not between one (1) and twelve (12)</td>
</tr>
<tr>
<td>009</td>
<td>Day specification is zero or wrong length</td>
</tr>
<tr>
<td>010</td>
<td>Relative date exceeded 9999 days</td>
</tr>
<tr>
<td><strong>System action:</strong> Automated file selection processing terminates.</td>
<td></td>
</tr>
<tr>
<td><strong>User response:</strong> Correct the date specification, then resubmit the job.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IPI0508E</th>
<th>IMSID operand not specified</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong> The automated file selection utility requires at least one IMSID operand to be specified.</td>
<td></td>
</tr>
<tr>
<td><strong>System action:</strong> Automated file selection processing terminates.</td>
<td></td>
</tr>
<tr>
<td><strong>User response:</strong> Specify the IMS subsystem name in the IMSID operand, then resubmit the job.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IPI0509E</th>
<th>Start time of first SLDS not found in RECON data set, SSID=xxxxxxx</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong> The automated file selection utility processing could not determine the start time of the first SLDS record. The DBRC routine failed to return the start time. The message can be issued for the following reasons:</td>
<td></td>
</tr>
<tr>
<td>• There are no SLDS records in the RECON data sets.</td>
<td></td>
</tr>
<tr>
<td>• There is a problem with the RECON data sets.</td>
<td></td>
</tr>
<tr>
<td>• There is a problem with DBRC.</td>
<td></td>
</tr>
<tr>
<td><strong>System action:</strong> Automated file selection processing terminates.</td>
<td></td>
</tr>
<tr>
<td><strong>User response:</strong> Verify that the RECON data sets contain SLDS records for the requested IMS subsystem.</td>
<td></td>
</tr>
</tbody>
</table>
Otherwise, contact your IBM representative for help.

**IPI0510E**

End time of first SLDS not found in RECON data set, SSID=xxxxxxxx

**Explanation:** The automated file selection utility processing could not determine the end time of the first SLDS record. The DBRC routine failed to return the start time. The message can be issued for the following reasons:
- There are no SLDS records in the RECON data sets.
- There is a problem with the RECON data sets.
- There is a problem with DBRC.

**System action:** Automated file selection processing terminates.

**User response:** Verify that the RECON data sets contain SLDS records for the requested IMS subsystem. Otherwise, contact your IBM representative for help.

**IPI0511E**

Start time of last SLDS not found in RECON data set, SSID=xxxxxxxx

**Explanation:** The automated file selection utility processing could not determine the start time of the last SLDS record. The DBRC routine failed to return the start time. The message can be issued for the following reasons:
- There are no SLDS records in the RECON data sets.
- There is a problem with the RECON data sets.
- There is a problem with DBRC.

**System action:** Automated file selection processing terminates.

**User response:** Verify that the RECON data sets contain SLDS records for the requested IMS subsystem. Otherwise, contact your IBM representative for help.

**IPI0512E**

End time of last SLDS not found in RECON data set, SSID=xxxxxxxx

**Explanation:** The automated file selection utility processing could not determine the end time of the last SLDS record. The DBRC routine failed to return the start time. The message can be issued for the following reasons:
- There are no SLDS records in the RECON data sets.
- There is a problem with the RECON data sets.
- There is a problem with DBRC.

**System action:** Automated file selection processing terminates.

**User response:** Verify that the RECON data sets contain SLDS records for the requested IMS subsystem. Otherwise, contact your IBM representative for help.

**IPI0513E**

No Log files for the required time range are available, SSID=xxxxxxxx

**Explanation:** The automated file selection utility detected that there were no SLDS records in the RECON data set within the specified time range for the subsystem.

**System action:** Automated file selection processing terminates.

**User response:** Correct the reporting time range, then resubmit the job.

**IPI0514W**

Log files not available for the complete time range, report period truncated, SSID=xxxxxxxx

**Explanation:** The automated file selection utility detected that the SLDS records in the RECON data set for the subsystem only partially cover the required date range. The report interval is truncated.

**System action:** Automated file selection processing continues.

**User response:** If reporting is required for the entire date/time range, ensure that SLDS records for that range are available in the RECON data set, then resubmit the job.

**IPI0515E**

DBRC Utility (DSPURX00) failed to return the LOG variable

**Explanation:** The DBRC routine did not return the LOG variable in the skeleton.

**System action:** Automated file selection processing terminates.

**User response:** Automated file selection utility error. Contact your IBM representative for help.

**IPI0516E**

DBRC Utility (DSPURX00) ATTACH error, RC=xx

**Explanation:** The DBRC routine received a bad return code from the ATTACH macro.

**System action:** Automated file selection processing terminates.

**User response:** Automated file selection utility error. Contact your IBM representative for help.

**IPI0517E**

RDJFCB error for DDname dddddddd, RC=xx

**Explanation:** The automated file selection utility received a bad return code from the RDJFCB macro for DDname dddddddd.

**System action:** Automated file selection processing terminates.
<table>
<thead>
<tr>
<th>IPI0518E</th>
<th>DDname xxxxxxx not specified in JCL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The automated file selection utility DDname xxxxxxx was not specified in the JCL, but is required.</td>
</tr>
<tr>
<td><strong>System action:</strong></td>
<td>Automated file selection processing terminates.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Ensure the DDname xxxxxxx is specified in the JCL, then resubmit the job.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IPI0519E</th>
<th>DBRC Utility (DSPURX00) Skeleton generation failed, LOG FROM time expected</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The automated file selection utility has found output from the DBRC routine in the wrong sequence or missing.</td>
</tr>
<tr>
<td><strong>System action:</strong></td>
<td>Automated file selection processing terminates.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Automated file selection utility error. Contact your IBM representative for help.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IPI0520E</th>
<th>DBRC Utility (DSPURX00) Skeleton generation failed, LOG TO time expected</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The automated file selection utility has found output from the DBRC routine in the wrong sequence or missing.</td>
</tr>
<tr>
<td><strong>System action:</strong></td>
<td>Automated file selection processing terminates.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Automated file selection utility error. Contact your IBM representative for help.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IPI0521E</th>
<th>DBRC Utility (DSPURX00) has failed, RC=xx</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The DBRC routine has failed to return SLDS information to the automated file selection utility. The SYSPRINT output file contains run information, including DBRC error messages to further explain the problem.</td>
</tr>
<tr>
<td><strong>System action:</strong></td>
<td>Automated file selection processing terminates.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Check the output from DBRC utility in the SYSPRINT output file. If you cannot resolve the problem, contact your IBM representative for help.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IPI0522E</th>
<th>DBRC Utility (DSPURX00) has abended, CODE=xxx</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The automated file selection utility has detected an abend in the DBRC routine. The SYSPRINT output file contains run information, including DBRC error messages to further explain the problem.</td>
</tr>
<tr>
<td><strong>System action:</strong></td>
<td>IMS PA processing terminates.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Check the output from DBRC utility in the SYSPRINT output file. If you cannot resolve the problem, contact your IBM representative for help.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IPI0523E</th>
<th>OPEN failed for DDname xxxxxxx, RC=xx</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The automated file selection utility received a bad return code from the OPEN SVC when opening the specified DDname.</td>
</tr>
<tr>
<td><strong>System action:</strong></td>
<td>Automated file selection processing terminates.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Automated file selection utility error. Contact your IBM representative for help.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IPI0524E</th>
<th>IMSID operand exceeds maximum length (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The automated file selection utility has detected that the IMS subsystem ID specification in the IMSID operand is longer than the maximum of four characters.</td>
</tr>
<tr>
<td><strong>System action:</strong></td>
<td>Automated file selection processing terminates.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Correct the IMSID operand, then resubmit the job.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IPI0525E</th>
<th>TO time is not greater than FROM time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The automated file selection utility has detected that the TO time specified is not greater than the FROM time.</td>
</tr>
<tr>
<td><strong>System action:</strong></td>
<td>Automated file selection processing terminates.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Correct the FROM and TO times, then resubmit the job.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IPI0526E</th>
<th>IMS release xxx is not supported</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The automated file selection utility has detected an unsupported release of IMS specified in the VRM operand. IMS PA supports IMS releases 121, 131, and 141.</td>
</tr>
<tr>
<td><strong>System action:</strong></td>
<td>Automated file selection processing terminates.</td>
</tr>
</tbody>
</table>
User response: Correct the VRM operand, then resubmit the job.

IPI0527E Date format is invalid

Explanation: The automated file selection utility encountered a date that did not adhere to the required format. Date must be a valid calendar date in the format yyyy-mm-dd, or a relative date such as 0, -1, -2 representing today, yesterday, and so on.

System action: Automated file selection processing terminates.

User response: Correct the date format, then resubmit the job.

IPI0528E Dynamic Allocation failed, DDname

Explanation: The automated file selection utility has failed to allocate the specified DDname. The error and information codes explain the cause of the problem.

System action: Automated file selection processing terminates.

User response: If you cannot correct the problem, then contact your IBM representative for help.

IPI0529E RECON specification error; RECON1 and RECON2 is the minimum specification

Explanation: The automated file selection utility detected an error in the RECON data set specification. At least two RECON data sets, RECON1 and RECON2, must be specified.

System action: Automated file selection processing terminates.

User response: Specify at least two RECON data sets, then resubmit the job.

IPI0530E BDL failed for MDA Members,

Explanation: The automated file selection utility received a bad return code from the BDL macro.

System action: Automated file selection processing terminates.

User response: Automated file selection utility error. Contact your IBM representative for help.

IPI0531E LOAD failed for MDA member

Explanation: The automated file selection utility failed to load an MDA member. The ABEND code explains the reason for the failure. This abend code could indicate:

- The job region size is too small
- MDA member has an I/O error

System action: Automated file selection processing terminates.

User response: Check the abend code, and if possible, correct the problem. Otherwise, contact your IBM representative for help.

IPI0532E xxxx RECON MDA member

Explanation: The automated file selection utility detected the MDA member for the specified RECON is not in MDA format.

System action: Automated file selection processing terminates.

User response: Verify that RECON MDA member has been generated correctly. Otherwise, contact your IBM representative for help.

IPI0533E Specified RECON data sets do not exactly match RECON MDA members

Explanation: The automated file selection utility detected that the explicitly specified RECON data sets do not exactly match the RECON MDA members. When the RECON data sets are explicitly specified, the automated file selection utility also checks the RECON MDA members. If at least one RECON MDA member is detected, then the specified RECON data set names must exactly match the RECON MDA members. This ensures that the DBRC RECON data sets are not corrupted by the DBRC API routine DSPAPI00.

System action: Automated file selection processing terminates.

User response: Correct the RECON data sets specification, then resubmit the job.

IPI0534E Operand specified more than once

Explanation: The automated file selection utility detected that the specified operand was duplicated for the subsystem. Each operand can only be specified once per subsystem.

System action: Automated file selection processing terminates.

User response: Correct the duplicated operand specification, then resubmit the job.
IPI0536E  Data set name is longer than 44 characters

Explanation: The automated file selection utility has detected a data set name longer than 44 characters.

System action: Automated file selection processing terminates.

User response: Correct the data set name specification, then resubmit the job.

IPI0537E  IMS subsystem ssss has no VRM operand

Explanation: The automated file selection utility requires that each IMS subsystem has a VRM operand to specify the release of the subsystem, or that it can be determined from the RESLIB using DFSVC000.

System action: Automated file selection processing terminates.

User response: Ensure each IMS subsystem has a VRM operand specified.

Either specify the IMS version in the JCL PARM specification as 'Vnnn', where nnn is either 121, 131, or 141, or add the IMS RESLIB data set to the STEPLIB concatenation.

Check that the IMS PA load library was specified correctly. This library is specified in the IMS PA Load Library option on the IMS PA Settings panel, and is used as a STEPLIB library at report submit time. See "IMS PA Settings" on page 67.

Correct the entries, then resubmit the job. If the problem persists, contact your IBM representative for help.

IPI0539E  Dynamic Deallocation failed, DName=dddddddd,SSID=ssssssss, RC=xx/EC=ee/HC=iiii

Explanation: The automated file selection utility has failed to deallocate the specified DDname. The error and information codes explain the cause of the problem.

System action: Automated file selection processing terminates.

User response: If you cannot correct the problem, then contact your IBM representative for help.

IPI0540E  LOCATE failed for xxxx Log data set, RC=xx/DSN=dddddddd

Explanation: The automated file selection utility could not locate the catalog entry for the specified Log data set.

IMS PA requires the device type (UNIT) information of each Log data set when using shared queue merge processing. IMS PA uses the catalog when UNIT information is not available in the RECON.

System action: Automated file selection processing terminates.

User response: Either catalog the Log data set or use DBRC utilities to update UNIT and VOLSER information in the RECON.

IPI0541W  xxxx Log data set UNIT information is incomplete, DSN=dddddddd

Explanation: The automated file selection utility has detected that the specified Log data set has VOLSER information in the RECON, but UNIT information was not available.

System action: Automated file selection processing terminates.

User response: Use DBRC utilities to update the UNIT information in the RECON.

IPI0542E  xxxx Log data set has unsupported UNIT type, DSN=datasetname

Explanation: The automated file selection utility has detected that the specified Log data set is not eligible as it is not defined as either a TAPE or DASD device on this processor.

System action: Automated file selection processing terminates.

User response: Move the log data set to an eligible device or exclude the log data set.

IPI0543E  xxxx LOG data set is not cataloged, DSN=dddddddd

Explanation: The automated file selection utility failed to locate the catalog entry for the specified Log data set. IMS PA requires the UNIT information from the catalog if this information is not available from the RECON.

System action: Automated file selection processing terminates.

User response: Either catalog the LOG data set or use DBRC utilities to update unit information in your RECON data set.

IPI0544E  xxxx Log data set has more than 255 volumes, DSN=dddddddd

Explanation: The automated file selection utility has detected that the specified Log data set has more than 255 volumes. IMS PA does not support more than 255 volumes per Log data set.

System action: Automated file selection processing terminates.
User response: The automated file selection utility cannot be used for this Log file.

IPI0545E  No input files were eligible for processing

Explanation: The automated file selection utility has found no SLDS log data sets or IMS Connect Extensions journal data sets to process for one of the following reasons:
- No IMS subsystems were specified.
- No Log data sets are available for the specified time period.
- DBRC failed to return Log data set information from the RECON.
- The IMS Connect Extensions definitions data set contained no eligible journals.

A previous message will explain the reason for the error.

System action: Automated file selection processing terminates.

User response: Correct the problem, then resubmit the job.

IPI0546E  IPISMQW1 Merge Work File DD statement not found in Report JCL skeleton

Explanation: The IMS PA automated file selection utility could not find the IPISMQW1 DD statement in the Report JCL skeleton.

IMS PA requires merge work files for shared queue processing. When insufficient tape units are available to concurrently process the log input from all subsystems, IMS PA requires merge work files.

System action: IMS PA automated file selection processing terminates.

User response: Specify IPISMQW1 DD statement in the Report JCL skeleton, then resubmit the job.

IPI0547I  DBRC Utility (DSPURX00) completed, RC=xx, SSID=ssssssss, FROM=ffffffff, TO=ffffffff

Explanation: The automated file selection utility has successfully invoked the DBRC routine. When RC=0, DBRC has returned SLDS entries for the specified time range. When RC=4, DBRC could not find any SLDS entries for the specified time range. In this case, IMS PA will re-invoke DBRC with a modified time range to retrieve the first required SLDS entry.

System action: Automated file selection processing continues.

User response: None required if RC=0 or 4. When RC=12, check that the RECON data set is at the same IMS level as the library that contains the DBRC routine (usually specified by the RESLIB parameter).

IPI0548I  Report JCL has been submitted, Jobname=jjjjjjjj, Jobno=nnnn

Explanation: The automated file selection utility has submitted the report/extract JCL. The job name and job number are specified.

System action: Automated file selection processing continues.

User response: None required.

IPI0549E  CAT operand must be YES or NO

Explanation: The automated file selection utility detected that the CAT operand was not specified as YES (SLDS data sets are cataloged) or NO (SLDS data sets are not cataloged).

System action: Automated file selection processing terminates.

User response: Correct the CAT operand, then resubmit the job. The dialog generates this operand from Log Data Sets are Cataloged on the Log Input - IMS Subsystem panel.

IPI0550E  SSID operand exceeds maximum length (8)

Explanation: The SSID operand is longer than the maximum allowed.

System action: Automated file selection processing terminates.

User response: Correct the SSID operand, then resubmit the job.

IPI0551E  SSID operand has invalid character at column cc

Explanation: The SSID operand contains invalid characters.

System action: Automated file selection processing terminates.

User response: Correct the SSID operand, then resubmit the job.

IPI0552E  SLDS operand must be SEC or PRI

Explanation: The automated file selection utility SLDS operand was incorrectly specified.

System action: Automated file selection processing terminates.

User response: Ensure the OLDS operand is specified as SEC or PRI, then resubmit the job.
IPI0553E  More than 1035 log files required for SSID=ssssssss
Explanation: The FROM and TO date range selected has resulted in the selection of more than the maximum allowed number of log data sets for this subsystem.
System action: Automated file selection processing terminates.
User response: Reduce the FROM, TO time range, then resubmit the job.

IPI0555E  xxxxxxx VOLSER name is too long.
DSN=datasetname, VOLSER=vvvvvvvv
Explanation: The VOLSER specified for the data set is greater than 6 characters.
System action: Automated file selection processing terminates.
User response: Automated file selection utility error. Contact your IBM representative for help.

IPI0556E  IMS DBRC API module DSPAPI00 not found
Explanation: The DBRC API module DSPAPI00 was not found in the RESLIB specified. If the RESLIB was not specified, then the DSPAPI00 module was not found in the STEPLIB or JOBLIB concatenation. Message IPI0558I follows.
System action: Automated file selection processing continues.
User response: None required.

IPI0557I  The RECON data set has not been upgraded, SSID=ssssssss
Explanation: The RECON data sets have not been upgraded to the format required by the IMS version specified by the RESLIB parameter. Message IPI0558I follows.
System action: Automated file selection processing continues.
User response: None required.

IPI0558I  The log data sets will be located using DSPURRX00
Explanation: This message will always come after message IPI0556E or IPI0557I. For IMS V9 or later, the log data sets will be located using the DBRC API routine DSPAPI00.
System action: Automated file selection processing continues.
User response: None required.

IPI0559I  DBRC API (DSPAPI00) completed, RC=rc, SSID=ssssssss, FROM=fromdate, TO=todate
Explanation: IMS PA has completed DSPAPI log selection processing, and issued the following return codes:
00  Processing completed successfully
04  Processing completed, warning message issued
08  Processing failed, error message issued
16  Operand specification error
System action: If the return code is 0 or 4, automated file selection completed successfully, and the IMS PA report JCL has been submitted. If the return code is 8 or 16, automated file selection has failed. Previous error messages explain the reason for the error.
User response: None required.

IPI0560E  OLDS operand must be YES or NO
Explanation: The automated file selection utility OLDS operand was incorrectly specified.
System action: Automated file selection processing terminates.
User response: Ensure the OLDS operand is specified as YES or NO, then resubmit the job.

IPI0561E  DBRC API interface module has abended, CODE=xxxxx
Explanation: The automated file selection API interface has detected an ABEND in the DBRC API interface module IPIDBRCA. The JESMSGGLG output file contains the summary ABEND information.
System action: Automated file selection processing terminates.
User response: If you cannot resolve the problem, contact your IBM representative for help.

IPI0562E  No IMS Log files were eligible for processing
Explanation: IMS logs and IMS Connect Extensions journal data sets were requested for this run, however the automated file selection utility did not find any IMS systems with SLDS log data sets to process for one of the following reasons:
• No Log data sets are available for the specified time period.
• DBRC failed to return Log data set information from the RECON.
A previous message will explain the reason for the error.
System action: Automated file selection processing terminates.
User response: Correct the problem, then resubmit the job.

IPI0564E No CEX journals were eligible for processing

Explanation: The automated journal file selection utility did not find any IMS Connect Extensions journal data sets to process for one of the following reasons:

- No journals are available for the specified time period.
- The IMS Connect Extensions definitions data set contained no eligible journals.

A previous message will explain the reason for the error.

System action: Automated file selection processing terminates.

User response: Correct the problem, then resubmit the job.

IPI0565E xxxxxxxx operand is blank

Explanation: IMSID or HWSID has not been specified.

System action: Automated file selection processing terminates.

User response: Correct the problem, then resubmit the job.

IPI0566E Authorization failed: IMSID=xxx, IMSPLEX=xxxxx

Explanation: The authorization exit IPIUAUTH disallowed the use of the IMSPLEX name for the IMS subsystem.

IPI0567E CEX Definitions Data Set access failed; DDname CEXDEF missing or invalid

Explanation: The specified IMS Connect Extensions definitions data set is invalid or the required DD CEXDEF is missing from the JCL.

System action: Automated file selection processing terminates.

User response: Specify a valid IMS Connect Extensions definitions data set and resubmit the job.

IPI0568E No journal data sets found for HWSID=hhhhhhhh in the CEX Definitions Data Set

Explanation: Either there are no archive records in the IMS Connect Extensions definitions data set for this
HWSID, or this HWSID does not exist in the IMS Connect Extensions definitions data set.

**System action:** Automated file selection processing terminates.

**User response:** Correct the HWSID and resubmit the job.

---

IPI0583E  CEX Definitions Data Set access failed

**Explanation:** The IMS Connect Journal File Selection utility could not use the IMS Connect Extensions definitions data set.

**System action:** Automated file selection processing terminates.

**User response:** Specify a valid IMS Connect Extensions definitions data set and resubmit the job.

---

IPI0584W  CEX Journals not available for the complete time range, report period truncated, HWSID=hhhhhhhh

**Explanation:** The IMS Connect Journal File Selection utility could not locate journal data sets that cover the entire requested reporting time range.

**System action:** Reporting continues with only partial coverage of the requested reporting time range.

**User response:** None required.

---

IPI0585E  Duplicate CEX subsystem ID specified, HWSID=hhhhhhhh

**Explanation:** The automated file selection utility detected a HWSID operand with a duplicate ID. An ID can only be specified once in the input.

**System action:** IMSPA automated file selection processing terminates.

**User response:** Correct the duplicated HWSID specification, then resubmit the job.

---

IPI0586E  HWSID operand exceeds maximum length (8)

**Explanation:** The HWSID operand is longer than the maximum allowed.

**System action:** Automated file selection processing terminates.

**User response:** Correct the HWSID operand, then resubmit the job.

---

IPI0587E  DSPAPI Error, FUNC=function, RC=rc, RSN=reasoncode, SSID=ssssssss

**Explanation:** An unexpected return code and reason code were returned from the IMS DBRC API call. See DBRC Application Programming Interface (API) Reference in the DBRC Guide and Reference for a detailed explanation of the reason code.

**System action:** Automated file selection processing terminates.

**User response:** If the RECON data sets that you want to use belong to an IMSplex:

- Ensure that you have correctly specified the name of the IMSplex in the PARM parameter of the EXEC statement for the automated file selection utility program. See "Preparing for DBRC Log Selection" on page 199.

- Ensure that the structured call interface (SCI) address space is running.

Otherwise, contact your IBM representative for help.

---

IPI0588E  DSPAPI Error, xxxxx data returned does not match the requested ID, Requested=rrrr, Returned=tttt

**Explanation:** Unexpected data was returned from the IMS DBRC API call. Possible data corruption.

**System action:** Automated file selection processing terminates.

**User response:** Automated file selection utility error. Contact your IBM representative for help.

---

IPI0589I  CEX xxxxxxxx Journal selection completed, RC=rc, HWSID=hhhhhhhh, FROM=fromdate, TO=todate

**Explanation:** IMS Connect Journal File Selection processing completed, and issued one of the following return codes:

- 00  Processing completed successfully
- 04  Processing completed, warning message issued
- 08  Processing failed, error message issued
- 16  Operand specification error

**System action:** If the return code is 0 or 4, IMS Connect Journal File Selection completed successfully, and the report JCL has been submitted. If the return code is 8 or 16, IMS Connect Journal File Selection has failed. Previous error messages explain the reason for the error.

**User response:** None required.

---

IPI0600I  xxxxxxxx not produced, no data available

**Explanation:** The specified Log report was not produced because no Log data was available for one of the following reasons:

- Log data was not available in the requested reporting time period
- The Log file did not contain the necessary Log records to build the report
**System action:** The specified Log report is not produced, processing continues.

**User response:** Validate the log input file by ensuring that it contains data for the requested reporting time period and the records required to build the report.

---

**IPI0601E  Report File xxxxxxxx Dynamic Allocation failed**

**Explanation:** The specified Report File failed Dynamic Allocation processing. The JES Job Log will contain the Dynamic Allocation information message.

**System action:** The reports that require the Report File are not produced. Processing continues.

**User response:** From the dynamic allocation information message, attempt to resolve the problem. Alternatively, insert a DD statement into the JCL for the report file name in error. This will cause IMS PA to bypass dynamic allocation of the report file. Otherwise, contact your IBM representative for help.

---

**IPI0700I  Input file dname processing started**

**Explanation:** IMS PA has started to process data in the specified IMS Connect Extensions journal data set.

**System action:** Reporting continues.

**User response:** None required.

---

**IPI0701I  Connect record processing started**

**Explanation:** IMS PA Connect reporting has started because the requested start date/time has been reached.

**System action:** Reporting continues.

**User response:** None required.

---

**IPI0702I  Connect record processing ended**

**Explanation:** IMS PA Connect reporting has stopped because the requested end date/time has been reached.

**System action:** Reporting stops.

**User response:** None required.

---

**IPI0703I  Input file dname processing ended**

**Explanation:** IMS PA has reached end-of-file for the specified IMS Connect Extensions journal data set.

**System action:** IMS PA continues reporting against the next IMS Connect Extensions journal data set until all journals are processed.

**User response:** None required.

---

**IPI0710I  Inflight file processing ended, records=nnnnnnnnnnnn**

**Explanation:** IMS PA has completed processing the inflight data set. The record count is the number of records read from the inflight data set (the outflight data set from the previous run).

**System action:** IMS PA continues processing the IMS Connect Extensions journals. Reporting continues.

**User response:** None required.

---

**IPI0711E  Unable to load Inflight file, processing terminated**

**Explanation:** IMS PA has been unable to store all inflight records in virtual storage.

**System action:** IMS PA terminates.

**User response:** Increase REGION= size and rerun the job. If this fails, contact your IBM representative for help.

---

**IPI0712I  Invalid record length, Inflight file processing abandoned**

**Explanation:** IMS PA has determined that the inflight record length is incorrect.

**System action:** IMS PA ignores the inflight file and continues processing the IMS Connect Extensions journals. Reporting continues.

**User response:** Check that the inflight file specification is correct.

---

**IPI0720I  Outflight file processing ended, records=nnnnnnnnnnnn**

**Explanation:** IMS PA has finished creating the outflight data set. The record count is the number of records written to the outflight data set (the inflight data set for the next run).

