DB2 Performance Monitor for OS/390

Report Reference Volume 2

Version 6

SC26-9165-00

Note

Before using this information and the product it supports, be sure to read the information in “Appendix F. Notices” on page 1285.

First Edition, June 1999

This edition applies to Version 6 of IBM DATABASE 2 Performance Monitor for OS/390, a feature of IBM DATABASE 2 Universal Database Server for OS/390 Version 6 (5645-DB2), and to all subsequent releases and modifications until otherwise indicated in new editions.

Contents

About This Book

This book provides you with detailed information about IBM DATABASE 2 Performance Monitor for OS/390 Version 6 (DB2 PM). DB2 PM is a performance analysis tool that helps you manage IBM DATABASE 2 Server (DB2) for OS/390 Version 6 (Program Product 5645-DB2), IBM DATABASE 2 for MVS/ESA Version 5 (Program Product 5655–DB2), and IBM DATABASE 2 for MVS/ESA Version 4 (Program Product 5695-DB2). DB2 is a relational database management system designed for use in MVS (TM) and OS/390 (R) environments. DB2 (R) provides a data model in which information is defined in tables consisting of columns and rows.

Who Should Use This Book

This book is designed for the following audiences:

- Anyone who will use the reports available in DB2 PM
- Anyone whose requirements are specialized (for example, the user who is interested only in information pertaining to the utility activity report set)

You will need this book if you are responsible responsible for one or more of the following activities:

- Determining total DB2 system performance and efficiency
- Tuning DB2
- Identifying and removing potential bottlenecks
- Measuring an application's performance and resource cost
- Measuring an application's effect on other applications and the system

It provides you with an overview of the reporting and graphic capabilities of DB2 PM and gives you some guidelines for setting up your strategy for using the product.

How to Use This Book

If you require access to information regarding *all* DB2 PM report sets, then you will probably want to leave this book in its original form - as a single book. However, if you need information pertaining to only one report set, you can remove that report set part together with Parts 1 and 2 of the Report Reference for use as a stand-alone book. Each report set has its own table of contents to help you quickly locate information specific to that report set.

Important Note about Reordering This Book

The DB2 PM Report Reference is not available as individual parts; you can only reorder the entire book.

How This Book Is Organized

The DB2 PM Report Reference is divided into two volumes, as follows:

- Volume 1
  - Part 1. Commonalities of the DB2 PM Report Sets
  - Part 2. Auxiliary and Troubleshooting Commands
  - Part 3. DB2 PM Logs
  - Part 4. User-Tailored Reporting
  - Part 5. Exception Processing
  - Part 6. The Accounting Report Set
  - Part 7. The Statistics Report Set
  - Part 8. The Performance Database
- Volume 2
  - Part 9. The Audit Report Set
  - Part 10. The Explain Report Set
  - Part 11. The I/O Activity Report Set
  - Part 12. The Locking Report Set
  - Part 13. The Record Trace Report Set
  - Part 14. The SQL Activity Report Set
  - Part 15. The System Parameters Report Set
  - Part 16. The Utility Activity Report Set
  - Bibliography

Prerequisites

To use this book and to create and interpret the DB2 PM reports, you need a working knowledge of, and experience with, DB2.

How to Send Your Comments

Your feedback is important in helping to provide the most accurate and high-quality information. If you have any comments about this book or any other DB2 PM documentation, send your comments by using:

- Internet. The address is: swsdid@de.ibm.com.
- IBM Mail Exchange. The address is: DEIBM3P3 at IBMMAIL.
- The form at the back of this book. Return it by mail or fax, or give it to an IBM representative. The fax number is: +49-7031-166901.

Be sure to include the name of the book, the version of DB2 PM, and, if applicable, the specific location of the text you are commenting on (for example, a page number or a table number).

Part 9. The Audit Report Set

This part of the *DB2 PM Report Reference* describes the audit report set. It is divided into the following chapters:

- Chapter 41. Introduction to the Audit Report Set describes the purpose of the audit reports. The data reported and the report levels that can be selected are identified.
- Chapter 42. General Audit Information describes the DB2 IFCIDs that provide the input for the audit report set, member-scope and group-scope reporting, the DB2 PM identifiers used in the audit report set, and the interpretation of report and trace headers. This chapter also explains how reported values are derived and presented.
- "Chapter 43. The AUDIT Command" on page 583 shows the JCL command stream necessary to produce Audit reports.
- Chapter 44. The Audit Summary Reports provides examples of the audit summary reports and explains each field printed in the reports.
- Chapter 45. The Audit Detail Reports and the Audit Trace gives examples of the audit detail reports and the audit trace and explains each field printed in the reports and trace.
- Chapter 46. Audit Scenarios provides several examples of situations that you might encounter while using DB2 PM.

If you have questions about a specific audit report or trace, or a field within a report or trace, refer to Chapter 44 through Chapter 45.

Chapter 41. Introduction to the Audit Report Set

DB2 audit data enables you to track DB2 resource access. DB2 PM audit reports and traces contain information about the user of an auditable object as well as the time and the type of action performed on the object.

You can produce both member-scope and group-scope reports and traces. In member-scope reports and traces, a group's instrumentation data is presented member by member, without the data being merged. In group-scope reports and traces, instrumentation data produced by members of a data sharing group is merged to give a full picture of the use of a shared resource.

You can produce reports and traces of individual audit events in the order in which they occurred, or reports of aggregated audit data.

The reports and traces can be ordered by the object of the audit event (for example, authorization failures per table). You can use the reports and traces to review audit data by DB2 PM identifiers and choose between a wide range of options for presenting DB2 audit data.

You can use the data obtained to:

- Monitor DB2 resource access.
- Identify potential security violations.
- Monitor the granting and revoking of privileges.
- Format DB2 audit records and write them to sequential data sets using the FILE subcommand. These data sets are suitable for use by the DB2 load utility.

Types of Audit Reports

The audit report set includes the audit summary and audit detail reports, and the audit trace.

- The *audit summary reports* summarize all DB2 audit records into various categories and produce aggregated audit data for the types of data you have requested.

  For a detailed explanation of the data printed in all fields of these reports, refer to "Chapter 44. The Audit Summary Reports" on page 593.

- The *audit detail reports* give a detailed listing of the DB2 audit events itemized by the various audit data categories. The events are sorted by timestamp within DB2 identifier. A separate audit detail report is created for each of the audit categories. The audit detail reports can be run to gather more specific information than that found in the summary report.

  For a detailed explanation of the data printed in the fields of the detail report, refer to "Chapter 45. The Audit Detail Reports and the Audit Trace" on page 613.

- The *audit trace* gives a detailed listing of each auditable event, in timestamp order. The itemized timestamp sequence is especially useful when the timing or chronological order of events is critical.

  For a detailed explanation of the data printed in all fields of this report, refer to "Chapter 45. The Audit Detail Reports and the Audit Trace" on page 613.

Types of Audit Data Reported

The following types of audit data are captured by DB2 and reported by DB2 PM:

- Authorization changes
- Authorization control (GRANTs and REVOKEs of privileges)
- Authorization failures
- DML statements against auditable DB2 tables at bind time
- DDL operations against auditable DB2 tables
- Read/write access against auditable DB2 tables
- Utility executions against auditable DB2 tables

Additional Features of the Audit Report Set

The audit FILE subcommand enables you to format DB2 audit records and store them in sequential data sets suitable for use by the DB2 load utility. You can load raw data into DB2 tables and produce reports using a reporting facility such as Query Management Facility (QMF).

You can create separate file data sets for each of the audit types, by using the TYPE option of the FILE subcommand.

For more information on the FILE subcommand, refer to “Using the FILE Subcommand” on page 590 .

Chapter 42. General Audit Information

This chapter contains information common to all audit traces and reports, namely:

- Input to audit reports and traces
- The DB2 PM identifiers used in the audit report set
- A description of member-scope and group-scope traces and reports
- A description of report and trace headers
- How large values and missing values are reported

Input to Audit Reports and Traces

The DB2 IFCIDs used as input for the audit reports and traces are shown in Table 80. You must know the input IFCIDs if you do not use the collect report data facility supplied with the Online Monitor.

Table 80. Input to Auditing

Audit Reports and Traces	IFCIDs	DB2 Trace Type and Class
Authorization change	55, 83, 87, 169	Audit 7
Authorization control	141	Audit 2
Authorization failure	140	Audit 1
DDL access	105, 107, 142	Audit 3
DML access	105, 107, 143, 144	Audit 4 and 5
DML at bind access	105, 107, 145	Audit 6
Utility access	24, 105, 107	Audit 8

Notes:

1. IFCIDs 83 and 87 are not written for database access threads.
2. IFCID 169 is produced for both application-directed and system-directed methods of access.
3. To get the IFCIDs 105 and 107, you must specify the START TRACE command.

Member-Scope and Group-Scope Traces and Reports

The information in this section is only applicable to DB2 data sharing environments.

Member-Scope Traces and Reports

Member-scope traces present events in chronological sequence within the DB2 subsystem (member) where the events occurred, whereas reports show these events aggregated by the DB2 PM identifiers you have specified. DB2 PM can present data from several DB2 members within a data sharing group. The data in member-scope reports is presented by a combination of location, group, subsystem, and member. Whenever one of their value changes, a new page is started and the page number is initialized. The following command produces the audit member-scope report shown in Figure 254 on page 580.

```
AUDIT REPORT
   LEVEL(SUMMARY)
   TYPE(DML)
   ORDER(OBJECT-PRIMAUTH)
   SCOPE(MEMBER)
```

```
   LOCATION: SYDNEY                          DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-1
      GROUP: DSHGRPXX                           AUDIT REPORT - SUMMARY                REQUESTED FROM: 08/29/99 12:00:00.00
     MEMBER: FIRST                                    DML ACCESS                                  TO: 08/29/99 13:00:00.00
  SUBSYSTEM: DB21                              ORDER: OBJECT-PRIMAUTH                   ACTUAL FROM: 08/29/99 12:05:32.13
DB2 VERSION: V6                                     SCOPE: MEMBER                                  TO: 08/29/99 12:59:33.58

DATABASE PAGESET  TABLEID  PRIMAUTH      1ST READ 1ST WRITE  TOTAL
-------- -------- -------- --------      -------- --------- --------
DBASE1   PSET9           7 USR17                3         4        7
                           USR25                2         1        3
                           USR32                1         0        1

                           *TOTAL*              6         5       11

DBASE3   PSET2          11 USR05                5         0        5
                           USR98                0        23       23

                           *TOTAL*              5        23       28

*GRAND TOTAL*                                  11        28       39
```

Figure 254. Member-Scope Audit Report (Part 1 of 2)

```
   LOCATION: SYDNEY                          DB2 PERFORMANCE MONITOR (V6)                          PAGE: 2-1
      GROUP: DSHGRPXX                           AUDIT REPORT - SUMMARY                REQUESTED FROM: 08/29/99 12:00:00.00
     MEMBER: SECOND                                   DML ACCESS                                  TO: 08/29/99 13:00:00.00
  SUBSYSTEM: DB22                              ORDER: OBJECT-PRIMAUTH                   ACTUAL FROM: 08/29/99 12:01:57.93
DB2 VERSION: V6                                     SCOPE: MEMBER                                  TO: 08/29/99 12:43:11.51

DATABASE PAGESET  TABLEID  PRIMAUTH      1ST READ 1ST WRITE  TOTAL
-------- -------- -------- --------      -------- --------- --------
DBASE3   PSET2          11 USR05                5         6       11
                           USR66                2         0        2
                           USR98                8         0        8

                           *TOTAL*             15         6       21

DBASE5   PSET1          21 USR02                2         2        4
                           USR03                5         6       11

                           *TOTAL*              7         8       15

*GRAND TOTAL*                                  22        14       36
```

Figure 254. Member-Scope Audit Report (Part 2 of 2)

There are two members in the data sharing group DSHGRPXX, namely FIRST and SECOND. For each of the two members a separate report part is created and a new page is started (see the MEMBER and PAGE fields in the report headings). Within each member the audit data is aggregated and presented by PRIMAUTH within OBJECT (in this case DATASET, PAGESET, and TABLEID).

Group-Scope Traces and Reports

In group-scope traces, events are reported in a chronological sequence within the DB2 data sharing group, regardless of which member of the group actually generated the events. The member name is printed in the body of the trace for each reported event, so that it is easy to see the member where the event occurred. Similarly, group-scope reports show events that are aggregated by the DB2 PM identifiers you specified. Data in group-scope reports is presented by member. The following command produces the audit group-scope report shown in Figure 255 on page 581.

```
AUDIT REPORT
    LEVEL(SUMMARY)
    TYPE(DML)
    ORDER(OBJECT-PRIMAUTH)
    SCOPE(GROUP)
```

```
   LOCATION: SYDNEY                          DB2 PERFORMANCE MONITOR (V6)                    PAGE: 1-1
      GROUP: DSHGRPXX                           AUDIT REPORT - SUMMARY                REQUESTED FROM: 08/29/99 12:00:00.00
                                                      DML ACCESS                               TO: 08/29/99 13:00:00.00
                                               ORDER: OBJECT-PRIMAUTH                    ACTUAL FROM: 08/29/99 12:01:57.93
DB2 VERSION: V6                                     SCOPE: GROUP                               TO: 08/29/99 12:59:33.58

DATABASE PAGESET  TABLEID PRIMAUTH MEMBER        1ST READ 1ST WRITE  TOTAL
-------- -------- ------- -------- --------      -------- --------- --------
DBASE1   PSET9          7 USR17    FIRST                3         4        7
                          USR25    FIRST                2         1        3
                          USR32    FIRST                1         0        1

                          *TOTAL*                       6         5       11

DBASE3   PSET2         11 USR05    FIRST                5         0        5
                          SECOND                        5         6       11

                                   *GROUP TOTAL*       10         6       16

                          USR66    SECOND               2         0        2

                          USR98    FIRST                0        23       23
                                   SECOND               8         0        8

                                   *GROUP TOTAL*        8        23       31

                          *TOTAL*                      20        29       49

DBASE5   PSET1    21     USR02    SECOND               2         2        4
                          USR03    SECOND               5         6       11

                          *TOTAL*                       7         8       15

*GRAND TOTAL*                                          33        42       75
```

Figure 255. Group-Scope Audit Report

The MEMBER and SUBYSTEM fields do not appear in the report heading because the group-scope report presents activity across the entire data-sharing group DSHGRPXX. Within DSHGPXX the audit data is aggregated and presented in PRIMAUTH within OBJECT (DATABASE, PAGESET, and TABLEID) sequence. Note that MEMBER is implicitly added to the ORDER identifiers and appears in the body of the report in order to point to the DB2 members from which a DML access to a particular object has been performed and enable the calculation of group totals.

Chapter 43. The AUDIT Command

You use the AUDIT command to reduce data and generate reports, traces, and file data sets. The command can be used once in a job step. However, it can be used in the same job step with commands of the other report sets. The following subcommands are associated with the AUDIT command:

- REDUCE
- REPORT
- TRACE
- FILE

Building a Command Stream

Figure 256 is a sample of the JCL required to produce audit reports and traces. A description of the DD statements follows the sample.

```
//DB2PM   JOB (INSTALLATION DEPENDENCIES)
//*
//* ================================================================*
//*         D B 2  P M   R E P O R T   G E N E R A T I O N          *
//* ================================================================*
//*
//        EXEC PGM=DB2PM
//* FOLLOWING ARE DB2PM SYSTEM DDNAMES
//STEPLIB  DD  DSN=DGO.V6R1M0.SDGOLOAD,DISP=SHR
//DPMPARMS DD  DSN=DGO.V6R1M0.DPMPARMS,DISP=SHR
//INPUTDD  DD  DSN=DGO.V6R1M0.DPMIN61,DISP=SHR
//DPMLOG   DD  SYSOUT=*
//SYSOUT   DD  SYSOUT=*
//JOBSUMDD DD  SYSOUT=*
//SYSPRMDD DD  SYSOUT=*
//DPMOUTDD DD  DSN=DGO.V6R1M0.DPMOUT.DATA,DISP=OLD
//SYSUDUMP DD  DUMMY
//* FOLLOWING ARE DB2PM REPORT SET DDNAMES
//AURPTDD  DD  SYSOUT=*
//AUTRCDDx DD  SYSOUT=*
//AUFILDDx DD  DSN=DGO.V6R1M0.AUDIT.FILE,DISP=OLD
//AUDWORK DD   DSN=DGO.V6R1M0.AUDIT.WORKDD,DISP=OLD
//* FOLLOWING IS THE DB2PM COMMAND STREAM
//SYSIN   DD  *

  .
  .
  .
  AUDIT
       REDUCE
       REPORT
       TRACE
       FILE
  .
  .
  .
  EXEC
```

Figure 256. Sample JCL for Requesting Audit Functions

The DB2 PM command language shown in Figure 256 is not appropriate in all circumstances. You must modify it to meet your requirements.

Most of the DD statements with a SYSOUT destination do not have to be specified because they are dynamically allocated by DB2 PM. See “DD Statements” on page 10 for full descriptions of the DD statements.

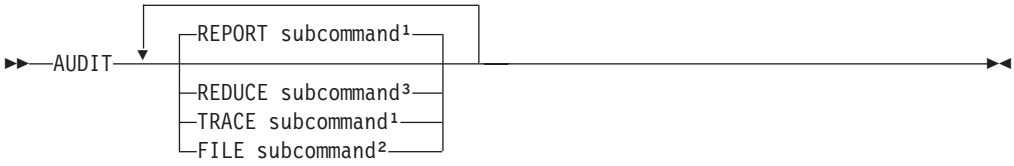
Notes:

1. There is an advantage in omitting DPMOUTDD from your JCL. For more information, see the description of DPMOUTDD on page “DPMOUTDD” on page 13.
2. The DB2 PM command stream is only processed if EXEC is included as the last command. Otherwise, DB2 PM only checks the syntax and writes the command stream together with any information, warning, or error messages generated to the job summary log.

Using the AUDIT Command

You use the AUDIT command to generate audit reports, traces, and file data sets. The subcommands are described in detail, together with their various options, in the following sections.

The command can be used once in a job step.



Notes:

1. You can specify both REPORT and TRACE up to 5 times.
2. You can specify FILE up to 7 times.
3. You cannot specify REDUCE without specifying at least one REPORT, TRACE, or FILE.

Figure 257. Syntax of the AUDIT Command

Using the REDUCE Subcommand

You use the REDUCE subcommand to reduce the volume of data that is input to subsequent subcommands. REDUCE can be used once in an AUDIT command.

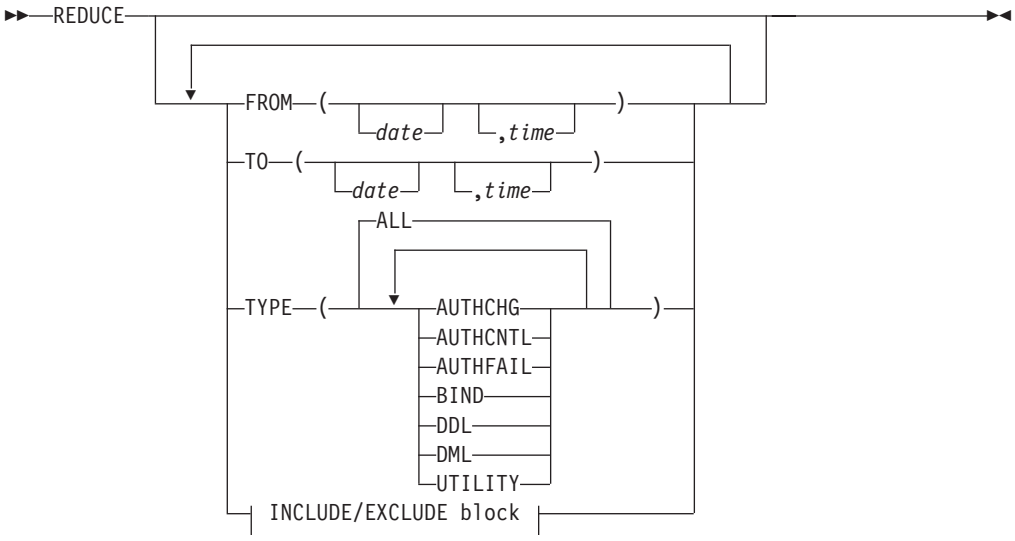


Figure 258. Syntax of the REDUCE Subcommand

The following options can be used with the REDUCE subcommand:

FROM/TO
Limits the range of records included in the reduction process by date and time.

For more information, see "FROM/TO" on page 21.

TYPE Specifies the type of audit data to be reduced. One or more categories can be selected. Only the data selected on the REDUCE subcommand is available to subsequent REPORT subcommands. You can enter one or more of the following:

- AUTHCHG (changes to authorization identifiers)
- AUTHCNTL (GRANTs and REVOKEs of privileges)
- AUTHFAIL (authorization failure)
- BIND (DML statements at bind of auditable DB2 tables)
- DDL (DDL operations against auditable DB2 tables)
- DML (read/write access against auditable DB2 tables)
- UTILITY (utility access against auditable DB2 tables)
- ALL (all audit categories are reported)

The default for TYPE is ALL.

INCLUDE/EXCLUDE
Includes or excludes data associated with specific DB2 PM identifiers.

For more information, see "INCLUDE/EXCLUDE" on page 28 and "Chapter 1. DB2 PM Identifiers" on page 3.

Using the REPORT Subcommand

You use the REPORT subcommand to generate reports from records. Up to five REPORT subcommands can be specified within each AUDIT command.

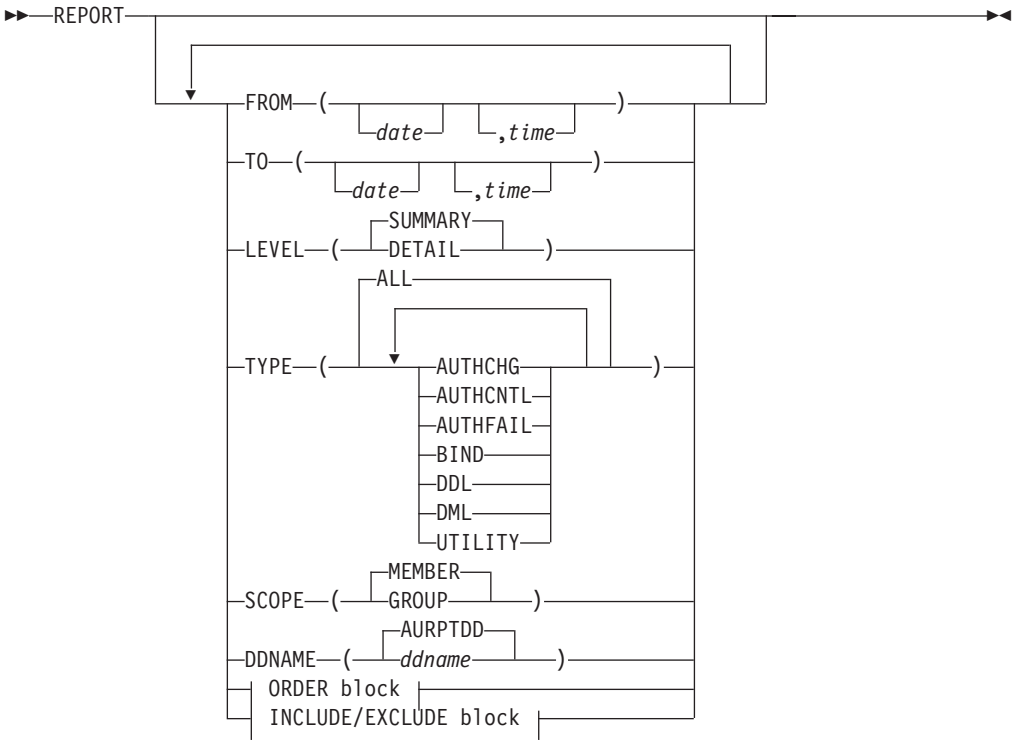


Figure 259. Syntax of the REPORT Subcommand

The following options can be used with the REPORT subcommand:

FROM/TO
Limits the range of records included in the reporting process by date and time.

For more information, see “FROM/TO” on page 41.

SCOPE
Specifies the scope of the report in a data sharing environment. You can specify MEMBER or GROUP. The default is MEMBER.

LEVEL
Specifies the level of the report. You can enter either of the following:

SUMMARY
Produces reports of aggregated audit data.