**System action:** Reporting stops normally.

**User response:** None required.

---

**IPI0750I  Input file processing started**

**Explanation:** IMS PA has started to process data in the specified OMEGAMON TRF file, DDname TRFIN.

**System action:** Reporting continues.

**User response:** None required.

---

**IPI0751I  TRF record processing started**

**Explanation:** IMS PA TRF reporting has started because the requested start date/time has been reached.

**System action:** Reporting continues.
User response: None required.

IPI0752I TRF record processing ended
Explanation: IMS PA TRF reporting has stopped because the requested end date/time has been reached.
System action: Reporting stops.
User response: None required.

IPI0753I Input file processing ended
Explanation: IMS PA has reached end-of-file for the specified OMEGAMON TRF file, DDname TRFIN.
System action: IMS PA continues reporting against the next OMEGAMON TRF file until all files are processed.
User response: None required.

IPI0758I Input file ddname processing started
Explanation: IMS PA has started to process data in the specified OMEGAMON TRF journal, DDname ATFINnnn.
System action: Reporting continues.
User response: None required.

IPI0781I ATF record processing started
Explanation: IMS PA ATF reporting has started because the requested start date/time has been reached.
System action: Reporting continues.
User response: None required.

IPI0782I ATF record processing ended
Explanation: IMS PA ATF reporting has stopped because the requested end date/time has been reached.
System action: Reporting stops.
User response: None required.

IPI0783I Input file ddname processing ended
Explanation: IMS PA has reached end-of-file for the specified OMEGAMON TRF journal, DDname ATFINnnn.
System action: IMS PA continues reporting against the next OMEGAMON TRF file until all files are processed.
User response: None required.

IPI0784E Unsupported version, OMEGAMON ATF IF3 required
Explanation: IMS PA ATF reporting requires the statistics record enhancements applied by OMEGAMON ATF IF3 APAR OA36278.
System action: Processing stops.
User response: Install OMEGAMON for IMS, V4.2 ATF APAR OA36278: Interim Feature 3 (IF3).

IPI0785I Inflight file processing ended, records=nnnnnnnnnnnn
Explanation: IMS PA has completed processing the inflight data set. The record count is the number of records read from the inflight data set (the outflight data set from the previous run).
System action: IMS PA continues processing the ATF journals. Reporting continues.
User response: None required.

IPI0790I Inflight file processing ended, records=nnnnnnnnnnnn
Explanation: IMS PA has finished creating the outflight data set. The record count is the number of records written to the outflight data set (the inflight data set for the next run).
System action: ATF reporting stops normally.
User response: None required.
IPI0800E  Number of Key fields exceed maximum of 8
Explanation:  The Summary report/extract field specification contains more than the maximum number of key fields allowed in a Form.
System action:  Processing terminates.
User response:  Reduce the number of key fields to no more than 8 and rerun the Summary report/extract.

IPI0801E  Key sequence error detected at field fieldname
Explanation:  At least 1 non-key field was specified before a key field in a Summary report field specification.
System action:  Processing terminates.
User response:  Ensure all key fields are defined before non-key fields.

IPI0802E  Key length exceeds 255 characters
Explanation:  The total length of all specified key fields exceeds the maximum of 255 characters.
System action:  Processing terminates.
User response:  Reduce the number of key fields to create a key whose combined length is less than or equal to 255 characters.

IPI0803I  No records were selected from input for processing
Explanation:  None of the input records were eligible for processing based on the Report Interval, Selection Criteria, or Completion Level specified.
System action:  Processing terminates.
User response:  Check START and STOP times, and other selection criteria, are consistent with input data sets.

IPI0804E  Error opening Extract output file
Explanation:  IMS PA was unable to open the output extract file for processing.
System action:  Processing terminates.
User response:  Look at any system messages that may be related to this error.

IPI1003E  CONVTOD macro error; Ret=xx
Explanation:  IMS PA could not upgrade your old System Definitions because the CONVTOD macro failed.
System action:  Upgrading of your old System Definitions is terminated but System Definition processing continues.
User response:  Contact your IBM representative for help.

IPI1020E  Table Library not available; DDname=xxxxxxxx
Explanation:  An IMS PA dialog module has detected that the specified DDname for the Table library was not allocated.
System action:  Processing is terminated.
User response:  Contact your IBM representative for help.

IPI1021E  System Definition Table for IMS PA xxxx has a format error
Explanation:  IMS PA determined that the Table containing your IMS System and file definitions is not in the correct format. The Systems Definition Table is a member in your Permanent ISPF Table Library, which is specified in your IMS PA Settings.
System action:  Processing is terminated.
User response:  With caution, you can delete member IPISDIN4 from your Permanent ISPF Table Library, then retry your request. Note that if you do this, you will lose your saved System Definitions and not be able to recover them. If the problem is occurring regularly, or you do not want to lose your saved System Definitions, then contact your IBM representative for help.

IPI1041E  Reason=reason Member=xxxxxxxx
DSN=dataset.name
Explanation:  IMS PA could not SAVE your currently active EDIT session. The reasons why your SAVE request may have failed are:
1.  ABEND - Save request abended
2.  PDS Directory Full - The PDS directory is full
3.  BLDL or STOW error - Unsupported return code from BLDL/STOW SVC
System action:  The SAVE request is aborted.
User response:  For ABENDsx37 conditions, compress the data set or re-allocate the data set with a larger primary/secondary space allocation. For Directory Full or ABENDSB14-0000000C conditions, re-allocate the data set with a larger directory block allocation. For all other conditions, contact your IBM representative for help.
<table>
<thead>
<tr>
<th>Code</th>
<th>Message</th>
<th>Explanation</th>
<th>System action</th>
<th>User response</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPI2000I</td>
<td>IMS Performance Analyzer 4.4 DB2 Load Utility - ddmmmyyyy hh.mm.ss</td>
<td>IMS PA batch utility IPIUTILB commences processing. This utility loads records from a form-based Summary extract data set into a pre-defined DB2 table with the Resume option.</td>
<td>Processing continues.</td>
<td>None required.</td>
</tr>
<tr>
<td>IPI2003I</td>
<td>parameter input</td>
<td>Print of the parameter card input.</td>
<td>Processing continues.</td>
<td>None required.</td>
</tr>
<tr>
<td>IPI2004I</td>
<td>SQL error message</td>
<td>Refer to the DB2 SQL publication library.</td>
<td>As recommended.</td>
<td></td>
</tr>
<tr>
<td>IPI2005I</td>
<td>Records Read - nnnnnnn</td>
<td>The number of input records read from the form-based extract data set.</td>
<td>Processing continues.</td>
<td>None required.</td>
</tr>
<tr>
<td>IPI2006I</td>
<td>Records Inserted - nnnnnnn</td>
<td>The number of input records read and inserted as new rows in the DB2 table.</td>
<td>Processing continues.</td>
<td>None required.</td>
</tr>
<tr>
<td>IPI2007I</td>
<td>Records Updated - nnnnnnn</td>
<td>The number of input records read which had duplicate keys and updated existing rows in the DB2 table.</td>
<td>Processing continues.</td>
<td>None required.</td>
</tr>
<tr>
<td>IPI2009I</td>
<td>TRANCNT information is not available</td>
<td>TRANCNT has not been defined for this extract. TRANCNT is key data required for processing of the extracted data. It is required to be able to perform updates on other data within this extract.</td>
<td>Processing terminates.</td>
<td></td>
</tr>
<tr>
<td>IPI2010E</td>
<td>Required DDNAME not found, DDNAME=ddname</td>
<td>A required DDname is missing from the JCL.</td>
<td>Processing terminates.</td>
<td>Add the DDNAME statement to the JCL and rerun the job.</td>
</tr>
<tr>
<td>IPI2011E</td>
<td>RDJFCB error for DDname ddname, RC=rc</td>
<td>The IMS PA input file selection utility received a bad return code from the RDJFCB macro for the specified DDname.</td>
<td>IMS PA input file selection processing terminates.</td>
<td>This is an IMS PA input file selection utility error. Contact your IBM representative for help.</td>
</tr>
<tr>
<td>IPI2012E</td>
<td>OPEN failed for DDname ddname, RC=rc</td>
<td>The IMS PA input file selection utility received a bad return code from the OPEN SVC when opening the specified DDname.</td>
<td>IMS PA input file selection processing terminates.</td>
<td>This is an IMS PA input file selection utility error. Contact your IBM representative for help.</td>
</tr>
<tr>
<td>IPI2013E</td>
<td>Unknown or misplaced keyword, xxxxxxx</td>
<td>The keyword is either unknown or out of place.</td>
<td>Processing terminates after verifying all parameters.</td>
<td>Correct the parameters and rerun the job.</td>
</tr>
<tr>
<td>IPI2014E</td>
<td>Duplicate parameter, xxxxxxx</td>
<td>The operand has been duplicated.</td>
<td>Processing terminates after verifying all parameters.</td>
<td>Correct the parameters and rerun the job.</td>
</tr>
<tr>
<td>IPI2015E</td>
<td>Invalid parameter syntax, xxxxxxx</td>
<td>The input parameters have an invalid syntax.</td>
<td>Processing terminates after verifying all parameters.</td>
<td>Correct the parameters and rerun the job.</td>
</tr>
<tr>
<td>IPI2016E</td>
<td>TRANCNT information is not available</td>
<td>TRANCNT has not been defined for this extract. TRANCNT is key data required for processing of the extracted data. It is required to be able to perform updates on other data within this extract.</td>
<td>Processing terminates.</td>
<td></td>
</tr>
</tbody>
</table>
Modify or define a new Form to include TRANCNT, then rerun the extract and export to DB2.

**IPI5000I Input options specified:**

**Explanation:** IMS Connect Journal File Selection utility input commands follow.

**System action:** Processing continues.

**User response:** None required.

**IPI5000I** Connect Archive Selection completed | failed, CC=rc

**Explanation:** Indicates the success or failure of IMS Connect Journal File Selection processing:

- For RC=0, journal file selection successfully completed submitting your report request.
- For RC=4, journal file selection successfully completed submitting your report request, but a warning message was issued.
- For RC greater than 4, the journal file selection utility issued an error message and did not proceed to submit your report request.

**System action:** Processing continues.

**User response:** If RC is not 00, then refer to the previous warning or error messages for the required action.

**IPI5002I** Selected Archive files range from start date time to end date time

**Explanation:** The IMS Connect Journal File Selection utility selected journal files in the specified date/time range.

**System action:** Processing continues.

**User response:** None required.

**IPI5003I** Connect Report JCL submitted, Jobname=xxxxxx, JobId=xxxxxxx

**Explanation:** The IMS Connect Journal File Selection utility submitted the specified job to run your report request.

**System action:** Processing continues.

**User response:** None required.

**IPI5004E** Invalid xxxxxx operand specified

**Explanation:** The specified operand is not a valid IMS Connect Extensions Journal File Selection utility command or operand.

**System action:** Processing stops.

**User response:** Correct the specified operand and resubmit the job.

**IPI5005E** Invalid Jobcard specified in IPISKEL input

**Explanation:** An invalid job card was specified in your IPISKEL DD report request skeleton.

**System action:** Processing stops.

**User response:** Correct the jobcard in the JCL or in IMS PA Settings in your Profile Options, then resubmit the job.

**IPI5006E** xxxxx has invalid syntax

**Explanation:** The specified operand is incorrectly specified in the IMS Connect Extensions Journal File Selection utility input commands.

**System action:** Processing stops.

**User response:** Correct the specified operand and resubmit the job.

**IPI5007E** Invalid date or time specified in the xxx operand, Reason=reason

**Explanation:** The FROM/TO date or time was incorrectly specified. The allowed date formats are yyyy/mm/dd or 0,-1,..., and the allowed time format is hh:mm:ss.th.

**System action:** Processing stops.

**User response:** Correct the specified date or time and resubmit the job.

**IPI5008E** Archive data set not cataloged, DSN=datasetname

**Explanation:** The specified data set defined in the IMS Connect Extensions definitions data set is not cataloged. This data set is required to satisfy your report request. The data set is deleted or cataloged on another system.

**System action:** Processing stops.

**User response:** If the data set is no longer available, then you cannot report against the required time range.

**IPI5009E** xxxxx operand specified more than once

**Explanation:** The specified operand was specified more than once in the IMS Connect Extensions Journal File Selection utility input commands.

**System action:** Processing stops.

**User response:** Remove the duplicate operand and resubmit the job.
IPI5010E IMS Connect Extensions service failed

Explanation: The IMS Connect Extensions Journal File Selection utility was unable to initialize its IMS Connect Extensions services environment.

System action: Processing stops.

User response: See the job log for the reason for failure and contact IBM.

IPI5011E Definitions Data Set access failed; DDname CEXDEF missing or invalid

Explanation: The specified IMS Connect Extensions definitions data set is invalid or the required DD CEXDEF is missing from the JCL.

System action: Processing stops.

User response: Specify a valid IMS Connect Extensions definitions data set and resubmit the job.

IPI5012E Definitions Data Set access failed

Explanation: The IMS Connect Extensions Journal File Selection utility could not use the IMS Connect Extensions definitions data set.

System action: Processing stops.

User response: Specify a valid IMS Connect Extensions definitions data set and resubmit the job.

IPI5013E No Archive files found for specified HWSID

Explanation: The required IMS Connect HWS system does not have any archive journal data sets defined. Journal data sets are created by IMS Connect Extensions.

System action: Processing stops.

User response: Verify that IMS Connect Extensions is collecting event data for this HWSID.

IPI5014E TO time is not greater than FROM time

Explanation: The TO date and time must be greater than the FROM date and time.

System action: Processing stops.

User response: Correct the FROM/TO specification and resubmit the job.

IPI5015E Unable to open file, DDname=ddname

Explanation: IMS PA was unable to open the file with the specified DDname.

System action: Processing stops.

User response: Correct the JCL and resubmit the job.

IPI5016E No Archive files found for required time range

Explanation: The IMS Connect Extensions Journal File Selection utility could not find any journal data sets (archive or active) for the required reporting time range.

System action: Processing stops.

User response: Verify that IMS Connect Extensions is collecting event data to meet your reporting requirements.

IPI5017W Archive files not available for the complete time range. Report period truncated.

Explanation: The IMS Connect Extensions Journal File Selection utility could not locate journal data sets (archive or active) that cover the entire requested reporting time range.

System action: Reporting continues with only partial coverage of the requested reporting time range.

User response: None required.

IPI5018E Required operand missing. HWSID, FROM and TO operands must be specified

Explanation: One or more of the required IMS Connect Journal File Selection utility operands is missing.

System action: Processing stops.

User response: Add missing operands and resubmit the job.

IPI5019E Specified HWSID is not defined in the Definitions Data Set

Explanation: The IMS Connect Journal File Selection utility could not locate the specified HWSID in the IMS Connect Extensions definitions data set. IMS Connect systems are defined in IMS Connect Extensions, not IMS PA.

System action: Processing stops.

User response: Correct the HWSID, or specify the correct IMS Connect Extensions definitions data set, and resubmit the job.

IPI9999E IMS PA internal failure, reason=reason

Explanation: IMS PA has detected an internal failure for the specified reason.

System action: Depending on the severity of the failure, processing may stop for the record, for the report, or entirely.
How to look up message explanations

You can use several methods to search for messages and codes.

Searching an information center

In the search box that is located in the top left toolbar of any Eclipse help system, such as the IBM Information Management Software for z/OS Solutions Information Center, enter the number of the message that you want to locate. For example, you can enter DFS1065A in the search field.

Use the following tips to help you improve your message searches:

- You can search for information on codes by entering the code; for example, enter -327.
- Enter the complete or partial message number. You can use the asterisk wildcard character (*) to represent multiple characters, and you can use the question mark wildcard character (?) to represent a single character.

The information center contains the latest message information for all of the information management products that are included in the information center.

Searching for messages on the Web

You can use any of the popular search engines that are available on the Web to search for message explanations. When you type the specific message number or code into the search engine, you will be presented with links to the message information in IBM information centers.

Using LookAt

LookAt is an online facility that you can use to look up explanations for most of the IBM messages you encounter, as well as for some system abends and codes. Using LookAt to find information is faster than a conventional search because in most cases LookAt goes directly to the message explanation.

You can use LookAt from the following locations to find IBM message explanations for z/OS elements and features, z/Vm®, VSE/ESA, and Clusters for AIX® and Linux:

- Your z/OS TSO/E host system. You can install code on your z/OS or z/OS.e systems to access IBM message explanations, using LookAt from a TSO/E command line (for example, a TSO/E prompt, ISPF, or z/OS UNIX System Services running OMVS).
- Your Microsoft Windows workstation. You can install code to access IBM message explanations on the z/OS Collection (SK3T-4271) using LookAt from a Microsoft Windows command prompt (also known as the DOS command line).
- Your wireless handheld device. You can use the LookAt Mobile Edition with a handheld device that has wireless access and an Internet browser (for example, Internet Explorer for Pocket PCs, Blazer, or Eudora for Palm OS, or Opera for Linux handheld devices). Link to the LookAt Mobile Edition from the LookAt website.
You can obtain code to install LookAt on your host system or Microsoft Windows workstation from a disk on your z/OS Collection (SK3T-4271) or from the LookAt website (click Download and select the platform, release, collection, and location that suit your needs). More information is available in the LOOKAT.ME files available during the download process.
Chapter 31. Gathering diagnostic information

Before you report a problem with IMS Performance Analyzer to IBM Software Support, you need to gather the appropriate diagnostic information.

Procedure

Provide the following information for all IMS Performance Analyzer problems:

- A clear description of the problem and the steps that are required to re-create the problem
- All messages that were issued as a result of the problem
- Product release number and the number of the last program temporary fix (PTF) that was installed
- The version of DB2/IMS that you are using and the type and version of the operating system that you are using

Provide additional information based on the type of problem that you experienced:

For online abends, provide the following information

- A screen shot of the panel that you were using when the abend occurred
- The job log from the TSO session that encountered the abend
- The job log from the server
- A description of the task that you were doing before the abend occurred

For errors in batch processing, provide the following information

- The complete job log
- Print output
- Contents of input data sets that were used during the processing

Obtaining dumps

IMS PA normally executes in a STAE environment set up by IMS PA. This environment is useful for obtaining partial reports in case of error conditions, such as input data set I/O checks. However, if a programming error occurs, the STAE environment may mask the true abnormal termination condition encountered.

About this task

If IMS PA terminates with an error that requires you to contact your IBM representative for help, it may be possible to expedite problem identification and solution by rerunning the job with the STAE environment cancelled. See message "IPI0095E" on page 669.

Procedure

1. Specify the NOSTAE parameter on the EXEC statement of the JCL.
2. Include a SYSUDUMP DD statement in the JCL to capture the system dump in the case of an abend.
Example

For example:

```
//BUILDERS EXEC PGM=IPIMAIN,PARM='Vnnn,NOSTAE'
.
.
//SYSUDUMP DD SYSOUT=* 
```

Figure 317. Specifying NOSTAE and SYSUDUMP in the JCL

### Obtaining problem diagnostics

To get more detailed problem diagnostics, specify an IPIDIAGS DD statement in your JCL.

#### About this task

Error messages associated with the processing of input records are not written at the time that the error is encountered. Instead, each error message is accumulated by message number, and written once at end of file, before the reports are written. These messages are identified by a message count preceding the message text, as shown in the following figure.

**Figure 318. Message counts**

It is helpful to capture each error message and associated diagnostic information in a diagnostic DD. If the JCL contains an IPIDIAGS DD statement, the error message is written to the IPIDIAGS data set at the time of the error, along with the record number and dump of the record that caused the problem.

**Figure 319. IPIDIAGS message and record dump**

#### Procedure

To get more detailed problem diagnostics:

1. Specify an IPIDIAGS DD statement in the JCL.
2. Submit the job.
3. Review the contents of the IPIDIAGS data set in the job output.
Part 11. Reference

This part provides reference information about IMS PA. It provides a list of the various record types processed by IMS PA, contents of the sample library supplied with IMS PA, details about the macros for user-written programs, some SQL examples to help you get started analyzing extracts exported to DB2, and instructions on how to use the IMS Tools Knowledge Base for IMS PA reports.
Chapter 32. IMS Log records

The IMS log type consists of log codes for IMS log records. Not all log codes are applicable to all releases of IMS.

The log code of an IMS record matches the IMS log record type and, if applicable, subtype. For a list of IMS log record types and subtypes, see the information about IMS log records used to analyze IMS problems in *IMS Diagnosis*.

Notes for specific log codes:

**CA01**  IMS transaction index.

**CA20**  IMS Connect transaction index.
Chapter 33. Monitor records

IMS Performance Analyzer uses 1-byte hexadecimal codes to identify the monitor records that it processes.

Table 4. Monitor records processed by IMS PA

<table>
<thead>
<tr>
<th>Record code (hex)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>System Configuration</td>
</tr>
<tr>
<td>02</td>
<td>BMP Scheduling start</td>
</tr>
<tr>
<td>03</td>
<td>BMP Scheduling end</td>
</tr>
<tr>
<td>04</td>
<td>BMP Termination start</td>
</tr>
<tr>
<td>05</td>
<td>BMP Termination end</td>
</tr>
<tr>
<td>06</td>
<td>IFP Scheduling start</td>
</tr>
<tr>
<td>07</td>
<td>IFP Scheduling end</td>
</tr>
<tr>
<td>08</td>
<td>IFP Termination start</td>
</tr>
<tr>
<td>09</td>
<td>IFP Termination end</td>
</tr>
<tr>
<td>10</td>
<td>MPP Scheduling start</td>
</tr>
<tr>
<td>11</td>
<td>MPP Scheduling end</td>
</tr>
<tr>
<td>12</td>
<td>Dependent Region start</td>
</tr>
<tr>
<td>13</td>
<td>MPP Termination start</td>
</tr>
<tr>
<td>14</td>
<td>BMP/MPP/IFP Scheduling IWAIT start</td>
</tr>
<tr>
<td>15</td>
<td>Scheduler IWAIT end</td>
</tr>
<tr>
<td>16</td>
<td>PSB Block Loader IWAIT start</td>
</tr>
<tr>
<td>17</td>
<td>PSB Block Loader IWAIT end</td>
</tr>
<tr>
<td>18</td>
<td>DMB Block Loader IWAIT start</td>
</tr>
<tr>
<td>19</td>
<td>DMB Block Loader IWAIT end</td>
</tr>
<tr>
<td>20</td>
<td>Storage IWAIT start</td>
</tr>
<tr>
<td>21</td>
<td>Storage IWAIT end</td>
</tr>
<tr>
<td>22</td>
<td>Database I/O IWAIT start</td>
</tr>
<tr>
<td>23</td>
<td>Database I/O IWAIT end</td>
</tr>
<tr>
<td>24</td>
<td>VSAM I/O IWAIT start</td>
</tr>
<tr>
<td>25</td>
<td>VSAM I/O IWAIT end</td>
</tr>
<tr>
<td>26</td>
<td>QMGR I/O IWAIT start</td>
</tr>
<tr>
<td>27</td>
<td>QMGR I/O IWAIT end</td>
</tr>
<tr>
<td>28</td>
<td>HSAM I/O IWAIT start</td>
</tr>
<tr>
<td>29</td>
<td>HSAM I/O IWAIT end</td>
</tr>
<tr>
<td>30</td>
<td>Format Buffer Pool IWAIT start</td>
</tr>
<tr>
<td>31</td>
<td>Format Buffer Pool IWAIT end</td>
</tr>
<tr>
<td>32</td>
<td>MFS Directory IWAIT start</td>
</tr>
<tr>
<td>33</td>
<td>MFS Directory IWAIT end</td>
</tr>
<tr>
<td>34</td>
<td>MFS Block IWAIT start</td>
</tr>
<tr>
<td>35</td>
<td>MFS Block IWAIT end</td>
</tr>
<tr>
<td>36</td>
<td>IFP Message IWAIT start</td>
</tr>
<tr>
<td>37</td>
<td>IFP Message IWAIT end</td>
</tr>
<tr>
<td>38</td>
<td>Communications start</td>
</tr>
<tr>
<td>39</td>
<td>Communications end</td>
</tr>
<tr>
<td>40</td>
<td>Transaction Originator</td>
</tr>
<tr>
<td>41</td>
<td>Fast Path Buffer Activities</td>
</tr>
<tr>
<td>42</td>
<td>MSC Message Enqueue</td>
</tr>
<tr>
<td>43</td>
<td>MSC Message Dequeue</td>
</tr>
<tr>
<td>44</td>
<td>TP Paging Request</td>
</tr>
<tr>
<td>Record code (hex)</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>47</td>
<td>BALG Dequeued</td>
</tr>
<tr>
<td>48</td>
<td>External Subsystem Call start</td>
</tr>
<tr>
<td>49</td>
<td>External Subsystem Call end</td>
</tr>
<tr>
<td>50</td>
<td>Checkpoint start</td>
</tr>
<tr>
<td>51</td>
<td>Checkpoint end</td>
</tr>
<tr>
<td>52</td>
<td>Write restart IWAIT start</td>
</tr>
<tr>
<td>53</td>
<td>Write restart IWAIT end</td>
</tr>
<tr>
<td>54</td>
<td>QMGR SNAPQ IWAIT start</td>
</tr>
<tr>
<td>55</td>
<td>QMGR SNAPQ IWAIT end</td>
</tr>
<tr>
<td>56</td>
<td>MSDB Write IWAIT</td>
</tr>
<tr>
<td>57</td>
<td>DEDB Read IWAIT</td>
</tr>
<tr>
<td>58</td>
<td>IRC10 start (FP Call)</td>
</tr>
<tr>
<td>59</td>
<td>IRC10 end (FP Call)</td>
</tr>
<tr>
<td>60</td>
<td>DL/I call start</td>
</tr>
<tr>
<td>61</td>
<td>DL/I call end</td>
</tr>
<tr>
<td>62</td>
<td>DLA start (DB)</td>
</tr>
<tr>
<td>63</td>
<td>DLA end (DB)</td>
</tr>
<tr>
<td>64</td>
<td>DLA start (Message)</td>
</tr>
<tr>
<td>65</td>
<td>DLA end (Message)</td>
</tr>
<tr>
<td>66</td>
<td>PI Enqueue IWAIT start</td>
</tr>
<tr>
<td>67</td>
<td>PI Enqueue IWAIT end</td>
</tr>
<tr>
<td>68</td>
<td>DEDB Lock IWAIT start</td>
</tr>
<tr>
<td>69</td>
<td>DEDB Lock IWAIT end</td>
</tr>
<tr>
<td>70</td>
<td>MFS Prefetch start</td>
</tr>
<tr>
<td>71</td>
<td>MFS Prefetch end</td>
</tr>
<tr>
<td>72</td>
<td>DEDB OTHREAD IWAIT</td>
</tr>
<tr>
<td>73</td>
<td>VSO CF Write IWAIT</td>
</tr>
<tr>
<td>74</td>
<td>PSB Block Loaded from 64-bit Storage Pool start</td>
</tr>
<tr>
<td>75</td>
<td>PSB Block Loaded from 64-bit Storage Pool end</td>
</tr>
<tr>
<td>76</td>
<td>DMB Block Loaded from 64-bit Storage Pool start</td>
</tr>
<tr>
<td>77</td>
<td>DMB Block Loaded from 64-bit Storage Pool end</td>
</tr>
<tr>
<td>78</td>
<td>Synchronous Callout start</td>
</tr>
<tr>
<td>79</td>
<td>Synchronous Callout end</td>
</tr>
<tr>
<td>80</td>
<td>Intent Failure</td>
</tr>
<tr>
<td>82</td>
<td>Pool Space Failure</td>
</tr>
<tr>
<td>83</td>
<td>FP Deadlock Detected</td>
</tr>
<tr>
<td>84</td>
<td>VSO Area Castout start</td>
</tr>
<tr>
<td>85</td>
<td>VSO Area Castout end</td>
</tr>
<tr>
<td>86</td>
<td>FF Deadlock Detected</td>
</tr>
<tr>
<td>87</td>
<td>OTHREAD Activities</td>
</tr>
<tr>
<td>88</td>
<td>VSO Preload start</td>
</tr>
<tr>
<td>89</td>
<td>VSO Preload end</td>
</tr>
<tr>
<td>90</td>
<td>Monitor start</td>
</tr>
<tr>
<td>91</td>
<td>Monitor end</td>
</tr>
<tr>
<td>94</td>
<td>VSO CF Read IWAIT</td>
</tr>
<tr>
<td>95</td>
<td>FP Lock Activity</td>
</tr>
<tr>
<td>98</td>
<td>User SLOG</td>
</tr>
<tr>
<td>AA</td>
<td>Pseudo End of File</td>
</tr>
</tbody>
</table>
Chapter 34. IMS Connect records

IMS Connect Extensions collects event records with details of incoming transaction requests as IMS Connect processes them.

Event records recorded by IMS Connect Extensions

Event records are collected continuously as messages are processed by IMS Connect. An event record consists of an event number and data associated with the event.

Event numbers can be X'00' - X'FF' (decimal 0 - 255) and the associated data varies depending on the event number. The event number is appended to the record prefix.

Connect status event records

The following table lists all single event records. The Collection level determines whether the event record is written to the Journal.

<table>
<thead>
<tr>
<th>Code (Hex)</th>
<th>Code (Dec)</th>
<th>Event description</th>
<th>Collection level</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>00</td>
<td>Control record</td>
<td>0</td>
</tr>
<tr>
<td>01</td>
<td>01</td>
<td>IMS Connect region initialization</td>
<td>0</td>
</tr>
<tr>
<td>02</td>
<td>02</td>
<td>IMS Connect region has completed termination</td>
<td>0</td>
</tr>
<tr>
<td>03</td>
<td>03</td>
<td>A support task (TCB) has been created</td>
<td>1</td>
</tr>
<tr>
<td>04</td>
<td>04</td>
<td>A support task (TCB) is terminating</td>
<td>1</td>
</tr>
<tr>
<td>05</td>
<td>05</td>
<td>Begin INIT API</td>
<td>4</td>
</tr>
<tr>
<td>06</td>
<td>06</td>
<td>End INIT API</td>
<td>4</td>
</tr>
<tr>
<td>07</td>
<td>07</td>
<td>Begin Bind Socket</td>
<td>4</td>
</tr>
<tr>
<td>08</td>
<td>08</td>
<td>End Bind Socket</td>
<td>4</td>
</tr>
<tr>
<td>09</td>
<td>09</td>
<td>Listen on socket</td>
<td>4</td>
</tr>
<tr>
<td>0A</td>
<td>10</td>
<td>Begin Accept Socket</td>
<td>4</td>
</tr>
<tr>
<td>0B</td>
<td>11</td>
<td>End Accept Socket</td>
<td>3</td>
</tr>
<tr>
<td>0E</td>
<td>14</td>
<td>Begin Message Exit INIT</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>16</td>
<td>IMS datastore becomes available</td>
<td>0</td>
</tr>
<tr>
<td>11</td>
<td>17</td>
<td>IMS datastore becomes unavailable</td>
<td>0</td>
</tr>
<tr>
<td>12</td>
<td>18</td>
<td>An IMS TMEMBER joins the XCF group</td>
<td>0</td>
</tr>
<tr>
<td>13</td>
<td>19</td>
<td>An IMS TMEMBER leaves the XCF group</td>
<td>0</td>
</tr>
<tr>
<td>14</td>
<td>20</td>
<td>Begin SCI Registration</td>
<td>4</td>
</tr>
<tr>
<td>15</td>
<td>21</td>
<td>End SCI Registration</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>22</td>
<td>Begin SCI De-registration</td>
<td>4</td>
</tr>
<tr>
<td>17</td>
<td>23</td>
<td>End SCI De-registration</td>
<td>1</td>
</tr>
<tr>
<td>18</td>
<td>24</td>
<td>Recorder trace DCB has been opened</td>
<td>1</td>
</tr>
<tr>
<td>Code (Hex)</td>
<td>Code (Dec)</td>
<td>Event description</td>
<td>Collection level</td>
</tr>
<tr>
<td>-----------</td>
<td>------------</td>
<td>-------------------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>19</td>
<td>25</td>
<td>Recorder trace DCB pre-close</td>
<td>1</td>
</tr>
<tr>
<td>1A</td>
<td>26</td>
<td>User message exit return from INIT</td>
<td>1</td>
</tr>
<tr>
<td>1B</td>
<td>27</td>
<td>User message exit return from TERM</td>
<td>1</td>
</tr>
<tr>
<td>1C</td>
<td>28</td>
<td>Begin Secure Environment Open</td>
<td>1</td>
</tr>
<tr>
<td>1D</td>
<td>29</td>
<td>End Secure Environment Open</td>
<td>1</td>
</tr>
<tr>
<td>20</td>
<td>32</td>
<td>Begin Secure Environment Close</td>
<td>1</td>
</tr>
<tr>
<td>21</td>
<td>33</td>
<td>End Secure Environment Close</td>
<td>1</td>
</tr>
<tr>
<td>22</td>
<td>34</td>
<td>Begin Local Port Setup</td>
<td>3</td>
</tr>
<tr>
<td>23</td>
<td>35</td>
<td>End Local Port Setup</td>
<td>3</td>
</tr>
<tr>
<td>24</td>
<td>36</td>
<td>Begin RRS Connect</td>
<td>1</td>
</tr>
<tr>
<td>25</td>
<td>37</td>
<td>End RRS Connect</td>
<td>1</td>
</tr>
<tr>
<td>26</td>
<td>38</td>
<td>List In-doubt Context</td>
<td>1</td>
</tr>
<tr>
<td>27</td>
<td>39</td>
<td>Begin RRS Disconnect</td>
<td>1</td>
</tr>
<tr>
<td>28</td>
<td>40</td>
<td>End RRS Disconnect</td>
<td>1</td>
</tr>
<tr>
<td>29</td>
<td>41</td>
<td>Begin ODBM Registration</td>
<td>1</td>
</tr>
<tr>
<td>2A</td>
<td>42</td>
<td>End ODBM Registration</td>
<td>1</td>
</tr>
<tr>
<td>2B</td>
<td>43</td>
<td>Begin ODBM De-registration</td>
<td>1</td>
</tr>
<tr>
<td>2C</td>
<td>44</td>
<td>End ODBM De-registration</td>
<td>1</td>
</tr>
<tr>
<td>2D</td>
<td>45</td>
<td>Datastore Status Update</td>
<td>1</td>
</tr>
<tr>
<td>2E</td>
<td>46</td>
<td>Return From Port Exit INIT Call</td>
<td>1</td>
</tr>
<tr>
<td>2F</td>
<td>47</td>
<td>Return From Port Exit TERM Call</td>
<td>1</td>
</tr>
<tr>
<td>30</td>
<td>48</td>
<td>Begin ODBM Routing Exit INIT</td>
<td>1</td>
</tr>
<tr>
<td>31</td>
<td>49</td>
<td>End ODBM Routing Exit INIT</td>
<td>1</td>
</tr>
<tr>
<td>32</td>
<td>50</td>
<td>Begin ODBM Routing Exit TERM</td>
<td>1</td>
</tr>
<tr>
<td>33</td>
<td>51</td>
<td>End ODBM Routing Exit TERM</td>
<td>1</td>
</tr>
<tr>
<td>34</td>
<td>52</td>
<td>XML Adapter INIT Call Begin</td>
<td>1</td>
</tr>
<tr>
<td>35</td>
<td>53</td>
<td>XML Adapter INIT Call End</td>
<td>1</td>
</tr>
<tr>
<td>36</td>
<td>54</td>
<td>XML Adapter TERM Call Begin</td>
<td>1</td>
</tr>
<tr>
<td>37</td>
<td>55</td>
<td>XML Adapter TERM Call End</td>
<td>1</td>
</tr>
<tr>
<td>38</td>
<td>56</td>
<td>OM Registration</td>
<td>1</td>
</tr>
<tr>
<td>39</td>
<td>57</td>
<td>OM Deregistration</td>
<td>1</td>
</tr>
<tr>
<td>A7</td>
<td>167</td>
<td>Internal Command Event</td>
<td>0</td>
</tr>
</tbody>
</table>

**Workload-related event records**

The following tables list all event records relating to message-related events, Open Database events, and IMS-to-IMS, and IMS-to-CICS TCP/IP communications.
### Table 6. Workload-related event records

<table>
<thead>
<tr>
<th>Code (Hex)</th>
<th>Code (Dec)</th>
<th>Event description</th>
<th>Collection level</th>
</tr>
</thead>
<tbody>
<tr>
<td>0C</td>
<td>12</td>
<td>Begin Close Socket</td>
<td>4</td>
</tr>
<tr>
<td>0D</td>
<td>13</td>
<td>End Close Socket</td>
<td>3</td>
</tr>
<tr>
<td>3C</td>
<td>60</td>
<td>Prepare for socket read</td>
<td>2</td>
</tr>
<tr>
<td>3D</td>
<td>61</td>
<td>User message exit entered for READ, XMIT, EXER, or RXML</td>
<td>2</td>
</tr>
<tr>
<td>3E</td>
<td>62</td>
<td>User message exit return for READ, XMIT, EXER, or RXML</td>
<td>1</td>
</tr>
<tr>
<td>3F</td>
<td>63</td>
<td>Begin SAF security request</td>
<td>3</td>
</tr>
<tr>
<td>40</td>
<td>64</td>
<td>End SAF security request</td>
<td>3</td>
</tr>
<tr>
<td>41</td>
<td>65</td>
<td>Message sent to OTMA</td>
<td>2</td>
</tr>
<tr>
<td>42</td>
<td>66</td>
<td>Message received from OTMA</td>
<td>2</td>
</tr>
<tr>
<td>43</td>
<td>67</td>
<td>Message sent to SCI</td>
<td>2</td>
</tr>
<tr>
<td>44</td>
<td>68</td>
<td>Message received from SCI</td>
<td>2</td>
</tr>
<tr>
<td>45</td>
<td>69</td>
<td>OTMA Timeout</td>
<td>1</td>
</tr>
<tr>
<td>46</td>
<td>70</td>
<td>Deallocate Request</td>
<td>3</td>
</tr>
<tr>
<td>47</td>
<td>71</td>
<td>Session Error. This event is called when an unrecoverable error has been encountered and the session is being aborted</td>
<td>1</td>
</tr>
<tr>
<td>48</td>
<td>72</td>
<td>Trigger event. This is the end-of-frame event recorded by IMS Connect when a multi-event process has completed</td>
<td>2</td>
</tr>
<tr>
<td>49</td>
<td>73</td>
<td>Read socket</td>
<td>3</td>
</tr>
<tr>
<td>4A</td>
<td>74</td>
<td>Write socket</td>
<td>3</td>
</tr>
<tr>
<td>4B</td>
<td>75</td>
<td>Local Client Connect</td>
<td>3</td>
</tr>
<tr>
<td>4C</td>
<td>76</td>
<td>Local Message Send</td>
<td>3</td>
</tr>
<tr>
<td>4D</td>
<td>77</td>
<td>Local Message Receive</td>
<td>3</td>
</tr>
<tr>
<td>4E</td>
<td>78</td>
<td>Local Message Send-then-Receive</td>
<td>3</td>
</tr>
<tr>
<td>4F</td>
<td>79</td>
<td>Local Disconnect</td>
<td>3</td>
</tr>
<tr>
<td>50</td>
<td>80</td>
<td>Begin Create Context</td>
<td>4</td>
</tr>
<tr>
<td>51</td>
<td>81</td>
<td>End Create Context</td>
<td>3</td>
</tr>
<tr>
<td>52</td>
<td>82</td>
<td>Begin RRS Prepare</td>
<td>4</td>
</tr>
<tr>
<td>53</td>
<td>83</td>
<td>End RRS Prepare</td>
<td>3</td>
</tr>
<tr>
<td>54</td>
<td>84</td>
<td>Begin RRS Commit/Abort</td>
<td>4</td>
</tr>
<tr>
<td>55</td>
<td>85</td>
<td>End RRS Commit/Abort</td>
<td>3</td>
</tr>
<tr>
<td>56</td>
<td>86</td>
<td>Begin Secure Environment Select</td>
<td>3</td>
</tr>
<tr>
<td>57</td>
<td>87</td>
<td>End Secure Environment Select</td>
<td>3</td>
</tr>
<tr>
<td>58</td>
<td>88</td>
<td>Hold compensation queue</td>
<td>1</td>
</tr>
<tr>
<td>59</td>
<td>89</td>
<td>Port Edit Exit Called</td>
<td>2</td>
</tr>
<tr>
<td>5A</td>
<td>90</td>
<td>Port Edit Exit Returned</td>
<td>1</td>
</tr>
<tr>
<td>5B</td>
<td>91</td>
<td>DRDA® Command is issued</td>
<td>2</td>
</tr>
<tr>
<td>5C</td>
<td>92</td>
<td>DRDA Command is Sent</td>
<td>2</td>
</tr>
<tr>
<td>5D</td>
<td>93</td>
<td>An Allocate PSB Command is Received</td>
<td>2</td>
</tr>
<tr>
<td>5E</td>
<td>94</td>
<td>An Allocate PSB Command is Sent</td>
<td>2</td>
</tr>
<tr>
<td>Code (Hex)</td>
<td>Code (Dec)</td>
<td>Event description</td>
<td>Collection level</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------</td>
<td>--------------------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>5F</td>
<td>95</td>
<td>A Deallocate PSB Command is Received</td>
<td>2</td>
</tr>
<tr>
<td>60</td>
<td>96</td>
<td>A Deallocate PSB Command is Sent</td>
<td>2</td>
</tr>
<tr>
<td>61</td>
<td>97</td>
<td>ODBM Routing Exit Entered</td>
<td>3</td>
</tr>
<tr>
<td>62</td>
<td>98</td>
<td>ODBM Routing Exit Returned</td>
<td>3</td>
</tr>
<tr>
<td>63</td>
<td>99</td>
<td>ODBM Security Exit Entered</td>
<td>3</td>
</tr>
<tr>
<td>64</td>
<td>100</td>
<td>ODBM Security Exit Returned</td>
<td>3</td>
</tr>
<tr>
<td>65</td>
<td>101</td>
<td>RRS Parent UR Token Creation Begins</td>
<td>3</td>
</tr>
<tr>
<td>66</td>
<td>102</td>
<td>RRS Parent UR Token Creation Ends</td>
<td>3</td>
</tr>
<tr>
<td>69</td>
<td>105</td>
<td>Message is Sent to ODBM</td>
<td>3</td>
</tr>
<tr>
<td>6A</td>
<td>106</td>
<td>Message is Received from ODBM</td>
<td>3</td>
</tr>
<tr>
<td>6B</td>
<td>107</td>
<td>RRS Delegate Commit Agent UR Begins</td>
<td>3</td>
</tr>
<tr>
<td>6C</td>
<td>108</td>
<td>RRS Delegate Commit Agent UR Ends</td>
<td>3</td>
</tr>
<tr>
<td>6D</td>
<td>109</td>
<td>XML Adapter CALL Begin</td>
<td>1</td>
</tr>
<tr>
<td>6E</td>
<td>110</td>
<td>XML Adapter CALL End</td>
<td>1</td>
</tr>
<tr>
<td>6F</td>
<td>111</td>
<td>XML Converter CALL Begin</td>
<td>1</td>
</tr>
<tr>
<td>70</td>
<td>112</td>
<td>XML Converter CALL End</td>
<td>1</td>
</tr>
<tr>
<td>71</td>
<td>113</td>
<td>Connected to Remote IMS Connect</td>
<td>3</td>
</tr>
<tr>
<td>72</td>
<td>114</td>
<td>Disconnected from Remote IMS Connect</td>
<td>3</td>
</tr>
<tr>
<td>73</td>
<td>115</td>
<td>Start Remote Thread for Partner ICON</td>
<td>3</td>
</tr>
<tr>
<td>74</td>
<td>116</td>
<td>Message Received for Remote ALTPCB</td>
<td>3</td>
</tr>
<tr>
<td>75</td>
<td>117</td>
<td>ALTPCB Message Sent to Remote Partner</td>
<td>3</td>
</tr>
<tr>
<td>76</td>
<td>118</td>
<td>ALTPCB Message Received from Remote Partner</td>
<td>3</td>
</tr>
<tr>
<td>77</td>
<td>119</td>
<td>Message Sent to OTMA for ALTPCB</td>
<td>3</td>
</tr>
<tr>
<td>78</td>
<td>120</td>
<td>MSC Message Received from MSC</td>
<td>3</td>
</tr>
<tr>
<td>79</td>
<td>121</td>
<td>MSC Message Sent to Partner IMS Connect</td>
<td>3</td>
</tr>
<tr>
<td>7A</td>
<td>122</td>
<td>MSC Message Received from Partner IMS Connect</td>
<td>3</td>
</tr>
<tr>
<td>7B</td>
<td>123</td>
<td>MSC Message Sent to MSC</td>
<td>3</td>
</tr>
<tr>
<td>7C</td>
<td>124</td>
<td>Connection to Partner IMS Connect Time-out</td>
<td>3</td>
</tr>
<tr>
<td>7D</td>
<td>125</td>
<td>Start of a session</td>
<td>3</td>
</tr>
<tr>
<td>7E</td>
<td>126</td>
<td>Trigger end of a session</td>
<td>3</td>
</tr>
<tr>
<td>80</td>
<td>128</td>
<td>IMS Performance Analyzer Automatic Trigger</td>
<td>1</td>
</tr>
<tr>
<td>81</td>
<td>129</td>
<td>IMS Performance Analyzer Exception Event</td>
<td>1</td>
</tr>
<tr>
<td>82</td>
<td>130</td>
<td>Event Collection Status</td>
<td>1</td>
</tr>
</tbody>
</table>
Table 7. Extended event records for event number 255

<table>
<thead>
<tr>
<th>Code (Hex)</th>
<th>Code (Dec)</th>
<th>Extended event number and event description</th>
<th>Collection level</th>
</tr>
</thead>
<tbody>
<tr>
<td>FF 255</td>
<td>256</td>
<td>Socket connected on RMTCICS</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>257</td>
<td>Socket disconnected from RMTCICS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>258</td>
<td>IMS Connect refreshed a cached RACF user ID after receiving a type 71 Event Notification Facility (ENF) notification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>259</td>
<td>IMS Connect sent a health status report to Work Load Manager (WLM)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2050</td>
<td>Communication thread started for a RMTCICS connection</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2051</td>
<td>ISC message received from IMS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2052</td>
<td>ISC message sent to IMS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2053</td>
<td>ISC message received on RMTCICS socket connection</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2054</td>
<td>ISC message sent on RMTCICS socket connection</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2055</td>
<td>ISC message received on CICSPORT socket connection</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2056</td>
<td>ISC message sent on CICSPORT socket connection</td>
<td></td>
</tr>
</tbody>
</table>

Recorder trace records

Recorder trace data produced by IMS Connect is converted to event record format by the IMS Connect Extensions Recorder trace utilities.

Table 8. Recorder trace event records produced by IMS Connect

<table>
<thead>
<tr>
<th>Code (Hex)</th>
<th>Code (Dec)</th>
<th>Event description</th>
<th>Collection level</th>
</tr>
</thead>
<tbody>
<tr>
<td>A0</td>
<td>160</td>
<td>HWS Recorder Base Section Trace</td>
<td>Not applicable</td>
</tr>
<tr>
<td>A1</td>
<td>161</td>
<td>HWS Recorder IPB Section Trace</td>
<td>Not applicable</td>
</tr>
<tr>
<td>A2</td>
<td>162</td>
<td>HWS Recorder OPB Section Trace</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

IMS Connect trace records

IMS Connect trace event records are produced when the Tracing Level has been set for the system.

Table 9. IMS Connect trace event records

<table>
<thead>
<tr>
<th>Code (Hex)</th>
<th>Code (Dec)</th>
<th>Event description</th>
<th>Collection level</th>
</tr>
</thead>
<tbody>
<tr>
<td>A3</td>
<td>163</td>
<td>Event Collection OTMA Trace</td>
<td>1</td>
</tr>
<tr>
<td>A4</td>
<td>164</td>
<td>Event Collection IRM Trace</td>
<td>1</td>
</tr>
<tr>
<td>A5</td>
<td>165</td>
<td>Event Recording RSM Message Trace</td>
<td>1</td>
</tr>
<tr>
<td>A6</td>
<td>166</td>
<td>Event Recording EXIT Output Message Trace</td>
<td>1</td>
</tr>
</tbody>
</table>
Table 9. IMS Connect trace event records (continued)

<table>
<thead>
<tr>
<th>Code (Hex)</th>
<th>Code (Dec)</th>
<th>Event description</th>
<th>Collection level</th>
</tr>
</thead>
<tbody>
<tr>
<td>A9</td>
<td>169</td>
<td>RXML Trace for XML Adapter</td>
<td>1</td>
</tr>
<tr>
<td>AA</td>
<td>170</td>
<td>ODBM trace record</td>
<td>1</td>
</tr>
<tr>
<td>AC</td>
<td>172</td>
<td>IMS Performance Analyzer Command and Response</td>
<td>1</td>
</tr>
</tbody>
</table>

Event record 172 (X’AC’) is a special type of event record that is used to represent an IMS Performance Analyzer command being issued. For example, this event record is recorded when the ROUTE command for DRAIN or RESUME is issued. It includes the ROUTE command as well as details of actions taken on behalf of the ROUTE command such as AUTORESUME processing. If the ROUTE DRAIN or ROUTE RESTORE command targets a routing list, one “request” record and one “response” record is created for the routing list, as well as one “both” record for each datastore in the routing list. The response record for the routing list will contain the highest return code and reason code for all of the datastore records.

User data logging record

The Event Recording User Data Logging record is produced when user data is submitted to the journal for logging.

Table 10. User data logging event record

<table>
<thead>
<tr>
<th>Code (Hex)</th>
<th>Code (Dec)</th>
<th>Event description</th>
<th>Collection level</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>171</td>
<td>Event Recording User Data Logging</td>
<td>1</td>
</tr>
</tbody>
</table>

Event types

There are two types of event records processed by IMS Performance Analyzer, Connect Status Events and Message Related Events.

Connect Status Event

A Connect Status Event identifies a change in the status of your IMS Connect environment. For example, a resource (Datastore, TMember) becoming available or unavailable, or a Socket becoming accepted for input by a Port task. Connect Status events are typically not related to the processing of input messages, but can affect their processing. Connect Status Event records are identified by a constant Event Key, EVNT.

Message Related Event

A Message Related Event identifies an event in the processing of an input message (transaction). Message Related Event records have a STCK token Event Key. Each incoming message is assigned a unique Event Key and every event associated with the processing of the message has the same Event Key. In this way, all events involved in the processing of an input message can be “connected” to obtain a complete picture of the life cycle of the message.

Collection levels

The number and type of event records collected by IMS Connect Extensions varies depending on the Collection level specified for the IMS Connect system.
0  Minimum level. Collects start up and shut down events along with some error events. This is the default.

1  Accounting level. Collects Return from Exit events, OTMA timeout and session error events. This level provides accounting information in terms of the number of messages by Transaction, User Exit, and so on.

2  Transit time reporting. Collects the minimum number of records to run simple transit time reports.

3  Comprehensive performance analysis. Collects all TCP/IP read and write events which provides for analysis of TCP/IP activity.

4  Maximum level. Collects all event records.

**Required event records for IMS PA reports**

For IMS Connect Extensions to collect IMS Connect event data for reporting, you need to ensure that IMS Connect Extensions Event Collection is active and that you specify a Collection Level that is appropriate to the type of reports that you want to produce.

The following figure summarizes how the IMS Connect Extensions Collection Level affects the IMS PA reports.

<table>
<thead>
<tr>
<th>Connect Report</th>
<th>Collection Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

**Transaction Transit Reports**

- Analysis: no | no | yes *a | yes | yes
- Log: no | no | yes *a | yes | yes
- Extract: no | no | yes *b | yes | yes

**Resource Usage Reports**

- Port Usage: no | no | yes c | yes | yes
- Resume Tpipe: no | no | yes | yes | yes
- ACK/NAK: no | no | yes | yes | yes

**Exception Events**

- yes *d | yes d | yes d | yes d | yes d

**Trace Reports**

- Transit Event Trace: no | no | yes *d | yes d | yes

Note:

"no" indicates that the report is not produced when run against data collected at this level; message "No observations in report period" is printed.

"yes" indicates that the report is produced when run against data collected at this level, however:

- *a Input READ Socket (record 49) and SAF fields (records 3F, 40) are 0
- *b Input READ Socket (49), SAF (3F, 40) and Acknowledgement (49, 4A) fields are 0
- *c WRITE (4A) Count and Length fields are zero, and READ Count and Length fields contain only Prepare READ Socket (3C) since READ Socket (49) is 0
- *d Only the event records that are collected at that level are listed in the report

*Figure 320. IMS Connect reports: IMS Connect Extensions Collection Level cross-reference*
OTMA NAK sense codes

This list describes the sense codes that accompany OTMA negative acknowledgement (NAK) messages in type 42 records.