DETAIL
Produces reports of nonaggregated audit data in timestamp sequence within the requested TYPE and ORDER. Events within reports are sorted by timestamp within DB2 PM identifiers.

The default level is SUMMARY.

TYPE Specifies the type of audit data to be reported. You can enter one or more of the following:

- AUTHCHG (changes to authorization identifiers)
- AUTHCNTL (GRANTs and REVOKEs of privileges)
- AUTHFAIL (authorization failure)
- BIND (DML statements at bind of auditable DB2 tables)
- DDL (DDL operations against auditable DB2 tables)

- DML (read/write access against auditable DB2 tables)
- UTILITY (utility access against auditable DB2 tables)
- ALL (all audit categories are reported)

The default for TYPE is ALL.

Notes:

1. If you select audit types in REPORT that were not specified in the TYPE option of REDUCE, blank reports are generated for those audit types.
2. If TYPE is specified with LEVEL(SUMMARY), a report of aggregated audit data is produced for each type requested.
3. If TYPE is not specified with LEVEL(SUMMARY), one report showing aggregated totals for all audit types is produced.
4. If TYPE is specified with LEVEL(DETAIL), one report showing nonaggregated audit data of all the requested types is produced.
5. If TYPE is not specified with LEVEL(DETAIL), a report showing nonaggregated audit data of all types is produced.

Example Using LEVEL and TYPE

```
⋮
AUDIT
     REPORT
        LEVEL (DETAIL)
        TYPE  (AUTHFAIL,AUTHCNTL)
⋮
```

This command produces a detail report for all authorization failures and authorization GRANTs and REVOKEs found in the input data. By default, the reports are in PRIMAUTH-PLANNAME sequence and, for summary reports, the output is aggregated by PRIMAUTH-PLANNAME. The output is sent to default ddname AURPTDD.

DDNAME

Specifies the data set to which the report is written.

ORDER

Specifies the DB2 PM identifiers and their sequence for sorting the report, and, in summary reports, which identifiers are used for aggregation. You can order by one, two, or three identifiers separated by a dash and specify up to five sets of the identifiers for each entry of ORDER separated by at least one blank. You can specify one entry of ORDER for each REPORT subcommand. The default for ORDER varies with the LEVEL and TYPE specified.

ORDER Block:

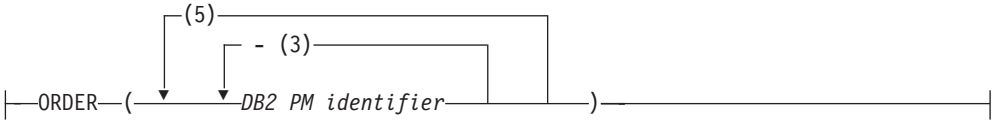


Figure 260. Syntax of the ORDER Option

The definition of an object depends on the LEVEL and TYPE specified.

Refer to “Chapter 1. DB2 PM Identifiers” on page 3 for definitions of DB2 PM identifiers.

ORDER Example

```
⋮
REPORT
   LEVEL (DETAIL)
   TYPE  (AUTHFAIL)
   ORDER (PRIMAUTH-PLANNAME-REQLOC
          CONNECT-PLANNAME REQLOC-PRIMAUTH)
⋮
```

This command specifies that three authorization failure detail reports are to be produced:

- The first is ordered by requesting location within plan name within primary authorization ID.
- The second is ordered by plan name within connection ID.
- The third is ordered by primary authorization ID within requesting location.

INCLUDE/EXCLUDE

Includes or excludes data associated with specific DB2 PM identifiers.

For more information, see “Chapter 1. DB2 PM Identifiers” on page 3 and “INCLUDE/EXCLUDE” on page 28.

Using the TRACE Subcommand

You use the TRACE subcommand to produce traces with an entry for each DB2 audit record.

Up to five traces can be requested in a job step.

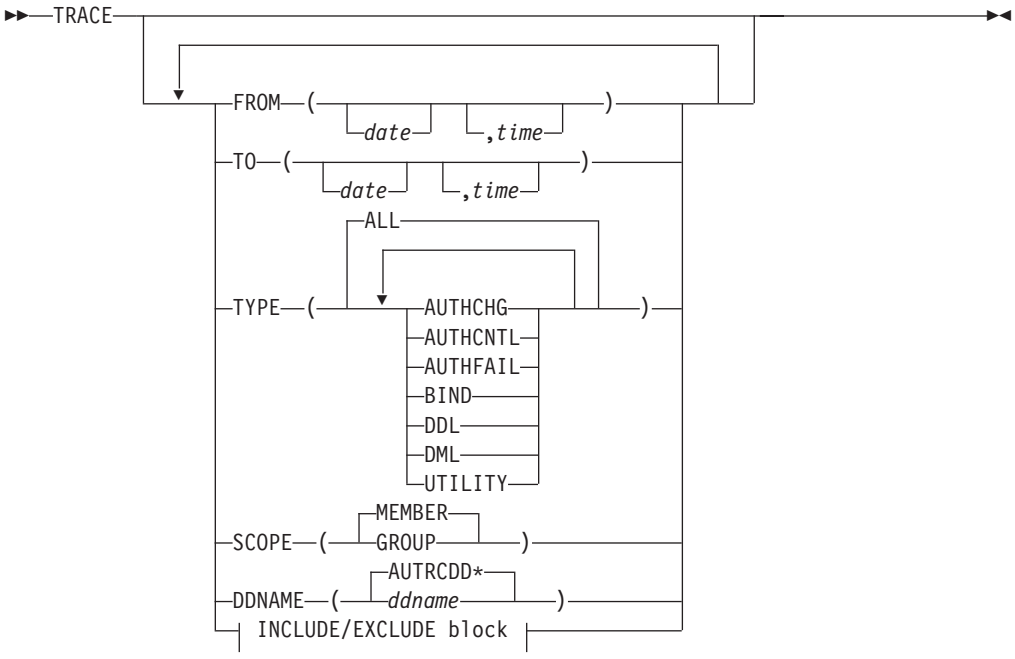


Figure 261. Syntax of the TRACE Subcommand

The following options can be used with the TRACE subcommand:

FROM/TO
Limits the range of records included in the trace by date and time.

TYPE Identifies the type of data traced. You can enter one or more of the following:

- AUTHCHG (changes to authorization identifiers)
- AUTHCNTL (GRANTs and REVOKEs of privileges)
- AUTHFAIL (authorization failure)
- BIND (DML statements at bind of auditable DB2 tables)
- DDL (DDL operations against auditable DB2 tables)
- DML (read/write access against auditable DB2 tables)
- UTILITY (utility access against auditable DB2 tables)
- ALL (all audit categories are traced)

The default for TYPE is ALL.

SCOPE
Specifies the scope of the trace. You can specify MEMBER or GROUP. The default is MEMBER.

DDNAME
Specifies the data set to which the trace is written.

INCLUDE/EXCLUDE
Includes or excludes data associated with specific DB2 PM identifiers. For more information, see “Chapter 1. DB2 PM Identifiers” on page 3 and “INCLUDE/EXCLUDE” on page 28.

Example Using TRACE

⋮

```
AUDIT
     TRACE
        TYPE (AUTHFAIL)
⋮
```

This command traces only authorization failures (in the order in which they occur). The output goes to the default ddname AUTRCDD1.

Using the FILE Subcommand

You use the FILE subcommand to format unreduced DB2 data and store it in sequential data sets suitable for use by the DB2 load utility. The records can be placed in DB2 tables and you can produce reports using a reporting facility such as Query Management Facility (QMF).

Using the FILE subcommand you can:

- Process the different audit types separately by specifying one audit type for each FILE subcommand.
- Process the different audit types simultaneously by specifying any number of the available audit types in each FILE subcommand.

  The FILE subcommand can occur a maximum of seven times in a job step.

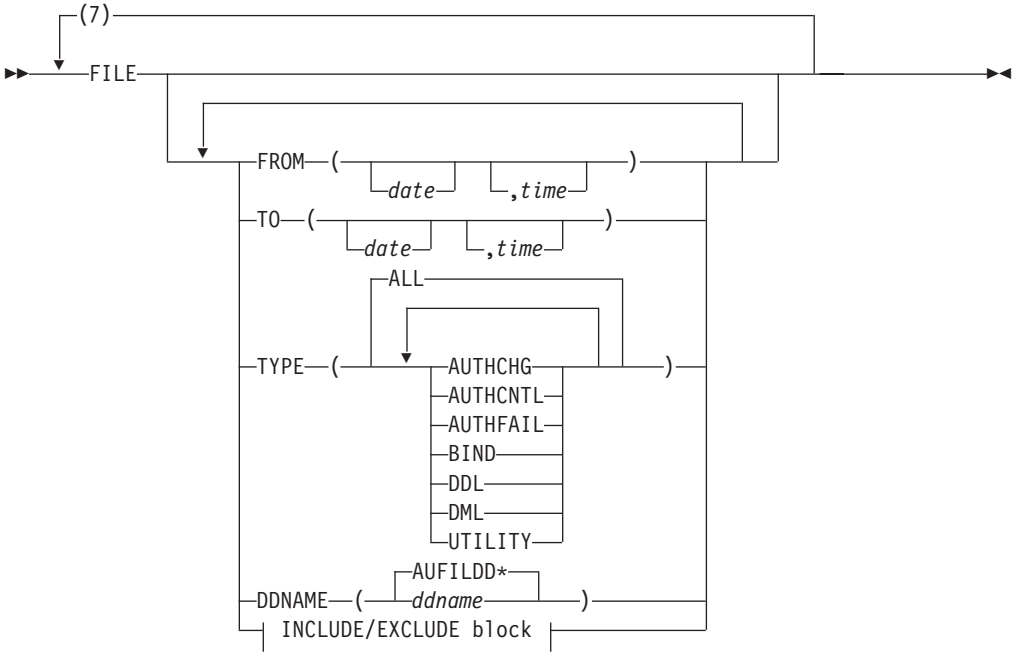


Figure 262. Syntax of the FILE Subcommand

The following options are used with the FILE subcommand:

FROM/TO
Limits the range of records included in the data set by date and time.

Refer to “FROM/TO” on page 21 for more information on how to use the FROM/TO option.

TYPE Selects the audit category. It identifies the type of data included in the data set. You can enter one or more of the following:

- AUTHCHG (changes to authorization identifiers)
- AUTHCNTL (GRANTs and REVOKEs of privileges)
- AUTHFAIL (authorization failure)
- BIND (DML statements at bind of auditable DB2 tables)
- DDL (DDL operations against auditable DB2 tables)
- DML (read/write access against auditable DB2 tables)
- UTILITY (utility access against auditable DB2 tables)
- ALL (all audit categories are selected)

The default for TYPE is ALL.

DDNAME

Specifies the ddname to which the file data set is written. You can specify any valid ddname including the default, provided that your JCL contains a DD statement for it. If you omit the DDNAME option, the default value is applied. The default ddname is AUFILDD1 for the first file data set, and AUFILDD2 to AUFILDD7 for the second to seventh file data sets.

You can specify a different ddname using the DDNAME option in the FILE subcommand. In this case, your JCL must contain a valid DD statement for the ddname you specify. If you do not specify a different ddname, your JCL must contain a valid DD statement for the corresponding default ddname. For example, if you omit the DDNAME option from the third FILE subcommand in the job stream, your JCL must contain a valid DD statement for AUFILDD3.

INCLUDE/EXCLUDE

Includes or excludes data associated with specific DB2 PM identifiers.

Refer to “INCLUDE/EXCLUDE” on page 28 for more information on how to use the INCLUDE/EXCLUDE option.

Refer to “Chapter 1. DB2 PM Identifiers” on page 3 for definitions of DB2 PM identifiers.

Example Using FILE

```
⋮
FILE
     TYPE (AUTHFAIL)
⋮
```

This command generates a data set in the default ddname AUFILDD1. The data set contains one or more records for each authorization failure: an AUTHFAIL record and any matching records containing the text of the SQL statement that caused the authorization failure.

Using the EXEC Command

This command instructs DB2 PM to execute the commands in the job stream. Enter EXEC as the last DB2 PM command in SYSIN. If you do not include EXEC, DB2 PM checks the command syntax and writes it, together with any information, warning, or error messages generated. The command stream is not executed.

Figure 263. Syntax of the EXEC Command

Chapter 44. The Audit Summary Reports

The audit summary reports present aggregated DB2 data. Data is accumulated and grouped by the DB2 PM identifiers you selected. You can request a basic summary report, which shows totals for all the different audit types. In addition, you can produce summary reports for each audit type, which can be:

- Authorization change
- Authorization control
- Authorization failure
- DML at bind access
- Audited DDL access
- Audited DML access
- Utility

To produce a basic summary report, you use the LEVEL option of the REPORT subcommand. To produce a summary report for an individual audit type, you use the LEVEL and TYPE options of the REPORT subcommand.

Audit Summary Report

The basic audit summary report is produced if the AUDIT REPORT LEVEL(SUMMARY) command is specified without any TYPE constraints:

```
⋮
AUDIT
REPORT
LEVEL (SUMMARY)
⋮
```

The audit summary report summarizes DB2 audit records under the following headings:

- TOTAL
- AUTH FAILURE
- GRANT/REVOKE
- DDL ACCESS
- DML READ ACCESS
- DML WRITE ACCESS
- DML AT BIND
- AUTHID CHANGE
- UTILITY ACCESS

Note: For bind events, specify the program name for PLANNAME in ORDER and INCLUDE/EXCLUDE. For utility events, specify the utility name of the PLANNAME in ORDER and INCLUDE/EXCLUDE. The header of this summary report will, however, still show PLANNAME.

Layout

The layout of the basic audit summary report is shown in Figure 264 .

```
   LOCATION: LOCATI_2                    DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-1
      GROUP: GROUP_1                       AUDIT REPORT - SUMMARY                    REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER_2                                                                          TO: NOT SPECIFIED
  SUBSYSTEM: SYS2                        ORDER: PRIMAUTH-PLANNAME                     ACTUAL FROM: 09/17/99 04:21:44.17
DB2 VERSION: V6                               SCOPE: MEMBER                                    TO: 09/17/99 07:19:20.25

PRIMAUTH                              AUTH       GRANT/      DDL      DML READ  DML WRITE     DML       AUTHID    UTILITY
   PLANNAME                  TOTAL    FAILURE    REVOKE     ACCESS    ACCESS    ACCESS     AT BIND    CHANGE    ACCESS
-------------------------  ---------- --------- --------- --------- --------- --------- --------- --------- ---------
AUTH_20
  DSNESM68                        4         0         0         0         0         0         4         0         0
  LOAD                            4         0         0         0         0         0         0         0         4
  PLAN_20                        18         2         2         4         2         2         0         6         0
  PLAN_30                        18         2         2         4         2         2         0         6         0

  *TOTAL*                        44         4         4         8         4         4         4        12         4

AUTH_30
  DSNESM68                        4         0         0         0         0         0         4         0         0
  LOAD                            4         0         0         0         0         0         0         0         4
  PLAN_20                        18         2         2         4         2         2         0         6         0
  PLAN_30                        16         2         2         2         2         2         0         6         0

  *TOTAL*                        42         4         4         6         4         4         4        12         4

*GRAND TOTAL*                    86         8         8        14         8         8         8        24         8
```

Figure 264. Layout of a Member-Scope Audit Summary Report

In group-scope reports, MEMBER and SUBSYSTEM are removed from the page heading.

The audit summary report gives the following levels of accumulation:

- GROUP TOTAL: The group total is printed on group-scope reports when the member value changes.
- SUBTOTAL: If you request ordering by three identifiers, a subtotal block of two lines is printed on the change of the second-level identifier when there is more than one third-level identifier reported under it.

  The first line shows the string *SUBTOTAL* in the first column.

  The second line shows the name of the second identifier in the first column, and the calculated data in all other columns.
- TOTAL: If you request ordering by two or three identifiers, a total block of two lines with all applicable data is printed on the change of the first-level identifier when there is more than one second-level identifier reported under it.

The first line shows the string *TOTAL* in the first column.

The second line shows the name of the first identifier in the first column, and the calculated data in all other columns.

- GRAND TOTAL: A grand total block of two lines with all applicable data is printed for a location when there is more than one first-level identifier reported.

  The first line shows the string *GRAND TOTAL* in the first column.

  The second line shows the name of the member (in a member-scope report) or the group (in a group-scope report) in the first column, and the calculated data in all other columns.

Field Descriptions

This section contains the description of the fields that appear on the basic audit summary report.

DB2 PM identifiers
The report can be sorted by up to five combinations of any three DB2 PM identifiers. The identifiers are printed in the first three columns from the left and indented in the sequence specified in the ORDER option of the REPORT subcommand.

The default is PRIMAUTH-PLANNAME.

For group-scope reports, MEMBER is considered the last ORDER identifier and is automatically added as the second, third, or fourth identifier. See “Chapter 1. DB2 PM Identifiers” on page 3 for more information.

The values printed in the following columns represent totals for each combination of the selected DB2 PM identifiers.

TOTAL
A total of events from all selected audit types.

AUTH FAILURE
The total number of authorization failures (IFCID 140 records).

GRANT/REVOKE
The total number of authorization GRANTs or REVOKEs (IFCID 141).

DDL ACCESS
The total number of DDL operations against auditable DB2 tables (IFCID 142 records).

DML READ ACCESS
The total number of first READ attempts within a logical unit of work against auditable DB2 tables (IFCID 144 records).

DML WRITE ACCESS
The total number of first WRITE attempts against audited DB2 tables (IFCID 143 records).

DML AT BIND
The total number of statements referenced during a static or dynamic bind (IFCID 145) against auditable DB2 tables.

AUTHID CHANGE
The total number of initial AUTHID establishments, AUTHID changes, or attempted AUTHID changes (IFCID 55, 83, 87, and 169 records).

UTILITY ACCESS
The total number of times a utility was used to access a DB2 object (IFCID 24 records).

Authorization Change Summary Report

The audit authorization change summary report presents audit activity in a DB2 system by collecting all authorization change events according to the combination of DB2 PM identifiers you select.

The following command is used to generate an authorization change summary report.

```
⋮
AUDIT

     REPORT

        LEVEL (SUMMARY)

        TYPE  (AUTHCHG)
⋮
```

Layout

The layout of the authorization change summary report is shown in Figure 265 on page 597.

```
   LOCATION: LOCATI_2                      DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-1
      GROUP: GROUP_1                          AUDIT REPORT - SUMMARY                REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER_2                          AUTHORIZATION CHANGE                            TO: NOT SPECIFIED
  SUBSYSTEM: SYS2                         ORDER: PRIMAUTH-PLANNAME-OBJECT           ACTUAL FROM: 09/17/99 04:21:44.17
DB2 VERSION: V6                                    SCOPE: MEMBER                              TO: 09/17/99 07:19:20.25

                   ORIGINAL      SET CURRENT  END OF   END OF  DISTRIBUTED
PRIMAUTH PLANNAME  AUTHID          SQLID    IDENTIFY  SIGNON  TRANSLATION  TOTAL
-------- -------- --------      ----------- -------- -------- ----------- --------

AUTH_20  PLAN_20  ORAUTH30               2        0        0           2        4
                  XXASP33               0        2        0           0        2
                  *SUBTOTAL*            2        2        0           2        6

         PLAN_30  ORAUTH30               2        0        0           2        4
                  XXASP33               0        2        0           0        2
                  *SUBTOTAL*            2        2        0           2        6

         *TOTAL*                        4        4        0           4       12

AUTH_30  PLAN_20  ORAUTH30               2        0        0           2        4
                  XXASP33               0        2        0           0        2
                  *SUBTOTAL*            2        2        0           2        6

         PLAN_30  ORAUTH30               2        0        0           2        4
                  XXASP33               0        2        0           0        2
                  *SUBTOTAL*            2        2        0           2        6

         *TOTAL*                        4        4        0           4       12
```

Figure 265. Layout of a Member-Scope Audit Authorization Change Summary Report

Field Descriptions

This section contains the description of the fields that appear on the audit authorization change summary report.

DB2 PM identifiers

Control the order of the audit data reported. Up to three DB2 PM identifiers are printed:

The default ORDER for this report is PRIMAUTH-PLANNAME-OBJECT, where OBJECT is the original authorization ID.

See “Chapter 1. DB2 PM Identifiers” on page 3 for more information.

For group-scope reports, MEMBER is considered the last ORDER identifier and is automatically added as the second, third, or fourth identifier.

ORIGINAL AUTHID
The original value of the authorization ID as passed to the IDENTIFY or SIGNON authorization exit.

When the input record is IFCID 55 or 169, the value is the ORIGINAL AUTHID from the DB2 correlation header.

SET CURRENT SQLID
The authorization changes due to a SET CURRENT SQLID request. The total number of IFCID 55 records for this set of identifiers.

END OF IDENTIFY
The authorization changes due to an identify request. The total number of IFCID 83 records for this set of identifiers.

END OF SIGNON
The authorization changes due to a signon. The total number of IFCID 87 records for this set of identifiers.

DISTRIBUTED TRANSLATION
The authorization changes due to distributed translation. The total number of IFCID 169 records for this set of identifiers.

TOTAL
All authorization changes. The total number of IFCIDs 55, 83, 87, and 169 for this set of identifiers.

Authorization Control Summary Report

The audit authorization control summary report presents audit activity in a DB2 system by collecting all authorization control events according to the combination of DB2 PM identifiers you select.

The following command is used to generate an authorization control summary report.

```
⋮
AUDIT
     REPORT
     LEVEL (SUMMARY)
     TYPE  (AUTHCNTL)
⋮
```

Layout

The layout of the default member-scope authorization control summary report is shown in Figure 266 on page 599.

```
   LOCATION: LOCATI_2                      DB2 PERFORMANCE MONITOR (V6)                      PAGE: 1-2
      GROUP: GROUP_1                          AUDIT REPORT - SUMMARY                REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER_2                          AUTHORIZATION CONTROL                          TO: NOT SPECIFIED
  SUBSYSTEM: SYS2                         ORDER: PRIMAUTH-PLANNAME-OBJECT             ACTUAL FROM: 09/17/99 04:21:44.17
DB2 VERSION: V6                                   SCOPE: MEMBER                             TO: 09/17/99 07:19:20.25

                  OBJECT
PRIMAUTH PLANNAME   TYPE         GRANTS  REVOKES   TOTAL
-------- -------- --------      -------- -------- --------

AUTH_20  PLAN_20  TSPACE              0        2        2
         PLAN_30  TSPACE              0        2        2
         *TOTAL*                      0        4        4

AUTH_30  PLAN_20  TSPACE              0        2        2
         PLAN_30  TSPACE              0        2        2
         *TOTAL*                      0        4        4

*GRAND TOTAL*                         0        8        8
```

Figure 266. Layout of a Member-Scope Audit Authorization Control Summary Report

The layout of the default group-scope authorization control summary report (ordered by member within object type) is shown in Figure 267 .

```
   LOCATION: LOCATI_2                      DB2 PERFORMANCE MONITOR (V6)                      PAGE: 1-2
      GROUP: GROUP_1                          AUDIT REPORT - SUMMARY                REQUESTED FROM: NOT SPECIFIED
                                               AUTHORIZATION CONTROL                          TO: NOT SPECIFIED
                                                   ORDER: OBJECT                     ACTUAL FROM: 09/17/99 04:21:44.17
DB2 VERSION: V6                                    SCOPE: GROUP                              TO: 09/17/99 07:21:20.25

OBJECT
 TYPE    MEMBER        GRANTS  REVOKES   TOTAL
-------- --------      -------- -------- --------

TSPACE   MEMBER_2            0        8        8
         MEMBER_3            0        8        8

*GRAND TOTAL*                0       16       16
```

Figure 267. Layout of a Group-Scope Audit Authorization Control Summary Report

MEMBER and SUBSYSTEM are removed from the page heading.

Only identifiers which are specified in ORDER are printed.

When a member value changes in a group-scope report, a GROUP TOTAL is shown.

Field Descriptions

This section contains the description of the fields that appear on the audit authorization control summary report.

DB2 PM identifiers
Control the order of the audit data reported. Up to three identifiers are printed.

The defaults are:

- For member-scope reports, PRIMAUTH-PLANNAME-OBJECT
- For group-scope reports, OBJECT

For group-scope reports, MEMBER is considered the last ORDER identifier and is automatically added as the second, third, or fourth identifier. See "Chapter 1. DB2 PM Identifiers" on page 3 for more information.