01 OTMA sign-on not established
02 Client cannot send/receive messages
03 State-data or XCF length error
04 Bad correlator
05 Multi-segment message duplicated
06 Bad XCF return code
07 Maximum (255) clients reached
08 Client-bid security request failed
09 Invalid OTMA command
0A OTMA data message not allowed
0B Invalid message type
0C Unknown response type
0D Nonexistent Tpipe for continuation
0E Unable to create Tpipe
0F Tpipe is stopped
10 No State data
11 Commit message was not to terminate
12 Prefix (4KB) too large
13 Hash table size not set
14 Second client-bid sent, first still active
15 Hash table storage allocation failed
16 Client not active
17 Invalid SYNC level
18 Invalid Tpipe name
19 Invalid Client name
1A Message cancelled due to IMS error
1B IMS is shut down
1C Invalid Commit Mode
1D User data too long (1K)
1E Server user data too long (256)
1F Sequence number mis-match
20 No Application data
21 No Chain flag
22 Tpipe not found
23 Sequence number invalid
24 Previous conversation still in progress
25 RESYNC Protocol violation
26 RESYNC Dequeue failed
27 RESYNC RSN reset failed
2C Invalid Commit Mode
2D SYNC/Commit levels incompatible
2E SYNC level/Context ID incompatible
2F Unable to express context interest

Figure 321. OTMA NAK sense codes

For more information, refer to the section “OTMA Sense Codes for NAK Messages” in the IMS Open Transaction Manager Access Guide and Reference.

Typical event flow with Sync Level NONE

The typical event flow of an incoming transaction with Sync Level NONE is shown in the following example.
Typical event flow with Sync Level CONFIRM

The typical event flow of an incoming transaction with Sync Level CONFIRM is shown in the following example.

3C Prepare Read Socket  <= Incoming message from client
49 Read Socket
3D Message Exit called for READ
3E Message Exit return for READ
41 Message sent to OTMA
42 Message received from OTMA
3D Message Exit called for XMIT
3E Message Exit return for XMIT
4A Write Socket  <= Response sent back to client
6C Begin Close Socket  <= Non-persistent Socket is closed
6D End Close Socket
48 Trigger event CLOS  <= Connect has finished processing message

Figure 322. IMS Connect event records: typical event flow with Sync Level NONE

Typical event flow with Sync Level CONFIRM

The typical event flow of an incoming transaction with Sync Level CONFIRM is shown in the following example.

3C Prepare Read Socket  <= Incoming message from client
49 Read Socket
3D Message Exit called for READ
3E Message Exit return for READ
41 Message sent to OTMA
42 Message received from OTMA
3D Message Exit called for XMIT
3E Message Exit return for XMIT
4A Write Socket  <= Response sent back to client
49 Read Socket
3D Message Exit called for READ
3E Message Exit return for READ
41 Message sent to OTMA
42 Message received from OTMA
46 De-allocate Session
3D Message Exit called for XMIT
3E Message Exit return for XMIT
4A Write Socket
0C Begin Close Socket  <= Non-persistent Socket is closed
0D End Close Socket
48 Trigger event CLOS  <= Connect has finished processing message

Figure 323. IMS Connect event records: typical event flow with Sync Level CONFIRM
Chapter 35. OMEGAMON TRF records

Transaction performance and resource utilization statistics are collected by OMEGAMON subsystems with the Transaction Reporting Facility (TRF) Trace running.

IMS Performance Analyzer processes TRF records extracted from the IMS Log by running the Transaction Reporting Facility post-processor.

The following table lists the TRF Extractor output records that are used in IMS Performance Analyzer reporting.

*Table 11. OMEGAMON TRF Extractor records processed by IMS PA*

<table>
<thead>
<tr>
<th>Record code (hex)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Transaction Message</td>
</tr>
<tr>
<td>11</td>
<td>Output Message</td>
</tr>
<tr>
<td>12</td>
<td>IMS System Message</td>
</tr>
<tr>
<td>13</td>
<td>Database Detail</td>
</tr>
<tr>
<td>15</td>
<td>MSDB Detail</td>
</tr>
<tr>
<td>16</td>
<td>DEDB Detail</td>
</tr>
<tr>
<td>17</td>
<td>Database Summary</td>
</tr>
<tr>
<td>18</td>
<td>DB2 Summary</td>
</tr>
<tr>
<td>19</td>
<td>Fast Path Database Summary</td>
</tr>
</tbody>
</table>
Chapter 36. OMEGAMON ATF records

IMS Performance Analyzer uses 1-byte hexadecimal codes to identify the ATF records that it processes.

Table 12. OMEGAMON ATF records processed by IMS PA

<table>
<thead>
<tr>
<th>Record code (hex)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>DLI</td>
</tr>
<tr>
<td>03</td>
<td>Fast Path</td>
</tr>
<tr>
<td>04</td>
<td>Summary completion</td>
</tr>
<tr>
<td>05</td>
<td>DLI IOPCB detail</td>
</tr>
<tr>
<td>06</td>
<td>Full Function</td>
</tr>
<tr>
<td>82</td>
<td>DB2</td>
</tr>
<tr>
<td>87</td>
<td>Generic External Subsystem</td>
</tr>
<tr>
<td>88</td>
<td>WebSphere MQ</td>
</tr>
<tr>
<td>F1</td>
<td>Transaction end</td>
</tr>
</tbody>
</table>
Chapter 37. Sample library

The IMS PA Sample Library SIPISAMP contains sample JCL to generate IMS PA reports and extracts.

It also contains examples of extended functions such as:

- Allocating inflight data sets for IMS, Connect or ATF reporting
- Loading extract and history data into DB2 tables and running queries on that data
- Fast Path report enhancements
- Invoking the Transaction Substitution Exit
- Defining IMS PA reports to the IMS Tools Knowledge Base
- Running User Programs under IMS PA

Report Set JCL

The sample library SIPISAMP contains members with sample JCL to generate IMS PA reports and extracts. Also included are examples for Automated file selection and BMP analysis.

IPICEXJC
Connect Report Set

IPIILDBRC
Automated file selection (DBRC Log Selection for IMS logs and Journal File Selection for IMS Connect Extensions journals)

IPILOGJC
Log Report Set

IPIMONJC
Monitor Report Set

IPIISBMP
Log Report Set for BMP analysis

Related tasks:

- "Run Log Report Set" on page 287
  The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category or individual reports.

- "Run Monitor Report Set" on page 475
  The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category, or individual reports.

- "Run Connect Report Set" on page 551
  The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category, or individual reports.

Related reference:

- "Log Report Set JCL" on page 395
  The JCL built by IMS PA for the batch execution of a Report Set via the SUBMIT or JCL (or RUN) commands is based on the sample library member IPILOGJC for a Log Report Set.

- "Transaction Transit (Form-based) Options" on page 314
  The IMS PA Form-based Transaction Transit Options define control information
Allocate IMS inflight data sets

The sample library SIPISAMP contains a member with sample JCL to create IMS inflight data sets.

IPIIMSIF

Allocate the IMS inflight transaction data sets using either GDG or fixed data set names. Both options ensure that no changes are required to the Report JCL.

Generation data group (GDG) is the recommended approach because it does not require a post-step to switch (rename) the inflight data sets.

The JCL also initializes the first inflight data set to an empty state, in preparation for the first batch request.

Use the following to define the GDG base. Notice the GDG limit is set to 3, although the report job requires only two data sets. This will ensure that in the event of a reporting failure, corrective action can be taken: delete the generation 0 data set and rerun the job.

//IPIIMSIF JOB,NOTIFY=&SYSUID
//DEFGDG EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*  
//SYSIN DD *
//DEFINE GDG (NAME(<&sysuid.IPI.IMS.INFLIGHT>) -
// NOEMPTY -
// SCRATCH -
// LIMIT(3))

//DEFGEN0 EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=*  
//SYSIN DD DUMMY  
//SYSUT1 DD DUMMY,RECFM=VB,BLKSIZE=32760,LRECL=32756
//SYSUT2 DD DSN=<&sysuid.IPI.IMS.INFLIGHT(1)>,
// DISP=(,CATLG),UNIT=SYSDA,SPACE=(CYL,(10,10)),
// DCB=(RECFM=VB,BLKSIZE=32760,LRECL=32756)

Figure 324. IPIIMSIF: IMS inflight data set using GDG

Use the following for fixed data set names. The IMSINFLT and IMSOTFLT data sets are switched in an IDCAMS post step after reporting has completed successfully (RC=0).
Related reference:

"Log Global Options" on page 290
The IMS PA Log Global Options define general control information which applies to all active reports within the Report Set.

"Log Global Options" on page 410
The Log Global Options define output and general control information for the log reports.

Connect Transit Extracts

The sample library SIPISAMP contains members with sample JCL to load Connect Transit extract data into DB2 tables and run SQL queries.

IPICLDDL
DDL for DB2 Table Create (List Extract)

IPICLLOD
Load data into DB2 Table (List Extract)

IPICSDDL
DDL for DB2 Table Create (Summary Extract)

IPICSLOD
Load data into DB2 Table (Summary Extract)

IPICQML1
QMF query showing average Transit input Elapsed times (including Pre-OTMA and SAF), Processing OTMA and Response time (List Extract)

IPICQML2
QMF query showing average Transit Output Elapsed time, including Confirm, Post-OTMA, XMIT EXIT and Acknowledgement READ Socket (List Extract)

IPICQMS1
SQL Query showing average Transit Processing times (Summary Extract)

IPICQMS2
SQL Query showing average Transit Queue times (Summary Extract)

For examples, see "Understanding the Connect Transit Extract" on page 740.
Allocate Connect inflight data sets

The sample library SIPISAMP contains a member with sample JCL to create the inflight data sets for Connect reporting.

**IPICEXIF**

Allocate the Connect inflight transaction data sets using either GDG or specified data set names. Both options ensure that no changes are required to the CEX Report JCL.

Use the following to define the generation data group (GDG) base. Notice the GDG limit is set to 3, although the report job requires only two data sets. This will ensure that in the event of a reporting failure, corrective action can be taken - delete the generation 0 data set and rerun the job.

```java
//IPICEXIF JOB,NOTIFY=&SYSUID
//DEFGDG EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=* 
//SYSIN DD *
DEFINE GDG (NAME(<&sysuid.ipi.cex.inflight>) -
NOEMPTY -
SCRATCH -
LIMIT(3))
/*
//DEFGEN0 EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=* 
//SYSIN DD DUMMY
//SYSUT1 DD DUMMY,RECFM=VB,BLKSIZE=27998,LRECL=27994
//SYSUT2 DD DSN=<&sysuid.ipi.cex.inflight(+1)>,
  // DISP=,(CATLG),UNIT=SYSDA,SPACE=(CYL,(10,10)),
  // DCB=(RECFM=VB,BLKSIZE=27998,LRECL=27994)
/*
```

*Figure 326. IPICEXIF: Create Connect inflight data set using GDG*

Use the following for fixed data set names. The CEXINFLT and CEXOTFLT data sets are switched in an IDCAMS post step after reporting has completed successfully (RC=0).

```java
//IPICEXIF JOB,NOTIFY=&SYSUID
//GENERIN EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=* 
//SYSIN DD DUMMY
//SYSUT1 DD DUMMY,RECFM=VB,BLKSIZE=27998,LRECL=27994
//SYSUT2 DD DSN=<&sysuid.ipi.cex.inflight>,
  // DISP=,(CATLG),UNIT=SYSDA,SPACE=(CYL,(10,10)),
  // DCB=(RECFM=VB,BLKSIZE=27998,LRECL=27994)
/*
//GENEROT EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=* 
//SYSIN DD DUMMY
//SYSUT1 DD DUMMY,RECFM=VB,BLKSIZE=27998,LRECL=27994
//SYSUT2 DD DSN=<&sysuid.ipi.cex.otflight>,
  // DISP=,(CATLG),UNIT=SYSDA,SPACE=(CYL,(10,10)),
  // DCB=(RECFM=VB,BLKSIZE=27998,LRECL=27994)
```

*Figure 327. IPICEXIF: Create Connect inflight data set using specified DSNs*
Allocate ATF inflight data sets

The sample library SIPISAMP contains a member with sample JCL to create the inflight data sets for ATF reporting.

**IPIATFIF**

Allocate the Connect inflight transaction data sets using either GDG or fixed data set names. Both options ensure that no changes are required to the ATF Report JCL.

Generation data group (GDG) is the recommended approach because it does not require a post-step to switch (rename) the inflight data sets.

The JCL also initializes the first inflight data set to an empty state, in preparation for the first batch request.

Use the following to define the GDG base. Notice the GDG limit is set to 3, although the report job requires only two data sets. This will ensure that in the event of a reporting failure, corrective action can be taken: delete the generation 0 data set and rerun the job. For sample JCL using inflight GDGs, see “Sample JCL using GDG inflight data sets” on page 654.

```
//IPIATFIF JOB, NOTIFY=&SYSUID
//DEFGDG EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*  
//SYSIN DD *
DEFINE GDG (NAME(<&sysuid.IPI.ATF.INFLIGHT>) - NOEMPTY - SCRATCH - LIMIT(3))
/*
//DEFGEN0 EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=*  
//SYSIN DD *
//SYSUT1 DD DUMMY,RECFM=VB,BLKSIZE=32760,LRECL=32756
//SYSUT2 DD DSN=<&sysuid.IPI.ATF.INFLIGHT(+1)>, DISP=(,CATLG),UNIT=SYSDA,SPACE=(CYL,(10,10)), DCB=(RECFM=VB,BLKSIZE=32760,LRECL=32756)
/*
```

Figure 328. IPIATFIF: ATF inflight data set using GDG

Use the following for fixed data set names. The ATFINFLT and ATFOTFLT data sets are switched in an IDCAMS post step after reporting has completed successfully (RC=0). For sample JCL using fixed data set names, see “Sample JCL using fixed inflight data set names” on page 654.

```
```
Export to DB2: Bind DB2 Plan

The sample library SIPISAMP contains members with sample JCL to bind a DB2 plan for program IPIUTILB.

IPIUTILB is an alternative to the DB2 load utility DSNUTILB when a Summary extract is loaded into a DB2 table with the Resume option. When a record in the extract file has a duplicate key to a row in the table, IPIUTILB accumulates the data, whereas DSNUTILB would stop processing on this condition.

**IPIDBRMU**

Binds the DB2 plan for program IPIUTILB

**IPIDB2BD**

JCL to create the DB2 package required to run the alternative load utility IPIUTILB

```verbatim
//IMSPA JOB,NOTIFY=&SYSUID
//**
//BIND EXEC PGM=IKJEFT01
//**
//STPLIB DD DISP=SHR,DSN=dsn.dsnload
//SYSTSRT DD SYSSOUT=* 
//SYSTSIN DD SYSOUT=* 
//DSN SYSTEM(ssid)
BIND PACKAGE(package) -  
MEMBER(IPIDBRMU) -  
LIBRARY('IPI.V4R4M0.SIPISAMP') -  
VALIDATE(BIND) -  
ISOLATION(CS) -  
RELEASE(COMMIT) -  
BIND PLAN(DB2plan) -  
PKLIST(package.* ) -  
ACQUIRE(USE) -  
ACTION(REP) -  
RETAIl
//**
```

Figure 330. IPIDB2BD: Sample JCL to create the DB2 package required to run the alternative load utility IPIUTILB
Authorization Exit for IMSPLEX security

The sample library SIPISAMP contains a sample program and a JCL member for a Request Authorization Exit.

The Request Authorization Exit is optional. The Exit stops DBRC Log Selection when an IMSPLEX name is specified. If not installed, then all requests are allowed.

IPIUAUTH
  Request Authorization Exit
IPIU002
  Authorization Exit JCL

Transaction History File samples

The sample library SIPISAMP contains members with sample JCL to create a Transaction History File, load the data into DB2 tables, and run SQL queries.

IPITH$$5
  SIPISAMP member documentation
IPITHCOL
  Collection
IPITHCOS
  Collection using DBRC Log Selection
IPITHDDL
  DDL for DB2 Table Create
IPITHDOC
  Transaction History File documentation
IPITHGDA
  IDCAMS statements to define generation data group (GDG) base
IPITHGDM
  Define a new history file (for example, at month-end)
IPITHLOD
  Load data into DB2 Table
IPITHQM1
  QMF query showing average Transit Queue times
IPITHQM2
  QMF query showing average Transit Queue times and average End-User Response times
IPITHQM3
  QMF query showing average Transit Queue time and approximate CPU and DL/I resource usage
IPITHQM4
  QMF query showing Transit Queue time peak percentile.

For examples, see “Understanding the Transaction History File” on page 735.

Transaction Substitution Exit

The sample library SIPISAMP contains members that demonstrate how to use the Transaction Substitution Exit facility.
IPITSUB#
Transaction Substitution Exit documentation: how it works, how to install it, how to use it

IPITSUBA
Assembly and Link-Edit JCL

IPITSUBR
Run Transit Reports

IPITSUBS
JCL to install the USERMOD

IPITSUBU
USERMOD to install the Transaction Substitution Exit

IPITSUBX
Sample Transaction Substitution Exit that forces IMS PA to report an alternate Transaction Code name

IPIXAASM
JCL to assemble and link the sample user program IPIXAPGP into the IMS PA User Load Library (dialog option 0.1 IMS PA Settings)

IPIXAPGP
Sample Transaction Substitution Exit to support Application Groups, relevant to the Transit Analysis, Statistics and Transaction Exception reports, or form-based transit reports specifying a report form that includes the APPLNAME field

This Exit enables you to change the Transaction Code name that is reported by selected Transit reports. The only reports affected by the Exit are the Transit Analysis, Statistics and Transaction Exception reports.

To code, install, and then request the Transaction Substitution Exit, the procedure is:

1. Tailor the exit source code IPITSUBX to meet your requirements. IPITSUBX contains the sample Assembler language Exit that forces IMS PA to report an alternate name in the Transaction Code name field. This sample exit extracts the 7 byte replacement TranCode name from offset 40 in the message text. You can assign any name to the Exit, and create as many Exits as required, although only one Exit can run at a time.

2. Install the Exit using either of two methods:
   a. SMPE USERMOD.
      IPITSUBU contains USERMOD IPIU001. It installs the Exit into your IMS PA SMPE environment.
      IPITSUBS contains the JCL to install the USERMOD. Tailor the JCL to suit your requirements.
   b. Direct Assemble and Link without SMPE.
      IPITSUBA contains JCL to Assemble and Link the Exit without SMPE.

3. To request the Exit from the dialog, specify the name of the Transaction Substitution Exit in Log Global Options in the Log Report Set. See Figure 160 on page 291.

4. To request the Exit using batch commands, specify the name of the Exit in the TRANEXIT operand as shown in IPITSUBR or the following example:
IMS Tools Knowledge Base setup

The sample library SIPISAMP contains a member with sample JCL to define or update the register of reports in the IMS Tools Knowledge Base.

**IPIDITKB**

If the Product Definition Table (PDT) is updated, run this job to load it into the IMS Tools Knowledge Base repository.

For more information, see Chapter 40, “IMS Tools Knowledge Base,” on page 747.

**User programs**

The sample library SIPISAMP contains members with sample user programs that can run under IMS PA and associated JCL.

**IPIERA30**

User Program to invoke the IMS Record 67 formatting routine DFSERA30. This sample is supported by the following additional members:

**IPIERA3A**

Assemble and Link IPIERA30

**IPIERA3R**

Run User Program IPIERA30
IPIPSUP1
User Program 1: Sample User Program that processes type 07 and 70 log records. This sample is supported by the following additional members:

IPIPUASM
Assemble and Link IPIPSUP1

IPIPURUN
Run IPIPSUP1

IPIUPGM9
User Program 9: Sample IMSPARS User Program for IMS Version 13. This sample is supported by the following additional members:

IPIUASM9
Assemble and Link IPIUPGM9

IPIUPARS
Run IPIUPGM9

Related reference:
"User-written reports" on page 376
IMS PA supports up to 21 user-written reports in each Report Set. These can be activated for execution together with other reports in the Report Set in a similar manner to the supplied log reports.

"USERPGM; User-Written Record Processors" on page 464
The USERPGM operand of the IMSPALOG batch command requests that a user-written program is to be run.

Chapter 38, “User-written log record processors,” on page 727
You can write your own User Programs to process IMS Log records. User Programs can be specified in Report Sets and run in conjunction with other IMS PA reports, so IMS PA and user reports can be produced with a single pass of the Log data. Macros are provided that allow User Programs to interface with IMS PA, and reduce the coding complexity.
Chapter 38. User-written log record processors

You can write your own User Programs to process IMS Log records. User Programs can be specified in Report Sets and run in conjunction with other IMS PA reports, so IMS PA and user reports can be produced with a single pass of the Log data. Macros are provided that allow User Programs to interface with IMS PA, and reduce the coding complexity.

The source code structure for a user-written program is as follows:

```assembly
programe IPIINIT 'January 12, 2014',
           IDS=(07,...), .Log record codes required
           INIT=initrtn .Initialization routine
....
initrtn DS 0H .Initialization routine
....
RECO7 IPIREC 07 .Log Record 07 routine
....
REC0EOD IPIREC EOD .End of data routine
....
END
```

IPIINIT must be the first line of code, and performs the following function:
- Defines the User Program to IMS PA
- Provides the interface to IMS PA control tables and services
- Defines the Log record codes to be passed to the program
- Establishes program linkage, base registers and save areas
- Identifies the program initialization routine to be called before processing commences

IPIREC macros identify the entry points for processing Log records. EOD is a special record type that identifies the program entry point when end of data is reached. If report data is accumulated when processing record codes, EOD processing can print the reports and free the data storage.

A sample User Program called IPIPSUP1 is provided in the SIPISAMP library. IPIPSUP1 demonstrates most of the facilities available to User Programs, and is a good starting point for the development of your own User Program.

To install a user-written program:
- Include the SIPIMAC library in the SYSLIB concatenation of your assembly JCL.
- Assemble your program.
- Link-edit into the user program load library.
- Specify the user program load library to the dialog. From the Options menu in the action bar, select option 1 IMS PA Settings. See "IMS PA Settings" on page 67 for specification of the User Program Load Library.

Include the user-written program in a Log Report Set, as described in "User-written reports" on page 376.

The IMS PA macros in the rest of this chapter are especially applicable to user-written programs.
The sample library SIPISAMP contains members with sample user programs that can run under IMS PA and associated JCL.

**IPIAMODE macro**

The IPIAMODE macro changes the addressing mode (AMODE) of your program to 24- or 31-bit addressing.

User Programs are invoked by IMS PA in 24-bit mode. All IMS PA control blocks and Log records passed to your program reside below the 16-megabyte line. 31-bit addressing mode offers virtual storage constraint relief when using large report queues. User Programs must revert back to 24-bit mode before they pass control back to IMS PA.

```plaintext
label IPIAMODE amode

amode
The new addressing mode (AMODE) to set, can be 24 or 31.

Example

IPIAMODE 31 starts the User Program executing in 31-bit addressing mode.
IPIAMODE 24 reverts back to 24-bit addressing mode.
```

**IPICHECK macro**

The IPICHECK macro checks the include/exclude table for values to be included or excluded.

```plaintext
label IPICHECK type,table[,value][,OK=][,NOTAB=][,NOTOK=][,SYNTAB=][,RETURN=][,ID=]

type
Format of the operand value to be tested; type can be one of the following:
C Eight-character string
X Four bytes hexadecimal
F One fullword
H One or two halfwords for each operand specified

table
Name of the operand to be tested.

value
Value of the operand to be tested. If the value is omitted, it must previously have been moved into the 8-byte area labelled CONVERT.

OK=
Label of the procedure to receive control if the value is matched in the table. Register notation is permitted.
```
NOTAB=
Indicates the include/exclude table does not contain entries for the named operand.

NOTOK=
Label of the procedure to receive control if the value is not matched in the table. Register notation is permitted.

SYNTAB=
Optional. Specifies your synonym table.

RETURN=
Defines an optional return address. The default is the next statement after IPICHECK.

ID=
The address of the address of an optional program entry table. The default is $IPPGMA0.

Instead of using the keyword operands for exits, you can branch on the return code in register 15. Register 15 will contain 0, 4, or 8 for OK, NOTAB, or NOTOK, respectively.

Example
Assume an IMS PA Report Set specifies a Transaction Code Object List with the transaction code TA01 to be included in the report.

Suppose the following macro is executed, where TRANSACT contains the value of the transaction code taken from the log:

```
MVC TRANSACT,=CL8'TA01'
.
.
IPICHECK C,TRANCODE,TRANSACT,NOTOK=EXIT
.
.
TRANSACT DC CL8'xxxx'
```

If the value in TRANSACT is TA01, control goes to the next instruction in the sequence; otherwise control goes to EXIT.

The following example accomplishes the same thing in a slightly different way:

```
MVC CONVERT,TRANSACT
IPICHECK C,TRANCODE,NOTOK=EXIT
.
.
CONVERT DS CL8
```

IPIINIT macro

The IPIINIT macro initializes a user-written program and provides an interface to IMS PA.
label   IPIINIT  date,{,IDS=}{,INIT=}{,PRINT=}

date
A character string giving the date for the current version of the program.

IDS=
List of log record numbers to be processed. The numbers are separated by commas and enclosed in parentheses.

INIT=
Label of a procedure for further initialization.

PRINT=GEN|NOGEN
Print or suppress print lines on the assembler listing.
NOGEN is the default.

The following code:
• Initializes a source program module with a date identification of 'JAN. 12, 2014'
• Processes log records 01, 03, 07, and 08

IPIUPGM1  IPIINIT 'JAN. 12, 2014'
           *
           IDS=(01,03,07,08)

IPIREC macro

The IPIREC macro defines entries pointed to by sublist tables.

IPIREC gives a DSECT of the specified log record and establishes a USING statement. IPIREC also provides an EP=(log record number) on dumps to indicate which record was being processed at the time of failure.

label   IPIREC  logcode|EOD,USING=,TIMECHK=

logcode|EOD
Log record number or EOD for end-of-data signal.

USING=NO|register number
To generate BALR and USING.
NO is the default.

TIMECHK=YES|NO
If YES is specified, the log record is time-checked and skipped if it does not lie within time limits. This parameter does not apply to FE (EOF) records.
YES is the default.

IPIRPTQ macro

The IPIRPTQ macro provides a report queue facility for User Programs.

Report queues are keyed data records in virtual storage managed by IMS PA. They enable User Programs to quickly and easily process information required to build reports. The report queue record format is defined in the User Program, and
consists of a key section, followed by a data section. IMS PA handles all indexing and storage management associated with report queues. User programs must meet the following conditions when using report queues:

- The IPIRPTQ macro is issued in AMODE 31, as all report queue storage resides above the 16-megabyte line.
- Report queue records are processed in AMODE 31, as they reside above the 16-megabyte line.
- Report queue record keys are not changed by the User Program. The data portion of records can be updated by User Programs.

```
label IPIRPTQ REQ=,ID= 
   {,KEYLEN=} {,RECLEN=} 
   {,KEY=}{,REC=} 
   {,FOUND=} {,NOTFND=} 
   {,EMPTY=} {,END=} 
```

**REQ=**
Request type can be one of the following:

- **DEFINE**
  Define a report queue. The report queue definition is 128 bytes long and contains the information required to manage the report queue.

- **INIT**
  Re-initialize the report queue. All records in the report queue are deleted, and all storage obtained for the report queue is freed.

- **FIND**
  Find a record in the report queue.

- **ADD**
  Add a new record to the report queue.

- **SCAN**
  Sequentially scan the report queue. SCAN requests must specify a label on the IPIRPTQ macro invocation. After processing a record, the user program requests the next record by branching to the label suffixed by 1 For example:

  ```
  LOOP IPIRPTQ ID=MYQ,REQ=SCAN, .Scan Report Queue 
  EMPTY=EMPTY,END=LOOPX 
  . . . .Process record 
  B LOOP1 .Get next record 
  ```

**ID=**
Report queue identifier. Three (3) character ID that uniquely identifies the report queue. All requests to the same report queue must specify the same ID.

**KEYLEN=**
For REQ=DEFINE, specifies the key length of the report queue. For REQ=FIND, KEYLEN can optionally be specified to request a search for an abbreviated key. For example, if TRANA and TRANB were two keys in the report queue, KEY=TRAN,KEYLEN=4 will return the TRANA record.

**RECLEN=**
For REQ=DEFINE, specifies the record length of the report queue. Record length is the sum of the key and data lengths.

**KEY=**
For REQ=FIND, specifies the address of the search key.
**REC**

For REQ=ADD, specifies the address of the record to be added to the report queue.

**FOUND**

For REQ=FIND, program label to branch to the specified key is found.

**NOTFND**

For REQ=FIND, program label to branch to the specified key is not found.

**EMPTY**

For REQ=SCAN, program label to branch to if the report queue is empty.

**END**

For REQ=SCAN, program label to branch to if the end of the report queue has been reached.

### Return codes

For REQ=FIND, a return code is set in R15:

- 0 key found
- 4 key not found

### Output

Upon successful completion of a FIND, ADD or SCAN request, R1 points to the start of the record.

### Example

Refer to sample User Program IPIPSUP1 in the SIPISAMP library for an example of how to use report queues.

### IPITEST macro

The IPITEST macro tests any byte in the program directory with a test under mask.

```
label    IPITEST    FLAG=,AT=,NZ=,Z=
```

**FLAG**

Binary (or hexadecimal) test value or symbolic.

**AT**

Label of the byte to be tested.

**NZ**

Label to go to on a non-zero condition.

**Z**

Label to go to on a zero condition.

### Example

To test the bytes in SIPMODF1 in the IPITINTF program directory for X'40' and then branch to EXIT if the bytes are not equal, code the following:

```
IPITEST  FLAG=X'40', AT=$IPMODF1, NZ=EXIT
```
**IPITIME macro**

The IPITIME macro calls the time check routine.

```
| label | IPITIME | RETADDR= |
```

**RETADDR=EXIT|label|null**

Branches to the specified RETADDR if the time is outside the time limits. Branches to EXIT if RETADDR is omitted. If RETADDR is null (RETADDR=), supply a branch instruction. Branches to the next instruction in the sequence (R14+4) if the time is within the specified limits.

EXIT is the default.

**Example**

Code one of the following to branch to BADTIME if the log time is outside the bounds specified by the From and To date and time on the User Processor panel.

```
IPITIME  RETADDR=BADTIME
or
       IPITIME  RETADDR=BADTIME
       TIMEOK   EQU *
```

**Date/time conversion routines**

IMS PA provides date/time conversion subroutines that your user program can call.

```
| BAS | R14,MIC2TIME |
```

or

```
| BAS | R14,TIME2MIC |
```

or

```
| BAS | R14,CNVTDT2G |
```

**MIC2TIME**

Converts microseconds to date and time.

Accepts as input in FR0 (floating point register zero), microseconds since 00:00 1 January 1973, and returns the following output:

- In R0 (register zero), the date in the format ccyyddd$ where:
  - **cc** is the century, 00 for the 20th century, 01 for the 21st century, and so on.
  - **yyddd** is the ordinal date, for example, 14239
is the sign bit

- In R1 (register one), the time in the decimal format **hhmmssth**, representing hours, minutes, seconds, tenths and hundredths of seconds.

**TIME2MIC**

Converts date and time to microseconds.

Accepts either of the following as input:

- In R0 (register zero), the date in the format **ccyyddd$** where:
  - **cc** is the century, 00 for the 20th century, 01 for the 21st century, and so on.
  - **yyddd** is the ordinal date, for example, 14239
  - $ is the sign bit

In R1 (register one), the time in the format **hhmmssth**, representing hours, minutes, seconds, tenths and hundredths of seconds.

or

- In R0 (register zero), 0 (zero)

In R1 (register one), the address of a field which contains a UTC time stamp in the format **yyyyddd$hllummssmiju** converted to local time. See IMS macro DFSTIMES which describes the time stamp format.

Returns as output in FR0 (floating point register zero), microseconds since 00:00 1 January 1973.

**CNVTDT2G**

Converts date from ordinal to calendar format.

Accepts as input in R1 (register one), the date in the format **ccyyddd$** where:

- **cc** is the century, 00 for the 20th century, 01 for the 21st century, and so on.
- **yyddd** is the ordinal date, for example, 14148
- $ is the sign bit

Returns the following output:

- In R1 (register one), the date in the format **mmddyy$** where:
  - **mmddyy** is the calendar date, for example, 052714
  - $ is the sign bit

- In the EXTRA2 field, the address of a field which contains a 9 byte character date in the format **ddmmyyyy**, for example, 27May2014
Chapter 39. Analyzing extracts using DB2

In addition to the versatile form-based extracts, IMS PA can create other extracts suitable for loading into DB2 for analysis using your favorite DB2 query tool.

These extracts include the Transaction History File, and the Connect Transit Extract.

The format of the Transaction History File and Connect Transit Extract data records are described here, with examples that show you how to use QMF SQL queries to analyze the data. Sample jobs are also provided in the SIPISAMP library to illustrate these examples.

For information on exporting and analyzing form-based extracts, see Chapter 18, “Processing form-based extracts (CSV files),” on page 255.

Understanding the Transaction History File

With IMS PA, you can extract and summarize IMS log data in a format suitable for loading directly into DB2 tables. From here you can then run queries or produce reports.

You can create Transaction History Files by running the Transaction History File in a Log Report Set in the dialog.

The command to request the Transaction History File is:

```
IMSPALOG TRANHIST(INTERVAL(hh:mm:ss),...)
```

In the Transaction History File, information is summarized for each transaction code over a short time interval, typically 15 minute intervals. This historical performance data includes transaction transit, response and CPU times, as well as DLI call statistics.

Transaction History record format

The following figure shows the format of the Transaction History File records. The record layout is defined by the assembler macro IPITRHR in the SIPIMAC library.
Sample DB2 jobs

Sample DB2 jobs are supplied in the SIPISAMP library to help you create DB2 tables and load the historical data into them:

- Sample DDL job IPITHDDL
- Sample Load job IPITHLOD

You will need the following DB2 settings when completing your JCL:

- DB2 Subsystem ID. For example, DB2P
- DSNTIAD Plan Name. For example, DSNTIAB1
- DB2 Load Library. For example, 'DB2.VB10.SDSNLOAD'
- DB2 Exit Library. For example, 'DB2.VB10.SDSNEXIT'
- DB2 RUNLIB Library. For example, 'DSNB10.RUNLIB.LOAD'

You will also need to define your:

- Storage group
- VOLSER
- VCAT
- Database name
- Table name
The following sample SQL queries are also supplied in the SIPISAMP library to help you run SQL queries using QMF:

- IPITHQM1
- IPITHQM2
- IPITHQM3
- IPITHQM4

**Simple query**

Transaction History records are already summarized by Time and Transaction Code, so a basic query does not require any scalar functions. The following SQL query lists selected fields in the history record.

```sql
SELECT TRHRDATE AS "Date",
TRHRTIME AS "Time",
TRHRPRID AS "IMS",
TRHRTRAN AS "TranCode",
DECIMAL(TRHRTRA#,8) AS "Tran Count",
DECIMAL(TRHRTINQ/1000,8,1) AS "Input Q_Time",
DECIMAL(TRHRTPRO/1000,8,1) AS "Process_Time",
DECIMAL(TRHRTOUT/1000,8,1) AS "Output Q_Time",
DECIMAL(TRHRTTOT/1000,8,1) AS "Total_Time"
FROM IPIHIST.TRANHIST
```

This query produces output like the following:

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>IMS</th>
<th>TRANCODE</th>
<th>TRAN COUNT</th>
<th>INPUT Q TIME</th>
<th>PROCESS TIME</th>
<th>OUTPUT Q TIME</th>
<th>TOTAL TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-04-04 05.45.00</td>
<td>D123</td>
<td>ACIS</td>
<td>31</td>
<td>283340.9</td>
<td>7968.3</td>
<td>0.0</td>
<td>296309.3</td>
<td></td>
</tr>
<tr>
<td>2014-04-04 05.45.00</td>
<td>D123</td>
<td>ZTMEN</td>
<td>6</td>
<td>78096.1</td>
<td>1838.4</td>
<td>0.0</td>
<td>79934.6</td>
<td></td>
</tr>
<tr>
<td>2014-04-04 06.00.00</td>
<td>D123</td>
<td>DN81711A</td>
<td>1</td>
<td>0.9</td>
<td>332.6</td>
<td>0.0</td>
<td>333.6</td>
<td></td>
</tr>
<tr>
<td>2014-04-04 06.00.00</td>
<td>D123</td>
<td>XY5P00A1</td>
<td>31</td>
<td>1343.4</td>
<td>7985.7</td>
<td>587.0</td>
<td>9916.1</td>
<td></td>
</tr>
<tr>
<td>2014-04-04 06.00.00</td>
<td>D123</td>
<td>ZTMEN</td>
<td>6</td>
<td>1.0</td>
<td>407.5</td>
<td>0.0</td>
<td>408.6</td>
<td></td>
</tr>
<tr>
<td>2014-04-04 06.00.00</td>
<td>D123</td>
<td>ZTOFF</td>
<td>6</td>
<td>1.2</td>
<td>591.2</td>
<td>0.0</td>
<td>592.5</td>
<td></td>
</tr>
<tr>
<td>2014-04-04 06.15.00</td>
<td>D123</td>
<td>XY5P00A1</td>
<td>31</td>
<td>694.6</td>
<td>7411.7</td>
<td>439.8</td>
<td>8546.2</td>
<td></td>
</tr>
<tr>
<td>2014-04-04 06.15.00</td>
<td>D123</td>
<td>ZTMEN</td>
<td>6</td>
<td>0.9</td>
<td>418.8</td>
<td>0.0</td>
<td>419.7</td>
<td></td>
</tr>
<tr>
<td>2014-04-04 06.15.00</td>
<td>D123</td>
<td>ZTOFF</td>
<td>6</td>
<td>1.5</td>
<td>327.0</td>
<td>0.0</td>
<td>328.6</td>
<td></td>
</tr>
<tr>
<td>2014-04-04 06.30.00</td>
<td>D123</td>
<td>DN81711A</td>
<td>1</td>
<td>0.2</td>
<td>116.6</td>
<td>0.0</td>
<td>116.9</td>
<td></td>
</tr>
<tr>
<td>2014-04-04 06.30.00</td>
<td>D123</td>
<td>XY5P00A1</td>
<td>31</td>
<td>48.6</td>
<td>8758.4</td>
<td>352.9</td>
<td>9160.0</td>
<td></td>
</tr>
<tr>
<td>2014-04-04 06.30.00</td>
<td>D123</td>
<td>ZTMEN</td>
<td>6</td>
<td>0.9</td>
<td>339.5</td>
<td>0.0</td>
<td>340.4</td>
<td></td>
</tr>
<tr>
<td>2014-04-04 06.30.00</td>
<td>D123</td>
<td>ZTOFF</td>
<td>6</td>
<td>0.9</td>
<td>260.8</td>
<td>0.0</td>
<td>261.7</td>
<td></td>
</tr>
<tr>
<td>2014-04-04 06.45.00</td>
<td>D123</td>
<td>XY5P00A1</td>
<td>31</td>
<td>563.0</td>
<td>6678.8</td>
<td>302.1</td>
<td>7544.0</td>
<td></td>
</tr>
<tr>
<td>2014-04-04 06.45.00</td>
<td>D123</td>
<td>ZTMEN</td>
<td>6</td>
<td>0.9</td>
<td>281.0</td>
<td>0.0</td>
<td>281.9</td>
<td></td>
</tr>
<tr>
<td>2014-04-04 06.45.00</td>
<td>D123</td>
<td>ZTOFF</td>
<td>6</td>
<td>1.6</td>
<td>283.5</td>
<td>0.0</td>
<td>285.2</td>
<td></td>
</tr>
</tbody>
</table>

Figure 333. Transaction History File: Simple SQL query by time and transaction code

**Calculating averages**

The following query summarizes all Response Counts greater than 0 and calculates the average time for each Transit Queue Elapsed time field.
### Calculating peak percentiles

Peak Percentile is a statistical estimate (based on the Normal Distribution) that provides an upper limit value of when \( m \% \) of tasks completed processing. Peak Percentiles allow you to measure whether workload targets are being met.

The following query calculates the 90\% peak percentile of elapsed time fields. The **CASE** statements show the function required to calculate peak percentiles.

```sql
SELECT TRHRDATE AS "Date",
TRHRTIME AS "Time",
TRHPRID AS "IMS",
TRHRTRAN AS "TranCode",
DECIMAL(TRHRTRA#,8) AS "Tran_Count",
DECIMAL(TRHRRSP#,8) AS "Resp_Count",
DECIMAL(TRHRTINQ/1000/TRHRTRA#,8,1) AS "Avg_Input Q_Time ",
DECIMAL(TRHRTPRO/1000/TRHRTRA#,8,1) AS "Avg_Process_Time",
DECIMAL(TRHRTTOT/1000/TRHRTRA#,8,1) AS "Avg_Total_Time",
DECIMAL(TRHRTRSP/1000/TRHRRSP#,8,1) AS "Avg_Response"
FROM IPIHIST.TRANHIST
WHERE TRHRRSP# > 0;
```

This query produces output like the following:

```
+----------++--------++----++--------++-----------++-----------++-----------++-----------++-----------++-----------+
<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>IMS</th>
<th>TRANCODE</th>
<th>COUNT</th>
<th>RESP</th>
<th>COUNT</th>
<th>AVG_INPUT Q</th>
<th>AVG_PROCESS</th>
<th>AVG_TOTAL</th>
<th>AVG_RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-04-04 09.45.00</td>
<td>D123</td>
<td>ZTOFF</td>
<td>3</td>
<td>3</td>
<td>0.1</td>
<td>48.1</td>
<td>48.2</td>
<td>97.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-04-04 10.00.00</td>
<td>D123</td>
<td>ACIS</td>
<td>10</td>
<td>10</td>
<td>0.2</td>
<td>225.5</td>
<td>225.8</td>
<td>225.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-04-04 10.00.00</td>
<td>D123</td>
<td>XY5P00A1</td>
<td>21</td>
<td>21</td>
<td>0.6</td>
<td>249.5</td>
<td>273.6</td>
<td>273.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-04-04 10.00.00</td>
<td>D123</td>
<td>ZTMEN</td>
<td>6</td>
<td>2</td>
<td>0.1</td>
<td>45.4</td>
<td>45.6</td>
<td>44.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-04-04 10.00.00</td>
<td>D123</td>
<td>ZTOFF</td>
<td>4</td>
<td>4</td>
<td>0.3</td>
<td>59.8</td>
<td>60.1</td>
<td>106.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-04-04 10.15.00</td>
<td>D123</td>
<td>XY5P00A1</td>
<td>25</td>
<td>25</td>
<td>0.3</td>
<td>231.9</td>
<td>257.4</td>
<td>257.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-04-04 10.15.00</td>
<td>D123</td>
<td>ZTOFF</td>
<td>4</td>
<td>4</td>
<td>0.1</td>
<td>46.1</td>
<td>46.3</td>
<td>95.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-04-04 10.30.00</td>
<td>D123</td>
<td>XY5P00A1</td>
<td>27</td>
<td>27</td>
<td>0.3</td>
<td>229.0</td>
<td>243.7</td>
<td>243.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-04-04 10.30.00</td>
<td>D123</td>
<td>ZTOFF</td>
<td>6</td>
<td>6</td>
<td>0.2</td>
<td>54.3</td>
<td>54.5</td>
<td>105.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-04-04 10.45.00</td>
<td>D123</td>
<td>XY5P00A1</td>
<td>28</td>
<td>28</td>
<td>2.0</td>
<td>242.6</td>
<td>267.3</td>
<td>267.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-04-04 11.00.00</td>
<td>D123</td>
<td>ZTOFF</td>
<td>5</td>
<td>5</td>
<td>9.9</td>
<td>49.5</td>
<td>59.4</td>
<td>105.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-04-04 11.00.00</td>
<td>D123</td>
<td>XY5P00A1</td>
<td>23</td>
<td>23</td>
<td>0.3</td>
<td>229.0</td>
<td>253.1</td>
<td>253.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-04-04 11.15.00</td>
<td>D123</td>
<td>ZTOFF</td>
<td>5</td>
<td>5</td>
<td>0.1</td>
<td>47.7</td>
<td>47.9</td>
<td>91.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-04-04 11.15.00</td>
<td>D123</td>
<td>XY5P00A1</td>
<td>30</td>
<td>30</td>
<td>0.3</td>
<td>253.2</td>
<td>272.9</td>
<td>272.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-04-04 11.15.00</td>
<td>D123</td>
<td>ZTOFF</td>
<td>6</td>
<td>6</td>
<td>0.2</td>
<td>23.7</td>
<td>24.0</td>
<td>65.9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

Figure 334. Transaction History File: SQL query reporting averages
Table: SQL query reporting peak percentiles

<table>
<thead>
<tr>
<th>TRancode</th>
<th>TRAN_COUNT</th>
<th>AVG_INPUT_Q</th>
<th>INPUT_PEEK90</th>
<th>AVG_PROCESS_TIME</th>
<th>PROCESS_PEEK90</th>
<th>AVG_TOTAL_TIME</th>
<th>TOTAL_PEEK90</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACIS</td>
<td>789</td>
<td>375.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DN81711A</td>
<td>36</td>
<td>0.3</td>
<td></td>
<td>167.4</td>
<td>211.961</td>
<td>167.7</td>
<td></td>
</tr>
<tr>
<td>XYKCT00</td>
<td>18</td>
<td>5.0</td>
<td></td>
<td>21.0</td>
<td></td>
<td>26.1</td>
<td></td>
</tr>
<tr>
<td>XYKUAM00</td>
<td>6</td>
<td>0.2</td>
<td></td>
<td>7.7</td>
<td></td>
<td>8.0</td>
<td></td>
</tr>
<tr>
<td>XYKUAN00</td>
<td>10</td>
<td>24.9</td>
<td></td>
<td>70.4</td>
<td></td>
<td>95.3</td>
<td></td>
</tr>
<tr>
<td>XYKUA000</td>
<td>22</td>
<td>12.8</td>
<td></td>
<td>100.2</td>
<td></td>
<td>113.0</td>
<td></td>
</tr>
<tr>
<td>XYKUA000</td>
<td>20</td>
<td>10.2</td>
<td></td>
<td>25.7</td>
<td></td>
<td>36.0</td>
<td></td>
</tr>
<tr>
<td>XYKUA000</td>
<td>8</td>
<td>0.2</td>
<td></td>
<td>22.4</td>
<td></td>
<td>22.7</td>
<td></td>
</tr>
<tr>
<td>XYKUA500</td>
<td>4</td>
<td>29.0</td>
<td></td>
<td>97.1</td>
<td></td>
<td>126.2</td>
<td></td>
</tr>
<tr>
<td>XYKUA600</td>
<td>2</td>
<td>1.6</td>
<td></td>
<td>40.5</td>
<td></td>
<td>42.1</td>
<td></td>
</tr>
<tr>
<td>XYKUA700</td>
<td>2</td>
<td>9.2</td>
<td></td>
<td>74.4</td>
<td></td>
<td>83.6</td>
<td></td>
</tr>
<tr>
<td>XYKUA800</td>
<td>23</td>
<td>4.5</td>
<td></td>
<td>47.6</td>
<td></td>
<td>52.2</td>
<td></td>
</tr>
<tr>
<td>XYKUG000</td>
<td>14</td>
<td>0.6</td>
<td></td>
<td>12.9</td>
<td></td>
<td>13.6</td>
<td></td>
</tr>
<tr>
<td>XYKUG000</td>
<td>32</td>
<td>3.2</td>
<td></td>
<td>41.0</td>
<td></td>
<td>104.4</td>
<td></td>
</tr>
<tr>
<td>XYKUH000</td>
<td>23</td>
<td>0.2</td>
<td></td>
<td>16.0</td>
<td></td>
<td>16.3</td>
<td></td>
</tr>
<tr>
<td>XYKUH100</td>
<td>72</td>
<td>0.3</td>
<td></td>
<td>32.6</td>
<td></td>
<td>32.9</td>
<td></td>
</tr>
<tr>
<td>XYTACP01</td>
<td>1</td>
<td>122.7</td>
<td>122.720</td>
<td>3988.8</td>
<td>3988.897</td>
<td>4111.6</td>
<td>4111.617</td>
</tr>
<tr>
<td>XY5P00A1</td>
<td>1476</td>
<td>9.0</td>
<td></td>
<td>245.6</td>
<td></td>
<td>272.8</td>
<td></td>
</tr>
<tr>
<td>ZTMEN</td>
<td>350</td>
<td>223.7</td>
<td></td>
<td>57.7</td>
<td></td>
<td>700.8</td>
<td></td>
</tr>
<tr>
<td>ZTOFF</td>
<td>337</td>
<td>887.5</td>
<td></td>
<td>46.0</td>
<td></td>
<td>933.5</td>
<td></td>
</tr>
</tbody>
</table>

Note: Replace &PEAK with the percentile of your choice. For example, to calculate the 90% peak percentile, replace &PEAK with 0.9.
Understanding the Connect Transit Extract

You can use IMS PA to extract IMS Connect event data in a format suitable for loading directly into DB2 tables.

You can create List or Summary extract data sets by running the Connect Transit Extract in a CEX Report Set in the dialog.

The command to request the Connect Transit Extract is:

```
IMSPACEX TRANEXTR([LIST,][SUMMARY,]INTERVAL(hh:mm:ss),...)
```

Connect Summary extract

In the Connect Summary Extract, transaction transit activity is summarized by time interval, typically 15 minute intervals.

Summary record format

The Summary Extract record has the following format.
Sample DB2 jobs

The following sample DB2 jobs are supplied in the SIPISAMP library:

- Sample DDL job IPICSDDL
- Sample Load job IPICSLOD
- Sample SQL queries IPICQMS1 and IPICQMS2

Simple query

Summary tables are already summarized (by time), so a basic query does not require any scalar functions. The following query lists selected fields in the summary table.
This query produces output like the following.

### Calculating averages

The following query summarizes all transactions, grouping by Transaction Code and calculating the average time for each elapsed time field.

```sql
SELECT CTSTC AS TRANSACTION_CODE,
      INTEGER(SUM(CTSTAN#)) AS TRANSACTION_COUNT,
      DECIMAL(SUM(CTSELRS)/1000,13,4) AS RESPONSE_TOTAL,
      DECIMAL(SUM(CTSELRS)/SUM(CTSTAN#))/1000,10,3 AS RESPONSE_AVERAGE,
      DECIMAL(SUM(CTSELIN)/1000,10,3) AS PRE_OTMA_TOTAL,
      DECIMAL(SUM(CTSELIN)/SUM(CTSTAN#))/1000,10,3 AS PRE_OTMA_AVERAGE,
      DECIMAL(SUM(CTSELRD)/1000,10,3) AS READ_SOCK_TOTAL,
      DECIMAL(SUM(CTSELRD)/SUM(CTSTAN#))/1000,10,3 AS READ_SOCK_AVERAGE,
      DECIMAL(SUM(CTSELRX)/1000,10,3) AS READ_EXIT_TOTAL,
      DECIMAL(SUM(CTSELRX)/SUM(CTSTAN#))/1000,10,3 AS READ_EXIT_AVERAGE,
      DECIMAL(SUM(CTSELSF)/1000,10,3) AS SAF_TOTAL,
      DECIMAL(SUM(CTSELSF)/SUM(CTSTAN#))/1000,10,3 AS SAF_AVERAGE,
      DECIMAL(SUM(CTSELPR)/1000,10,3) AS OTMA_TOTAL,
      DECIMAL(SUM(CTSELPR)/SUM(CTSTAN#))/1000,10,3 AS OTMA_AVERAGE,
      DECIMAL(SUM(CTSELXX)/1000,10,3) AS XMIT_EXIT_TOTAL,
      DECIMAL(SUM(CTSELXX)/SUM(CTSTAN#))/1000,10,3 AS XMIT_EXIT_AVERAGE,
      DECIMAL(SUM(CTSELFAR)/1000,10,3) AS ACK_READ_TOTAL,
      DECIMAL(SUM(CTSELFAR)/SUM(CTSTAN#))/1000,10,3 AS ACK_READ_AVERAGE,
      DECIMAL(SUM(CTSELFCF)/1000,10,3) AS CONFIRM_TOTAL,
      DECIMAL(SUM(CTSELFCF)/SUM(CTSTAN#))/1000,10,3 AS CONFIRM_AVERAGE,
      DECIMAL(SUM(CTSELFOT)/1000,10,3) AS POST_OTMA_TOTAL,
      DECIMAL(SUM(CTSELFOT)/SUM(CTSTAN#))/1000,10,3 AS POST_OTMA_AVERAGE
FROM IPICONS.CTSUMM
GROUP BY CTSTC
ORDER BY CTSTC
```

This query produces output like the following.

Figure 337. Connect Transit Summary Extract: Simple SQL query by transaction

Figure 338. Connect Transit Summary Extract: SQL query reporting averages
Calculating peak percentiles

Peak Percentile is a statistical estimate (based on the Normal Distribution) that provides an upper limit value of when nn% of tasks completed processing. Peak Percentiles allow you to measure whether workload targets are being met.

Peak Percentiles are calculated using the formula:
Factor*Standard Deviation+Average

The following table shows the Factors for each 5 percentile greater than 50% (the average):

<table>
<thead>
<tr>
<th>Factor</th>
<th>Peak Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.126</td>
<td>55%</td>
</tr>
<tr>
<td>0.253</td>
<td>60%</td>
</tr>
<tr>
<td>0.385</td>
<td>65%</td>
</tr>
<tr>
<td>0.524</td>
<td>70%</td>
</tr>
<tr>
<td>0.674</td>
<td>75%</td>
</tr>
<tr>
<td>0.842</td>
<td>80%</td>
</tr>
<tr>
<td>1.036</td>
<td>85%</td>
</tr>
<tr>
<td>1.282</td>
<td>90%</td>
</tr>
<tr>
<td>1.645</td>
<td>95%</td>
</tr>
</tbody>
</table>

The following query calculates the 90% peak percentile of elapsed time fields. The CASE statements show the function required to calculate peak percentiles. Calculations use a Factor of 1.282 for 90%. 

Chapter 39. Analyzing extracts using DB2 743
The Connect List Extract lists transaction transit activity in a similar way to the Connect Transit Log report.

**List record format**

The List Extract record has the following format.