OBJECT TYPE
The DB2 object type of the GRANT or REVOKE. Possible values are:

- TSPACE
- LOBTS
- TAB/VIEW

GRANTS
All grant operations.

REVOKES
All revoke operations.

TOTAL
All grant/revoke operations. The total number of IFCID 141 records for this set of identifiers.

Authorization Failure Summary Report

The audit authorization failure summary report presents audit activity in a DB2 system by collecting all authorization failure events according to the combination of DB2 PM identifiers you select.

The following command is used to generate an authorization failure summary report.

```
⋮
AUDIT
     REPORT
        LEVEL (SUMMARY)
        TYPE  (AUTHFAIL)
⋮
```

Layout

The layout of the default member-scope authorization failure summary report, ordered by object type, source object, source owner, target object, and target owner

within plan name within primary authorization ID, is shown in Figure 268 .

```
   LOCATION: LOCATI_2                      DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-3
      GROUP: GROUP_1                          AUDIT REPORT - SUMMARY                      REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER_2                          AUTHORIZATION FAILURE                                 TO: NOT SPECIFIED
  SUBSYSTEM: SYS2                          ORDER: PRIMAUTH-PLANNAME-OBJECT                 ACTUAL FROM: 09/17/99 04:21:44.17
DB2 VERSION: V6                                  SCOPE: MEMBER                                     TO: 09/17/99 07:19:20.25

                                  OBJECT  --------- SOURCE ---------- ---------- TARGET ---------
PRIMAUTH PLANNAME    PRIVILEGE      TYPE    OWNER          NAME         OWNER          NAME              TOTAL
-------- -------- --------------- -------- -------- ------------------ -------- ------------------      --------

AUTH_20  PLAN_20  SELECT          TABLE    SYSIBM   SYSDATABASE        SYSIBM   SYSDATABASE                  2
         PLAN_30                  TABLE    SYSIBM   SYSDATABASE        SYSIBM   SYSDATABASE                  2
         *TOTAL*                                                                                            4

AUTH_30  PLAN_20  INSERT          TABLE    SYSIBM   SYSDATABASE        SYSIBM   SYSDATABASE                  2
         PLAN_30                  TABLE    SYSIBM   SYSDATABASE        SYSIBM   SYSDATABASE                  2
         *TOTAL*                                                                                            4

*GRAND TOTAL*                                                                                               8
```

Figure 268. Layout of a Member-Scope Audit Authorization Failure Summary Report

The layout of the default group-scope authorization failure summary report, ordered by member within object type, is shown in Figure 269 .

```
   LOCATION: LOCATI_2                      DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-3
      GROUP: GROUP_1                          AUDIT REPORT - SUMMARY                      REQUESTED FROM: NOT SPECIFIED
                                               AUTHORIZATION FAILURE                                 TO: NOT SPECIFIED
                                                   ORDER: OBJECT                           ACTUAL FROM: 09/17/99 04:21:44.17
DB2 VERSION: V6                                  SCOPE: GROUP                                      TO: 09/17/99 07:21:20.25

               OBJECT  --------- SOURCE ---------- ---------- TARGET ---------
  PRIVILEGE     TYPE    OWNER          NAME         OWNER          NAME         MEMBER        TOTAL
--------------- -------- -------- ------------------ -------- ------------------ --------      -------

SELECT          TABLE    SYSIBM   SYSDATABASE        SYSIBM   SYSDATABASE        MEMBER_2            8
                                                                                 MEMBER_3            8

*GRAND TOTAL*                                                                                       16
```

Figure 269. Layout of a Group-Scope Audit Authorization Failure Summary Report

MEMBER and SUBSYSTEM are removed from the page heading.

Only identifiers which are specified in ORDER are printed.

When a member value changes in a group-scope report, a GROUP TOTAL is shown.

Field Descriptions

This section contains the description of the fields that appear on the audit authorization failure summary report.

DB2 PM identifiers
Control the order of the audit data reported. Up to three identifiers are printed.

The defaults are:

- For member-scope reports, PRIMAUTH-PLANNAME-OBJECT
- For group-scope reports, OBJECT

For group-scope reports, MEMBER is considered the last ORDER identifier and is automatically added as the second, third, or fourth identifier. See "Chapter 1. DB2 PM Identifiers" on page 3 for more information.

PRIVILEGE
The attempted operation (privilege).

OBJECT TYPE
The DB2 object type.

SOURCE OWNER
If the *OBJECT TYPE* field is not blank, this field displays the qualifier of the object against which authorization was checked. It is only valid for qualifiable objects.

If the object type is blank, this field displays the qualifier of the alias being created. It is only valid when the privilege is CREATE ALIAS. Otherwise, *N/A* is printed.

SOURCE OBJECT
If the *OBJECT TYPE* field is not blank, this field displays the name of the object being created. It is only valid when the privilege is CREATE ALIAS, CREATE DBA, CREATE DBC, or CREATE STOGROUP. Otherwise, *N/A* is printed.

TARGET OWNER
The qualifier of the object being defined. It is valid when the privilege is CREATE INDEX or CREATE TABLE. It is also valid for a CREATE VIEW authorization check against the set of CREATE VIEW, SELECT, INSERT, DELETE, and UPDATE privileges. Otherwise, *N/A* is printed.

TARGET OBJECT
The name of the object being defined. It is only valid when the *TARGET OWNER* field is valid. Otherwise, *N/A* is printed.

TOTAL
All authorization failures. The total number of IFCID 140 records for this set of identifiers.

DML at Bind Access Summary Report

The audit DML at bind access summary report presents audit activity in a DB2 system by collecting all DML at bind access events according to the combination of DB2 PM identifiers you select.

The following command is used to generate a DML at bind access summary report.

```
⋮
AUDIT
REPORT
LEVEL (SUMMARY)
TYPE  (BIND)
⋮
```

For both ORDER and INCLUDE/EXCLUDE, the program name is used for PLANNAME.

Layout

The layout of the default member-scope DML at bind access summary report, ordered by database and table ID within program name within primary authorization ID, is shown in Figure 270.

```
   LOCATION: LOCATI_2                    DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-4
      GROUP: GROUP_1                        AUDIT REPORT - SUMMARY                REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER_2                          DML AT BIND ACCESS                            TO: NOT SPECIFIED
  SUBSYSTEM: SYS2                         ORDER: PRIMAUTH-PLANNAME-OBJECT           ACTUAL FROM: 09/17/99 04:21:44.17
DB2 VERSION: V6                                   SCOPE: MEMBER                               TO: 09/17/99 07:19:20.25


PRIMAUTH PROGRAM  DATABASE TABLEID        TOTAL
-------- -------- -------- --------      --------

AUTH_20  DSNESM68 DBASE1   7                    4
AUTH_30  DSNESM68 DBASE1   7                    4

*GRAND TOTAL*                                   8
```

Figure 270. Layout of a Member-Scope Audit DML at Bind Access Summary Report

The layout of the default group-scope DML at bind access summary report, ordered by member within database and table ID, is shown in Figure 271 on page 604 .

```
  LOCATION: LOCATI_2                        DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-6
     GROUP: GROUP_1                            AUDIT REPORT - SUMMARY                  REQUESTED FROM: NOT SPECIFIED
                                                  DML AT BIND ACCESS                              TO: NOT SPECIFIED
                                                    ORDER: OBJECT                       ACTUAL FROM: 09/17/99 04:21:44.17
DB2 VERSION: V6                                     SCOPE: GROUP                                    TO: 09/17/99 07:21:20.25


DATABASE TABLEID   MEMBER       1ST READ 1ST WRITE  TOTAL
-------- -------- --------      -------- --------- --------

DBASE1          7 MEMBER_2             8         8       16
                7 MEMBER_3             8         8       16

*GRAND TOTAL*                         16        16       32
```

Figure 271. Layout of a Group-Scope Audit DML at Bind Access Summary Report

MEMBER and SUBSYSTEM are removed from the page heading. MEMBER is treated as another ORDER identifier in group-scope reporting.

Only identifiers which are specified in ORDER are printed.

When a member value changes in a group-scope report, a GROUP TOTAL is shown.

Field Descriptions

This section contains the description of the fields that appear on the audit DML at bind access report summary report.

DB2 PM identifiers
Control the order of the audit data reported. Up to three identifiers are printed.

The defaults are:

- For member-scope reports, PRIMAUTH-PLANNAME-OBJECT
- For group-scope reports, OBJECT

For group-scope reports, MEMBER is considered the last ORDER identifier and is automatically added as the second, third, or fourth identifier. See “Chapter 1. DB2 PM Identifiers” on page 3 for more information.

DATABASE
Either the name of the database that contains the auditable DB2 table, or the internal DB2 identification (DBID) of the database that contains the auditable DB2 table.

Note: DATABASE is a repeating field and can have more than one entry on the report.

TABLEID
The internal DB2 identification (OBID) of the auditable DB2 table.

Note: TABLEID is a repeating field and can have more than one entry on the report.

TOTAL
All DML at bind operations. The total number of IFCID 145 records for this set of identifiers.

DDL Access Summary Report

The audit DDL access summary report presents audit activity in a DB2 system by collecting all DDL access events according to the combination of DB2 PM identifiers you select.

The following command is used to generate a DDL access summary report.

```
⋮
AUDIT

    REPORT

    LEVEL (SUMMARY)

    TYPE  (DDL)
⋮
```

Layout

The layout of the default member-scope DDL access summary report, ordered by table owner and table name within plan name within primary authorization ID, is shown in Figure 272 on page 606.

```
   LOCATION: LOCATI_2                    DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-5
      GROUP: GROUP_1                        AUDIT REPORT - SUMMARY                  REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER_2                             DDL ACCESS                                 TO: NOT SPECIFIED
  SUBSYSTEM: SYS2                        ORDER: PRIMAUTH-PLANNAME-OBJECT              ACTUAL FROM: 09/17/99 04:21:44.17
DB2 VERSION: V6                                  SCOPE: MEMBER                                 TO: 09/17/99 07:19:20.25

                ---------- TABLE ----------
PRIMAUTH PLANNAME  OWNER          NAME              CREATE    DROP    ALTER    TOTAL
-------- -------- -------- ------------------      -------- -------- -------- --------

AUTH_20  PLAN_20  XXASP09  NHDEPT                        0        2        0        2
                  XXASP09  NHEMP                         0        2        0        2
                  *SUBTOTAL*                             0        4        0        4

         PLAN_30  XXASP09  NHDEPT                        0        2        0        2
                  XXASP09  NHEMP                         0        2        0        2
                  *SUBTOTAL*                             0        4        0        4

         *TOTAL*                                         0        8        0        8

AUTH_30  PLAN_20  XXASP09  NHDEPT                        0        2        0        2
                  XXASP09  NHEMP                         0        2        0        2
                  *SUBTOTAL*                             0        4        0        4

         PLAN_30  XXASP09  NHDEPT                        0        1        0        1
                  XXASP09  NHEMP                         0        1        0        1
                  *SUBTOTAL*                             0        2        0        2

         *TOTAL*                                         0        6        0        6

*GRAND TOTAL*                                            0       14        0       14
```

Figure 272. Layout of a Member-Scope Audit DDL Access Summary Report

The layout of the default group-scope DDL access summary report, ordered by member within table owner and table name, is shown in Figure 273 on page 607 .

```
   LOCATION: LOCATI_2                      DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-5
      GROUP: GROUP_1                         AUDIT REPORT - SUMMARY                  REQUESTED FROM: NOT SPECIFIED
                                                  DDL ACCESS                                    TO: NOT SPECIFIED
                                                ORDER: OBJECT                       ACTUAL FROM: 09/17/99 04:21:44.17
DB2 VERSION: V6                                 SCOPE: GROUP                                    TO: 09/17/99 07:21:20.25

         ---------- TABLE ----------
OWNER          NAME         MEMBER        CREATE    DROP    ALTER    TOTAL
-------- ------------------ --------      -------- -------- -------- --------

XXASP09  NHDEPT             MEMBER_2           0        7        0        7
                            MEMBER_3           0        7        0        7
                            *TOTAL*            0       14        0       14

XXASP09  NHEMP              MEMBER_2           0        7        0        7
                            MEMBER_3           0        7        0        7
                            *TOTAL*            0       14        0       14

*GRAND TOTAL*                                  0       28        0       28
```

Figure 273. Layout of a Group-Scope Audit DDL Access Summary Report

MEMBER and SUBSYSTEM are removed from the page heading.

Only identifiers which are specified in ORDER are printed.

When a member value changes in a group-scope report, a GROUP TOTAL is shown.

Field Descriptions

This section contains the description of the fields that appear on the audit DDL access summary report.

DB2 PM identifiers
Control the order of the audit data reported. Up to three identifiers are printed.

The defaults are:

- For member-scope reports, PRIMAUTH-PLANNAME-OBJECT
- For group-scope reports, OBJECT

For group-scope reports, MEMBER is considered the last ORDER identifier and is automatically added as the second, third, or fourth identifier. See “Chapter 1. DB2 PM Identifiers” on page 3 for more information.

TABLE OWNER
The user identification of the owner of the audited DB2 table accessed.

TABLE NAME
The name of the accessed audited DB2 table.

CREATE
All create object operations.

ALTER
All create object operations.

DROP All drop object operations.

TOTAL
All DDL access operations. The total number of IFCID 142 records for this set of identifiers.

DML Access Summary Report

The audit DML access summary report presents audit activity in a DB2 system by collecting all DML access events according to the combination of DB2 PM identifiers you select.

The following command is used to generate a DML access summary report.

```
⋮
AUDIT

REPORT

LEVEL (SUMMARY)

TYPE  (DML)

⋮
```

Layout

The layout of the default member-scope DML access summary report, ordered by database, page set, and table ID within plan name within primary authorization ID, is shown in Figure 274 on page 609.

```
   LOCATION: LOCATI_2                      DB2 PERFORMANCE MONITOR (V6)                      PAGE: 1-6
      GROUP: GROUP_1                          AUDIT REPORT - SUMMARY                  REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER_2                               DML ACCESS                               TO: NOT SPECIFIED
  SUBSYSTEM: SYS2                           ORDER: PRIMAUTH-PLANNAME-OBJECT            ACTUAL FROM: 09/17/99 04:21:44.17
DB2 VERSION: V6                                    SCOPE: MEMBER                              TO: 09/17/99 07:19:20.25


PRIMAUTH PLANNAME DATABASE PAGESET  TABLEID       1ST READ 1ST WRITE  TOTAL
-------- -------- -------- -------- --------      -------- --------- --------

AUTH_20  PLAN_20  DBASE1   PSET1           7             2         2        4
         PLAN_30  DBASE1   PSET1           7             2         2        4
         *TOTAL*                                        4         4        8

AUTH_30  PLAN_20  DBASE1   PSET1           7             2         2        4
         PLAN_30  DBASE1   PSET1           7             2         2        4
         *TOTAL*                                        4         4        8

*GRAND TOTAL*                                           8         8       16
```

Figure 274. Layout of a Member-Scope Audit DML Access Summary Report

The layout of the default group-scope DML access summary report, ordered by member within database, page set, and table ID, is shown in Figure 275 .

```
   LOCATION: LOCATI_2                      DB2 PERFORMANCE MONITOR (V6)                      PAGE: 1-6
      GROUP: GROUP_1                          AUDIT REPORT - SUMMARY                  REQUESTED FROM: NOT SPECIFIED
                                                     DML ACCESS                               TO: NOT SPECIFIED
                                                   ORDER: OBJECT                        ACTUAL FROM: 09/17/99 04:21:44.17
DB2 VERSION: V6                                    SCOPE: GROUP                               TO: 09/17/99 07:21:20.25


DATABASE PAGESET  TABLEID   MEMBER       1ST READ 1ST WRITE  TOTAL
-------- -------- -------- --------      -------- --------- --------

DBASE1   PSET1           7 MEMBER_2            8         8       16
                         7 MEMBER_3            8         8       16

*GRAND TOTAL*                                 16        16       32
```

Figure 275. Layout of a Group-Scope Audit DML Access Summary Report

MEMBER and SUBSYSTEM are removed from the page heading.

Only identifiers which are specified in ORDER are printed.

When a member value changes in a group-scope report, a GROUP TOTAL is shown.

Field Descriptions

This section contains the description of the fields that appear on the audit DML access summary report.

DB2 PM identifiers
Control the order of the audit data reported. Up to three identifiers are printed.

The defaults are:

- For member-scope reports, PRIMAUTH-PLANNAME-OBJECT
- For group-scope reports, OBJECT

For group-scope reports, MEMBER is considered the last ORDER identifier and is automatically added as the second, third, or fourth identifier. See "Chapter 1. DB2 PM Identifiers" on page 3 for more information.

DATABASE
The name of the database that contains the auditable DB2 table. If the database name is unavailable, the decimal DBID is printed.

PAGESET
The name of the page set that contains the auditable DB2 table. If the page set name is unavailable, the decimal PSID is printed. If neither of these values is present, *N/P* is printed.

TABLEID
The internal DB2 identification (OBID) of the table, if applicable, associated with the access.

1ST READ
The total number of first read attempts within a logical unit of work against auditable DB2 tables.

1ST WRITE
The total number of first write attempts against audited DB2 tables.

TOTAL
All DML access operations. The total number of IFCID 143 and 144 records for this set of identifiers.

Utility Access Summary Report

The audit utility access summary report presents audit activity in a DB2 system by collecting all utility access events according to the combination of DB2 PM identifiers you select.

The following command is used to generate a utility access summary report.

```
⋮
AUDIT
    REPORT
       LEVEL (SUMMARY)
       TYPE  (UTILITY)
⋮
```

Note: For both ORDER and INCLUDE/EXCLUDE, the utility name is used for PLANNAME.

Layout

The layout of the default member-scope utility access summary report, ordered by database and page set within utility name within primary authorization ID, is shown in Figure 276.

```
   LOCATION: LOCATI_2                    DB2 PERFORMANCE MONITOR (V6)                    PAGE: 1-7
      GROUP: GROUP_1                        AUDIT REPORT - SUMMARY              REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER_2                           UTILITY ACCESS                           TO: NOT SPECIFIED
  SUBSYSTEM: SYS2                       ORDER: PRIMAUTH-PLANNAME-OBJECT           ACTUAL FROM: 09/17/99 04:21:44.17
DB2 VERSION: V6                                 SCOPE: MEMBER                           TO: 09/17/99 07:19:20.25


PRIMAUTH UTILNAME DATABASE PAGESET        TOTAL
-------- -------- -------- --------      --------

AUTH_20  LOAD     DBASE1   PSET1                4
AUTH_30  LOAD     DBASE1   PSET1                4

*GRAND TOTAL*                                  8
```

Figure 276. Layout of a Member-Scope Audit Utility Access Summary Report

The layout of the default group-scope utility access summary report, ordered by member within database and page set, is shown in Figure 277 on page 612 .

```
   LOCATION: LOCATI_2                    DB2 PERFORMANCE MONITOR (V6)                        PAGE: 1-7
      GROUP: GROUP_1                        AUDIT REPORT - SUMMARY                 REQUESTED FROM: NOT SPECIFIED
                                               UTILITY ACCESS                                TO: NOT SPECIFIED
                                                ORDER: OBJECT                       ACTUAL FROM: 09/17/99 04:21:44.17
DB2 VERSION: V6                                 SCOPE: GROUP                                  TO: 09/17/99 07:21:20.25


DATABASE PAGESET   MEMBER        TOTAL
-------- -------- --------      --------

DBASE1   PSET1    MEMBER_2             8
                  MEMBER_3             8

*GRAND TOTAL*                         16
```

Figure 277. Layout of a Group-Scope Audit Utility Access Summary Report

MEMBER and SUBSYSTEM are removed from the page heading.

Only identifiers which are specified in ORDER are printed.

When a member value changes in a group-scope report, a GROUP TOTAL is shown.

Field Descriptions

This section contains the description of the fields that appear on the audit utility access summary report.

DB2 PM identifiers
Control the order of the audit data reported. Up to three identifiers are printed.

The defaults are:

- For member-scope reports, PRIMAUTH-PLANNAME-OBJECT
- For group-scope reports, OBJECT

For group-scope reports, MEMBER is considered the last ORDER identifier and is automatically added as the second, third, or fourth identifier. See “Chapter 1. DB2 PM Identifiers” on page 3 for more information.

DATABASE
The name of the database that contains the auditable DB2 object or the decimal DBID of that database.

PAGESET
The name or the decimal PSID of the page set that contains the DB2 object.

TOTAL
All utility access operations. Total number of IFCID 24 records for this set of identifiers.

Chapter 45. The Audit Detail Reports and the Audit Trace

Both the audit detail report and the audit trace show a detailed listing of all occurrences of the different audit types. Their layout only differs in that the audit trace is sorted by timestamp whereas the audit detail report is sorted by timestamp within audit type within ORDER identifiers. Any combination of audit types can be specified. The audit types are:

- Authorization change
- Authorization control
- Authorization failure
- DML at bind access
- Audited DDL access
- Audited DML access
- Utility access

The following command is used to generate an audit detail report.

```
⋮
AUDIT
REPORT
LEVEL (DETAIL)
⋮
```

The following command is used to generate an audit trace.

```
⋮
AUDIT
TRACE
⋮
```

Layout

The layout of an audit detail report is shown in Figure 278 on page 614 and that of the audit trace is shown in Figure 279 on page 616.

```
   LOCATION: LOCATI_2                        DB2 PERFORMANCE MONITOR (V6)                              PAGE: 1-1
      GROUP: GROUP_02                           AUDIT REPORT - DETAIL                        REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER_2                                                                                    TO: NOT SPECIFIED
  SUBSYSTEM: SYS2                             ORDER: PRIMAUTH-PLANNAME                          ACTUAL FROM: 09/17/99 04:21:44.17
DB2 VERSION: V6                                    SCOPE: MEMBER                                        TO: 09/17/99 07:19:20.25

PRIMAUTH CORRNAME CONNTYPE
ORIGAUTH CORRNMBR INSTANCE
PLANNAME CONNECT                TIMESTAMP   TYPE                                  DETAIL
-------- -------- ------------ ----------- -------- ------------------------------------------------------------------------------
AUTH_20  CORNME30 SYST-DIR     04:29:20.37 AUTHCHG  TYPE: INBOUND DDF TRANSLATION
ORAUTH30 CN30     A4F498FAD712                      PREVIOUS AUTHID : DB2ADM      NEW AUTHID: DB2ADM
PLAN_20  CONN_20                                    REMOTE LU NAME  : SYDAPC4     REMOTE LOCATION: DSNAPC4
REQLOC:  LOCATI_20

AUTH_20  CORNME30 TSO          04:24:06.30 AUTHCNTL REVOKER: XXASP09    REASON: N/A                   SQLCODE:     0
ORAUTH30 'BLANK'  A4F497D49C07                      OBJECT TYPE: TSPACE
PLAN_20  CONN_20                                    TEXT: REVOKE SYSADM FROM XXASP07 BY ALL

AUTH_20  CORNME30 TSO          04:24:04.97 AUTHFAIL AUTHID CHECKED: XXASP07              PRIVILEGE: SELECT
ORAUTH30 'BLANK'  A4F497D49C07                      OBJECT TYPE   : TABLE               REASON:     8   RC:  4
PLAN_20  CONN_20                                    SOURCE OBJECT : SYSDATABASE         SOURCE OWNER:   SYSIBM
                                                    TARGET OBJECT : SYSDATABASE         TARGET OWNER:   SYSIBM
                                                    TEXT: REVOKE SYSADM FROM XXASP07 BY ALL

AUTH_20  CORNME30 APPL-DIR     04:40:14.57 BIND     PACKAGE: DSNAPC3.DSNESPCS.DSNESM68.X'148C2637049FB9B0'
ORAUTH30 CN30     A4F49B66B12D                      TYPE: SEL-QUERY                   STMT#    71    ISOLATION(CS)
PLAN_20  CONN_20                                    TEXT: SELECT * FROM XXASP09.NHDEPT
REQLOC:  LOCATI_30                                  DATABASE: DBASE1            TABLE OBID:      7

AUTH_20  CORNME30 TSO          04:21:44.26 DDL      TABLE NAME: NHEMP               OWNER     : XXASP09    CREATOR: XXASP09
ORAUTH30 'BLANK'  A4F4970F2B37                      DATABASE  : DBASE1              TABLE OBID:    14      TYPE   : ALTER
PLAN_20  CONN_20                                    TEXT: ALTER TABLE N HEMP AUDIT ALL

AUTH_20  CORNME30 TSO          04:23:27.14 DML      TYPE    : 1ST READ
ORAUTH30 'BLANK'  A4F497ADC393                      DATABASE: DBASE1                TABLE OBID:      7
PLAN_20  CONN_20                                    PAGESET : PSET1                 LOG RBA   : X'00000EA2CAF7'

AUTH_20  CORNME30 TSO          04:23:28.88 DML      TYPE    : 1ST WRITE
ORAUTH30 'BLANK'  A4F497ADC393                      DATABASE: DBASE1                TABLE OBID:      7
PLAN_20  CONN_20                                    PAGESET : PSET1                 LOG RBA   : X'00000EA2D200'

AUTH_20  CORNME30 TSO          04:23:27.34 UTILITY  NAME    : LOAD                      ID   : DSNTEX
ORAUTH30 'BLANK'  A4F497ADC393                      DATABASE: DBASE1                    PHASE: RELOAD
PLAN_20  CONN_20                                    PAGESET : PSET1                     TYPE : RECORD
```