```sql
SELECT CTSTC AS TRANSACTION_CODE,
INT(SUM(CTSTRAN#)) AS TRANSACTION_COUNT,
CASE WHEN (SUM(CTSTRAN#) > 1) THEN
  DEC((&PEAK*SQRT(((SUM(CTSTRAN#)*SUM(CTSELRS2)/1000000)
  -POWER(SUM(CTSELRS)/1000,2))
  -(SUM(CTSTRAN#)+SUM(CTSELRS))/1000,13,3))
  +(SUM(CTSELRS)/SUM(CTSTRAN#))/1000,10,3)
ELSE DEC((SUM(CTSELRS)/SUM(CTSTRAN#))/1000,10,3)
END AS RESPONSE_PEAK90,
CASE WHEN (SUM(CTSTRAN#) > 1) THEN
  DEC((&PEAK*SQRT(((SUM(CTSTRAN#)*SUM(CTSELIN2)/1000000)
  -POWER(SUM(CTSELIN)/1000,2))
  -(SUM(CTSTRAN#)+SUM(CTSELIN))/1000,13,3))
  +(SUM(CTSELIN)/SUM(CTSTRAN#))/1000,10,3)
ELSE DEC((SUM(CTSELIN)/SUM(CTSTRAN#))/1000,10,3)
END AS PRE_OTMA_PEAK90,
CASE WHEN (SUM(CTSTRAN#) > 1) THEN
  DEC((&PEAK*SQRT(((SUM(CTSTRAN#)*SUM(CTSELRD2)/1000000)
  -POWER(SUM(CTSELRD)/1000,2))
  -(SUM(CTSTRAN#)+SUM(CTSELRD))/1000,13,3))
  +(SUM(CTSELRD)/SUM(CTSTRAN#))/1000,10,3)
ELSE DEC((SUM(CTSELRD)/SUM(CTSTRAN#))/1000,10,3)
END AS READ_SOCKET_PEAK90,
CASE WHEN (SUM(CTSTRAN#) > 1) THEN
  DEC((&PEAK*SQRT(((SUM(CTSTRAN#)*SUM(CTSELRX2)/1000000)
  -POWER(SUM(CTSELRX)/1000,2))
  -(SUM(CTSTRAN#)+SUM(CTSELRX))/1000,13,3))
  +(SUM(CTSELRX)/SUM(CTSTRAN#))/1000,10,3)
ELSE DEC((SUM(CTSELRX)/SUM(CTSTRAN#))/1000,10,3)
END AS READ_EXIT_PEAK90,
CASE WHEN (SUM(CTSTRAN#) > 1) THEN
  DEC((&PEAK*SQRT(((SUM(CTSTRAN#)*SUM(CTSELSF2)/1000000)
  -POWER(SUM(CTSELSF)/1000,2))
  -(SUM(CTSTRAN#)+SUM(CTSELSF))/1000,13,3))
  +(SUM(CTSELSF)/SUM(CTSTRAN#))/1000,10,3)
ELSE DEC((SUM(CTSELSF)/SUM(CTSTRAN#))/1000,10,3)
END AS SAF_PEAK90
FROM IPICONS.CTSUMM
GROUP BY CTSTC
ORDER BY CTSTC
```

This query produces output like the following:

<table>
<thead>
<tr>
<th>TRANSACTION_CODE</th>
<th>TRANSACTION_COUNT</th>
<th>RESPONSE_PEAK90</th>
<th>PRE_OTMA_PEAK90</th>
<th>SOCKET_PEAK90</th>
<th>EXIT_PEAK90</th>
<th>SAF_PEAK90</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSPALLI</td>
<td>111</td>
<td>29928.674</td>
<td>13599.108</td>
<td>13235.167</td>
<td>42.412</td>
<td>0.000</td>
</tr>
<tr>
<td>DSPINV</td>
<td>111</td>
<td>32727.816</td>
<td>17237.198</td>
<td>16552.236</td>
<td>27.029</td>
<td>0.000</td>
</tr>
<tr>
<td>PART</td>
<td>285</td>
<td>50882.091</td>
<td>23939.055</td>
<td>23756.950</td>
<td>152.333</td>
<td>109.671</td>
</tr>
</tbody>
</table>

*Figure 339. Connect Transit Summary Extract: SQL query reporting peak percentiles*
Sample DB2 jobs

The following sample DB2 jobs are supplied in the SIPISAMP library:
- Sample DDL job IPICLDDL
- Sample Load job IPICLLOD
- Sample SQL queries IPICQML1 and IPICQML2

Ten worst response times

You can use a DB2 SQL query to highlight the top ten worst response times.
```
SELECT CTLTC AS "TRANSACTION_CODE",
TIME(CTLTIME) AS "START TIME",
DECIMAL(CTLELRS/1000,8,2) AS "RESPONSE_AVERAGE",
DECIMAL(CTLELIN/1000,8,2) AS "PRE_OTMA_AVERAGE",
DECIMAL(CTLELSF/1000,8,2) AS "SAF_AVERAGE",
DECIMAL(CTLELPR/1000,8,2) AS "OTMA_AVERAGE",
DECIMAL(CTLELCF/1000,8,2) AS "CONFIRM_AVERAGE",
DECIMAL(CTLELOT/1000,8,2) AS "POST_OTMA_AVERAGE",
DECIMAL(CTLELXX/1000,8,2) AS "EXIT_XMIT_AVERAGE",
DECIMAL(CTLELAR/1000,8,2) AS "READ_SOCK_AVERAGE"
FROM IPICONL.CONLIST
ORDER BY CTLELRS DESC
FETCH FIRST 10 ROWS ONLY
OPTIMIZE FOR 10 ROWS
```

This query produces output like the following:

<table>
<thead>
<tr>
<th>TRANSACTION CODE</th>
<th>START TIME</th>
<th>RESPONSE AVERAGE</th>
<th>PRE_OTMA AVERAGE</th>
<th>SAF AVERAGE</th>
<th>OTMA AVERAGE</th>
<th>CONFIRM AVERAGE</th>
<th>POST_OTMA AVERAGE</th>
<th>EXIT_XMIT AVERAGE</th>
<th>READ_SOCK AVERAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PART 15.26.25</td>
<td>5519.16</td>
<td>268.38</td>
<td>0.00</td>
<td>57.98</td>
<td>5149.02</td>
<td>43.77</td>
<td>0.17</td>
<td>5111.11</td>
<td></td>
</tr>
<tr>
<td>PART 16.58.11</td>
<td>2988.95</td>
<td>1895.00</td>
<td>0.00</td>
<td>1088.74</td>
<td>0.00</td>
<td>5.20</td>
<td>0.11</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>PART 16.58.11</td>
<td>2943.25</td>
<td>1808.59</td>
<td>0.00</td>
<td>1130.77</td>
<td>0.00</td>
<td>3.88</td>
<td>0.13</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>PART 16.58.11</td>
<td>2907.96</td>
<td>1846.99</td>
<td>0.00</td>
<td>1058.05</td>
<td>0.00</td>
<td>2.01</td>
<td>0.11</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>PART 16.58.11</td>
<td>2823.57</td>
<td>1836.53</td>
<td>0.00</td>
<td>976.59</td>
<td>0.00</td>
<td>10.45</td>
<td>0.12</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>PART 16.58.11</td>
<td>2766.14</td>
<td>1825.13</td>
<td>0.00</td>
<td>923.77</td>
<td>0.00</td>
<td>11.23</td>
<td>0.12</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>PART 16.58.11</td>
<td>2712.31</td>
<td>1873.00</td>
<td>0.00</td>
<td>830.20</td>
<td>0.00</td>
<td>9.10</td>
<td>0.14</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>PART 16.58.11</td>
<td>2670.28</td>
<td>288.92</td>
<td>0.00</td>
<td>239.58</td>
<td>0.00</td>
<td>51.77</td>
<td>0.11</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>PART 16.58.11</td>
<td>2622.52</td>
<td>1764.89</td>
<td>0.00</td>
<td>818.24</td>
<td>0.00</td>
<td>39.38</td>
<td>0.05</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>PART 16.58.11</td>
<td>2412.90</td>
<td>1688.80</td>
<td>0.00</td>
<td>719.75</td>
<td>0.00</td>
<td>4.35</td>
<td>0.13</td>
<td>0.00</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 40. IMS Tools Knowledge Base

IBM IMS Tools Knowledge Base (IMS Tools KB) is an IMS Tools product that allows you to store, manage, and access reports that are generated by any tool product that has been enabled and registered to participate in an IMS Tools Knowledge Base information management environment. It provides a common information management service that allows the sharing of data generated by multiple tool products within a sysplex from a single, centralized interface.

What does IMS Tools Knowledge Base do?

IMS Tools Knowledge Base provides centralized storage, access, and management of reports generated by IMS Tools.

IMS database administration responsibilities can include ensuring the availability and maintenance of many hundreds or thousands of databases. These database administration tasks require the services of many tools to perform backup, reorganization, and analysis operations. Reports that are generated by the tools during these operations can provide valuable information, such as documenting the success of tool execution or reporting statistics on the state of a database at that time.

Most of these reports are valuable to you long after they are generated. The reports, and the data that is provided in these reports, allow you to better utilize the rich information that is produced by the tools. Typically, however, most reports are deleted because there is no useful way to save and organize them.

With its common report repository and viewing interface, IMS Tools Knowledge Base can provide centralized report storage, access, and management capabilities for a complex sysplex environment. IMS Tools Knowledge Base becomes the single platform within a sysplex environment for multiple IMS Tools products to share report output.

IMS Tools KB features and benefits

IMS Tools KB provides a central repository for reports generated by IMS Tools.

IMS Tools KB provides the following features:

\* A central repository for automatically collecting output reports that are generated by participating IMS Tools products
\* Support for multiple IMS Tools products that are enabled for and registered with the IMS Tools KB environment
\* An interactive user interface (ISPF) with extensive and flexible search capabilities to quickly locate the reports that you need and then display them from anywhere in the sysplex environment
\* Report history retention, to provide a history of database analysis and actions taken

IMS Tools KB provides the following benefits:

\* One central report repository that is shared by all registered IMS Tools products in a sysplex and that provides convenient report administration
\* Preservation of data for future trend analysis and decision making
• Access to historical report data for accurate decision making
• Report retention policy based on user-defined criteria, such as the number of
days and the number of versions of a report
• Report retention policy customized for individual tools or individual reports
• Automatic report deletion, after a report is expired

**IMS Tools KB setup for IMS Performance Analyzer reports**

IMS Performance Analyzer is registered as a product (PRODUCTID=IP). All
fixed-format reports are registered. Also, generic report definitions are registered
for ten LIST and ten SUMMARY form-based reports and five user-written log
reports.

If the Product Definition Table (PDT) is updated, run the sample job IPIDITKB to
load it into the IMS Tools Knowledge Base repository. See “IMS Tools Knowledge
Base setup” on page 725.

**Related reading:** For information about how to install and configure IMS Tools
KB, see “Configuring IMS Tools Knowledge Base” in the *IMS Tools Knowledge Base
for z/OS User’s Guide*. For information about how to register more reports, such as
more user-defined form-based reports, see “Registering products and reports”.

To display the list of products that are available in the IMS Tools Knowledge Base,
select from the action bar menu Administration > 2. List Installed Products.

![View Help](SERVER: IPIXCFSV Installed Products List Row 1 to 2 of 2
Command ===>
卷轴>>> CSR
Select a row action or press End to exit.
Row Actions: S Subs List RP Remove Product RR Remove Release RS Remove Subs

<table>
<thead>
<tr>
<th>Act</th>
<th>Product Name</th>
<th>Product Release</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>IMS Performance Analyzer for z/OS</td>
<td>040400</td>
</tr>
<tr>
<td></td>
<td>IVP PRODUCT</td>
<td>010101</td>
</tr>
</tbody>
</table>

*Figure 342. IMS Tools KB: Installed products*

Enter S to view the list of reports defined for IMS Performance Analyzer.

Scroll down to view the full list. The following figure shows the reports at the end
of the list.
The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category or individual reports.

Loading IMS Performance Analyzer reports into IMS Tools KB

When you submit a Log Report Set, to redirect the output to the IMS Tools Knowledge Base, select the run-rime option Write to the ITKB repository and specify the ITKB server name.
About this task

Related reading: For information about how to import reports into the IMS Tools KB, see “Managing reports” in the IMS Tools Knowledge Base for z/OS User’s Guide.

Viewing IMS Performance Analyzer reports using IMS Tools KB

After loading your reports into the IMS Tools KB, you can use the IMS Tools KB ISPF dialog to find and view them.

Procedure

1. From the IMS Tools Knowledge Base primary option panel, select option 6 to display the list of reports.

   Administration Help
   ************************************************************
   SERVER: IPIXCFSV IMS Tools Knowledge Base Ver 1.5.0
   Option ===> 6

   Select an option or press END to exit.

   *Knowledge Base Server Name . . . IPIXCFSV
   Recon ID . . . . . . . . . . . . . . . . *History (y/n) N

   Display Database Report Output
   1 List of databases with reports
   2 List of DDnames with reports
   3 List of IMS Systems with reports
   4 List of Report jobs
   5 List of Report types
   6 List of Reports
   7 List of Products
   8 List reports using selection criteria
   9 List of all reports available
   10 List of recently viewed reports
   11 Exit

   Figure 344. IMS Tools KB: Primary option panel

   The list of reports that have been loaded into the IMS Tools Knowledge Base is displayed.

   View Help
   ************************************************************
   SERVER: IPIXCFSV Report List Row 1 from 6
   Command ==> ________________________ Scroll ==> CSR

   Select a row action or press END to exit.

   Row actions: S - List
   A Product Report Title
   IMSPA FORM LIST 1
   IMSPA FORM LIST 2
   IMSPA FORM LIST 3
   IMSPA FORM SUMMARY 1
   IVP PRODUCT IVP REPORT
   IMSPA USER LOG REPORT 1

   Figure 345. IMS Tools KB: List of report types
2. Select an IMS PA report. The list of occurrences of this report is displayed.

```
SERVER: IPIXCFSV Available Reports - Reports Row 1 from 1
Command ===> Scroll ===> CSR

Select a row action or press END to exit.

Row actions: S - View J - Job T - Step H - History P - Print D - Delete
             I - Info A - Archive

Act DBD Area/Part DD Set Recon ID IMS ID Grp Type Grp Name
S SUMM0001 NORCON
```

```
Figure 346. IMS Tools KB: List of available reports of selected type
```

3. Select a report from the list to display its contents.

```
IMS Performance Analyzer
MSC Summary Report

SUMM0001 Printed at 16:48:37 10Jun2008 Data from 09.19.52 02Apr2008 to 10.34.55

Trancode Count FrontEnd BackEnd Time Time Time Time
IVTCB 2 50.00% 50.00% 117.117 15.729.610 44.543 -
IVTCV 78 55.13% 44.87% 1.685 0.827 22.975 1.164
IVTCX 25 28.00% 28.00% 7.295 8.687 49.542 1.192
IVTN0 130 47.69% 45.38% 1.258 10.327.961 21.128 9.106
IVTNV 184 47.83% 47.83% - 3.518.618 43.831 0.878
Total 419 47.97% 45.35% 5.534 4.879.439 33.539 3.519
```

```
Figure 347. IMS Tools KB: Actual report content
```

The IMS Tools Knowledge Base ISPF dialog provides a variety of methods for finding your reports, such as by selection criteria, by job, or by group.
Chapter 41. Glossary of Report Form field names

This glossary lists all the fields available to Form-based transit and OMEGAMON TRF message queue reporting.

The fields are listed alphabetically ignoring embedded spaces (in column headings).

The field name is that used in the Report Forms dialog. It is also the default DB2 column name used when exporting a Form-based extract to DB2. The default DB2 table name is the Report Form name.

The field name is also used in the FIELDS operand in the batch report commands as follows:

IMSPALOG LIST(...,FIELDS(field1,...))
IMSPACEX LIST(...,FIELDS(field1,...))
IMSPATRF LIST(...,FIELDS(field1,...))
IMSPALOG SUMMARY(...,FIELDS(field1,...))
IMSPACEX SUMMARY(...,FIELDS(field1,...))
IMSPATRF SUMMARY(...,FIELDS(field1,...))

Other details provided for each field are:

• Short and long description.
• Source of the field: IMS, IMS Connect, or TRF.
• Column heading used for reports and extracts.
• Where applicable, the corresponding global field in IMS Problem Investigator.

For an explanation of other terms and abbreviations used in this book, refer to the index, the IMS Glossary, or to the following web page:

http://www.ibm.com/software/globalization/terminology

A

ABEND Code

See [COMPCODE]

ABENDCNT

For Form-based summary reporting only, the number of abending transactions that were accumulated in the key range. See also [TRANCNT]

Source: IMS and ATF

Column heading: Abend Count

ACKREAD

Acknowledgement read socket time. The total elapsed time for all read Socket Events issued after the response from OTMA has been sent to the client. This is time taken to read the acknowledgement from the client.

Source: IMS Connect

Column heading: ReadSock Ack Time

APPC

APPC indicator. Indicates whether the transaction originated from APPC.

Reported values are:
<table>
<thead>
<tr>
<th>Column heading: APPC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>APPC</strong></td>
</tr>
<tr>
<td><strong>CPI</strong></td>
</tr>
<tr>
<td><strong>blank</strong></td>
</tr>
</tbody>
</table>

Source: IMS

<table>
<thead>
<tr>
<th>Column heading: Applictn Grp Name</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>See [APPLNAME]</strong></td>
</tr>
</tbody>
</table>

**APPLNAME**
Application grouping name provided by the Transaction Substitution exit.

Source: IMS

<table>
<thead>
<tr>
<th>Column heading: ApplResp Time(R0)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>See [R0TIME]</strong></td>
</tr>
</tbody>
</table>

**ASIO Waits**
See [FPASIOWT]

**ASYNC Rd-Ahead**
See [FPASIORA]

<table>
<thead>
<tr>
<th>Column heading: BALG Q Count</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>See [FPBALGCT]</strong></td>
</tr>
</tbody>
</table>

**BMPCHKID**
The BMP user checkpoint id.

Column heading: BMP Chkpt ID

<table>
<thead>
<tr>
<th>Column heading: BMPCHKPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>The number of checkpoints issued by the BMP, or the unit of work.</td>
</tr>
<tr>
<td><strong>See also [BMPSYNCP]</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column heading: BMPSYNCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>The number of syncpoints issued by the BMP, or the unit of work.</td>
</tr>
<tr>
<td><strong>See also [BMPCHKPT]</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column heading: BMP Sync Cnt</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>See [FPASIORA]</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column heading: CEXcm Level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>See [COMPLVLCC]</strong></td>
</tr>
</tbody>
</table>

**CI Lock WAITS**
See [FPASIORA]

<table>
<thead>
<tr>
<th>Column heading: CICSAPPL</th>
</tr>
</thead>
<tbody>
<tr>
<td>CICS generic APPLID.</td>
</tr>
</tbody>
</table>

For CICS-DBCTL only, the generic APPLID of the CICS region that scheduled this thread.

The APPLID is extracted from the first 8 characters of the IMS recovery token.
CICSTASK
CICS task number. For CICS-DBCTL only, the task number of the CICS
transaction that scheduled this DBCTL thread.

In CICS Performance Analyzer, the associated CMF field is TRANNUM
DFHTASK P031 and is reported using field name TASKNO.

You can use the CICS task number to match transactions in the CICS and
IMS reports.

The CICS transaction name and task number are available in the IMS 08
log record. For details, see the IMS-supplied macro SDFSMAC(DFSLOG08).

Source: IMS

Column heading: CICS Task ID

CLASS
Transaction Class. Transaction class as specified in the TRANSACT macro
MSGTYPE parameter.
Source: IMS and TRF
Column heading: Class

CLIACK
Client acknowledgement indicator. Indicates how the IMS Connect
transaction client acknowledged the transaction results from IMS. Reported
values are:

ACK  Client positively acknowledged (ACK)
NAK  Client negatively acknowledged (NAK)
blank  Transaction was not Synch Level=CONFIRM

Source: IMS Connect

Column heading: CLI ACK

CLIENTID
Client ID. IMS Connect Client ID.
Source: IMS Connect
Column heading: Client ID

IMS Problem Investigator global field: ClientID

Clis See CLASS

CM0DELAY
OTMA Commit Mode 0 (Commit-Then-Send) client ACK time. For OTMA
Commit Mode 0 transactions only, the time it takes the client to
acknowledge the response back to IMS. The elapsed time is calculated from
when the output message is sent (Comms 31) to when the client
acknowledgement is received and dequeued (36). This is a part of
transaction processing time and can include the following:

• XCF overhead
• OTMA client (Connect) processing overhead and wait for client
  acknowledgement

Source: IMS

Column heading: CM0Delay Time

CM1DELAY
OTMA Commit Mode 1 (Send-Then-Commit) delay time. For OTMA
Commit Mode 1 transactions only, the delay in processing after the output
message has been sent to OTMA. The delay elapsed time is from when the output message is sent (03/31) to when the transaction commences syncpoint processing (5610). This delay is a part of transaction processing time and can include the following:

- XCF overhead
- For Synch Level=CONFIRM only, OTMA client (Connect) processing overhead and wait for client acknowledgement

Source: IMS

Column heading: CMIDelay Time

**COMMITMD**
Commit mode. IMS Connect Commit mode. Reported values are:

0  Commit mode 0, also called Commit-Then-Send
1  Commit mode 1, also called Send-Then-Commit

blank  Not an IMS Connect transaction

Source: IMS Connect

Column heading: Commit mode

**Commit SDEP CIs**
See [FPSDEPCI](#)

**Commit SDEP Seg**
See [FPSDEPSG](#)

**COMPCODE**
Completion Code. Transaction abend completion code.

Source: IMS and TRF

Column heading: ABEND Code

**COMPLVL**
IMS transaction completion level. IMS PA assigns a completion level to every transaction. Form-based reporting can specify a minimum completion level, instructing IMS PA to report only those transactions that have reached this level of completion. The IMS transaction completion levels are:

0  IMS message is a message switch or generated output message, not a transaction. Use Completion level 0 to analyze all message queue activity, not when transaction transit information is required.
1  Transaction input message enqueued onto the IMS message queue. Use Completion level 1 to analyze transaction message queue activity, not when transaction transit information is required.
2  Transaction has started processing in the dependent region but has not completed processing. Only input queue time is available for reporting.
3  Transaction has finished processing in the dependent region but has not sent the output message to the destination LTERM. Input queue and processing times are available for reporting.
4  Transaction has ended but resource utilization statistics (from the type 07 application termination record) are not available, possibly due to WFI processing (schedule not ended). Input queue, processing, output queue and total times are available for reporting.
5  Transaction has ended and resource utilization statistics (from the type 07 application termination record) are available, and are approximations only. Type 07 application termination record...
statistics are apportioned equally amongst all transactions processed by the program schedule. All fields are available for reporting.

Transaction has ended and resource utilization statistics are available. Unlike the approximations in completion level 5, type 56FA transaction-level accounting record provides accurate and reliable information. All fields are available for reporting.

Non-message driven BMP and DBCTL transactions are also included.

Source: IMS

Column heading: Comp Level

**COMPLVL**

Connect transaction completion level. IMS Connect transaction completion level. IMS PA assigns a completion level to every transaction. Form-based reporting can specify a minimum completion level, instructing IMS PA to report only those transactions that have reached this level of completion. The Connect transaction completion levels are:

0  IMS Connect non-transactional message initialized. Use Completion level 0 to analyze all activity.
1  IMS Connect transactional message initialized. Use Completion level 1 to analyze messages rejected by the message exit.
2  IMS Connect Message sent to OTMA for processing.
3  IMS Connect Message received from OTMA. This level may also indicate an OTMA timeout or error.
4  Transaction has completed Connect processing.

Source: IMS Connect

Column heading: CEXcm Level

**CONFIRM**

Client Confirm time. For Sync Level CONFIRM transactions only, the elapsed time from when OTMA completed processing the input message to when the ACK response from the client is sent back to OTMA.

Source: IMS Connect

Column heading: Confirm Time

**CONFOTMA**

OTMA ACK processing time. For Sync Level CONFIRM transactions, the time Connect waits for the ACK transaction to be processed by IMS and send the response back.

Source: IMS Connect

Column heading: OTMAconf Time

**Conn RTp Time**

See **OUTRTCON**

**Connect Logon Token**

See **CONNLTOK**

**Connect System**

See **HWSID**

**CONNLTOK**

Connect Logon token. IMS Connect logon token.

Source: IMS and IMS Connect
Column heading: Connect Logon Token

IMS Problem Investigator global field: LogToken

CONNOTOK
Connect Resume-Tpipe Orig Message logon token. IMS Connect logon token of the originating input message taken from the first IMS Connect event 58 (IMS Hold Queue Compensation) record encountered in the IMS Connect transaction.

Source: IMS Connect

Column heading: Resume Tpipe Orig Msg Token

CON Resp Time
See RESPCON

CON Tran Start
See STARTCON

Conv
See CONVERS

CONVERS
Conversational transaction indicator. Indicates whether a transaction is conversational as defined in the TRANSACT macro SPA parameter. Reported values are:
C Conversational
N Non-conversational
blank Not a message queue transaction

Source: IMS

Column heading: Conv

CPUSU
Program execution CPU time reported in service units. The service unit normalizes the reporting of CPU time to allow for performance comparisons between, for example, an older processor and a newer processor in terms of CPU effort. CPU service unit reporting is only available in Form-based transit reports.

The CPUSU is calculated as CPUSU = CPU * conversion factor. When IMS PA is running on the same system that generated the IMS log input file, the conversion factor can be calculated at run-time. Otherwise the conversion factor must be supplied to IMS PA in the command input as IMSPALOG SYSTEM(name,Vvrm,factor).

The conversion factor for each IMS system should be specified in your batch JCL:

1. Use the IPICPUSU REXX EXEC located in the SIPIEXEC library to calculate the conversion factor and generate the batch command:
   * IBM IMS Performance Analyzer: CPU time to Service Units conversion
   * SYSID: XYZ1
   * CPU VV --ID-- Model Speed Specialty
   * 0 00 039A37 2818 1.000
   * 1 00 039A37 2818 1.000
   * 2 00 039A37 2818 1.000 zIIP
   * Adjustment values: RMCTADJC=718 RMCTCPU=4097
   * Formula: SUSEC = 1000000 / (RMCTADJC * 256 / RMCTCPU)
   * Result: 1 CPU second = 22289.563 Service Units
The following IMSPA batch command will convert CPU time to SUs:

IMSPALOG SYSTEM(name,Vvrm,22289.563)

You can specify a conversion factor of CURRENT to instruct IMS PA to calculate the conversion factor at run time, based on the processor where IMS PA is executing. If you do not specify a conversion factor, IMS PA will use CURRENT.

2. Specify the command generated by step 1 in your batch JCL, for example:

```csh
//IMSPA JOB (ACCOUNT), 'NAME'
//IMSPA EXEC PGM=IPIMAIN, PARM='V141'
//STEPLIB DD DISP=SHR, DSN=IMSPA.V4R4M0.SIPILINK
//SYSPRINT DD SYSOUT=*  
//LOLD1001 DD DISP=SHR, DSN=IMS.OLD1.SLDS 
//LNEW1001 DD DISP=SHR, DSN=IMS.NEW1.SLDS  
///IPIOPTS DD *

* IMS System Definitions
IMSPALOG SYSTEM(OLD1,V121,14637.212)
IMSPALOG SYSTEM(NEW1,V141,22289.563)

/*

/IPICMD DD *
IMSPALOG LIST(SECGROUP, FIELDS(...,CPUSU,...))
IMSPALOG SUMMARY(SECGROUP, FIELDS(...,CPUSU,...))
IMSPALOG EXECUTE
*/

You must execute this REXX on the same system that created the IMS log file. The command generated by this REXX is then input into the IMS PA batch process.