Figure 278. Example of a Member-Scope Audit Detail Report (Part 1 of 2)

```
   LOCATION: LOCATI_2                        DB2 PERFORMANCE MONITOR (V6)                              PAGE: 1-2
      GROUP: GROUP_02                           AUDIT REPORT - DETAIL                          REQUESTED FROM: NOT SPECIFIED
MEMBER: MEMBER_3                                                                                       TO: NOT SPECIFIED
  SUBSYSTEM: SYS2                             ORDER: PRIMAUTH-PLANNAME                           ACTUAL FROM: 09/17/99 04:21:44.17
DB2 VERSION: V6                                    SCOPE: MEMBER                                  PAGE DATE: 09/17/99

PRIMAUTH CORRNAME CONNTYPE
ORIGAUTH CORRNMBR INSTANCE
PLANNAME CONNECT                TIMESTAMP   TYPE                                  DETAIL
-------- -------- ------------ ----------- -------- ------------------------------------------------------------------------------------
AUTH_20  CORNME30 TSO          04:49:20.25 AUTHCHG  TYPE: SET CURRENT SQLID
ORAUTH30 'BLANK'  A4F49D0AA847                      PREVIOUS SQLID  : XXASP07     NEW SQLID : XXASP09     STATUS: FAILURE
PLAN_20  CONN_20

AUTH_20  CORNME30 APPL-DIR     04:42:49.13 BIND     PACKAGE: DSNAPC3.DSNESPCS.DSNESM68.X'148C2637049FB9B0'
ORAUTH30 CN30     A4F49B66B12F                      TYPE: SEL-QUERY                   STMT#    71    ISOLATION(CS)
PLAN_20  CONN_20                                    TEXT: SELECT * FROM XXASP09.NHDEPT
REQLOC:  LOCATI_30                                  DATABASE: DBASE1            TABLE OBID:      7

AUDIT REPORT COMPLETE
```

Figure 278. Example of a Member-Scope Audit Detail Report (Part 2 of 2)

```
   LOCATION: LOCATI_2                        DB2 PERFORMANCE MONITOR (V6)                              PAGE: 1-1
      GROUP: GROUP_02                                  AUDIT TRACE                          REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER_2                                                                                    TO: NOT SPECIFIED
  SUBSYSTEM: SYS2                                                                                 ACTUAL FROM: 09/17/99 04:21:44.17
DB2 VERSION: V6                                    SCOPE: MEMBER                                  PAGE DATE: 09/17/99

PRIMAUTH CORRNAME CONNTYPE
ORIGAUTH CORRNMBR INSTANCE
PLANNAME CONNECT                TIMESTAMP   TYPE                                  DETAIL
-------- -------- ------------ ----------- -------- ------------------------------------------------------------------------------
AUTH_20  CORNME30 TSO          04:21:44.26 DDL      TABLE NAME: NHEMP               OWNER     : XXASP09    CREATOR: XXASP09
ORAUTH30 'BLANK'  A4F4970F2B37                      DATABASE  : DBASE1              TABLE OBID:    14      TYPE   : ALTER
PLAN_20  CONN_20                                    TEXT: ALTER TABLE N HEMP AUDIT ALL

AUTH_20  CORNME30 TSO          04:23:27.14 DML      TYPE    : 1ST READ
ORAUTH30 'BLANK'  A4F497ADC393                      DATABASE: DBASE1                TABLE OBID:      7
PLAN_20  CONN_20                                    PAGESET : PSET1                 LOG RBA   : X'00000EA2CAF7'

AUTH_20  CORNME30 TSO          04:23:27.34 UTILITY  NAME    : LOAD                      ID   : DSNTEX
ORAUTH30 'BLANK'  A4F497ADC393                      DATABASE: DBASE1                PHASE: RELOAD
PLAN_20  CONN_20                                    PAGESET : PSET1                 TYPE : RECORD

AUTH_20  CORNME30 TSO          04:23:28.88 DML      TYPE    : 1ST WRITE
ORAUTH30 'BLANK'  A4F497ADC393                      DATABASE: DBASE1                TABLE OBID:      7
PLAN_20  CONN_20                                    PAGESET : PSET1                 LOG RBA   : X'00000EA2D200'

AUTH_20  CORNME30 TSO          04:24:04.97 AUTHFAIL AUTHID CHECKED: XXASP07              PRIVILEGE: SELECT
ORAUTH30 'BLANK'  A4F497D49C07                      OBJECT TYPE   : TABLEREASON:     8   RC:  4
PLAN_20  CONN_20                                    SOURCE OBJECT : SYSDATABASE          SOURCE OWNER:   SYSIBM
                                                    TARGET OBJECT : SYSDATABASE          TARGET OWNER:   SYSIBM
                                                    TEXT: REVOKE SYSADM FROM XXASP07 BY ALL

AUTH_20  CORNME30 TSO          04:24:06.30 AUTHCNTL REVOKER: XXASP09    REASON: N/A                   SQLCODE:     0
ORAUTH30 'BLANK'  A4F497D49C07                      OBJECT TYPE: TSPACE
PLAN_20  CONN_20                                    TEXT: REVOKE SYSADM FROM XXASP07 BY ALL

AUTH_20  CORNME30 SYST-DIR     04:29:20.37 AUTHCHG  TYPE: INBOUND DDF TRANSLATION
ORAUTH30 CN30     A4F498FAD712                      PREVIOUS AUTHID : DB2ADM      NEW AUTHID: DB2ADM
PLAN_20  CONN_20                                    REMOTE LU NAME  : SYDAPC4     REMOTE LOCATION: DSNAPC4
REQLOC:  LOCATI_20

AUTH_20  CORNME30 APPL-DIR     04:40:14.57 BIND     PACKAGE: DSNAPC3.DSNESPCS.DSNESM68.X'148C2637049FB9B0'
ORAUTH30 CN30     A4F49B66B12D                      TYPE: SEL-QUERY                  STMT#    71    ISOLATION(CS)
PLAN_20  CONN_20                                    TEXT: SELECT * FROM XXASP09.NHDEPT
REQLOC:  LOCATI_30                                  DATABASE: DBASE1            TABLE OBID:      7
```

Figure 279. Example of a Member-Scope Audit Trace (Part 1 of 2)

```
   LOCATION: LOCATI_2                        DB2 PERFORMANCE MONITOR (V6)                              PAGE: 1-2
      GROUP: GROUP_02                                 AUDIT TRACE                          REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER_3                                                                                  TO: NOT SPECIFIED
  SUBSYSTEM: SYS2                                                                                ACTUAL FROM: 09/17/99 04:21:44.17
DB2 VERSION: V6                                    SCOPE: MEMBER                                  PAGE DATE: 09/17/99

PRIMAUTH CORRNAME CONNTYPE
ORIGAUTH CORRNMBR INSTANCE
PLANNAME CONNECT                TIMESTAMP   TYPE                                  DETAIL
-------- -------- ------------ ----------- -------- ------------------------------------------------------------------------------------
AUTH_20  CORNME30 APPL-DIR     04:42:49.13 BIND     PACKAGE: DSNAPC3.DSNESPCS.DSNESM68.X'148C2637049FB9B0'
ORAUTH30 CN30     A4F49B66B12F                      TYPE: SEL-QUERY                   STMT#    71    ISOLATION(CS)
PLAN_20  CONN_20                                    TEXT: SELECT * FROM XXASP09.NHDEPT
REQLOC:  LOCATI_30                                  DATABASE: DBASE1            TABLE OBID:      7

AUTH_20  CORNME30 TSO          04:49:20.25 AUTHCHG  TYPE: SET CURRENT SQLID
ORAUTH30 'BLANK'  A4F49D0AA847                      PREVIOUS SQLID  : XXASP07     NEW SQLID : XXASP09     STATUS: FAILURE
PLAN_20  CONN_20

AUDIT TRACE COMPLETE
```

Figure 279. Example of a Member-Scope Audit Trace (Part 2 of 2)

Field Descriptions

This section contains the description of the columns of the audit detail report and audit trace.

DB2 PM identifiers
Control the order of the audit data reported. If the requester location differs from the local location, the report or trace shows REQLOC together with the appropriate name under the first column of identifiers.

The member name (MEMBER) is printed if you requested a group-scope report or trace. See “Chapter 1. DB2 PM Identifiers” on page 3 for more information.

TIMESTAMP
The time of the event.

TYPE The type of event being reported. You can control which of the events is reported using the INCLUDE/EXCLUDE TYPE option. Possible values are:

TYPE DESCRIPTION

AUTHCHG
Authorization change.

AUTHCNTL
Authorization control.

AUTHFAIL
Authorization failure.

BIND Audited DML at bind access.

DDL Audited DDL access.

DML Audited DML access.

UTILITY
Audited utility access.

DETAIL
Each event has its own specific detail.

Your selection for the TYPE option determines which of the fields described on the following pages is printed.

Authorization Change

If you select the AUTHCHG type, the following fields are printed:

```
TYPE: SET CURRENT SQLID

PREVIOUS SQLID  : XXASP07     NEW SQLID : XXASP09     STATUS: FAILURE


TYPE: END OF SIGNON

PREVIOUS AUTHID : XXASP07     NEW AUTHID: XXASP09     STATUS: SUCCESSFUL

SECONDARY AUTHID: XXASP09 XXASP11 XXASP26


TYPE: INBOUND DDF TRANSLATION

PREVIOUS AUTHID : DB2ADM      NEW AUTHID: DB2ADM

REMOTE LU NAME  : SYDAPC4     REMOTE LOCATION: DSNAPC4
```

TYPE The kind of authorization change or establishment. It depends on the IFCID of the input record.

Possible values are:

- SET CURRENT SQLID (IFCID 55)
- END OF IDENTIFY (IFCID 83)
- END OF SIGNON (IFCID 87)
- INBOUND/OUTBOUND DISTRIBUTED TRANSLATION (IFCID 169)

PREVIOUS SQLID/AUTHID
For IFCID 55: The initial value of the SQLID before execution of the request.

For IFCIDs 83 and 87: The original value of the authorization ID, as passed to the IDENTIFY or SIGNON authorization exit.

For IFCID 169: The authorization ID before translation.

NEW SQLID/AUTHID
For IFCID 55:

For a successful command: The new value of the SQLID.

For an unsuccessful command: The value of the attempted SQLID change.

For IFCIDs 83 and 87: The value of the authorization ID as set by the IDENTIFY or SIGNON exit.

For IFCID 169: The new value of the authorization ID.

STATUS
The success or failure of the attempted authorization change.

SECONDARY AUTHID
Lists the secondary authorization IDs set by the identify or signon authorization exits. If no secondary authorization IDs exist, this line is not printed.

Secondary authorization IDs are printed in rows of five, up to a maximum of 49 rows (245 AUTHIDs).

This list does not apply to the IFCIDs 55 and 169.

REMOTE LU NAME
The logical unit name of the DB2 subsystem. For inbound translation, this is the LU name of the subsystem performing the translation.

This field only applies to IFCID 169.

REMOTE LOCATION
The location name of the serving DB2 subsystem. For inbound translation, this is the name of the subsystem performing the translation.

This field only applies to IFCID 169.

Authorization Control

If you select the AUTHCNTL type, the following fields are printed:

```
REVOKER: XXASP09    REASON: N/A                    SQLCODE:     0

OBJECT TYPE: TSPACE

TEXT: REVOKE SYSADM FROM XXASP07 BY ALL
```

GRANTOR or REVOKER
The authorization ID of the user who issued the GRANT or REVOKE.

This field is left blank when the BY clause is used in a REVOKE statement.

REASON
Valid only for grants. It indicates the authorization level of the grantor.

For revokes and unsuccessful grants, *N/A* is printed.

SQLCODE
The SQL return code from the GRANT or REVOKE operation.

OBJECT TYPE
The DB2 object type.

TEXT The SQL statement text associated with the GRANT or REVOKE. Long SQL text can be truncated.

Authorization Failure

If you select the AUTHFAIL type, the following fields are printed:

```
AUTHID CHECKED: XXASP07              PRIVILEGE: SELECT

OBJECT TYPE   : TABLE                REASON:     8   RC:  4

SOURCE OBJECT : SYSDATABASE          SOURCE OWNER:   SYSIBM

TARGET OBJECT : SYSDATABASE          TARGET OWNER:   SYSIBM

TEXT: REVOKE SYSADM FROM XXASP07 BY ALL
```

AUTHID CHECKED
The authorization ID causing the failure.

PRIVILEGE
The attempted operation.

OBJECT TYPE
The DB2 object type.

REASON
The user-defined reason code from the access control authorization exit routine.

RC The return code from the access control authorization exit routine.

SOURCE OBJECT
If the *OBJECT TYPE* field is not blank, this field displays the name of the object against which the authorization was checked.

If the object type is blank, then this field displays the name of the object being created. It is valid only when the privilege is CREATE ALIAS, CREATE DBA, CREATE DBC, or CREATE STOGROUP.

Otherwise, *N/A* is printed.

SOURCE OWNER
If the *OBJECT TYPE* field is not blank, this field displays the qualifier of the object against which the authorization was checked. It is valid only for qualifiable objects.

If the object type is blank, this field displays the qualifier of the alias being created. It is valid only when the privilege is CREATE ALIAS.

Otherwise, *N/A* is printed.

TARGET OBJECT
The name of the object being defined. It is valid only when the target owner field is valid. Otherwise, *N/A* is printed.

TARGET OWNER
The qualifier of the object being defined. It is valid when the privilege is CREATE INDEX or CREATE TABLE. It is also valid for a CREATE VIEW authorization check against the set of CREATE VIEW, SELECT, INSERT, DELETE, and UPDATE privileges. Otherwise, *N/A* is printed.

TEXT The SQL statement text associated with the failure. Long SQL text can be truncated.

DML at Bind Access

If you select the BIND type, the following fields are printed:

```
PACKAGE: DSNAPC3.DSNESPCS.DSNESM68.X'148C2637049FB9B0'

TYPE: SEL-QUERY                 STMT#    71  ISOLATION(CS)  KEEP UPD LOCKS: YES

TEXT: SELECT * FROM XXASP09.NHDEPT

DATABASE: DBASE1            TABLE OBID:      7
```

PACKAGE/DBRM NAME
The name of the database request module (DBRM) or package containing the DML statement being bound.

A package name is made up of the following parts:

Location
The location name is applicable only to packages, otherwise 'BLANK' is printed.

Collection ID
The package collection ID is applicable only to packages, otherwise 'BLANK' is printed.

Package ID
The program name for DBRMs or the package ID for packages.

Consistency token
A hexadecimal dump of the DB2 timestamp of the program during precompilation. This field contains the value in the TIMESTAMP column of SYSIBM.SYSDBRM. The value represents the time of the precompilation in internal format, that is, modified STCK format.

TYPE The type of statement being bound.

STMT#
The statement number in the program or DBRM involved in the bind.

ISOLATION
The isolation of the bind. Possible values are:

RR Repeatable read

CS Cursor stability

UR Uncommitted read

RS Read stability

KEEP UPD LOCKS
Indicates if an update lock is kept. YES is only valid if the value in the TYPE field is SQL OPEN CURSOR and the value in the ISOLATION field is RR or RS.

TEXT The SQL statement text associated with the BIND. When SQL text is not present, *N/P* is printed. Long SQL text can be truncated.

DATABASE
Either the name or the decimal DBID of the database that contains the auditable DB2 table. The name is printed if known, otherwise DB2 PM reports a decimal DBID.

TABLE OBID
The internal DB2 identification (OBID) of the DB2 table.

Note: DATABASE and TABLE OBID are repeating fields and can have more than one entry in the report or trace. Two or more occurrences result from a DML statement that refers to two or more DB2 tables.

DDL Access

If you select the DDL type, the following fields are printed:

```
TABLE NAME: NHEMP                OWNER     : XXASP09    CREATOR: XXASP09

DATABASE  : DBASE1               TABLE OBID:    14      TYPE   : ALTER

TEXT: ALTER TABLE NHEMP AUDIT ALL
```

TABLE NAME
The name of the audited DB2 table.

OWNER
The authorization ID of the owner of the audited DB2 table.

CREATOR
The authorization ID of the creator of the DB2 table.

DATABASE
Either the name or the decimal DBID of the database that contains the auditable DB2 table. The name is printed if known, otherwise DB2 PM reports a decimal DBID.

TABLE OBID
The internal DB2 identification (OBID) of the auditable table associated with the access.

TYPE The type of access performed on the auditable DB2 table, for example CREATE, ALTER, DROP.

TEXT The SQL statement text associated with the table access. Long SQL text can be truncated.

DML Access

If you select the DML type, the following fields are printed:

```
TYPE    : 1ST READ

DATABASE: DBASE1                TABLE OBID:      7

PAGESET : PSET1                 LOG RBA   : X'00000EA2CAF7'
```

TYPE The type of access. It is determined by the IFCID (143 is a WRITE and 144 is a READ).

DATABASE
Either the name or the decimal DBID of the database that contains the auditable DB2 table. The name is printed if known, otherwise DB2 PM reports a decimal DBID.

TABLE OBID
The internal DB2 identification (OBID) of the auditable DB2 table associated with the access.

PAGESET
Either the name or the decimal PSID of the page set that contains the auditable DB2 table. The name is printed if known, otherwise DB2 PM reports a decimal PSID. If neither field is available, *N/A* is printed in this field.

LOG RBA
The log relative byte address of the current unit of recovery. It is printed in hexadecimal, when present.

Utility Access

If you select the UTILITY type, the following fields are printed:

```
NAME    : LOAD                    ID   : DSNTEX

DATABASE: DBASE1                  PHASE: RELOAD

PAGESET : PSET1                   TYPE : RECORD
```

NAME The name of the utility.

ID The DB2 user's identification of the utility.

DATABASE
Either the name or the decimal DBID of the database that contains the auditable DB2 object.

For the report entry describing the start of a utility (IFCID 23), *N/P* is printed. To determine the real value, find the corresponding entry describing the utility object or phase change (IFCID 24), or the entry describing the utility end information.

PHASE
The utility phase identification.

PAGESET
Either the name or the decimal PSID of the page set that contains the auditable DB2 object. If neither field is present, *N/A* is printed.

TYPE The type of utility access. For the utility phase UTILINIT and UTILTERM, *N/A* is printed.

Chapter 46. Audit Scenarios

This chapter shows examples of using the AUDIT command.

Reviewing Grant/Revoke Activity

As the auditor, you suspect that someone is granting and revoking privileges on tables indiscriminately. It is important that you locate the person quickly and correct the problem.

User Action

1. Issue the following DB2 command to trace all information regarding GRANTs and REVOKEs:

```
⋮
-START TRACE(AUDIT) DEST(SMF) CLASS(2)
⋮
```

   This statement causes class 2 audit trace records (audit type AUTHCNTL) to begin recording in the SMF data set whenever a GRANT or REVOKE is issued against an auditable DB2 table.
2. When sufficient SMF data has been traced, use the following DB2 command to terminate the trace:

```
⋮
-STOP TRACE(AUDIT) DEST(SMF) CLASS(2)
⋮
```

3. Use the SMF data as input to a DB2 PM execution. Request an audit trace by issuing the following command:

```
⋮
AUDIT
   TRACE
     TYPE (AUTHCNTL)
⋮
```

The output is written to AUTRCDD1 by default. This trace contains all GRANTs and REVOKEs recorded to the SMF data set.

The process (START TRACE, STOP TRACE, AUDIT TRACE) can be repeated until enough information has been gathered to confirm or verify your initial findings.

Determining Which User or Batch Job Is Updating a Database

For the following scenario, assume that incorrect updates to the table PAYRATE in the payroll database have been made recently. You need to determine which users or batch jobs are updating this table incorrectly.

User Action

1. To determine the source of these incorrect updates, the table is first made "auditable" using the DB2 DDL statement:
   Making the table auditable in this case means that, when the DB2 audit trace

```
⋮
ALTER TABLE PAYRATE AUDIT ALL
⋮
```

   class 4 is active, audit type DML trace records are generated because the tables are initially written to, or read from, a logical unit of work (for example, commit). These class 4 records are produced when an UPDATE or INSERT is performed on the table.
2. Then start the DB2 audit trace class for DML accesses using the DB2 command:
   This statement causes class 4 audit trace records (audit type DML) to begin

```
⋮
-START TRACE(AUDIT) DEST(SMF) CLASS(4)
⋮
```

   recording in the SMF data set whenever an auditable DB2 table is initially updated or read within a unit of recovery. Thus, any initial DML reads or writes to the table PAYRATE within a given unit of recovery cause an audit trace class 4 record to be recorded in the SMF data set.
3. When sufficient audit trace data is obtained, the DB2 trace can be terminated using the following DB2 command:

```
-STOP TRACE(AUDIT) DEST(SMF) CLASS(4)
```

4. Now use the SMF data as input to a DB2 PM execution. If you know the plans that are updating the columns, use the GLOBAL command to include only those. Request an audit file data set by issuing the following command:

```
⋮
GLOBAL
   (INCLUDE (PLANNAME(PLAN1,PLAN2)))
      AUDIT
        FILE
          TYPE (DML)
⋮
```

The output is written to the default ddname AUFILDD1. The data set contains the initial reads and writes within a logical unit of work to auditable DB2 tables, including PAYRATE. A new table can now be created. Use the sample JCL DGOXLDML supplied in the SDGOSAMP library to load the data into the table.

Assuming that the OBID of the table PAYRATE is 456 and it resides in database PAYROLL with DBID 123, the following SQL statement can be issued to obtain the date, time, original authorization ID, and plan name of all initial write accesses to the PAYRATE table in the PAYROLL database:

```
SELECT TIME_STAMP, ORIG_AUTHID, PLANNAME

FROM AUTHDML

WHERE IFCID = 143 AND DATABASE_DBID = 123 AND TABLE_OBID = 456.
```

The SQL statement text associated with the updates might also be useful to determine whether or not a certain column was involved in an update. In this case, the SQL statement text associated with the audit trace DML data can also be loaded to another table with the sample JCL DGOXLSQL supplied in the SDGOSAMP library.

The SQL text can also be examined for any further information regarding the problem.

Chapter 47. The Audit File Data Set

You use the FILE subcommand to format DB2 audit records and write them to sequential data sets that can be

The audit FILE subcommand produces up to seven sequential variable-blocked data sets. You can use FILE to separate the various audit types by specifying one audit type per FILE subcommand.

The content of the output data set is determined by the options you specify for the FILE subcommand and by the input DB2 audit trace data processed.

Each output record is divided into several parts:

- The *Standard Header* section contains header data common to all records. This section is at the beginning of each record. It contains DB2 identifier information known as the correlation header. It also contains the DB2 distributed network header information associated with the record.
- The *Data* section lists data unique to the audit category of the record. Each audit type maps the areas of the record differently. Records which share the same header information have a repeating subtype.

Audit File Output Record

File data is written to a File data set. The following types of records are created:

- Bind
- Auth Change
- Auth Control
- DDL
- Auth Failure
- SQL
- Utility

Descriptions of the layouts of these records can be found in the SDGOSAMP library under the following names:

DGOXDBND
Bind

DGOXDCHG
Auth Change

DGOXDCNT
Auth Control

DGOXDDDL
DDL

DGOXDDML
DML

DGOXDFAI
Auth Failure

DGOXDSQL
SQL

DGOXDUTI
Utility

Part 10. The Explain Report Set

This part of the *DB2 PM Report Reference* describes the explain report set. It is divided into the following chapters:

Explain

- Chapter 48. Introduction to the Explain Report Set gives a brief overview of the explain function and the types of access path information you can obtain.
- Chapter 49. General Explain Information contains general information about requesting DB2 PM explain reports, the different types of DB2 PM explain functions, the different levels of detail available, authorization, and PLAN_TABLE considerations.
- Chapter 50. The EXPLAIN Command outlines the DB2 PM EXPLAIN commands, provides syntax diagrams of the different explain functions, and describes the available explain specifications and options.
- Chapter 51. Explain Reports describes the DB2 PM explain reports and the different sections of these reports. It also describes how a great amount of plans and packages are processed.
- Chapter 52. Processing Considerations describes the impact that explain can have on the DB2 PM performance and suggests methods of minimizing overhead.

Chapter 48. Introduction to the Explain Report Set

The DB2 PM explain report set is used to describe the access path selected by DB2 for a given SQL statement. This description is based on information produced by the SQL EXPLAIN function as well as additional relevant DB2 catalog data.

SQL EXPLAIN is a DB2 function that provides information on how DB2 accesses data for a given SQL statement. The following methods can be used to invoke the SQL EXPLAIN function:

- Using the SQL EXPLAIN statement
- Using the EXPLAIN(YES) option when binding or rebinding a plan or package
- At automatic rebind if the plan or package that was previously bound with EXPLAIN(YES) is automatically rebound

For more information on SQL EXPLAIN, refer to *DB2 Administration Guide*.

The SQL EXPLAIN statement can be executed dynamically using SPUFI or QMF or statically from an application program. The argument of the SQL EXPLAIN statement is the SQL statement being investigated, as the following example shows:

```
⋮
EXPLAIN ALL SET QUERYNO = 1234 FOR
        SELECT LASTNAME, DEPTNAME
           FROM DSN8610.EMP, DSN8610.DEPT
           WHERE WORKDEPT = DEPTNO
           ORDER BY 1
⋮
```

In this example, DB2 selects the access path for the SELECT statement, and SQL EXPLAIN provides access path information such as:

- Access type
- Indexes to be used
- Order of table access
- Order of table join
- The join method chosen
- Sort information
- Locking strategy
- DB2 catalog information

The information is stored in a DB2 table named PLAN_TABLE. You can determine the chosen access path by selecting access path information from this table.

The information produced by the SQL EXPLAIN function is very useful in application design and tuning. However, this information alone is not a sufficient source in determining and understanding the access path chosen by DB2 and documented by the SQL EXPLAIN function. In many cases combining the SQL EXPLAIN output in the PLAN_TABLE with selected information extracted from the DB2 catalog suggests more adequately the performance implications of the SQL, and reports more completely the reason for the selection of a specific access path.

The main purpose of the DB2 PM explain report set is to combine these two sources of information and present the data in a clear and concise format. The

DB2 PM explain report set output can be obtained as a result of DB2 PM background or foreground execution. The DB2 PM explain report set requires access to DB2.

Chapter 49. General Explain Information

Tuning DB2

This chapter identifies and describes the specific DB2 data which is reported for the purpose of tuning DB2. For general tuning advice on DB2, refer to the DB2 Administration Guide 'Performance, Monitoring, and Tuning' chapters for the specific release of DB2.

This chapter contains general information on explain processing. Information is provided on:

- Explain functions
- Levels of detail
- Authorization
- PLAN_TABLE considerations

Explain Functions

An explainable SQL statement can be identified by any of the following:

- Its query number
- Its SQL statement text
- The plan to which the statement belongs
- The package to which the statement belongs
- The QMF query name

The contents of an explain report depends on which of these identifications you specify.

Explain Query Number

This specification is used if you want to investigate a particular SQL statement identified by its query number.

You can obtain the query number in the following circumstances:

- A dynamic SQL EXPLAIN statement has been executed with a given query number. The SQL EXPLAIN statement can have been executed from either DB2I or QMF. If the query number is not specified in the SQL EXPLAIN statement, DB2 assigns a number. You can obtain the query number directly from the PLAN_TABLE.
- The application has been bound with the EXPLAIN(YES) option on the BIND or REBIND commands. The query number is the statement number that was assigned by the precompiler and placed in the DBRM.

  Note: If a statement belonging to a particular plan or package is to be explained, EXPLAIN PLAN or EXPLAIN PACKAGE specifications are better suited than EXPLAIN QUERYNO. By using EXPLAIN PACKAGE or EXPLAIN PLAN options such as FIRST, LAST, or DBRM, the statement can be better identified.

DB2 PM explain searches for the query number in the job submitter's PLAN_TABLE, unless the OWNER keyword with a different user ID is specified. If the job submitter has SELECT authorization to another user's PLAN_TABLE, the job submitter can select EXPLAIN information from this table, by specifying the other user's authorization ID as the OWNER option.

If the specified query number does not exist in the PLAN_TABLE, a warning message is issued. DB2 PM resumes processing with the next request.

Explain SQL Statement

This specification is used if you want to investigate a particular SQL statement supplied in its text form.

The supplied SQL statement is explained by SQL EXPLAIN using a query number of 999735911. If this number already exists in the PLAN_TABLE of the job submitter, DB2 PM explain deletes the rows before processing the SQL statement. After successful execution of SQL EXPLAIN, the newly created rows in the PLAN_TABLE of the job submitter are used to produce the usual DB2 PM explain report.

Explain Plan

This specification is used if you want to investigate all or selected SQL statements in a given plan.

You can specify the name of the plan to be explained. DB2 PM explain verifies that the specified plan exists in the catalog table SYSIBM.SYSPLAN. If it does, DB2 PM explain further verifies that the plan has been bound with the EXPLAIN(YES) option.

Explain Package

This specification is used if you want to investigate all or selected SQL statements for given packages.

DB2 PM explain verifies that the specified package exists in the catalog table SYSIBM.SYSPACKAGE. If it does, DB2 PM explain further verifies that the package has been bound with the EXPLAIN(YES) option.

Explain QMF Query

This specification is used if you want to investigate a saved QMF query that it is written in the SQL language.

QBE and PROMPTED queries must be converted to SQL before they can be explained.

Apart from explaining your own saved QMF queries, you can explain a query created by other users provided that the query was saved with SHARE=YES.

The QMF query can contain parameters, for example PARM1 and &PARM2; These parameters can also substitute column names in the select list. However, the query must not contain literals and other strings with one or more ampersands (&), enclosed between quotes (').

If there is more than one entry in the PLAN_TABLE with the same identifiers (for example, query number, plan name, and program name), a report for the most recent entry is produced.

Levels of Detail

The output produced by DB2 PM explain can be large, especially in the case of explain plan and explain package functions. In order to control the amount of data, the following levels of detail can be requested:

Summary (SUMMARY)
This produces a summary report with one line for each SQL statement.

Detail (DETAIL)
This produces a full report for each SQL statement including the following blocks of data:

- "Raw" SQL EXPLAIN data as found in the PLAN_TABLE
- Access path data
- Table and table space data
- Index data
  - All available indexes for a given table
  - Indexes selected for the access only
- Key data
- Plan data
- Host variables data

The number of data blocks listed varies with the DB2 PM explain function requested.

Basic - No Catalog Data (BASIC)
Only the SQL EXPLAIN and access path data blocks are shown for each SQL statement.

SQL Summary (SQL)
Only the access path data block is shown for each SQL statement.

Index Data (INDEXES)
All data blocks of the DETAIL level are shown except for the key data block.

No PLAN_TABLE Data (NORAWXPL)
All data blocks of the DETAIL level are shown except for the SQL EXPLAIN data as found in the PLAN_TABLE.

Key Distribution (KEYDIST)
All data blocks of the DETAIL level are shown including the distribution of the ten mostly used key values.

For information about the levels of detail and the information they contain, refer to "Chapter 51. Explain Reports" on page 653.

Authorization

DB2 PM explain uses DB2 system catalog tables. Consequently, it is necessary that the binder of DB2 PM explain has SELECT authorization on the following catalog tables:

- SYSIBM.SYSDATABASE
- SYSIBM.SYSTABLESPACE
- SYSIBM.SYSTABLEPART
- SYSIBM.SYSTABLES
- SYSIBM.SYSCOLUMNS
- SYSIBM.SYSINDEXES
- SYSIBM.SYSINDEXEPART
- SYSIBM.SYSCOLDIST
- SYSIBM.SYSKEYS
- SYSIBM.SYSSTMT
- SYSIBM.SYSPLAN
- SYSIBM.SYSDBRM
- SYSIBM.SYSPACKLIST
- SYSIBM.SYSPACKAGE
- SYSIBM.SYSPACKDEP
- SYSIBM.SYSPACKSTMT
- SYSIBM.SYSCOLDISTSTATS
- SYSIBM.SYSCOLSTATS
- SYSIBM.SYSINDEXSTATS
- SYSIBM.SYSSYNONYMS
- SYSIBM.SYSTABSTATS

To explain saved QMF queries, you must have SELECT authorization on the following QMF tables:

- Q.OBJECT_DIRECTORY
- Q.OBJECT_DATA

To control user access to the catalog tables, DB2 PM explain selects through views or synonyms. Definitions of these functions can be found in sample DDL members, which are supplied in the SDGOSAMP library. These can be used as supplied, or tailored to fit your installation requirements. Refer to the *DB2 PM Program Directory* for more information.

The other main resource used by DB2 PM explain is PLAN_TABLE. One of the first steps in the execution of a DB2 PM explain function is verifying that a PLAN_TABLE exists for the current authorization ID. If a PLAN_TABLE does not exist and a dynamic SQL EXPLAIN is required as a result of the explain SQL statement or explain QMF query functions, such a table is created in the default database (provided that the user has the required privileges). If the user is not authorized, an error message is issued and the execution of DB2 PM explain is terminated.

Table 81 shows the selected authorization ID of the PLAN_TABLE for all DB2 PM explain functions.

Table 81. PLAN_TABLE Authorization Identification

Function	Authorization ID
SQLSTMT	Job submitter[1]
QMFQUERY	Job submitter[1]
PLAN	Plan creator
PACKAGE	Package owner
QUERYNO	1. OWNER on QUERYNO
QUERYNO	2. OWNER on GLOBAL
QUERYNO	3. Job submitter[1]

If your PLAN_TABLE is in a backlevel format, DB2 PM automatically adds any missing columns.

PLAN_TABLE Considerations

If a DB2 PM explain request is specified for an SQL statement or QMF query, and you do not already have a PLAN_TABLE, it is created in the default database.

The PLAN_TABLE is normally prefixed by the primary user ID. If, however, a secondary SQL ID has been specified, this table is prefixed by the secondary SQL ID. For example, if a DB2 PM explain job is submitted by USER001 and the following command is specified:

```
EXPLAIN
     QMFQUERY
        NAME  (SALE_INQUIRY)
        SQLID (USER002)
```

a PLAN_TABLE is created under the primary authorization ID USER002 unless such a table already exists.

The contents of the PLAN_TABLE depend on the DB2 release. The first 30 columns are created regardless of the DB2 release. Columns 31 to 34 are created for DB2 Version 3, columns 35 to 43 for DB2 Version 4, and columns 44 to 46 for DB2 Version 6.

DB2 PM explain compares the DB2 release and the columns available in the PLAN_TABLE and, if necessary, automatically adds any missing columns.

For a description of the individual columns, refer to the *SQL Reference*.

1. This can be either the primary authorization ID or any of the secondary authorization IDs if the authorization exit is enabled, unless the user has specified the DB2 PM explain SQLID option with one of the above IDs.

Chapter 50. The EXPLAIN Command

This chapter describes how to use the EXPLAIN command.

Building a Command Stream

Figure 280 is an example of the JCL required to produce explain output. The DB2 PM EXPLAIN statements in the JCL are examples only. You can modify the JCL to meet your requirements. A description of the DD statements follows the example.

```
//DB2PM   JOB (INSTALLATION DEPENDENCIES)
//*
//* ================================================================*
//*          D B 2  P M   R E P O R T   G E N E R A T I O N          *
//* ================================================================*
//*
//        EXEC PGM=DB2PM

//STEPLIB  DD  DSN=DGO.V6R1M0.SDGOLOAD,DISP=SHR
//         DD  DSN=SYS1.SDSNLOAD,DISP=SHR
//DPMLOG   DD  SYSOUT=*
//SYSOUT   DD  SYSOUT=*
//EXPLAIN  DD  SYSOUT=*
//* FOLLOWING IS THE DB2 PM COMMAND STREAM
//SYSIN    DD *
  GLOBAL
       SSID     (DSNX)
       LEVEL    (DETAIL)

  EXPLAIN
       PLAN     (DB2PMEX)
       SSID     (DSNT)

  EXPLAIN
       PACKAGE  (DB2PMCOLL.PACK1.(2))
       SSID     (DSNT)

  EXPLAIN
       QMFQUERY (USER001.TAX_QUERY_1)
       SSID     (DSNT)

  EXPLAIN
       SQLSTMT  (SELECT * FROM SYSIBM.SYSSTMT ; )

  EXPLAIN
       QUERYNO  (12345)
       LEVEL    (SUMMARY)

 EXEC
```

Figure 280. Sample JCL for Requesting Explain Output

Note: If the load library of the DB2 release you are using is not part of the system link list, it must be specified as part of the STEPLIB statement in the JCL. You can specify only one DB2 load library statement.

DD Statements

This section describes the DD statements and the data sets associated with the explain report set.

The values for RECFM, LRECL, and BLKSIZE shown for some data sets are the values generated by DB2 PM at run time. Note that the generated value for BLKSIZE is not mandatory, but is suggested. Do not override the values for RECFM and LRECL by specifying other values in your JCL.

STEPLIB
STEPLIB contains the load library for both DB2 PM and DB2. The DB2 load library specifies the DB2 subsystem on which the EXPLAIN request is performed. If you specify the DB2 subsystem in the system LINK library you can omit the DB2 load library.

DPMLOG
DB2 PM command processor messages, and other messages indicating unusual processing conditions, are written to DPMLOG. If DPMLOG is omitted, it is dynamically allocated to the SYSOUT message class of the job. DPMLOG is a required DD statement.

RECFM:	FBA
LRECL	133
BLKSIZE	6251

SYSOUT
Messages from DFSORT are written to the ddname SYSOUT. If SYSOUT is omitted, it is dynamically allocated to the SYSOUT message class of the job. This DD statement is required.

RECFM:	FBA
LRECL	133
BLKSIZE	6251

EXPLAIN
DB2 PM explain reports are written to a data set specified in the EXPLAIN DD statement. If this DD statement is not specified and DB2 PM explain is requested, an error message is issued and DB2 PM execution is terminated.

RECFM:	FBA
LRECL	133
BLKSIZE	6251

SYSIN SYSIN contains the DB2 PM report set commands that are input to DB2 PM. This DD statement is required.

RECFM:	FBA
LRECL	80
BLKSIZE	6160

Using the EXPLAIN Command

You use the DB2 PM EXPLAIN command to produce explain reports. You can specify any number of EXPLAIN commands in the DB2 PM command stream. For each EXPLAIN command a separate DB2 PM explain report is produced.

As Figure 281 shows, one of five different DB2 PM explain functions can be specified for an EXPLAIN command.

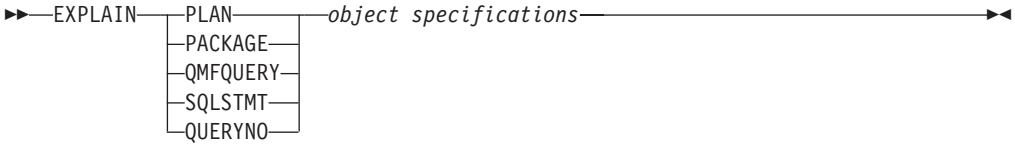


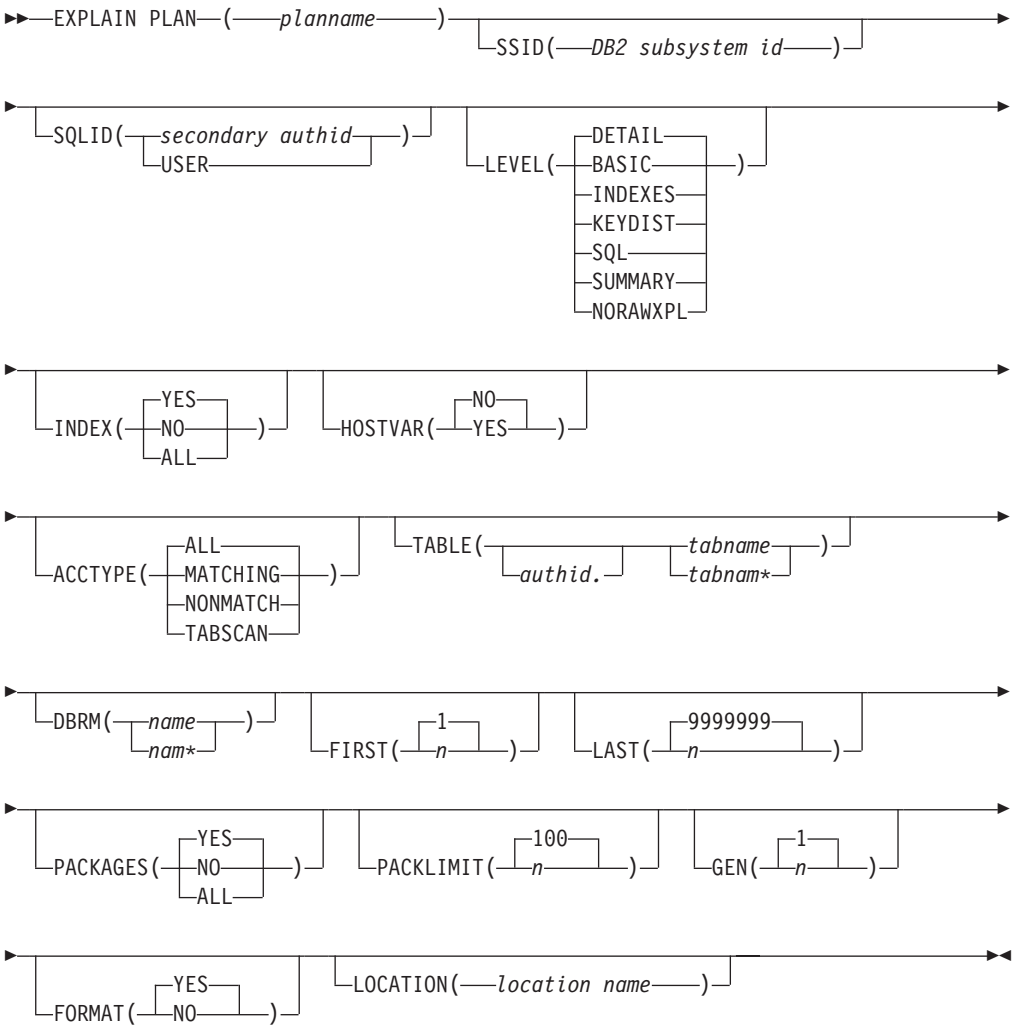
Figure 281. Syntax of the EXPLAIN Command

Each of the functions is identified with an appropriate keyword followed by various options which identify the object being explained and control the amount of detail being produced.

Note: Some parameters can include a wildcard (*) provided that it is the last character in the text string.

EXPLAIN PLAN Specifications

Figure 282 shows the syntax of the EXPLAIN PLAN specification.



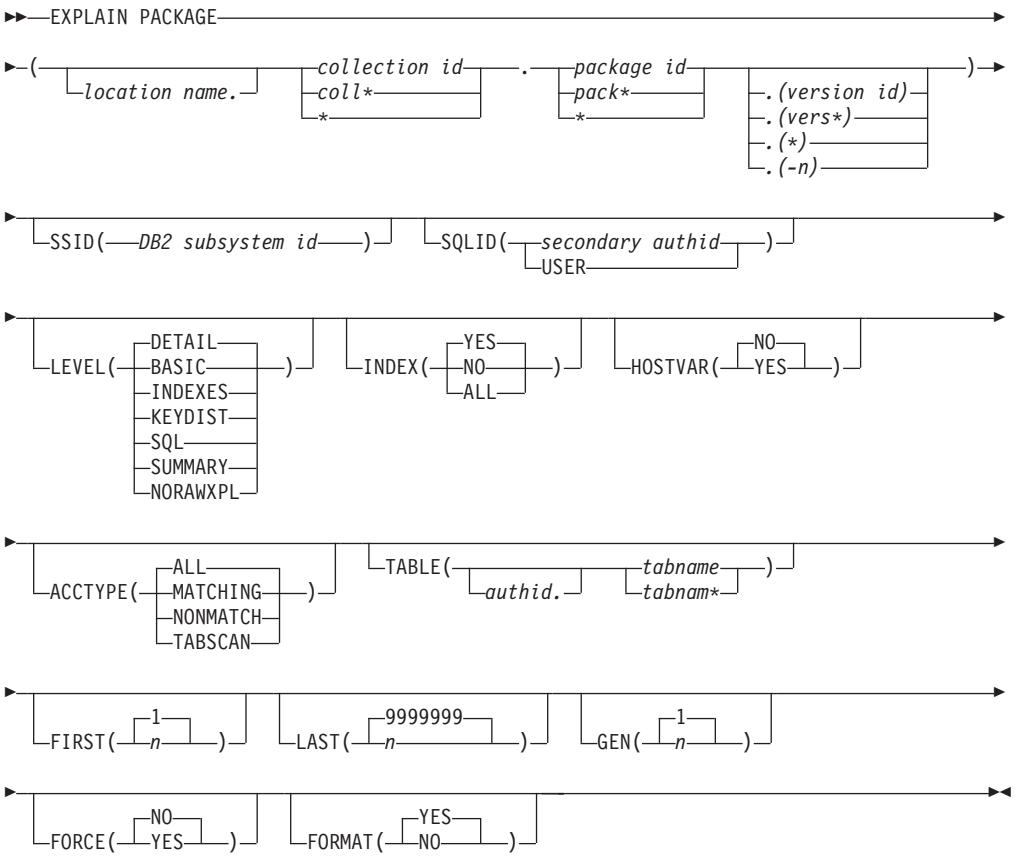
Note: SSID is required unless specified in a preceding GLOBAL command.

Figure 282. Syntax of the EXPLAIN PLAN Specification

planname identifies the plan for which statements are to be explained. All other options are described in “Description of the EXPLAIN Options” on page 648.

EXPLAIN PACKAGE Specifications

Figure 283 shows the syntax of the EXPLAIN PACKAGE specification.



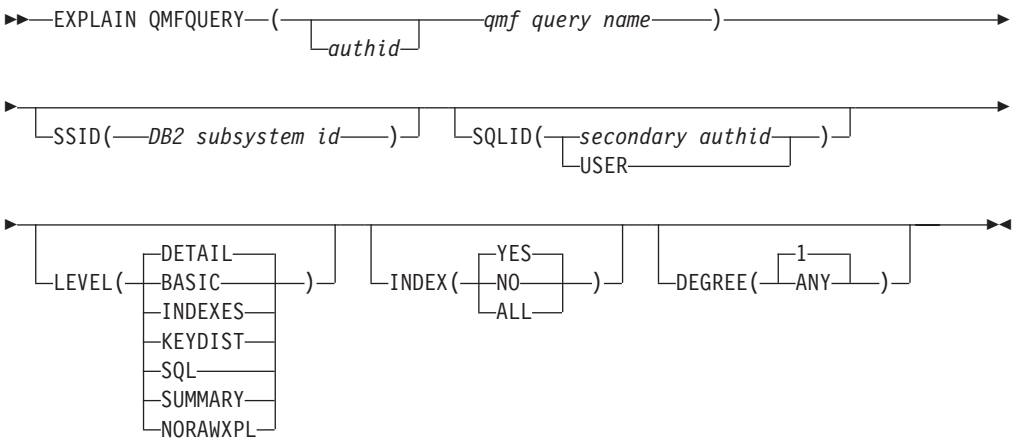
Note: SSID is required unless specified in a preceding GLOBAL command.