Note: There is no provision for specialty processors.
Source: IMS and TRF

Column heading: CPUSU

CPUTIME
CPU time. Program execution CPU time, approximation only at completion level 5, accurate at completion level 6. Resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+). See also DBGETS and DBUPDATS.
Source: IMS and TRF

Column heading: CPU Time

CPUZAAP
zAAP/zIIP execution time.

D
DATABASE
The DBD name of the database used by the transaction.
DATABASE is the list of databases updated by the transaction (derived from the x'50' full function and the x'5950' fast path database update records) and read (checkpointed in the type x'18 log record).
A transaction can update more than one database. In this case there will be additional report lines for each database used by the transaction.

Source: IMS

<table>
<thead>
<tr>
<th>Database DBD Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>See DATABASE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DB AccM</th>
</tr>
</thead>
<tbody>
<tr>
<td>See DBACMETH</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DB Lock Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>See LOCKTIME</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DB Org Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>See DBORGTY</td>
</tr>
</tbody>
</table>

**DBACMETH**
Database access method. Reported values are:

- **CHKP** BMP user checkpoint. CHKP is an indicator that the database has been read by the BMP.
- **DEDB** Fast path data entry database
- **ESDS** Entry-sequenced data set (VSAM)
- **KSDS** Key-sequenced data set (VSAM)
- **OSAM** Overflow sequential access method

Recommendation: When requesting this field, also include the DATABASE field in the form. This will identify the database to which this field applies.

Source: IMS

<table>
<thead>
<tr>
<th>Column heading: Database DBD Name</th>
</tr>
</thead>
</table>

**DBBLKDEL**
The number of block deletes for the database.

Recommendation: When requesting this field, also include the DATABASE field in the form. This will identify the database to which this field applies.

Source: IMS

Column heading: DB Block Deletes

**DBBLKINS**
The number of block inserts for the database.

Recommendation: When requesting this field, also include the DATABASE field in the form. This will identify the database to which this field applies.

Source: IMS
Column heading: DB Block Inserts

**DBBLKREP**

The number of block replaces for the database.

A transaction can update more than one database. In this case there will be additional report lines for each database used by the transaction.

**Recommendation:** When requesting this field, also include the [DATABASE] field in the form. This will identify the database to which this field applies.

Source: IMS

Column heading: DB Block Replaces

**DBBLKUPD**

The number of block updates for the database.

A transaction can update more than one database. In this case there will be additional report lines for each database used by the transaction.

**Recommendation:** When requesting this field, also include the [DATABASE] field in the form. This will identify the database to which this field applies.

Source: IMS

Column heading: DB Block Updates

**DBCALLS**

DB call count. Full function database call count, approximation only at completion level 5, accurate at completion level 6. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56F transaction accounting record (IMS V10+).

Source: IMS

Column heading: DB Call Count

**DBCTLPRE**

The elapsed time between the start of the CICS transaction and the IMS PSB being scheduled and ready to process DLI calls.

For programs that issue the EXEC DLI SCHEDULE at the start of processing, this measurement can provide an estimate of the time for a DBCTL thread to become available, and for IMS to schedule it.

This time is calculated as 08 suffix STCK - IMS recovery token STCK.

For CICS-DBCTL, the IMS recovery token is generated by CICS, and consists of two parts:

1. CICS APPLID
2. Unique recovery UOW identifier (STCK value recorded in CMF field RMUOWID DFHTASK T132)

**DBDLET**

Database DLET call count. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56F transaction accounting record (IMS V10+).
<table>
<thead>
<tr>
<th>Column heading: DB DLET Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBGETS</td>
</tr>
<tr>
<td>DB get call count. Full function database get call count, approximation only at completion level 5, accurate at completion level 6. Get calls are GU, GN, GNP, GHU, GHN, GHNP. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).</td>
</tr>
</tbody>
</table>

Source: IMS

<table>
<thead>
<tr>
<th>Column heading: DB Get Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBGHN</td>
</tr>
<tr>
<td>Database Get Hold Next (GHN) call count. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).</td>
</tr>
</tbody>
</table>

Source: IMS

<table>
<thead>
<tr>
<th>Column heading: DB GHN Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBGHNP</td>
</tr>
<tr>
<td>Database Get Hold Next within Parent (GHNP) call count. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).</td>
</tr>
</tbody>
</table>

Source: IMS

<table>
<thead>
<tr>
<th>Column heading: DB GHNP Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBGHU</td>
</tr>
<tr>
<td>Database Get Hold Unique (GHU) call count. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).</td>
</tr>
</tbody>
</table>

Source: IMS

<table>
<thead>
<tr>
<th>Column heading: DB GHU Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBGN</td>
</tr>
<tr>
<td>Database Get Next (GN) call count. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).</td>
</tr>
</tbody>
</table>

Source: IMS
**DBGNP**

Database Get Next within Parent (GNP) call count. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

**DBGNS**

Total database GN, GNP, GHN, and GHNP calls. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

**DBGU**

Database Get Unique (GU) call count. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

**DBGUS**

Total database GU and GHU calls. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

**DBIOCALL**

Only available for IMS V10+. Total OSAM and VSAM database IO count, approximation only at completion level 5, accurate at completion level 6. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record.

Source: IMS
**DBIOTIME**  
Only available for IMS V10+. Database IO elapsed time, approximation only at completion level 5, accurate at completion level 6. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record.

Source: IMS

Column heading: DB IO Time

**DBISRT**  
Database ISRT call count. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

Column heading: DB ISRT Count

**DBORGTYPE**  
Database organization type.

A transaction can update more than one database. In this case there will be additional report lines for each database used by the transaction.

**Recommendation:** When requesting this field, also include the DATABASE field in the form. This will identify the database to which this field applies.

Source: IMS

Column heading: DB Org Type

**DBREPL**  
Database REPL call count. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

Column heading: DB REPL Count

**DBUPDATS**  
DB update call count. Full function database update call count, approximation only at completion level 5, accurate at completion level 6. Update calls are ISRT, DLET, REPL. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

Column heading: DB Updat Count
**DBUPRATE**

The number of updates per second to the database.

A transaction can update more than one database. In this case there will be additional report lines for each database used by the transaction.

**Recommendation:** When requesting this field, also include the DATABASE field in the form. This will identify the database to which this field applies.

Source: IMS

Column heading: Updates/Second

**DBWAITS**

DB wait count. Full function database wait count, approximation only at completion level 5, accurate at completion level 6. Waits can be for Test enqueues, Queue commands, Update and enqueues, Exclusive enqueues.

At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

Column heading: DB Wait Count

**DB2CPU**

DB2 CPU time.

Source: TRF

Column heading: DB2 CPU Time

**DCCALLS**

DC call count. DC message queue call count, approximation only at completion level 5, accurate at completion level 6. DC calls are GU, GN, ISRT, PURGE. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

Column heading: DC Call Count

**DDNAME**

Input log DDname. The name specified in the JCL for the log containing the start record (usually X'01') for this transaction.

Source: IMS

Column heading: IMS log DD name

**DEDAREA**

The DEDB area name of the database.

A transaction can update more than one database. In this case there will be additional report lines for each database used by the transaction.

**Recommendation:** When requesting this field, also include the DATABASE field in the form. This will identify the database to which this field applies.
DEDB Get Count
See FPDEGET

DEDB Put Count
See FPDEPUT

Dest Tmember
See TMEMBERD

DLAYOTMA
OTMA delay time. The delay attributable to OTMA for an IMS Connect transaction. This elapsed time is a combination of two times:
1. From when IMS connect sends the transaction message to OTMA, to when the message is enqueued onto the IMS message queue.
2. From when the IMS transaction sends the response back to OTMA, to when IMS Connect receives the response back.

OTMA delay time can only be calculated when IMS Connect and IMS log data is merged. This is because both IMS Connect Extensions and IMS log records are required to calculate the elapsed time delay.

Source: IMS Connect

Column heading: OTMA Delay Time

ESAFCALL
Total ESAF call count, approximation only at completion level 5, accurate at completion level 6. Available from IMS V10. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record.

Source: IMS

Column heading: ESAF Call Count

ESAFCCON
The time of day when the external subsystem completed Commit Continue processing during the transaction syncpoint.

A transaction can use more than one external subsystem (for example, DB2 and the WebSphere MQ adapter). In this case there will be additional report lines for each subsystem used by the transaction.

Recommendation: When requesting this field, also include the ESAFNAME field in the form. This will identify the subsystem to which this field applies.

Source: IMS

Column heading: Commit Cont Completed

ESAFCOMT
The elapsed time it took for the external subsystem to complete Commit processing during the transaction syncpoint.
A transaction can use more than one external subsystem (for example, DB2
and the WebSphere MQ adapter). In this case there will be additional
report lines for each subsystem used by the transaction.

**Recommendation:** When requesting this field, also include the
**ESAFNAME** field in the form. This will identify the subsystem to which
this field applies.

Source: IMS

Column heading: **Commit Time**

**ESAFNAME**

The name of the external subsystem used by the transaction.

A transaction can use more than one external subsystem (for example, DB2
and the WebSphere MQ adapter). In this case there will be additional
report lines for each subsystem used by the transaction.

Source: IMS

Column heading: **External Sub-Sys**

**ESAFPRE**

The time of day when the external subsystem started Commit Prepare
processing during the transaction syncpoint.

A transaction can use more than one external subsystem (for example, DB2
and the WebSphere MQ adapter). In this case there will be additional
report lines for each subsystem used by the transaction.

**Recommendation:** When requesting this field, also include the
**ESAFNAME** field in the form. This will identify the subsystem to which
this field applies.

Source: IMS

Column heading: **Commit Prep Started**

**EXITNAME**

The user message exit name for an IMS Connect transaction. This exit
name is extracted from the first “message exit returned from READ” event
record (log code 3E) for the transaction.

Source: IMS Connect

Column heading: **Exit Name**

**F**

**FAILED**

Transaction failure indicator. The reason for an IMS or Connect transaction
failure. Reported values are:

- **blank**  Transaction did not fail.
- **ABEND**  Transaction abend (abnormal end of task).
- **CANCEL**  Transaction cancelled.
- **REJECT**  Transaction rejected.
- **SESSION**  Connect transaction failed due to a session error.
- **SF= ?**  Fast Path Syncpoint Failure, code = ?
Failure Reason
See FAILED

FFDB50
The number of full-function database update (type 50) log records cut by this transaction.

FLD Call Count
See FPFLD

FP SyncP Count
See FPSYNCCCT

FPASIORA
Fast Path ASYNC Read-aheads. The number of UOW asynchronous read-aheads by HSSP or the High Speed DEDB Direct Reorganization utility in a transaction (one unit of work).
Source: IMS
Column heading: ASYNC Rd-Ahead

FPASIOWT
Fast Path Waits for ASIO. The number of UOW asynchronous read-aheads to complete by HSSP or the High Speed DEDB Direct Reorganization utility in a transaction (one unit of work). This number should be either zero or one.
Source: IMS
Column heading: ASIO Waits

FPBALGCT
Fast Path BALG Queue Count at Syncpoint. The number of transactions in the balancing group (BALG) queue when this transaction entered sync point processing.
Source: IMS
Column heading: BALG Q Count

FPBFOTHR
Fast Path Buffers sent to OTHREAD. The number of Fast Path buffers sent to OTHREAD.
Source: IMS
Column heading: OTHREAD Buffers

FPBFSTL
Fast Path Buffer steals per Tran. The number of times buffer stealing is invoked by this transaction.
Source: IMS
Column heading: FPBuffer Steals

FPBFWT
Fast Path Waits for Buffer. The number of times the transaction waited for a buffer to become available.
Source: IMS
FPBUFFER Steals
See \texttt{FPBFSTL}

FPCALLS
Fast Path database call count. FP DB calls are GU, GN, GNP, GHU, GHN, GHNP, ISRT, DLET, REPL, FLD, POS. FP resource usage statistics are accurate, not approximations. FP cuts a 5937 syncpoint record for every MPP transaction that uses a Fast Path database.

Source: IMS

Column heading: FP Call Count

FPCILWT
Fast Path CI Lock IWAITs.

Source: IMS

Column heading: CI Lock WAITS

FPDB5950
The number of Fast Path database update (type 5950) log records cut by this transaction.

Source: IMS

Column heading: DDEP Updates

FPDDEPU
The number of Direct Dependent Segment updates for the Fast Path database.

A transaction can update more than one database. In this case there will be additional report lines for each database used by the transaction.

\textbf{Recommendation:} When requesting this field, also include the \texttt{DATABASE} field in the form. This will identify the database to which this field applies.

Source: IMS

Column heading: DEDB Calls

FPDECL
Fast Path DEDB call count. DL/I calls to DEDB databases.

Source: IMS

Column heading: DEDB Get Count

FPDEGET
Fast Path DEDB Get count.

Source: IMS

Column heading: DEDB Put Count

FPDEPUT
Fast Path database DLET call count.

Source: IMS

Column heading: FP DLET Count
FPFLD
Fast Path FLD call count.
Source: IMS
Column heading: FLD Call Count

FPGETS
Fast Path database get call count. FP DB get calls are GU, GN, GNP, GHU, GHN, GHNP. FP resource usage statistics are accurate, not approximations. FP cuts a 5937 syncpoint record for every MPP transaction that uses a FP database.
Source: IMS
Column heading: FP Get Count

FPGHN
Fast Path GHN call count. Fast Path database Get Hold Next (GHN) call count.
Source: IMS
Column heading: FP GHN Count

FPGHNP
Source: IMS
Column heading: FP GHNP Count

FPGHU
Fast Path GHU call count. Fast Path database Get Hold Unique (GHU) call count.
Source: IMS
Column heading: FP GHU Count

FPGN
Source: IMS
Column heading: FP GN Count

FPGNP
Source: IMS
Column heading: FP GNP Count

FPGNS
Fast Path GN + GNP + GHN + GHNP call count. Total of Fast Path database GN, GNP, GHN and GHNP calls.
Source: IMS
Column heading: FP GNS Count

FPGU
Fast Path GU call count. Fast Path database Get Unique (GU) call count.
Source: IMS
Column heading: FP GU Count
FPGUS
Fast Path GUX call count. Total of Fast Path database GU and GHU calls.
Source: IMS
Column heading: FP GUX Count

FPISRT
Source: IMS
Column heading: FP ISRT Count

FPMSCL
Fast Path MSDB call count. DL/I calls to MSDB databases.
Source: IMS
Column heading: MSDB Calls

FPNBFS
Fast Path NBA Value. The NBA (normal) buffer value specified in the
region startup procedure.
Source: IMS
Column heading: NBA Buffers

FPNBFU
Fast Path NBA Buffers used. The number of NBA (normal) buffers used.
Source: IMS
Column heading: NBA Used

FPNRDBFU
Fast Path MSDB and SDEP buffers used. Number of buffers used by MSDB
and SDEP processing.
Source: IMS
Column heading: SDEP Buf Used

FPOBFS
Fast Path OBA Value. The OBA (overflow) buffer value specified in the
region startup procedure.
Source: IMS
Column heading: OBA Buffers

FPOBFU
Fast Path OBA Buffers used. The number of OBA (overflow) buffers used.
Source: IMS
Column heading: OBA Used

FPOTELAP
For transactions that update Fast Path DEDBs, the time taken to complete
output thread (OTHREAD) processing.

OTHREAD is an asynchronous process that performs the updates to the
Fast Path databases. Depending on delays, OTHREAD can complete before
or after the end of transaction processing, but always independently.

It is calculated as 5612 suffix STCK - TPCCLK
<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
<th>Source</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPPBFU</td>
<td>Fast Path PVT Buffers used. The number of private buffers used by HSSP or the High Speed DEDB Direct Reorganization utility in a transaction (one unit of work).</td>
<td>IMS</td>
<td></td>
</tr>
<tr>
<td>FPBFWT</td>
<td>Fast Path PVT Buffer Waits. The number of waits for private buffers by HSSP or the High Speed DEDB Direct Reorganization utility in a transaction (one unit of work).</td>
<td>IMS</td>
<td></td>
</tr>
<tr>
<td>FPPOS</td>
<td>Fast Path POS call count.</td>
<td>IMS</td>
<td></td>
</tr>
<tr>
<td>FPPRCTYP</td>
<td>Fast Path Process type. Fast Path Process type from the 5937/38 log record. Reported values are:</td>
<td>IMS</td>
<td></td>
</tr>
<tr>
<td>HSSP</td>
<td>HSSP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-HSSP</td>
<td>Non-HSSP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data-Cap</td>
<td>Data Capture Log written</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abort</td>
<td>APPL Abort (Sent DFS2766I)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Java</td>
<td>JAVA Application</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FPSDEPCI</td>
<td>Commit SDEP CI number used.</td>
<td>IMS</td>
<td></td>
</tr>
</tbody>
</table>
Column heading: Commit SDEP CIs

FPSDEPI
The number of Sequential Dependent Segment inserts for the Fast Path database.
A transaction can update more than one database. In this case there will be additional report lines for each database used by the transaction.

Recommendation: When requesting this field, also include the DATABASE field in the form. This will identify the database to which this field applies.
Source: IMS

Column heading: SDEP Inserts

FPSDEPSG
Commit SDEP Segment used. Commit SDEP Segment number.
Source: IMS

Column heading: Commit SDEP Seg

FPSEMHQI
Fast Path Shared EMHQ Input time. Shared EMHQ Input time is the elapsed time a transaction input message spends on the shared EMH queue.
Source: IMS

Column heading: SEMHQ Input

FPSEMHQO
Fast Path Shared EMHQ Output time. Shared EMHQ Output time is the elapsed time a transaction output message spends on the shared EMH queue.
Source: IMS

Column heading: SEMHQ Output

FPSYNCCT
Fast Path Syncpoint count. The number of Fast Path synchronization points for a transaction. This value is a count of the following IMS log records for a transaction:
• X'5937' Fast Path synchronization point operation completed
• X'5938' Fast Path synchronization point operation was unsuccessful
Source: IMS

Column heading: FP SyncP Count

FPTOTIME
Fast Path Terminal Output time. Terminal output time is the elapsed time that the Fast Path transaction output message took to be sent to the terminal.
Source: IMS

Column heading: OutTermQ Time

FPUOWLWT
Fast Path UOW Lock IWAITs.
Source: IMS

Column heading: UOW Lock WAITS
**FPUPDATS**
Fast Path database update call count. FP DB update calls are ISRT, DLET, REPL. FP resource usage statistics are accurate, not approximations. FP cuts a 5937 syncpoint record for every MPP transaction that uses a FP database.
Source: IMS
Column heading: FP Updat Count

**FPVSORFD**
VSO Reads from Dataspace. The number of CI read requests satisfied from a dataspace or coupling facility structure.
Source: IMS
Column heading: VSO Read Dataspace

**FPVSREAD**
VSO Reads from DASD. The number of CIs read from DASD into a dataspace or coupling facility structure.
Source: IMS
Column heading: VSO Read DASD

**FPVSWRIT**
VSO Writes to DASD. The number of CIs with updates to a dataspace or coupling facility structure. This number represents the number of CIs that would have been sent to OTHREAD if the areas were non-VSO.
Source: IMS
Column heading: VSOWrite DASD

**FPWAITS**
Fast Path DB wait count. Fast Path database wait count. FP DB waits include waits for DEDB Buffers, CI locks, UOW locks. FP resource usage statistics are accurate, not approximations. FP cuts a 5937 syncpoint record for every MPP transaction that uses a FP database.
Source: IMS
Column heading: FP Wait Count

**H**

**HWSID**
IMS Connect system name.
Source: IMS Connect
Column heading: Connect System

**I**

**ICALCNT**
Sync Callout Message count. The number of IMS calls (DL/I ICAL calls) by this transaction. This number is taken from either the application terminate accounting (log code 07) record or the transaction-level statistics (log code 56FA) record.

**IMSACK**
IMS acknowledgement indicator. Indicates how the IMS Connect transaction was acknowledged by IMS. Reported values are:
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACK</td>
<td>IMS positively acknowledged (ACK)</td>
</tr>
<tr>
<td>NAK</td>
<td>IMS negatively acknowledged (NAK)</td>
</tr>
<tr>
<td>blank</td>
<td>Transaction was not acknowledged by IMS</td>
</tr>
</tbody>
</table>

Source: IMS Connect

Column heading: IMS ACK

**IMSID**

Processing IMS ID. IMS subsystem ID where the transaction was processed.

Source: IMS and TRF

Column heading: Proc IMS ID

IMS Problem Investigator global field: IMSID

**IMS log DD name**

See DDNAME

**IMSRel**

See IMSVER

**IMS Resp Time**

See RESPIMS

**IMS RTp Time**

See OUTRTIMS

**IMS RTp Tot Time**

See TOTRTIMS

**IMS Tran Start**

See STARTIMS

**IMSVER**

Processing IMS Version. IMS Version of the system where the IMS transaction was processed.

Source: IMS and TRF

Column heading: Proc Vers

IMS Problem Investigator global field: IMSRel

**Input Msg Len**

See MSGLIN

**INPUTQ**

Input queue time. The elapsed time from when the input message is enqueued onto the message queue (01/35) to when the program starts processing the transaction (31 DLI).

Source: IMS and TRF

Column heading: InputQ Time

**INREAD**

Input read Socket time. The elapsed time taken for IMS Connect to read the incoming message from when the transaction input message enters IMS Connect (Read Prepare) to when IMS Connect has completed reading the message (final Read Socket).

Source: IMS Connect

Column heading: ReadSock In Time
<table>
<thead>
<tr>
<th>Column Heading</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP ADDR</td>
<td>Client IP address, either IPv4 dot-decimal notation or IPv6 format. Source: IMS Connect</td>
</tr>
<tr>
<td>JOBNAME</td>
<td>Region Jobname. Jobname of the dependent region that processed the transaction. Source: IMS and TRF</td>
</tr>
<tr>
<td>LOCKTIME</td>
<td>Database Locking elapsed time. Database Locking elapsed time, approximation only at completion level 5, accurate at completion level 6. Available from IMS V10. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record. Source: IMS</td>
</tr>
<tr>
<td>LOGTOKEN</td>
<td>See CONNLTOK</td>
</tr>
<tr>
<td>LTERM</td>
<td>Input LTERM. The LTERM from where the incoming transaction was initiated. For a generated message, the LTERM is unavailable and the Userid is reported. Source: IMS and TRF</td>
</tr>
<tr>
<td>LTERMOVR</td>
<td>Override LTERM. Override LTERM to where the output message from the transaction is sent. Source: IMS and Connect</td>
</tr>
<tr>
<td>LTERMOVR</td>
<td>Override LTERM to where the output message from the transaction is sent. Source: IMS and Connect</td>
</tr>
</tbody>
</table>

IMS Problem Investigator global field: LTerm
MSC  MSC indicator. Indicates whether the transaction involved MSC. Reported values are:
  FE Front-end MSC transaction, where the transaction originated
  BE Back-end MSC transaction, where the transaction was processed
  blank Not an MSC transaction
  Source: IMS
  Column heading: MSC

MSDB Calls
  See [FPMSCL]

MSGLIN
  Input Message length (including prefix). Input message length, including the message prefix. All type 01 records for the transaction input messages are accumulated to obtain the total input message length.
  Source: IMS and TRF
  Column heading: Input Msg Len

MSGLOUT
  Output Message length (including prefix). Output message length, including the message prefix. All type 03 records for output messages issued by the transaction are accumulated to obtain the total output message length.
  Source: IMS and TRF
  Column heading: Output Msg Len

NBA Buffers
  See [FPNBFS]

NBA Used
  See [FPNBFU]

OBA Buffers
  See [FPOBFS]

OBA Used
  See [FPOBFU]

ORGLTERM
  Originating LTERM. Input LTerm of the originating transaction in the program switch sequence. For the first transaction in a program switch sequence, ORGLTERM is input LTerm. For subsequent transactions in the program switch sequence, ORGLTERM is blank for List reports and the originating LTerm for Summary reports.
Use ORGLTERM for Transit List-style reporting where you want to see the start of a program switch sequence, followed by the program switches in sequence.

ORGLTERM has special values for non-message driven transactions:

- **CICS-DBCTL**
  - CICS APPLID (taken from the IMS recovery token)
- **BMP**  
  - Job name

Source: IMS

Column heading: 0rg LTERM

**ORGTRAN**

Originating transaction code. Transaction Code of the originating transaction in the program switch sequence. Use ORGTRAN, TRANCODE and PGMSWIT (hidden) as keys for Form-based summary reporting when transit analysis is required. IMS PA will summarize transaction transit activity by grouping all transactions involved in program switching, in the sequence that they are processed.

Source: IMS and IMS Connect

Column heading: 0rg Trancode

**ORGUOWID**

Originating tracking unit of work (UOW) ID. Only the tracking token is reported, as this uniquely identifies a transaction in a sysplex. Field ORGIMS contains the UOW originating IMS subsystem ID.

Source: IMS

Column heading: Originating UOW ID

IMS Problem Investigator global field: 0rgUOWID

**ORGVER**

Originating IMS Version. IMS Version of the system where the IMS transaction originated.

Source: IMS

Column heading: 0rg Vers

**ORIGDS**

Original datastore. IMS Connect original datastore.

Source: IMS Connect

Column heading: Original Datastor

**Orig Tmember**

See TMEMBERO

**OSAMREAD**

OSAM read IO count, approximation only at completion level 5, accurate at completion level 6. Available from IMS V10. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record.