Figure 283. Syntax of the EXPLAIN PACKAGE Specification

collection id, *package id*, and *version id* identify the package for which statements are to be explained. *-n* stands for the version generation. All other options are described in “Description of the EXPLAIN Options” on page 648.

EXPLAIN QMFQUERY Specifications

Figure 284 shows the syntax of the EXPLAIN QMFQUERY specification.



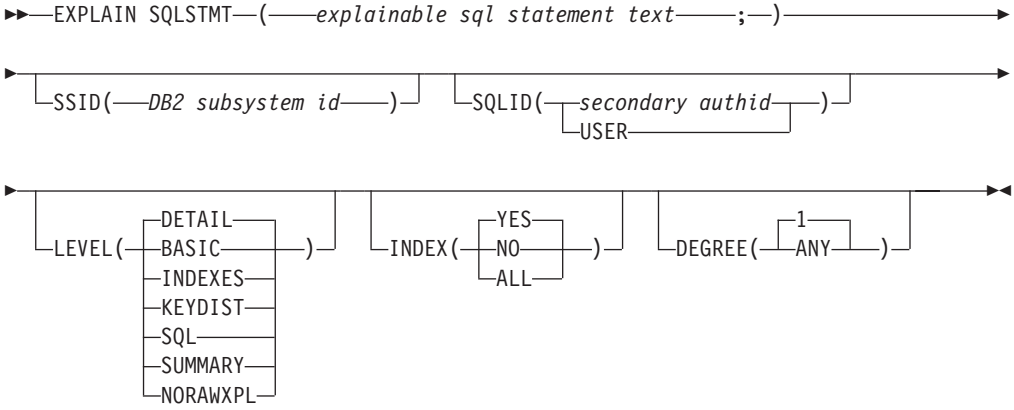
Note: SSID is required unless specified in a preceding GLOBAL command.

Figure 284. Syntax of the EXPLAIN QMFQUERY Specification

authid and *qmf query name* identify the saved QMF query to be explained. All other options are described in “Description of the EXPLAIN Options” on page 648.

EXPLAIN SQLSTMT Specifications

Figure 285 shows the syntax of the EXPLAIN SQLSTMT specification.



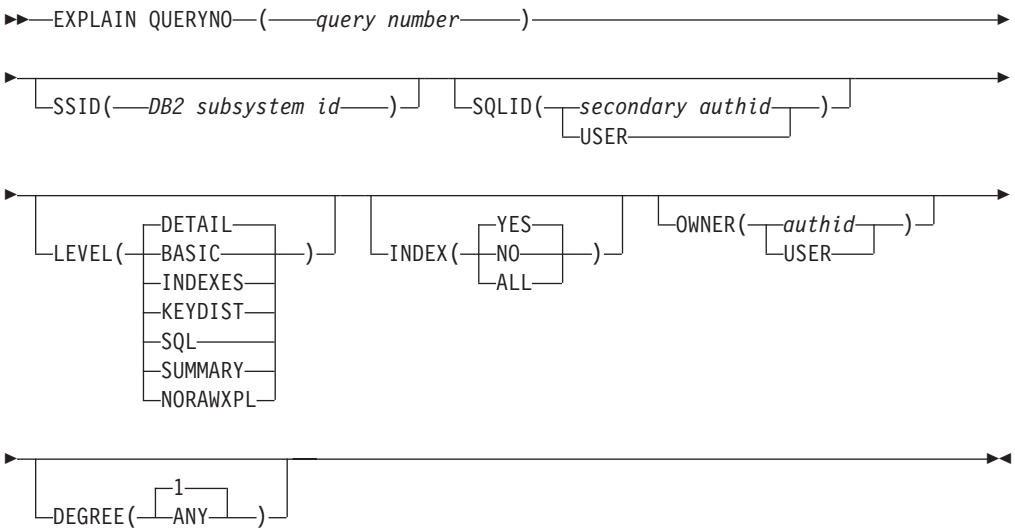
Note: SSID is required unless specified in a preceding GLOBAL command.

Figure 285. Syntax of the EXPLAIN SQLSTMT Specification

explainable sql statement text can span several lines. All other options are described in “Description of the EXPLAIN Options” on page 648.

EXPLAIN QUERYNO Specifications

Figure 286 shows the syntax of the EXPLAIN QUERYNO specification.



Note: SSID is required unless specified in a preceding GLOBAL command.

Figure 286. Syntax of the EXPLAIN QUERYNO Specification

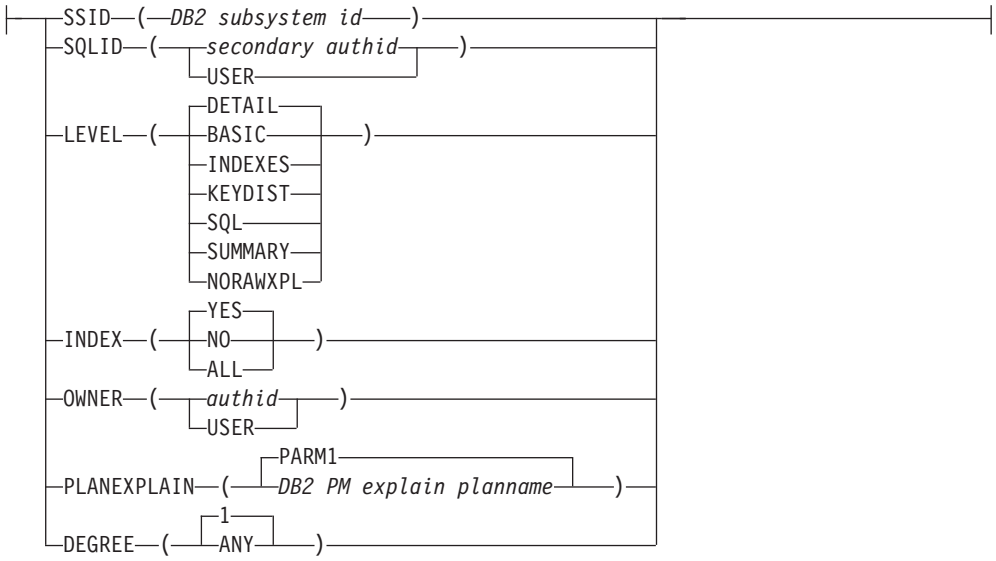
query number identifies a query number in the PLAN_TABLE being accessed. All other options are described in “Description of the EXPLAIN Options” on page 648.

EXPLAIN Options in the GLOBAL Command

Some DB2 PM explain options can be made globally valid if specified in the GLOBAL command. An option value specified in a specific EXPLAIN command takes precedence over the corresponding GLOBAL option value.

Figure 287 shows the syntax of the EXPLAIN options in the GLOBAL command.

EXPLAIN Block:



Note: SSID is required unless specified in a preceding GLOBAL command.

Figure 287. Syntax of the GLOBAL EXPLAIN Options

Description of the EXPLAIN Options

The following sections describe the explain options that can be specified with the EXPLAIN and GLOBAL commands.

ACCTYPE

Can be specified for the PLAN and PACKAGE keywords to control the statements that are to be explained within the plan or package based on the chosen access path. The following values are available:

ALL For each explainable SQL statement in the plan, a report is produced. This is the default value.

MATCHING

Only explainable SQL statements where an access path of matching index scan has been selected, are processed and reported.

NONMATCH

Only explainable SQL statements where an access path of nonmatching index scan has been selected, are processed and reported.

TABSCAN

Only explainable SQL statements where an access path of table space scan has been selected, are processed and reported.

Note: ACCTYPE selection, as with any other DB2 PM explain selection, applies to individual PLAN_TABLE rows, not to the entire SQL statement. For example, if a particular SQL statement is executed in two steps, the first using matching index scan and the second using nonmatching index scan, and ACCTYPE(MATCHING) is specified, only the first step is reported.

DBRM Can be specified for the PLAN keyword to control the DBRMs to be explained within the plan. If DBRM is not specified, all DBRMs within the plan are explained. If only a given DBRM within the plan is to be explained, you must specify the actual DBRM name in DBRM. If all DBRMs with a given name pattern are to be explained, a wildcard (*) can be used.

DEGREE
Can be specified for the QMFQUERY and SQLSTMT keywords to indicate whether the SQL statement or statements are eligible for query parallelism.

The following values are available:

1 The SQL statement does not use query parallelism. This is the default value.

ANY The SQL statement is eligible for query parallelism.

FIRST/LAST
Specifies the number of the first and the last statement in the plan or package to be explained, to control the range of SQL statements to be explained within the plan or package.

If FIRST is not specified, a value of 1 is used. If LAST is not specified, a value of 999999999 is used. If FIRST is greater than LAST, both parameters are set to the value of FIRST.

FORCE
Can be specified for the PACKAGE keyword to control the explanation of the SQL statements in a package.

The following values are available:

NO If more than one package is referenced, the statements are only explained if the total number of SQL statements is less than 300. This is the default value.

YES All statements in all packages that conform to the specification are explained.

FORMAT
Can be specified for the PLAN and PACKAGE keywords to control the formatting of the SQL statements in the plan or package.

The following values are available:

YES The SQL statement is formatted so that a new line is started for SQL keywords such as SELECT, INTO, FROM, WHERE. Subselects, however, are not indented. This is the default value.

NO The SQL statement is formatted so that a new line is only started for the SQL keywords SELECT and UNION. Using this option, the SQL statement uses minimum page space.

GEN Can be specified for the PLAN and PACKAGE keywords to control the number of version generations in a package to be explained.

If GEN is not specified, one version of the package is explained.

HOSTVAR
Can be specified for the PLAN and PACKAGE keywords to control the listing of host variable specifications.

The following values are available:

NO No host variable definitions are listed in the report. This is the default value.

YES A listing of all (maximum 500) host variables used in the SQL statement is produced. This listing includes the definition type, length, and null characteristics.

INDEX

Controls the level of index information unless the index data block is excluded by using the LEVEL option.

The following values are available:

YES If DB2 has selected a matching or nonmatching index scan, DB2 PM explain shows all index information for the selected index including key column information. If DB2 has selected a table space scan, DB2 PM explain shows detailed index information for all indexes of the accessed table. This is the default value.

NO No index information is shown in the report.

ALL Information for all indexes created for the table (including key column information) is shown in the report. The information is listed after the table details.

LEVEL

Controls which of the following blocks of data the DB2 PM explain report contains:

- "Raw" SQL EXPLAIN data as found in the PLAN_TABLE
- Access path data
- Table and table space data
- Index data
- Key data
- Distribution of the ten mostly used keys
- Plan/package bind data, if applicable
- Host variables data, if applicable
- Summary report

Table 82 summarizes which values can be specified and which blocks are reported.

Table 82. LEVEL Values

LEVEL	Raw SQL Explain	Access Path Data	Table (Space) Data	Index Data	Key Data	Top Ten Key Dist.	Plan/ Package Data	Host Variables	Summary Report
SUMMARY									●
SQL		●							●
BASIC	●	●							●
INDEXES	●	●	●	●			●	●	●
DETAIL	●	●	●	●	●		●	●	●
NORAWXPL		●	●	●	●		●	●	●
KEYDIST	●	●	●	●	●	●	●	●	●

LOCATION
Can be specified for the PLAN keyword to determine the location of the plan. If LOCATION is not specified, the local location, that is, the location specified in the SSID option, is used.

When a valid location name is specified, DB2 PM explain connects to the specified location and EXPLAIN PLAN processing continues at that location. To be valid, the location name must appear in the LOCATION column of the SYSIBM.SYSLOCATIONS table, or be the local DB2 subsystem's location name.

OWNER
Can be specified for the GLOBAL and QUERYNO keywords to control the authorization ID of the PLAN_TABLE for the current request. To select the correct PLAN_TABLE, DB2 PM explain looks for the authorization ID specified in the OWNER option of QUERYNO. If it is not specified, the OWNER value in GLOBAL is used. If OWNER is not specified in GLOBAL, DB2 PM explain uses the authorization ID of the job submitter.

PACKAGES
Can be specified for the PLAN keyword to control the explanation of statements in packages within a plan.

The following values are available:

YES For each package in the plan, only statements in the most recent version are explained. This is the default value.

NO No statements in the packages are explained.

ALL All statements in all versions of the packages are explained.

PACKLIMIT
Controls the number of packages to be explained.

A particular plan can consist of more packages than has been specified in PACKLIMIT (default is 100). In this case, a report listing all packages is produced but no SQL statements in these packages are explained. PACKLIMIT does not affect DBRMs.

id=yxplan.PLANEXPLAIN
One of the steps in DB2 PM installation is to bind the DB2 PM explain application. The default name for this plan is DB2PMEX, but you can specify any name.

If you do not want to use the default name, you can specify the name of the DB2 PM explain plan at DB2 PM execution time. This is done by specifying PLANEXPLAIN(*xxxxxxxx*) in GLOBAL, where *xxxxxxxx* is the DB2 PM explain plan name.

SQLID
Defines the current SQL ID. If you specify SQLID(USER), the primary SQL ID is set. Otherwise, a valid secondary authorization ID is set. This option has the same effect and is used in the same context as the SQL statement SET CURRENT SQLID.

SSID Identifies the DB2 subsystem where the object specified in EXPLAIN resides. If SSID is not specified in either EXPLAIN or GLOBAL, an error message is issued and DB2 PM resumes processing with the next command.

TABLE
Can be specified for the PLAN and PACKAGE keywords to control the

statements that are to be explained within the plan or package. If TABLE is not specified, all statements within the plan or package are explained.

If only statements accessing a given table are to be explained, you must specify the actual table name in TABLE. If only statements accessing tables with a given name pattern are to be explained, you can use a wildcard (*).

Chapter 51. Explain Reports

The DB2 PM explain report is divided into sections. The sections that are presented in the DB2 PM explain report depend on:

- Which object is to be explained.

  Most sections are applicable to all DB2 PM explain functions, but there are a few which are applicable to selected functions only.
- The requested level of detail.

  For a summary of the different levels of reporting, see Table 82 on page 650.

The following sections can appear in the DB2 PM explain report:

- The page header
- Object identification
- "Raw" SQL EXPLAIN data as found in PLAN_TABLE
- Access path data
- Index data
- Key data
- Key distribution data
- Table and table space data
- Host variables data
- Bind plan data
- Bind package data

At normal completion of DB2 PM explain, the last pages of the output show a summary of the DB2 PM explain execution. This is called the *Summary Report*.

The Page Header

The explain page header is printed on every page of the explain report. The header, in its general form, is shown in Figure 288.

```
ACTUAL AT:09/08/99 13:24:14       DB2PM (V6)              PAGE       :     1-1
                                EXPLAIN SQL STATEMENT      DB2 RELEASE: V6
LOCATION: PMO2D621                                         USER AUTHID: JEN
SUBSYSTEM:D621                        DETAIL               CURR.SQLID : JEN

 SQL STATEMENT TEXT :
```

Figure 288. DB2 PM Explain Page Header - General

The header contains the following information, described in the order left block, middle block, right block:

ACTUAL AT
The date and time at which the DB2 subsystem (specified in SUBSYSTEM) containing explain functions, is accessed to collect the requested data.

LOCATION
The location name of the DB2 subsystem specified in SUBSYSTEM.

SUBSYSTEM
The ID of the DB2 subsystem that generated the data.

DB2 PM (V6)
The product name and version.

EXPLAIN <object>
The object to be explained as specified in the EXPLAIN command (for example, QMFQUERY, PACKAGE, or PLAN). See “Description of the EXPLAIN Options” on page 648 for a complete list of values.

<object identification>
The name of the object to be explained as specified in the EXPLAIN command. It can have one of the following values:

SQLSTMT
None

QUERYNO
Query number

PLAN Plan name

PACKAGE
Package ID

QMFQUERY
Unqualified QMF query name

<level>
The level of the report specified in the LEVEL option. Values are:

- SUMMARY
- SQL
- BASIC
- INDEXES
- DETAIL
- NORAWXPL
- KEYDIST

See Table 82 on page 650 for a summary of the level values and the blocks that are reported.

PAGE The page number in the format *lll-nnnn*, where *lll* denotes the report number and *nnnn* the page number within the report.

DB2 RELEASE
The version and release of the DB2 subsystem specified in SUBSYSTEM.

USER AUTHID
The user authorization ID.

CURR.SQLID
The current SQLID as specified in the SQLID option, or the default.

Object Identification

The page header allows quick identification of the object being explained. However, a complete identification is contained in the object identification section of the report.

- If a plan is explained, the object identification section of the report shows the following for each SQL statement:

- Plan name
- DBRM or package name
- Statement number
- Statement text
- Statement-related information

Examples are shown in Figure 289 and Figure 290.

```
PLAN LOCATION     :DSNAPC1
PLAN NAME         :FVTXPLAN
DBRM NAME         :CHOLD
DBRM VERSION ID   :
STATEMENT NUMBER  :     182

SQL STATEMENT READ FROM SYSIBM.SYSSTMT:

 DECLARE C2 CURSOR FOR
 SELECT NAME, BINDDATE, BINDTIME, ISOLATION
 FROM SYSIBM.SYSPLAN
 WHERE CREATOR = USER AND NAME IN ('EEE2', 'EEE3', 'EEE4')
 ORDER BY NAME
 STATUS   : COMPILED-BOUND USING DEFAULTS FOR INPUT VARIABLES
 ISOLATION: CURSOR STABILITY
```

Figure 289. DB2 PM Explain Plan - SQL Statement Found in DBRM

```
PLAN LOCATION     :DSNAPC1
PLAN NAME         :FVTXPLAN
PACKAGE LOCATION  :DSNAPC1
PACKAGE COLLECTION:MIXCOL
PACKAGE ID        :MIX
PACKAGE VERSION ID:VER3
STATEMENT NUMBER  :      87

SQL STATEMENT READ FROM SYSIBM.SYSPACKSTMT:

 DECLARE CURSOR_1 CURSOR FOR
 SELECT EMPNO, LASTNAME, WORKDEPT, BIRTHDATE
 FROM DSN8610.EMP
 WHERE (EMPNO BETWEEN '000170' AND '000240' AND WORKDEPT IN ('D01', 'E21',
 'X23')) OR (EMPNO = '000100' AND (WORKDEPT = (SELECT MIN (DEPTNO)
 FROM DSN8610.DEPT
 WHERE MGRNO = '000050') OR WORKDEPT = (SELECT MAX (DEPTNO)
 FROM DSN8610.DEPT
 WHERE ADMRDEPT = 'A00')))
 ORDER BY EMPNO
 STATUS   : COMPILED-BOUND USING DEFAULTS FOR INPUT VARIABLES
 ISOLATION: CURSOR STABILITY
```

Figure 290. DB2 PM Explain Plan - SQL Statement Found in Package

- If a package is explained, the object identification section of the report shows the following for each SQL statement:
  - Full package name
  - Statement number
  - Statement text
  - Statement-related information

Figure 291 shows an example.

```
PACKAGE LOCATION  :DSNAPC1
PACKAGE COLLECTION:CHOLZCOL
PACKAGE ID        :CHOLZ
PACKAGE VERSION ID:VER3
STATEMENT NUMBER  :     182

SQL STATEMENT READ FROM SYSIBM.SYSPACKSTMT:

 DECLARE C2 CURSOR FOR
 SELECT NAME, BINDDATE, BINDTIME, ISOLATION
 FROM SYSIBM.SYSPLAN
 WHERE CREATOR = USER AND NAME IN ('EEE2', 'EEE3', 'EEE4')
 ORDER BY NAME
 STATUS   : COMPILED-BOUND USING DEFAULTS FOR INPUT VARIABLES
 ISOLATION: CURSOR STABILITY
```

Figure 291. DB2 PM Explain Package

- If a QMF query is explained, the object identification section of the report shows the following for each SQL statement:
  - Full QMF query name
  - Statement text

  Figure 292 shows an example.

```
QMFQUERY: USR1.MY_QUERY

--
--SELECT * FROM A CATALOG TABLE
--

  SELECT  NAME, CREATOR
    FROM SYSIBM.SYSTABLES
   WHERE CREATOR NOT LIKE 'SYSIBM%'
     AND CREATOR LIKE 'XXASP%'
  ORDER BY CREATOR, NAME

--
```

Figure 292. DB2 PM Explain QMF Query

- If an SQL statement identified by its text is explained, the object identification section shows the statement text. Figure 293 shows an example.

```
 SQL STATEMENT TEXT:

               SELECT * FROM SYSIBM.SYSTABLES
                 FROM DSN8610.EMP, DSN8610.DEPT
                 WHERE WORKDEPT = DEPTNO
                   AND MGRNO    = '000100';
```

Figure 293. DB2 PM Explain SQL Statement

- If an SQL statement identified by a query number is explained, there is no object identification section.

“Raw” SQL Explain Data as Found in PLAN_TABLE

Diagnosis, Modification, or Tuning Information

This section of the explain report lists the SQL EXPLAIN data as found in the DB2 PLAN_TABLE.

Figure 294 shows an example of SQL EXPLAIN data.

```
PLAN TABLE DATA    OWNER: PMDEV
BIND TIME : 1999-12-10-16.19.31.157642

QUERYNO:      71, ACC. TYPE:   R, PLAN NO:   1, TABLE NAME: DEPT
Q BLOCK NO.:   1, MATCHCOLS:   0, TAB. NO:   1,   -  OWNER: DSN8610
DATE: 1999-12-10, PLAN:         , METHOD :   0, INDEX NAME:
TIME: 16:19:31.1, PCKG: LOXXPLAN, IDXONLY : NO,   -  OWNER:
TS LOCKMODE:  IS, COL.FUNC. :   , PREFETCH:  S, MULT.INDEX :
ACCESS DEG :   0, ACC.PGROUP:  0, JOIN DEG:  0, JOIN PGROUP:    0
PAGE RANGE :    , PARALL.MODE:  , JOIN TYPE:  , MERGE JOIN :    0
WHEN_OPTIM :    , PRIMARY_ACCESSTYPE:         , QBLOCK_TYPE: SELECT
                  HINT_USED  :                , OPT_HINT_ID:
CORRELATION:                    , GROUP MEMB.: SG51
COLLECTION : LOXXPLANCOL        , VERSION    : DFLT

SORTN TABLE -UNIQUE: N, JOIN: N, ORDER BY: N, GROUP BY: N, PARAL.GROUP:     0
SORTC TABLE -UNIQUE: N, JOIN: N, ORDER BY: N, GROUP BY: N, PARAL.GROUP:     0
```

Figure 294. SQL Explain Data

For a description of the data produced by the SQL EXPLAIN statement, refer to the *DB2 Application Programming and SQL Guide* and the *SQL Reference*.

End of Diagnosis, Modification, or Tuning Information

Access Path Data

This section of the explain report shows the access path chosen by DB2. The access path is contained in a frame, as shown in Figure 295.

```
THE ACCESS PATH CHOSEN BY DB2 AT 16:19:31.1   ON 1999-12-10

 +-----------------------------------------------------------------+
 ! TABLE SPACE SCAN - NO INDEX WILL BE USED                        !
 ! STANDARD SEQUENTIAL PREFETCH WILL BE PERFORMED                  !
 ! LOCK MODE IS SHARE LOCK FOR THE PAGE                            !
 ! PAGE RANGE SCAN WILL NOT BE USED                                !
 !                                                                 !
 !                                                                 !
 +-----------------------------------------------------------------+
```

Figure 295. DB2 PM Explain Access Path Section

Index Data

If an index is used, that is, an access path other than TABLE SPACE SCAN, information about this index is shown. The data is derived from the SYSIBM.SYSINDEXES table.

Figure 296 shows an example of the index data section.

```
INDEX: DSN8610.XEMP2 ------------------------------------------------------
STATSTIME: 1999-08-14-13.44.44
CREATED  : 1999-07-15-17.21.28.432678    ALTERED : 1999-09-01-18.19.05.893451
FULL KEY CARD:         8,PAGES :         1,LEVELS:       2,CLUSTRING: N
1"ST KEY CARD:         8,SPACE :       N/A,UNIQUE:      NO,CLUSTERED: N
INDEX TYPE   :         2,PGSIZE:      4096,BFPOOL:     BP0,DB.NAME  : DSN8D61A
CLUSTERRATIO :       42%,ERRULE:        NO,CLRULE:      NO,IXSPACE  : XEMP2
MAX.PIECESIZE:       256,COPY  :        NO,COPYLRSN: X'000000000000'
```

Figure 296. DB2 PM Explain Index Data Section

Key Data

If an index is used and LEVEL(INDEXES) is not specified, information about the key columns is presented. The data is derived from the SYSIBM.SYSKEYS and SYSIBM.SYSCOLUMNS tables.