Source: IMS
OSAMWRIT
OSAM write IO count, approximation only at completion level 5, accurate at completion level 6. Available from IMS V10. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record.
Source: IMS

Column heading: OSAMWRIT Count

OTMA
OTMA indicator. Indicates whether the transaction originated from OTMA. Reported values are:
  OTMA
    Transaction originated from OTMA, via an unknown Client
  CONNECT
    Transaction originated from OTMA, via IMS Connect
  MQ
    Transaction originated from OTMA, via WebSphere MQ
  blank
    Transaction did not originate from OTMA

Source: IMS

Column heading: OTMA

OUTDEQ
Output messages dequeued count. The number of output messages sent (dequeued) by the transaction. Compare OUTENQ to OUTDEQ to ensure that output messages issued by transactions are being sent to the destination LTERM (dequeued). Outstanding output messages can fill the message queue, causing IMS to fail.
Source: IMS

Column heading: OUTDEQ Count

OUTENQ
Output messages enqueued count. The number of output messages issued (enqueued) by the transaction. Compare OUTENQ to OUTDEQ to ensure that output messages issued by transactions are being sent to the destination LTERM (dequeued). Outstanding output messages can fill the message queue, causing IMS to fail.
Source: IMS

Column heading: OUTENQ Count
OUTPUTG
SMQ global output queue time. The elapsed time from when the output
message is put onto the shared message queue by the backend system to
when it is read off the queue by the frontend system.
Source: IMS and TRF
Column heading: SMQ Glob OutQTime

OUTPUTL
SMQ local output queue time. The elapsed time from when the output
message is read from the shared message queue to when it is sent to the
output LTERM.
Source: IMS and TRF
Column heading: SMQ Locl OutQTime

Output LTERM
See LTERMOUT

Output Msg Len
See MSGLOUT

OUTPUTQ
Output queue time. The elapsed time from when the transaction ends to
when the output message is sent back to the LTERM.
Source: IMS and TRF
Column heading: OutputQ Time

OUTRTCON
IMS Connect Resume-Tpipe time. Calculated as the elapsed time between
the Connect 48 Trigger Event that terminates the Send-Only Connect
transaction and the subsequent Connect 42 OTMA Message Received Event
after the Resume-Tpipe transaction has commenced.
Source: IMS Connect
Column heading: Conn RTp Time

OUTRTIMS
IMS Resume Tpipe output time. The elapsed time from when the
transaction output message is sent to the Tpipe (transaction 31 COMMS) to
when the Resume Tpipe takes the output message and sends it to its final
destination (RTPIPE 31 COMMS).
Source: IMS
Column heading: IMS RTp Time

OutTermQ Time
See FPTOTIME

P
PARTRAN
Parent transaction code. The transaction code of the parent transaction in
the program switch sequence.
Source: IMS
Column heading: Parent Trancode
PGMSIZE
MPP preload module size in bytes. If the address space is swapped out during the TRF data collection, this field will be zero. Always zero for BMPs and DBCTL threads.
Source: TRF
Column heading: Preload Size

PGMSWIT
Transaction number in program switch sequence. The sequence number of the transaction in the program switch sequence. The originating transaction starts the sequence at position 0. Use ORGTRAN PGMSWIT (hidden) and TRANCODE as keys for Form-based summary reporting when transit analysis is required. IMS PA will summarize transaction transit activity by grouping all transactions involved in program switching, in the sequence that they are processed.
Source: IMS
Column heading: Prog Swit#

PgmSwitch Time
See SWITTIME

PH1+PH2 Time
See FPPH1PH2

PORT
IMS Connect TCP/IP Port number.
Source: IMS Connect
Column heading: Port
IMS Problem Investigator global field: Port

PORTDEP
Port depth. The number of concurrently open sockets on the port from which the transaction was received. This field can be used to monitor the socket usage at the time the individual transactions were received by IMS Connect.
Source: IMS Connect
Column heading: Port Depth

PORTTYPE
Port type. Indicates whether a transaction is using a TCP/IP or Local port connection. Reported values are:
T   TCP/IP
L   Local
blank   Not a Connect transaction
Source: IMS Connect
Column heading: Port Type

POS Call Count
See FPPOS

POSTOTMA
Total post-OTMA output time. For Sync Level NONE transactions, the elapsed time from when OTMA completed processing the input message to when the transaction terminates (trigger event). For Sync Level CONFIRM
transactions, the elapsed time from when OTMA completed processing the
ACK response to when the transaction terminates (trigger event).

Source: IMS Connect

<table>
<thead>
<tr>
<th>Column heading: PostOTMA Time</th>
</tr>
</thead>
</table>

**PREOTMA**

Total pre-OTMA input time. The elapsed time from when the transaction
input message enters IMS Connect (Read Prepare) to when the transaction
is sent to IMS (OTMA) for processing.

Source: IMS Connect

<table>
<thead>
<tr>
<th>Column heading: PreOTMA Time</th>
</tr>
</thead>
</table>

**PRIORITY**

Transaction priority. As specified in the TRANSACT macro PRTY
parameter.

Source: IMS

<table>
<thead>
<tr>
<th>Column heading: Pr</th>
</tr>
</thead>
</table>

**Private <16M**

See | PRMEM24 |
|-----|

**Private >16M**

See | PRMEM31 |
|-----|

**PRMEM24**

Private storage below 16M line. Allocated private storage in bytes below
the 16M line. If the address space is swapped out during the TRF data
collection, this field will be zero. Always zero for DBCTL threads.

Source: TRF

<table>
<thead>
<tr>
<th>Column heading: Private &lt;16M</th>
</tr>
</thead>
</table>

**PRMEM31**

Private storage above 16M line. Allocated private storage in bytes above
the 16M line. If the address space is swapped out during the TRF data
collection, this field will be zero. Always zero for DBCTL threads.

Source: TRF

<table>
<thead>
<tr>
<th>Column heading: Private &gt;16M</th>
</tr>
</thead>
</table>

**PROCESS**

Processing time. The elapsed time the transaction spends processing in the
dependent region.

Source: IMS and TRF

<table>
<thead>
<tr>
<th>Column heading: Process Time</th>
</tr>
</thead>
</table>

**Processing UOW ID**

See | PROUOWID |
|-----|

**Process Start**

See | STARTDEP |
|-----|

**Process Type**

See | FPPRCTYP |
|-----|

**Proc IMS ID**

See | IMSID |
|-----|
PROCOTMA
OTMA processing time. The elapsed time OTMA spent processing the transaction, from when the message is sent to IMS (OTMA) to when the response is received back from OTMA. Transaction messages are sent to OTMA for processing. For Sync Level CONFIRM transactions, the ACK response from the client is also sent to OTMA for processing.
Source: IMS Connect
Column heading: 0TMAproc Time

PROGRAM
Program or PSB name.
Source: IMS and TRF
Column heading: Program
IMS Problem Investigator global field: Program

Program exec time
See PROCESS

Prog Swit#
See PGMSWIT

PROUOWID
Processing tracking unit of work (UOW) ID.
Source: IMS
Column heading: Processing UOW ID

PSTID
Region PST ID. The PST ID of the dependent region that processed the transaction.
Source: IMS and TRF
Column heading: PST
IMS Problem Investigator global field: Region

PVT Buff Used
See FPPBFU

PVT Buff Waits
See FPPBFWT

Q

QTYPE
Queue type. Indicates the type of queue from where the transaction was taken to be processed. Reported values are:

MSGQ
IMS message queue

LOCALF
Local-first (always processed by the same system where the message was queued)

LOCAL
IMS shared queue, processed locally by the frontend IMS system

GLOBAL
IMS shared queue, processed globally by another backend IMS system
NONMSG
Non-message driven BMP

CPI-CI
CPI-CI APPC transaction scheduled in message region

Use TRANCODEx and QTYPE as keys for Form-based summary reporting when transit analysis of input queue time is required. For shared queues, you will be able to compare input queue times for globally and locally processed transactions.

Source: IMS

Column heading: Queue Type

R

RATEMIN
Transaction rate / Minute. For Form-based summary reporting only, the transaction rate per minute.

Source: IMS, Connect, and TRF

Column heading: Rate/Min

RATESEC
Transaction rate / Second. For Form-based summary reporting only, the transaction rate per second.

Source: IMS, Connect, and TRF

Column heading: Rate/Sec

READEXIT
Read message Exit time. The elapsed time the input message spent being processed by the READ Message Exit. For Sync Level NONE transactions, the READ Message Exit is called once for the input message. For Sync Level CONFIRM transactions, the READ Message Exit is called twice, initially for the input message and a second time for the ACK response from the client.

Source: IMS Connect

Column heading: ReadExit Time

ReadSock Ack Time
See ACKREAD

ReadSock In Time
See INREAD

RECOVER
Recoverable transaction indicator. Indicates whether a transaction is recoverable or non-recoverable as defined in the TRANSACT macro INQUIRY parameter. Reported values are:

R Recoverable
N Non-recoverable
blank Not a message queue transaction

Source: IMS

Column heading: Rec
REGOCCUP
The elapsed time that an MPP transaction spends in the dependent region, from when it is scheduled, or starts processing, to when the next transaction is eligible for processing.
Source: IMS
Column heading: Region Occ Time

RECTOKEN
The last 8 hexadecimal bytes (unique part) of the IMS unit of recovery token.
The recovery token is a 16-byte token that uniquely identifies a unit of work. The token consists of the following items:

IMSID
8-character IMS subsystem ID padded with blanks.

OASN
4-byte origin application sequence number assigned at schedule time. OASN is unique and reset back to zero at cold start.

COMN
4-byte commit number initialized to zeros and incremented each time the application goes through commit processing.
For CICS-DBCTL only, the recovery token is generated by CICS and consists of the 8-character CICS generic APPLID followed by the 8-byte RMUOWID (a STCK value).
To report the full recovery token, use RECTOKID and RECTOKEN together.
Source: IMS and TRF
Column heading: Recovery Token
IMS Problem Investigator global field: RecToken

RECTOKID
The first 8 characters of the IMS unit of recovery token, identifying the system where the transaction is processed.
The recovery token is a 16-byte token that uniquely identifies a unit of work. The token consists of the following items:

IMSID
8-character IMS subsystem ID padded with blanks.

OASN
4-byte origin application sequence number assigned at schedule time. OASN is unique and reset back to zero at cold start.

COMN
4-byte commit number initialized to zeros and incremented each time the application goes through commit processing.
For CICS-DBCTL only, the recovery token is generated by CICS and consists of the 8-character CICS generic APPLID followed by the 8-byte RMUOWID (a STCK value).
To report the full recovery token, use RECTOKID and RECTOKEN together.
<table>
<thead>
<tr>
<th>Region</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>AER</td>
<td>IMS Application Execution</td>
</tr>
<tr>
<td>BAT</td>
<td>Batch Application</td>
</tr>
<tr>
<td>BMP</td>
<td>Batch message region</td>
</tr>
<tr>
<td>CPI</td>
<td>CPI-CI APPC in a Message region</td>
</tr>
<tr>
<td>DBC</td>
<td>DBCTL</td>
</tr>
<tr>
<td>IFP</td>
<td>Fast Path Message-Driven region</td>
</tr>
<tr>
<td>JBP</td>
<td>JBP region</td>
</tr>
<tr>
<td>JMP</td>
<td>JMP region</td>
</tr>
<tr>
<td>MPP</td>
<td>Message region</td>
</tr>
<tr>
<td>MSC</td>
<td>MSC transaction sent to a remote IMS system for processing</td>
</tr>
<tr>
<td>ODB</td>
<td>Open database (ODBM/ODBA)</td>
</tr>
<tr>
<td>SWI</td>
<td>Message switch or generated output message, not a transaction</td>
</tr>
<tr>
<td>TRK</td>
<td>Tracking thread</td>
</tr>
<tr>
<td>UTI</td>
<td>Utility</td>
</tr>
</tbody>
</table>

Source: IMS and TRF

| Column heading: Reg Typ |

**REJECT**

Transaction rejected indicator. Indicates whether an IMS Connect transaction has been rejected. Reported values are:

- R: Transaction rejected
- blank: Transaction not rejected

Source: IMS Connect

| Column heading: Rej |

**REROUTNM**

Connect Reroute name. The name used on a NAK Reroute request to specify the new destination for the message being NAK’d.

Source: IMS Connect

| Column heading: Reroute Name |

**RESPCON**

Connect response time. The elapsed time from when the transaction input message enters IMS Connect (Read Prepare) to when the transaction terminates (trigger event).

Source: IMS Connect

| Column heading: CON Resp Time |

**RESPIMS**

IMS response time. IMS transaction end-user response time. The elapsed time from when the input transaction is enqueued by IMS (01/35) to when the response is sent back to the originating LTERM (31 Communications). Only transactions that respond back to their originating LTERM incur a response time. Responses may occur prior to the completion of program execution time resulting in a response time less than the total transaction time. To analyze all transactions from end-to-end, regardless of their response destination, use field TOTALTM.

Source: IMS and TRF
Column heading: IMS Resp Time

RESPMODE
Response mode indicator. Indicates whether a transaction is response mode or not. Reported values are:
R  Response mode
N  Not response mode
blank  Not a message queue transaction
Source: IMS

Column heading: Resp Mode

Resp time
See RESPIMS

RESUMETP
Resume Tpipe indicator. Indicates whether IMS Connect uses a resume Tpipe to request asynchronous output data from IMS during a transaction. Reported values are:
R  Resume Tpipe is used
N  Resume Tpipe is not used
blank  Not a Connect transaction
Source: IMS Connect

Column heading: Resum Tpipe

IMS Problem Investigator global field: ResumeTP

Resume Tpipe Orig Msg Token
See CONNOTOR

Routing Code
See FPRTCODE

RXMLEXIT
XML Adapter message Exit time. The elapsed time the input message from the XML Adapter spent being processed by the READ Message Exit.
Source: IMS Connect

Column heading: RXMLEXit Time

R0TIME
Internal Application Response time. The sum of the input queue time and processing time.
Source: IMS and TRF

Column heading: ApplResp Time(R0)

R1TIME
Total Response time. The sum of the input queue time, processing time, and output queue time.
Source: IMS and TRF

Column heading: Tot Resp Time(R1)

S

SAF Call Time
See SAFTIME
SAFTIME
SAF security call time. The accumulated elapsed time spent in all SAF calls for the message.
Source: IMS Connect
Column heading: SAF Call Time

SCHEDTM
Schedule time. The elapsed time from when the application program starts (08) to when the input message processing starts (31 DLI).
Source: IMS and TRF
Column heading: Schedule Time

SCHEDWIC
Wait time for Intent Conflict, taken from the LINTMINT field of the IMS Application Start (08) record.

SCHEDWPS
Wait time for Pool Space, taken from the LINTMPOL field of the IMS Application Start (08) record.

SCOACKCT
Sync Callout ACK count. The number of Sync callout ACK events attributed to the transaction. See also SCOACKTM.
Source: IMS
Column heading: SyncCout ACK Cnt

SCOACKTM
Sync Callout ACK time. The elapsed time from when the Sync Callout message is sent to when the ACK is received (YOUT-YACK). If the transaction issued more than one ICAL call, then this field contains the sum of all ACK times. The count of ACK times is available in SCOACKCT.
Source: IMS
Column heading: SyncCout ACK Time

SCOCALCT
Sync Callout Response count. The number of ICAL calls issued by the transaction that recorded a response time. See also SCOCALTM.
Source: IMS
Column heading: SyncCout Resp Cnt

SCOCALTM
Sync Callout Total time. The elapsed time from when the Sync Callout message is sent to when the Response (YOUT-YRSP) or a NAK (YOUT-YNAK) is received back. If the transaction issued more than one ICAL call, then this field contains the sum of all elapsed times. The count of Total Response times is available in SCOCALCT.
Source: IMS
Column heading: SyncCout RespTime

SCOEXTCT
Sync Callout External Response count. The total number of Sync Callout external acknowledgements or responses processed by the transaction. See also SCOEXTTM.
| Source: IMS |
| Column heading: SyncCout XRsp Cnt |

**SCOEXTTM**

Sync Callout External Response time. The elapsed time from when the Sync Callout ACK is received to when either the Response (YOUT-YRSP) or a NAK (YOUT-YNAK) is received. If the transaction issued more than one ICAL call, then this field contains the sum of all elapsed times. The count of External Response times is available in **SCOEXTCT**.

| Source: IMS |
| Column heading: SyncCout XRsp Cnt |

**SCONAKCT**

Sync Callout NAK count. The number of Sync callout ACK events attributed to the transaction. See also **SCONAKTM**.

| Source: IMS |
| Column heading: SyncCout NAK Cnt |

**SCONAKTM**

Sync Callout NAK time. The elapsed time from when the Sync Callout message is sent to when the NAK is received (YOUT-YNAK). If the transaction issued more than one ICAL call, then this field contains the sum of all NAK times. The count of NAK times is available in **SCONAKCT**.

| Source: IMS |
| Column heading: SyncCout NAK Time |

**SDEP Buf Used**

See **FPNRDBFU**

**SEMHQ Input**

See **FPSEMHQI**

**SEMHQ Output**

See **FPSEMHQO**

**SMQ Glob OutQTime**

See **OUTPUTG**

**SMQ Locl OutQTime**

See **OUTPUTL**

**SOCKET**

Socket number.

| Source: IMS Connect |
| Column heading: Sock Num |

**SRBTIME**

Program execution SRB time.

| Source: TRF |
| Column heading: SRB Time |

**STARTCON**

Connect transaction start time. The time of day when the transaction input message enters IMS Connect (Read Prepare).
Source: IMS Connect

Column heading: CON Tran Start

STARTDEP
IMS transaction processing start. The time of day when the IMS Full Function transaction starts (31). The time of day when the Fast Path transaction starts (5901+InputQ).
Source: IMS

Column heading: Process Start

STARTIMS
IMS transaction arrival time. The time of day when the transaction input message is enqueued onto the IMS message queue (01/35).
Source: IMS and TRF

Column heading: IMS Tran Start

STARTLVL
IMS transaction start level. Start level is an attribute that IMS PA assigns to every transaction reported in the IMS log. It is an indicator of how far the transaction lifecycle has already progressed at the start of the IMS log. Together with Completion level, Start level is an indicator of the completeness of information collected about the reported transaction. For example you may choose to report only those transactions that started and ended with the IMS log to guarantee complete performance metrics.

Specify Start level to instruct form-based reporting to report only those transactions with a Start Level less than or equal to the required value. For example: Specify 1 to report start level 1 transactions only; specify 2 to report start level 1 and 2 transactions, and so on. The default is 2.

The IMS transaction start levels are:

1   The transaction first arrives in this IMS log.
    For message driven transactions, the type 01 input message is available indicating the transaction has arrived onto the message queue. For non-message driven transactions (BMP, DBCTL, ODBM), the type 08 program start record is available indicating the start of processing. Use start level 1 when analyzing input message arrival rates and lengths.

2   The transaction starts processing in this log.
    For message driven transactions only, the type 01 input message is not available, but the type 31 DLI record is available indicating that transaction dependent region processing starts in this IMS log. The complete transit time breakdown is available, including input queue time (which is derived). Use Start level 2 when analyzing transaction dependent region processing time.

3   Dependent region processing is already in progress at the start of this log.
    The type 08 application start record is not available for long running BMP or thread processes that commenced processing prior to this log. Processing start time is derived from the first log event for the Job. Processing elapsed time is calculated from this time to the job end (type 07). Use Start level 3 when analyzing all activity that occurred in the IMS log.
STEPNAME
Region stepname. The stepname of the dependent region that processed the transaction.
Source: IMS and TRF

SWITTIME
Program switch time.
A program switch occurs when one transaction calls another by inserting a message (destination is SMB) onto the message queue. Program switch time is the elapsed time from when the program switch message is eligible for processing to when it actually starts processing in a dependent message processing region. It is attributed to the program switch transaction not the originating transaction, and is analogous to input queue time for transactions coming into IMS from VTAM or OTMA.

P2P transactions are discrete transactions with their own units of recovery. Their processing eligibility depends on the type of IO PCB used to insert the message:
- For EXPRESS=YES IO PCB, the P2P transaction is immediately eligible for processing (asynchronously).
- Otherwise, the P2P transaction cannot start until the parent starts syncpoint phase 2 and transfers the message to its permanent (SMB) destination.

SYNCLEV
Synchronization level. IMS Connect Synch Level. Reported values are:
- NONE - No acknowledgement is required from the client
- CONFIRM - The client is required to acknowledge
- SYNCH - Two-phase commit processing is required
- blank - Not an IMS Connect transaction

SYNCTIME
IMS transaction syncpoint time. The time of day when the IMS Full Function transaction ends (5612) or the Fast Path transaction ends (5937).
Source: IMS

Column heading: Syncpoint Time

**SYNCPH1E**
Syncpoint phase 1 elapsed time. Note that the required log records are not always available, in which case the time will be reported as not available.

**SYNCPH2E**
Syncpoint phase 2 elapsed time. Note that the required log records are not always available, in which case the time will be reported as not available.

**SYNCPH2F**
Syncpoint phase 2 elapsed time for Fast Path only. Note that the required log records are not always available in which case the time will be reported as not available.

**T**

**TARGDS**
Target datastore. IMS Connect target datastore.
Source: IMS Connect

Column heading: Target datastore

**TERMINAL**
VTAM Node name. VTAM Node name or BTAM Line/PTERM number. When neither VTAM or BTAM, TERMINAL may be reported as:
- For implicit APPC transactions, network ID (LUP_NETWORK_ID)
- For OTMA transactions, Tpipe name (TMAMCTNM)
- For MSC transactions, origin LTERM (MSGMSINM)

Source: IMS and TRF

Column heading: Terminal

IMS Problem Investigator global field: Terminal

**TIMEOUT**
Transaction timeout indicator. Indicates whether an IMS Connect transaction has timed-out. Reported values are:
- **T** Transaction timed-out
- **blank** Transaction did not time out

Source: IMS Connect

Column heading: Time Out

**TIMERV**
Transaction timer value. This value, set by the client in the IRM header, is the time IMS Connect will wait for a response from OTMA before timing out. The time is reported in microseconds. Use the `SECGROUP` operand to report values in seconds in the range 0 (no wait option) to 4200 (70 mins), or 9999 to wait forever. Use the `TIMEOUT` field to indicate whether the Connect transaction did time out.

Source: IMS Connect

Column heading: Transact Timer

**TMEMBERD**
Destination OTMA Tmember name. Connect XCF queue which delivers the message to the IMS System.
Source: IMS Connect
Column heading: Dest Tmember

**TMEMBERO**
Originating OTMA Tmember name. IMS XCF queue which will return the
message to the Connect System.
Source: IMS

Column heading: Orig Tmember

**Total IMS Time**
See TOTALTM

**Total IO Count**
See DBIOCALL

**Total time**
See TOTALTM

**TOTALTM**
Total transaction elapsed time. The total elapsed time that the transaction
incurs in message queues and being processed by IMS. For self-contained
transactions, or the initial transaction in a program switch sequence, total
time consists of input queue, processing and output queue times. For
subsequent transactions in a program switch sequence, total time consists
of switch time, processing time and output queue time.
Source: IMS and TRF

Column heading: Total IMS Time

**Tot Resp Time(R1)**
See R1TIME

**TOTRTIMS**
Resume Tpipe total time. The elapsed time from when the input message
arrives (01/35) to when the Resume Tpipe takes the output message and
sends it to its final destination (RPIPE 31 COMMS). This time is useful for
transactions that use SENDONLY RESUME-TPIPE protocol – it measures
the overall time in IMS that contributes to end-user response time.
Source: IMS

Column heading: IMS RTp Tot Time

**TPIPE**
Connect Tpipe name derived from IMS Connect Extensions journal 41
record field CERE_41_TPIPE_NAME.
Source: IMS Connect

Column heading: Tpipe

**TRANCNT**
Transaction count. For Form-based summary reporting only, the number of
transactions that were accumulated in this key range.

When TRANCNT is used in combination with fields that report on
database activity or external subsystems, additional report lines are
produced that provide a count for each database or external subsystem
affected by the transaction. If requested, a summary line is also produced
that reports on the total number of transactions. As transactions can update
more than one database, or more than one external subsystem, the total in
the summary line will not necessarily be the sum of counts listed above.
In the following example, the total number of transactions (A) does not equal the sum of counts for each database as some transactions have accessed more than one database.

<table>
<thead>
<tr>
<th>Database</th>
<th>Tran</th>
<th>DBD Name</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>IVTNO</td>
<td>-</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>IVTNO</td>
<td>IVPDB1</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>IVTNO</td>
<td>IVPDB1I</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>IVTNO</td>
<td></td>
<td></td>
<td>11</td>
</tr>
</tbody>
</table>

Fields that report on database activity: DATABASE, DBACMETH, DBBLKDEL, DBBLKINS, DBBLKREP, DBBLKUPD, DBORGTYPE, DBUPRATE, DEDBAREA, FPDDEPU, FPSDEPI

Fields that report on external subsystems: ESAFNAME, ESAFCALL, ESAFCOMT, ESAFCON, ESAFCON, ESAFPRE

See also ABENDCNT

Source: IMS and IMS Connect

Column heading: Tran Count

TRANCODEx

IMS Transaction Code.

Source: IMS, Connect, and TRF

Column heading: Trancode

IMS Problem Investigator global field: TranCode

Transact Timer

See TIMERV

U

UORTIMEx

Unit-of-recovery time. The elapsed time the transaction spends processing in the dependent region. UOR time is similar to Processing Time, the difference for an MPP transaction is:

- UOR time starts when the IMS unit-of-recovery commences (5607).
- Processing time starts when the MPP transaction gets the input message from the message queue (31 DLI), usually after the commencement of the UOR.

Therefore UOR time is usually longer than Processing time.

Source: IMS

Column heading: UOR Time

UOW Lock WAITS

See FPWOWLWT

USERID

User ID. RACF user ID, or substitute as used by IMS for security purposes.

Source: IMS, Connect, and TRF

Column heading: Userid

IMS Problem Investigator global field: Userid
V

VSAMREAD

VSAM read IO count, approximation at completion level 5, accurate at completion level 6. Available from IMS V10. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record.

Source: IMS

Column heading: VSAMRead Count

VSAMWRIT

VSAM write IO count, approximation at completion level 5, accurate at completion level 6. Available from IMS V10. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record.

Source: IMS

Column heading: VSAMWrite Count

VSO Read DASD

See [FPVSREAD]

VSO Read Dataset

See [FPVSORFD]

VSOWrite DASD

See [FPVSWRIT]

W

WFITIME

WFI elapsed time. SUBQ6 time where the message region waited before the next WFI transaction starts processing. Warning: IMS only records SUBQ6 time to a precision of 0.1 seconds.

Source: IMS

Column heading: WFI Time

X

XMITEXIT

Transmit message Exit time. The elapsed time output messages (responses) spent being processed by the XMIT Message Exit.

Source: IMS Connect

Column heading: XmitExit Time

XMLADAPT

XML Adapter name. The name of the XML Adapter passed by the SOAP Gateway.

Source: IMS Connect

Column heading: XML Adapter

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Part 12. Appendixes
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