If a matching index scan is used in the access path, the report indicates the columns that are used in the index scan. This is indicated by an arrow (<===) in the column named *KEY USED*. The number of arrows corresponds to the contents of the matching columns field in the SQL EXPLAIN data.

Figure 297 shows an example of the explain key data section.

```
KEY                                    KEY                                KEY
NO. COLUMN NAME       COL.TYPE LNG NULL CARD. ORDER LOW2KEY    HIGH2KEY   USED
                      COL.STAT LENGTH2  TYPESCHEMA  TYPENAME
                                                    CREATED
--- ----------        -------- --- ----  ----- ----- ---------- ---------- ----
  1 LOCATION          CHAR      16 NO       -1 ASC.  N/A        N/A
                                    0  SYSIBM        CHAR
                                                    0001-01-01-00.00.00.000000
```

Figure 297. DB2 PM Explain Key Data Section

Key Distribution Data

If LEVEL(KEYDIST) has been specified and RUNSTATS has produced key distribution information for the first column of the index, a section in the report shows the distribution of up to ten most frequently used key values. The data is derived from the SYSIBM.SYSCOLDIST table.

Figure 298 shows an example of the key distribution data section.

```
KEY DISTRIBUTION FOR : SYSIBM.SYSTABLES.CREATOR       -------------------------
SYSIBM    (27%),DSN8230   (11%),U473298   ( 9%),Q         ( 7%),XXASP09   ( 5%)
U01       ( 5%),USR2      ( 5%),XXASP32   ( 3%),XXASP16   ( 3%),USER001   ( 2%)
```

Figure 298. DB2 PM Explain Key Distribution Data Section

Table and Table Space Data

This section of the explain report shows information for the accessed table and its corresponding table space. The data is derived from the SYSIBM.SYSTABLES and SYSIBM.SYSTABLESPACE tables.

Figure 299 shows an example of the explain table data section.

```
TABLE: DSN8610.EMP ------------------------------------------------------------
STATSTIME: 1999-10-20-12.45.16.342587 TB TYPE  : TABL
CREATED  : 1999-04-01-00.00.00.000000 ALTERED  : 1999-10-20-12.38.17.872962
ROWS     :        42, COLUMNS :  14 , ROWLENGTH:  107, EDIT PROC.: DSN8EAE1
% PAGES  :         2, DBASE ID:  269, AUDITING : NONE, VALIDPROC.:
ACT.PAGES:         2, TABLE ID:   18, STATUS   :    X, TABCREATOR: BKUP
                                      TAB.STAT.:     , ENC.SCHEME: EBCDIC
TABLESPACE: DSN8D61A.DSN8S61E -------------------------------------------------
STATSTIME: 1999-04-01-00.00.00.000000
CREATED  : 1999-04-01-00.00.00.000000 ALTERED  : 0001-01-01-00.00.00.000000
PAGES ACTIVE:    100, PSID:        4, ERASERULE:   NO, DATABASE  : DSN8D61A
PAGE SIZE :       4K, LOCKRULE: PAGE, CLOSERULE:   NO, STOGROUP  : DSN8G610
PARTITIONS:        4, LOCKPART: YES , TS STATUS:    A, BUF.POOL  :  BP0
SPACE     :      N/A, SEG.SIZE:UNSEG, TABLES/TS:    1, TS TYPE   :   LARGE
DEFAULT ENC.SCHEME: EBCDIC          , MAXROWS  :  255, LOG       : YES
DEFAULT SBCS CCSID:    0,    DEFAULT DBCS CCSID:    0, MIX. CCSID:    0
```

Figure 299. DB2 PM Explain Table Data Section

If table space scan has been selected as the access path method, and INDEX(NO) is not specified, a separate block is presented for each available index on the subject table along with information about key columns.

See “Index Data” on page 657 and “Key Data” on page 658 for the layout of these blocks.

Host Variables Data

This section of the explain report is produced if HOSTVAR(YES) is specified for the DB2 PM explain plan or package.

If you define host variables which are not consistent with the corresponding column definition, DB2 selects an inefficient access path.

In Figure 300, the access path selected is table space scan even though an index is defined on the only column referenced in the WHERE clause. As the example in Figure 300 shows, DB2 has selected table space scan because the column definition is 3 characters (see **1**), but the corresponding host variable is defined as 4 characters (see **2**). By changing the host variable definition to 3 characters, a matching index scan is selected by DB2.

```
 DECLARE C1 CURSOR FOR
 SELECT DEPTNO, DEPTNAME, LOCATION
 FROM DSN8610.DEPT
 WHERE DEPTNO = :HOSTVAR_STRUCTURE.DEPARTMENT_NUMBER
 ORDER BY DEPTNO


 --------


+---------------------------------------------------------------------+
| TABLE SPACE SCAN - NO INDEX IS USED                                 |
| STANDARD SEQUENTIAL PREFETCH WILL BE PERFORMED                      |
+---------------------------------------------------------------------+


 --------


KEY                                    KEY                              KEY
NO. COLUMN NAME       COL.TYPE LNG NULL  CARD. ORDER LOW2KEY    HIGH2KEY   USED
--- -----------       -------- --- ----  ----- ----- ---------- ---------- ----
  1 WORKDEPT          CHAR       3 YES       8 ASC.  C'B01      C'E11      <===
                                [1]


 --------


HOST VAR. TYPE  LENGTH  IND.  HOST VARIABLE NAME
--------------- ------  ---- ----------------------------------------
FIXED CHARACTER      4  NO    HOSTVAR_STRUCTURE.DEPARTMENT_NUMBER
                    [2]
```

Figure 300. DB2 PM Explain Host Variables Data

Bind Plan Data

This section of the explain report is shown if the object being explained is a plan or query number for a miniplan created by the bind process. Information related to the binding of the plan, such as plan binder, bind time, or isolation level, is presented.

This part of the report is only produced in connection with the first SQL statement of the plan.

When a plan is explained using DB2 PM explain, the bind-related data is stored in a DB2 table which enables you to compare relevant information for up to three generations of the plan.

If, in a given row, there is a difference among the three columns, an arrow (<===) is shown in the rightmost column.

The bottom part of this section shows data for each DBRM and package in the most recent plan generation. The report states the precompilation date and time, programming language, number of SQL statements, single-byte or double-byte

character set, use of comma, use of decimal(31), type of source, and the DB2 release when the module was precompiled.

An example of the bind plan data section is shown in Figure 301.

```
 PLAN NAME:    LOXXPLAN     LOCATION:    SYSDSN5                    CHANGES

 CREATOR  :    PMDEV
 BIND DATE:    1999-01-15
 BIND TIME:    12:19:59.35
 BOUND BY :    JEN
 QUALIFIER:    PMDEV
 BASE SIZE:        2040
 AVG. SIZE:           0
 CACHESIZE:        1024
 PLENTRIES:           1
 SYS.ENTR.:           0
 SQL STMTS:           7
 VALIDATE :    BIND
 ISOLATION:    CUR.STAB.
 VALID    :    YES
 OPERATIVE:    YES
 ACQUIRE  :    USE
 RELEASE  :    COMMIT
 DEFERPREP:    NO
 CURR.SERV:    N/P                                                  <===

 DEGREE   :    1
 REOPTIM. :    NO
 DYN.RULES:
 KEEP DYN.:    NO
 SQLRULES :    DB2
 PATH     :
 DDF PROT.:    DRDA
 FNCT.RES.:    1999-01-15-12
 DISCONNCT:    EXPLICIT
 OPTHINTID:
 STORED BY:    PMDEV
 STORED AT:    1999-01-15

 ================================================================================
 DBRM/PACK PC-DATE    PC-TIME  LANG. SQLSTMT  CHARSET   COMMA DEC31 TYPE  REL.
 --------- -------    -------  ----- -------  -------   ----- ----- ----  ----
```

Figure 301. DB2 PM Explain Plan Data

Bind Package Data

This section of the explain report is shown if the object being explained is a package. The information related to the binding of the package, such as package owner, bind time or isolation level, is presented.

This part of the report is only produced in connection with the first SQL statement of the package.

An example of the bind package data section is shown in Figure 302.

```
LOCATION     : SYSDSN5
COLLECTION ID: LOXXPLANCOL
PACKAGE ID   : LOXXPLAN
VERSION ID   : DFLT
CONSIST.TOKEN: X'162F6A8009089EA4'
PDSNAME      : JEN.PARALLEL.COBOL.DBRMLIB

OWNER        : PMDEV                QUOTE        : APOSTROPHE
CREATOR      : JEN                  COMMA        : PERIOD
BIND DATE    : 1999-12-10           HOSTLANG     : VS COBOL II
BIND TIME    : 16.19.31.157642      CHARSET      : ALPHANUMERIC
CREATE DATE  : 0001-01-01           MIXED        : NO
CREATE TIME  : 00.00.00.000000      DEC31        : NO
QUALIFIER    : PMDEV                DATA CURRENCY: INHIBIT BLOCKING
BASE SIZE    :       1576           SQLERROR     : NOPACKAGE
AVERAGE SIZE :       8428           SOURCE       : DBRM
SYSENTRIES   :          0           PRECOMP. DATE: 1999-12-10
SQL STATEMENT:          1           PRECOMP. TIME: 16.19.16.446586
VALIDATE     : RUN                  VALID        : YES
ISOLATION    : CURSOR STABILITY     OPERATIVE    : YES
RELEASE      : CHECK PLAN           REOPTIMIZAT. : NO
DEGREE       : ANY                  DEFERPREPARE : INHERITED FROM PLAN
KEEP DYNAMIC : DRDA                 DDF PROTOCOL : INHERITED FROM PLAN
TYPE OF PACK.: BIND PACKAGE         OPT_HINT_ID  :
FNCT.RESOLVED: 1999-12-10-16.19.31.146517
      ....5....0....5....0....5....0....5....0....5....0....5....0....5..
PATH: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
     xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
     xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
     xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
```

Figure 302. DB2 PM Explain Package Data

Explain Plan

When you bind a plan, you might decide to include a package list that contains wildcard characters, for example COLLID3.* or even *.*. This could result in a plan pointing at thousands of packages with an even greater number of explainable SQL statements. To control the volume of output produced, the PACKLIMIT option is provided.

If a particular plan consists of more packages than specified in PACKLIMIT, a report with all the package names is produced, but no SQL statements in these packages are explained. This report shows the collection IDs, the creator and owner names, the version IDs, and the dates of precompilation. However, if any DBRMs belong to the plan, SQL statements in these DBRMs are explained.

For example, if a plan named *LARGPLAN* was bound with a package list of COLLECT.*, which includes 80 packages, an EXPLAIN PLAN statement with PACKLIMIT(10) results in the report example shown in Figure 303.

```
ACTUAL AT:09/15/99 20:00:00      DB2 PM (V6)              PAGE        :   1-50
                                 EXPLAIN PLAN             DB2 RELEASE: V6
LOCATION: DSNAPC1                 LARGEPLAN               USER AUTHID: USR2
SUBSYSTEM:APC1                      DETAIL                CURR.SQLID : USR2

           USE PACKAGE=COLLID.NAME.(VERSION) TO GET A DETAILED LISTING


PACKAGE  COLLECTION ID.     CREATOR  OWNER    EXP  PC-DATE    VERSION
-------- ------------------ -------- -------- ---  ---------- ---------------
DRDAUPDT APC5COL3           XXASP16  XXASP16  NO   1997-11-30 VERSION_1.0.0_27/1
DRDAUPDT APC5COL3           XXASP16  XXASP16  NO   1997-11-27 VERSION_1.0.0_20/1
ABINDCS1 APC5COL9           XXASP09  XXASP09  NO   1997-07-24 NAMIK_PRIVATE_VER1
RUW      APC5COL9           XXASP09  XXASP09  YES  1997-12-01 NAMIK_PRIVATE_VER1
RUWCURHL APC5COL9           XXASP09  XXASP09  NO   1997-08-07 NAMIK_PRIVATE_VER1
CHOLZ    CHOLZCOL           USR1     USR1     YES  1999-08-18 VER3
CHOLZ    CHOLZCOL           USR1     USR1     YES  1999-08-18 VER2
CHOLZ    CHOLZCOL           USR1     USR1     YES  1999-08-18 VER1
DB0C4    DB0C4COL           USR1     USR1     YES  1999-08-18 VER3
DB0C4    DB0C4COL           USR1     USR1     YES  1999-08-18 VER2
DB0C4    DB0C4COL           USR1     USR1     YES  1999-08-18 VER1
HVAR2    HVAR2COL           USR1     USR1     YES  1999-08-18 VER3
HVAR2    HVAR2COL           USR1     USR1     YES  1999-08-18 VER2
HVAR2    HVAR2COL           USR1     USR1     YES  1999-08-18 VER1
KEYT     KEYTCOL            USR1     USR1     YES  1999-08-18 VER3
KEYT     KEYTCOL            USR1     USR1     YES  1999-08-18 VER2
KEYT     KEYTCOL            USR1     USR1     YES  1999-08-18 VER1
MIX      MIXCOL             USR1     USR1     YES  1999-08-18 VER3
MIX      MIXCOL             USR1     USR1     YES  1999-08-18 VER2
MIX      MIXCOL             USR1     USR1     YES  1999-08-18 VER1
MX       MXCOL              USR1     USR1     YES  1999-08-23 VER3
MX       MXCOL              USR1     USR1     YES  1999-08-23 VER2
MX       MXCOL              USR1     USR1     YES  1999-08-23 VER1
```

Figure 303. Explain Plan Report Example

Explain Package

When a package is explained, you can specify the collection ID, the package name, or both, as generic names using an asterisk (*) as a wildcard character. For example, you have the following options:

```
EXPLAIN PACKAGE (DSNAPC1.COLLECT.MYT*)
EXPLAIN PACKAGE (DSNAPC1.COLLECT.MYTEST)
```

If a wildcard character is used, DB2 PM explain counts the total number of SQL statements that belong to the packages (the total number of SQL statements also includes nonexplainable statements).

If the number of packages is more than one, and the total number of SQL statements in these packages is larger than 300, DB2 PM explain does not explain any SQL statements unless the FORCE(YES) option is specified.

If the package specification does not contain any wildcard character, the total number of SQL statements is less than 300, or only one package conforms to the specification, the SQL statements are explained. However, if the package exists in more than one version, only the most recent version is explained. In this case a report showing all the versions for that package is produced.

For example, the following command was used to produce the report shown in Figure 304:

```
⋮
EXPLAIN PACKAGE (DSNAPC1.COLLECT.MYTEST.(-7))  GEN(3)
⋮

ACTUAL AT:09/15/99 15:09:37      DB2 PM (V6)              PAGE        :    1-1
                                EXPLAIN PACKAGE           DB2 RELEASE: V6
LOCATION: DSNAPC1                                         USER AUTHID: USR1
SUBSYSTEM:APC1                      SUMMARY               CURR.SQLID : USR1


DGOY0166I  PACKAGE MYTEST IN COLLECTION COLLECT HAS THE FOLLOWING VERSIONS

PRE-COMP'D EXP GEN  VERSION IDENTIFICATION
---------- --- ---- ----------------------
1999-08-24 YES    0 VERSION0
1999-08-23 YES -001 VERSION1
1999-08-22 YES -002 VERSION2
1999-08-21 YES -003 VERSION3
1999-08-20 YES -004 VERSION4
1999-08-19 YES -005 VERSION5
1999-08-18 YES -006 VERSION6
1999-08-17 YES -007*VERSION7IDENT
1999-08-16 YES -008 VERSION8
1999-08-15 YES -009 VERSION9
1999-08-14 YES -010 VERSION ID NOT SPECIFIED>
1999-08-13 YES -011 VERSION11
1999-08-12 YES -012 VERSION12
1999-08-11 YES -013 VERSION13
1999-08-10 YES -014 VERSION14
1999-08-09 YES -015 VERSION15
1999-08-08 YES -016 VERSION16
1999-08-07 YES -017 VERSION17
1999-08-06 YES -018 VERSION18
1999-08-05 YES -019 VERSION19
1999-08-04 YES -020 VERSION20

START VERSION GENERATION NUMBER SPECIFIED:  -7
NUMBER OF VERSION GENERATIONS REQUESTED:     3
```

Figure 304. Explain Package Report Example

This report shows that the package exists in 21 versions, where the version that corresponds to generation number -7 was selected for explanation. The report further shows that the user asked for the explanation of three generations (-7, -8, and -9). The first generation to be explained is marked with an asterisk (*). Instead of specifying a generation ID, the version ID could be specified. The version ID can be specified either in full or in combination with a wildcard character as in the following example:

```
EXPLAIN PACKAGE(DSNAPC1.COLLECT.MYTEST.(VERSION7*))  GEN(3)
```

A maximum of 100 generations are listed.

Source Explain

You use DB2 PM source explain to explain SQL statements that are embedded in a source program or SPUFI input. Source explain is performed from within the ISPF/PDF editor. The supported languages are:

- Assembler
- C/370 (TM)
- COBOL
- FORTRAN
- PL/I
- SPUFI

Note: Before you activate source explain, make sure that the DB2 load library is allocated to your TSO ISPF session.

To explain an SQL statement while editing a source program (or SPUFI input), you specify the lines you want explained using the ISPF/PDF editor line prefix command **E**, then you type `EXPLAIN` on the command line and press **Enter**. Ensure that source explain has been installed at your site.

The **E** line prefix command can be used as follows:

E To explain a single line, you type `E` in the prefix area of the line to be scanned for SQL statements.

EE To explain a range of lines, you type `EE` in the prefix area of the first and last lines of the range to be scanned for SQL statements.

E[n] To explain a specific number of lines, type `E`[*n*] on the first line of the area to scan, where *n* is the number of lines to be scanned for SQL statements.

When you enter the EXPLAIN command, source explain scans the specified range for valid SQL statements. If a range is not specified, the entire source is scanned. Note that an SQL statement is processed even if the SQL statement text exceeds the specified range.

Figure 305 is an example of how to explain an SQL statement while editing COBOL source code. To explain a range of source from line 3040 to 3160, type `EE` in the line prefix area of lines 3040 and 3160 as shown in Figure 305. Type `EXPLAIN` on the command line and press **Enter** to explain the SQL statements within the specified range of lines.

```
EDIT ---- SYS1.DSN610.SDSNSAMP(DSN8BC3) - 01.00 -------------- COLUMNS 001 072
003010       *** CURSOR LISTS ALL EMPLOYEE NAMES WITH A PATTERN (%) OR (_)
003020       *** FOR LAST NAME
003030
EE3040                 EXEC SQL DECLARE TELE2 CURSOR FOR
003050                           SELECT *
003060                           FROM   VPHONE
003070                           WHERE  LASTNAME  LIKE :LNAME-WORK
003080                             AND  FIRSTNAME LIKE :FNAME-WORK
003090                       END-EXEC.
003100
003110       *** CURSOR LISTS ALL EMPLOYEES WITH A SPECIFIC
003120       *** LAST NAME
003130
003140                 EXEC SQL DECLARE TELE3 CURSOR FOR
003150                           SELECT *
EE3160                     FROM   VPHONE
003170                           WHERE  LASTNAME   =   :LNAME
003180                             AND  FIRSTNAME LIKE :FNAME-WORK
003190                        END-EXEC.
003200       /
003210       /*************************************************
003220       * FIELDS SENT TO MESSAGE ROUTINE                 *
003230       *************************************************
003240        01  MAJOR                    PIC X(07) VALUE 'DSN8BC3'.
003250
003260        01  MSGCODE                  PIC X(4).
COMMAND ===> explain                                    SCROLL ===> CSR
 F1=HELP      F2=SPLIT     F3=END       F4=RETURN    F5=RFIND     F6=RCHANGE
 F7=UP        F8=DOWN      F9=SWAP     F10=LEFT     F11=RIGHT    F12=RETRIEVE
```

Figure 305. Source Explain Example

If the *Always display this window* field has been selected, the Source Explain Options window is displayed. Otherwise, the SQL Statement Selection window is displayed.

Source Explain Options Window

Source Explain Options Window

You can display this window from the ISPF/PDF editor in one of the following ways:

- By typing `EXPLAIN OPTIONS` on the command line and pressing **Enter**
- By typing `EXPLAIN` on the command line and pressing **Enter** after the *Always display this window* field is selected
- From the SQL Statement Selection panel by typing `OPTIONS` on the command line and pressing **Enter**

You use the Source Explain Options window (Figure 306 on page 667) to specify the source explain processing options, such as the language of the source code you are editing, the subsystem ID of the explaining DB2, the SQLID to be used, and the degree of parallelism.

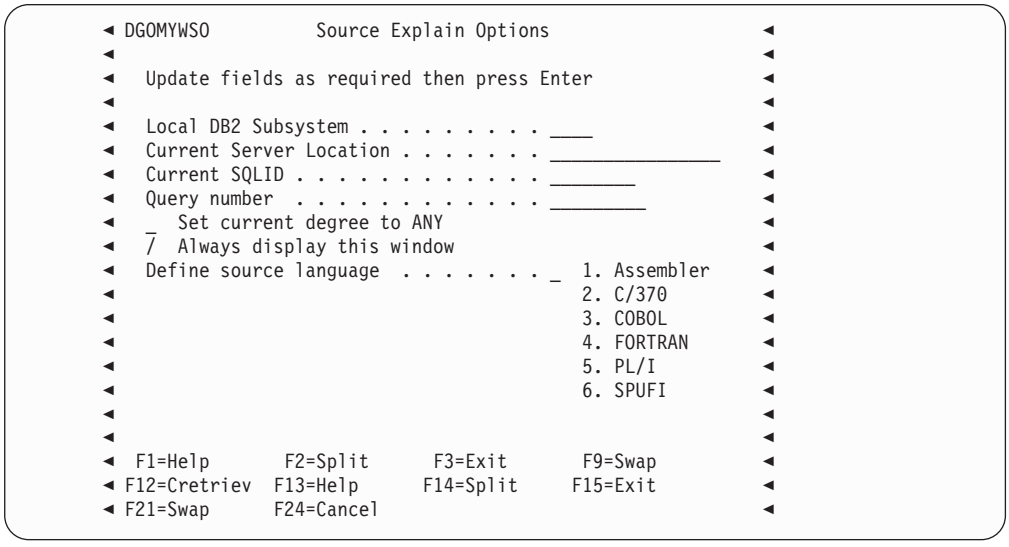


Figure 306. Source Explain Options Window

The fields shown on the Source Explain Options window are:

Local DB2 Subsystem
The local DB2 subsystem to which you want to connect.

Current Server Location
The DB2 subsystem where you want the source SQL statements to be explained. This field makes it possible that you are connected to a DB2 test subsystem, while you execute the explain on the remote production system. If this field is left blank, it defaults to the local DB2 subsystem.

Current SQLID
A different SQL authorization ID for qualifying the unqualified tables in the SQL statements being explained. A different SQL authorization ID is also used to qualify the plan table to be accessed. If this field is not specified, it defaults to your user ID.

Query number
A number that identifies the explain statement. If left blank, the value 999735912 is assigned to this field.

Set current degree to ANY
To specify whether the SQL statement is eligible for query parallelism. If you enter a slash (/) in this field, the current degree of parallelism is set to ANY. Otherwise, the current degree of parallelism is set to 1.

Always display this window
To control the display of the Source Explain Options window. If you enter a slash (/) in this field, the Source Explain Options window is displayed on each source explain request. If the field is blank, the Source Explain Options window is not displayed on each source explain request.

Define source language
The language of the source containing the SQL statements. This field cannot be left blank.

After specifying the required information, press **Enter** to proceed to the SQL Statement Selection panel.

SQL Statement Selection Panel

SQL Statement Selection Panel

You use this window to view a summarized list of the valid SQL statements within the specified source area. If there are many SQL statements listed, you can use the scrolling keys **F7** (Up) and **F8** (Down) to browse the list.

```
DGOMYWSS               SQL Statement Selection         ROW 1 TO 2 OF 2

This panel summarizes the SQL statements found in the following source
module that can be explained.
                     SYS1.DSN610.SDSNSAMP(DSN8BC3)

Select an SQL statement then press Enter to process.

    Source
    Line No  SQL Statement Text
_    003040  DECLARE TELE2 CURSOR FOR SELECT * FROM VPHONE WHERE LASTNAM
_    003140  DECLARE TELE3 CURSOR FOR SELECT * FROM VPHONE
-- End of List --









Command ===> ____________________________________________________________
 F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
F12=Cretriev F13=Help     F14=Split    F15=Exit     F19=Backward F20=Forward
F21=Swap     F24=Cancel
```

Figure 307. SQL Statement Selection Panel

You can select any SQL statement listed on this window for explain processing. The selected SQL statement is then processed and the Online Monitor is accessed, where you can view the explain output on the DB2 Explain Output panel. Refer to the *DB2 PM Online Monitor User's Guide* for more information.

You can use the OPTIONS command to access the Source Explain Options window from the SQL Statement Selection panel, where you can change various source explain processing options. To do this, enter `OPTIONS` on the command line and press **Enter**. This command is only available on the SQL Statement Selection panel.

Source EXPLAIN Command

You use the EXPLAIN command to explain an SQL statement from within an ISPF/PDF editor, or to specify source explain options.

The command syntax is:

Figure 308. Syntax of the Source EXPLAIN Command

All lines within the specified source area are scanned for valid SQL statements which are then listed on the SQL Statement Selection panel. If no lines are marked, the entire source is scanned. You can then select any SQL statement from the SQL Statement Selection panel for explain processing.

If you specify `OPTIONS` or if the *Always display this window* field is selected, the Source Explain Options window is displayed before the SQL Statement Selection panel, where you can specify processing options such as the language of the source code you are editing, the subsystem ID of the explaining DB2, the SQLID to be used, and the degree of parallelism.

Summary Report

At normal completion of DB2 PM explain, the last pages of the output are a summary of the DB2 PM explain execution. This is called the *Summary Report*. Each command is prefixed with the report number.

For each SQLSTMT, QUERYNO, and QMFQUERY request, the access path is listed adjacent to the input request. For each PLAN or PACKAGE statement, the access path is listed for every SQL statement in the plan or package.

To the right of the access path information, the report page number (*rrr-nnnn*) is shown, unless LEVEL(SUMMARY) was specified. In this way the summary report can be used as a table of contents.

An example of the summary report is shown in Figure 309.

```
REPORT ON:09/17/99 14:36:35          DB2 PM (V6)                  SUMMARY PAGE
                                      EXPLAIN

THE FOLLOWING   1 DB2 PM EXPLAIN REQUESTS WERE PROCESSED:                PAGE NO

  1:    APC5 PACKAGE  : DB2PMEEE                    .DGOY%
           DETAIL REPORT REQUESTED
     DBRM/PACK   STMT TYP
     DGOYALPT    154  P    MATCHING INDEX SCAN (2/3) - INDEX ONLY SCAN    1-1
     DGOYCKPT      7  P    MATCHING INDEX SCAN (2/2) - DATA PAGES SCAN    1-2
     DGOYCKPT     31  P    MATCHING INDEX SCAN (2/3) - INDEX ONLY SCAN    1-3
     DGOYCNDX     15  P    MATCHING INDEX SCAN (2/2) - DATA PAGES SCAN    1-4
     DGOYCNDX    206  P    MATCHING INDEX SCAN (2/2) - DATA PAGES SCAN    1-5
     DGOYCNDX    206  P S  TABLE SPACE SCAN - NO INDEX WILL BE USED       1-6
     DGOYCNDX    206  P    ADDITIONAL SORT FOR ORDER BY                   1-7
     DGOYCNDX    239  P    MATCHING INDEX SCAN (3/3) - DATA PAGES SCAN    1-8
     DGOYCNDX    239  P    MATCHING INDEX SCAN (2/2) - DATA PAGES SCAN    1-9
     DGOYCNDX    250  P S  TABLE SPACE SCAN - NO INDEX WILL BE USED      1-10
     DGOYCNDX    417  P S  TABLE SPACE SCAN - NO INDEX WILL BE USED      1-11
     DGOYCNDX    417  P    ADDITIONAL SORT FOR ORDER BY                  1-12
     DGOYFIST      7  P S  TABLE SPACE SCAN - NO INDEX WILL BE USED      1-13
     DGOYFIST    267  P    MATCHING INDEX SCAN (3/5) - DATA PAGES SCAN   1-14
     DGOYFIST    267  P    ADDITIONAL SORT FOR ORDER BY                  1-15
     DGOYFPCK      5  P    MATCHING INDEX SCAN (2/4) - DATA PAGES SCAN   1-16
     DGOYGPCK      8  P    MATCHING INDEX SCAN (2/4) - INDEX ONLY SCAN   1-17
     DGOYGPCK    103  P    MATCHING INDEX SCAN (2/4) - DATA PAGES SCAN   1-18
     DGOYGPCK    103  P    ADDITIONAL SORT FOR ORDER BY                  1-19
     DGOYGPCK    142  P S  MATCHING INDEX SCAN (2/5) - DATA PAGES SCAN   1-20
     DGOYGPCK    142  P    ADDITIONAL SORT FOR UNION OR UNIQUENESS       1-21
     DGOYGPCK    176  P    MATCHING INDEX SCAN (3/4) - INDEX ONLY SCAN   1-22
     DGOYJOIN      9  P    MATCHING INDEX SCAN (2/2) - DATA PAGES SCAN   1-23
     DGOYJOIN      9  P    MATCHING INDEX SCAN (2/2) - DATA PAGES SCAN   1-24
                            FOR A LIST OF VERSIONS, PLEASE REFER TO PAGE  1-25
     DGOYSEEE    236  P    MATCHING INDEX SCAN (2/3) - INDEX ONLY SCAN   1-26
                            FOR A LIST OF VERSIONS, PLEASE REFER TO PAGE  1-27
     DGOYXPLC      9  P    MATCHING INDEX SCAN (1/1) - DATA PAGES SCAN   1-28
     DGOYXPLC    130  P S  TABLE SPACE SCAN - NO INDEX WILL BE USED      1-29
     DGOYXPLC    130  P    ADDITIONAL SORT FOR ORDER BY                  1-30
```

Figure 309. Summary Report Example

The TYP column can contain the following values:

P Package

D DBRM

S Standard sequential prefetch

L Prefetch through a page list Table space scan

+ Nonmatching index scan

A blank
No prefetch or others

The numbers in brackets following MATCHING INDEX SCAN, for example (2/3), show how many columns match, namely 2, and how many columns the index has, namely 3.

Explain Report without a Summary

Figure 310 shows a DB2 PM explain report without a summary report produced if the following command is specified:

```
⋮
EXPLAIN
     SQLSTMT (
              SELECT * FROM DSN8610.EMP;
             )
⋮
```

```
ACTUAL AT:01/15/99 12:25:15      DB2PM (V6)               PAGE       :     1-1
                                EXPLAIN SQL STATEMENT      DB2 RELEASE: V6
 LOCATION: SYSDSN5                                         USER AUTHID: PMDEV
 SUBSYSTEM:SG51                      BASIC                 CURR.SQLID : PMDEV


  SQL STATEMENT TEXT :


              SELECT * FROM DSN8610.EMP

 ------------------------------------------------------------------------------
 DSN_STATEMENT_TABLE
 EXPLAIN TIME: 1999-01-15-12.25.15.890000
 QUERY NO:     N/A , APPL.NAME   :
                     PROGNAME    : DGOPR21;MAIN
                     COLLID      : PMDEVX
                     GROUP MEMBER: SG51
                     STMT TYPE   : SELECT

 COST CATEGORY:  A
 REASON:
 ESTIMATED PROCESSOR COST (MS):             7
           PROCESSOR COST (SU):            13

 ------------------------------------------------------------------------------
 PLAN TABLE DATA    OWNER: PMDEV
 BIND TIME : 1999-01-15-12.25.15.890000

 QUERYNO:    N/A , ACC. TYPE:   R, PLAN NO:   1, TABLE NAME: EMP
 Q BLOCK NO.:   1, MATCHCOLS:   0, TAB. NO:   1,   -  OWNER: DSN8610
 DATE: 1999-01-15, PLAN:         , METHOD :   0, INDEX NAME:
 TIME: 12:25:15.8, DBRM: DYN.STMT, IDXONLY : NO,   -  OWNER:
 TS LOCKMODE:  IS, COL.FUNC. :   , PREFETCH:  S, MULT.INDEX :
 ACCESS DEG :   0, ACC.PGROUP:  0, JOIN DEG:  0, JOIN PGROUP:    0
 PAGE RANGE :    , PARALL.MODE:  , JOIN TYPE:  , MERGE JOIN :    0
 WHEN_OPTIM :    , PRIMARY_ACCESSTYPE:         , QBLOCK_TYPE: SELECT
                   HINT_USED  :                , OPT_HINT_ID:
 CORRELATION:                    , GROUP MEMB.: SG51

 SORTN TABLE -UNIQUE: N, JOIN: N, ORDER BY: N, GROUP BY: N, PARAL.GROUP:     0
 SORTC TABLE -UNIQUE: N, JOIN: N, ORDER BY: N, GROUP BY: N, PARAL.GROUP:     0
 ------------------------------------------------------------------------------

 THE ACCESS PATH CHOSEN BY DB2 AT 12:25:15.8   ON 1999-01-15

 +-------------------------------------------------------------------+
 ! TABLE SPACE SCAN - NO INDEX WILL BE USED                          !
 ! STANDARD SEQUENTIAL PREFETCH WILL BE PERFORMED                    !
 ! LOCK MODE IS SHARE LOCK FOR THE PAGE                              !
 ! PAGE RANGE SCAN WILL NOT BE USED                                  !
 !                                                                   !
 !                                                                   !
 +-------------------------------------------------------------------+
```

Figure 310. Explain Report Example without a Summary (Part 1 of 2)

```
INDEX: DSN8610.XEMP2 ------------------------------------------------------------
STATSTIME: 1999-08-14-13.44.44
CREATED  : 1999-07-15-17.21.28.432678    ALTERED : 1999-09-01-18.19.05.893451
FULL KEY CARD:         8,PAGES :         1,LEVELS:       2,CLUSTRING: N
1"ST KEY CARD:         8,SPACE :       N/A,UNIQUE:      NO,CLUSTERED: N
INDEX TYPE   :         2,PGSIZE:      4096,BFPOOL:     BP0,DB.NAME  : DSN8D61A
CLUSTERRATIO :       42%,ERRULE:        NO,CLRULE:      NO,IXSPACE  : XEMP2
MAX.PIECESIZE:       256,COPY  :        NO,COPYLRSN: X'000000000000'


KEY                                      KEY                                KEY
NO. COLUMN NAME       COL.TYPE LNG NULL  CARD. ORDER LOW2KEY    HIGH2KEY   USED
                      COL.STAT LENGTH2   TYPESCHEMA  TYPENAME
                                                     CREATED
--- -----------       -------- --- ----  ----- ----- ---------- ---------- ----
  1 LOCATION          CHAR      16 NO       -1 ASC.  N/A        N/A
                                          0  SYSIBM       CHAR
                                                     0001-01-01-00.00.00.000000

TABLE: DSN8610.EMP -------------------------------------------------------------
STATSTIME: 1999-10-20-12.45.16.342587 TB TYPE  : TABL
CREATED  : 1999-04-01-00.00.00.000000 ALTERED  : 1999-10-20-12.38.17.872962
ROWS     :        42, COLUMNS :  14 , ROWLENGTH:  107, EDIT PROC.: DSN8EAE1
% PAGES  :         2, DBASE ID:  269, AUDITING : NONE, VALIDPROC.:
ACT.PAGES:         2, TABLE ID:   18, STATUS   :    X, TABCREATOR: BKUP
                                      TAB.STAT.:     , ENC.SCHEME: EBCDIC
TABLESPACE: DSN8D61A.DSN8S61E --------------------------------------------------
STATSTIME: 1999-04-01-00.00.00.000000
CREATED  : 1999-04-01-00.00.00.000000 ALTERED  : 0001-01-01-00.00.00.000000
PAGES ACTIVE:    100, PSID:        4, ERASERULE:   NO, DATABASE  : DSN8D61A
PAGE SIZE :       4K, LOCKRULE: PAGE, CLOSERULE:   NO, STOGROUP  : DSN8G610
PARTITIONS:        4, LOCKPART: YES , TS STATUS:    A, BUF.POOL  :  BP0
SPACE     :      N/A, SEG.SIZE:UNSEG, TABLES/TS:    1, TS TYPE   :   LARGE
DEFAULT ENC.SCHEME: EBCDIC          , MAXROWS  :  255, LOG       : YES
DEFAULT SBCS CCSID:    0,    DEFAULT DBCS CCSID:    0, MIX. CCSID:    0
```

Figure 310. Explain Report Example without a Summary (Part 2 of 2)

Chapter 52. Processing Considerations

The time and system resources required to produce a DB2 PM Batch explain execution directly depends on the functions and the processing options specified. The number of accesses to the DB2 system catalog is the most important factor. The following catalog tables are nonindexed:

- SYSIBM.SYSSTMT
- SYSIBM.SYSDBRM
- SYSIBM.SYSKEYS in versions prior to DB2 Version 4

For DB2 Version 4 or later, you can create user-defined indexes on the catalog tables:

- Two indexes for SYSIBM.SYSSTMT: one on the columns PLCREATOR, PLNAME, NAME, and STMTNO and one on the columns PLNAME, SEQNO, STMTNO, and SECTNO
- One index for SYSIBM.SYSDBRM: on the columns PLCREATOR, PLNAME, and NAME.

Note, however, that in addition to the usual costs of indexes (for more information, refer to the *DB2 Administration Guide*) you might experience a performance overhead in an environment with frequent DDL and static bind activity.

Another way to speed up the production of a report is to create copies of these catalog tables and add indexes to these copies. A sample member, DGOYCOPY, which creates such copies, is provided in SDGOSAMP. DB2 does not automatically update the copied tables. To get up-to-date DB2 PM explain information, copy the data from the DB2 catalog tables to your tables on a daily basis. For this, another sample member, DGOYRSQL, is provided in SDGOSAMP. Modify this member as required by your installation.

You can also reduce processing by instructing DB2 PM to skip production of index and key information using the LEVEL and INDEX options.

The execution time to explain a plan or package depends on the number of rows in the accessed PLAN_TABLE. If the table has many rows, you can speed things up by creating an index on PROGNAME, QUERYNO. Alternatively, delete unnecessary rows from your PLAN_TABLE.

For further information on processing considerations, see also the *DB2 PM Program Directory*.

Part 11. The I/O Activity Report Set

This part of the *DB2 PM Report Reference* describes the I/O activity report set. It is divided into the following chapters:

- Chapter 53. Introduction to the I/O Activity Report Set describes the purpose of the I/O activity report set.
- Chapter 54. General I/O Activity Information describes the DB2 IFCIDs that provide the input for the I/O activity report set, the identifiers used by the I/O activity report set, and the I/O activity report header.
- Chapter 55. I/O Activity Summary Report identifies each field printed in the summary report. The report summarizes information presented on each of the detail reports.
- Chapter 56. I/O Activity Detail Reports describes the detail reports and identifies the report fields.

Chapter 53. Introduction to the I/O Activity Report Set

Tracking I/O volumes and service times is one of the key activities in monitoring system performance. DB2 performance trace data reflects the reads, writes, and other I/O activities performed throughout the system. DB2 PM summarizes I/O activity and reports it under one of the following categories:

- Database buffer pool
- Environmental descriptor manager (EDM) pool
- Active log
- Archive log and bootstrap data set (BSDS)
- Cross invalidation (XI)

The reports produced help you:

- Measure the volumes and performance of the I/O events for DB2 databases and resources
- Identify potential bottlenecks related to I/O activity
- Monitor trends in I/O activity

Chapter 54. General I/O Activity Information

This section contains information about:

- Input to the I/O activity reports
- A description of the report headers

Input to the I/O Activity Reports

The DB2 IFCIDs used as input for the I/O activity reports are shown in Table 83. You must know the input IFCIDs if you do not use the collect report data facility supplied with the Online Monitor.

Table 83. Input to the I/O Activity Reports

I/O Activity Reports	Input IFCIDs	DB2 Trace Type and Class
Buffer Pool	6, 7, 8, 9, 10, 105, 107	Performance 4
EDM Pool	29, 30, 105, 107	Performance 4
Active Log	34, 35, 36, 37, 38, 39	Performance 5
Archive Log/BSDS	34, 35, 36, 37, 40, 41, 114, 115, 116, 119, 120	Performance 5
Cross Invalidation	105, 107, 255	Performance 21

To get the IFCIDs 105 and 107, you must specify the START TRACE command.

If you want DB2 PM to include sequential prefetch read I/O operations in the report, do *not* qualify the DB2 START TRACE command with a plan name or an authorization ID. Such a qualification for performance trace class 4 reduces the data DB2 puts in the user's task TCB and omits all asynchronous tasks including sequential prefetch.

However, if you only want the report data you are interested in, you *can* qualify the DB2 PM I/O activity report by a plan name, an authorization ID, or both, using the INCLUDE/EXCLUDE option. DB2 PM is able to attribute the asynchronous I/O activity to the thread that initiated it.

The IOACTIVITY Command

You use the IOACTIVITY command to reduce data and generate reports. The command can be used once in a job step. However, it can be used in the same job step with commands of the other report sets. The following subcommands are associated with the IOACTIVITY command:

- REDUCE
- REPORT

Building the Command Stream

You can choose between two methods for entering DB2 PM commands:

- **The Interactive Report Facility (IRF)**

  The IRF provides a series of interactive menus and panels you can use to specify the commands and options required to generate reports and traces, as

well as review and edit your selections. You can either generate the command stream and submit the job in background, or execute your job in foreground. Refer to the *DB2 PM Batch User's Guide* for more information on the IRF.

- **The DB2 PM Command Language**

  You can use an editor to enter the DB2 PM commands in the proper syntax, specifying the appropriate subcommands, options, and keywords, and the JCL required to execute the job.

This chapter is intended for the user who wants to build a command stream using the DB2 PM command language. See "DD Statements" on page 10 for full descriptions of the DD statements contained in this sample.

```
//DB2PM   JOB (INSTALLATION DEPENDENCIES)
//*
//* ================================================================*
//*          D B 2  P M   R E P O R T   G E N E R A T I O N          *
//* ================================================================*
//*
//        EXEC PGM=DB2PM
//* FOLLOWING ARE DB2PM SYSTEM DDNAMES
//STEPLIB  DD  DSN=DGO.V6R1M0.SDGOLOAD,DISP=SHR
//DPMPARMS DD  DSN=DGO.V6R1M0.DPMPARMS,DISP=SHR
//INPUTDD  DD  DSN=DGO.V6R1M0.DPMIN61,DISP=SHR
//DPMLOG   DD  SYSOUT=*
//SYSOUT   DD  SYSOUT=*
//JOBSUMDD DD  SYSOUT=*
//SYSPRMDD DD  SYSOUT=*
//DPMOUTDD DD  DSN=DGO.V6R1M0.DPMOUT.DATA,DISP=OLD
//SYSUDUMP DD  DUMMY
//* FOLLOWING ARE DB2PM REPORT SET DDNAMES
//* FOLLOWING IS THE DB2PM COMMAND STREAM
//SYSIN   DD  *
  IOACTIVITY
      REDUCE
      REPORT
   EXEC
```

Using the IOACTIVITY Command

You use the IOACTIVITY command to generate I/O activity reports. The subcommands are described in detail, together with their various options, in the following sections.

The command can be used once in a job step.

Figure 311. Syntax of the IOACTIVITY Command

Using the REDUCE Subcommand

You use the REDUCE subcommand to reduce the volume of data that is input to subsequent subcommands. REDUCE consolidates records with certain common

characteristics into one record. REDUCE can be used once in an IOACTIVITY command.

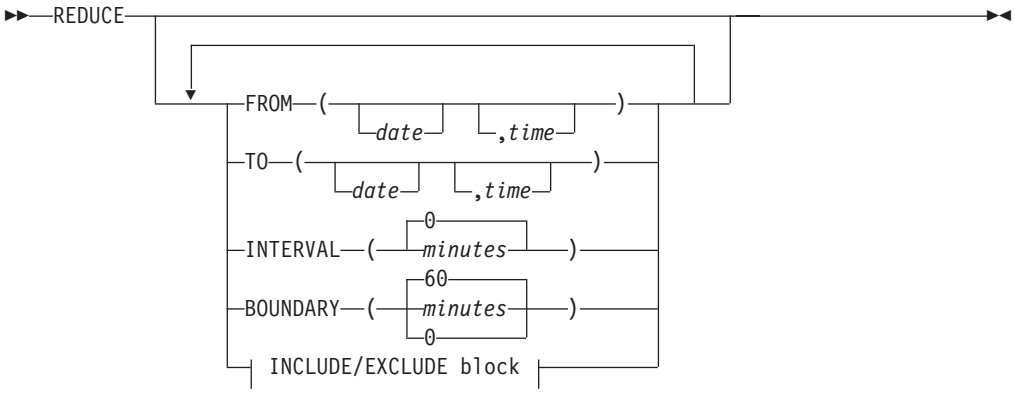


Figure 312. Syntax of the REDUCE Subcommand

The following options can be used with the REDUCE subcommand:

FROM/TO
Limits the range of records included in the reduction process by date and time.

INTERVAL
Defines the time interval for consolidating and averaging records.

BOUNDARY
Controls the alignment of the intervals used to summarize records in the reduction process.

INCLUDE/EXCLUDE
Includes or excludes data associated with specific DB2 PM identifiers.

Refer to “INCLUDE/EXCLUDE” on page 28 for more information on how to use the INCLUDE/EXCLUDE option.

Refer to “Chapter 1. DB2 PM Identifiers” on page 3 for definitions of DB2 PM identifiers.

Using the REPORT Subcommand

You use the REPORT subcommand to generate reports from records. Up to five REPORT subcommands can be specified within each IOACTIVITY command.

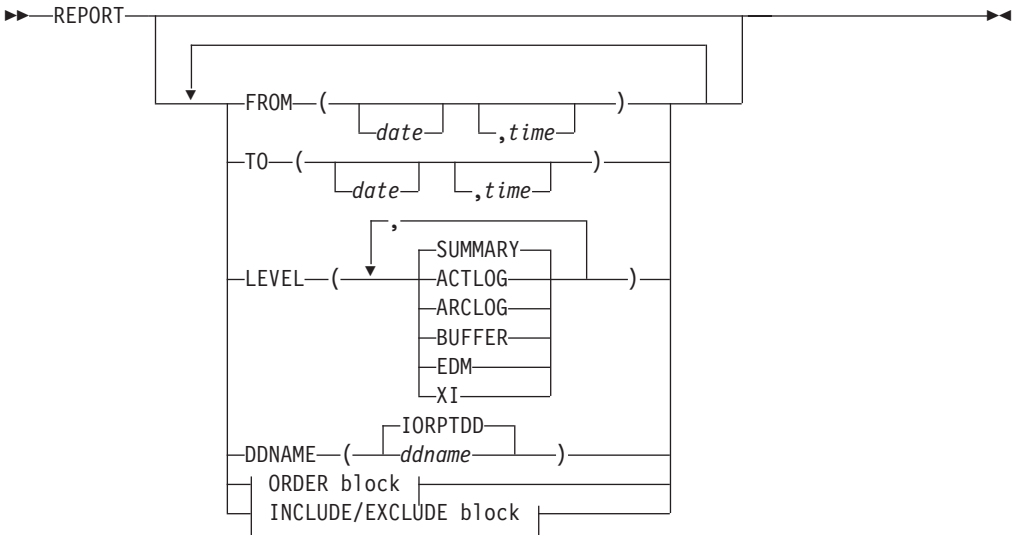


Figure 313. Syntax of the REPORT Subcommand

The following options can be used with the REPORT subcommand:

FROM/TO
Limits the range of records included in the reporting process by date and time.

LEVEL
Specifies the level of the report.

The following keywords can be used with LEVEL:

SUMMARY
Gives a summary of all I/O activity for the following categories:

- Buffer pool
- EDM pool
- Active log
- Archive log and BSDS
- Cross invalidation

SUMMARY also gives the grand totals of all the I/O statistics for the reporting interval for each category. It provides a quick overview of system-wide I/O activity to help monitor trends and identify potential problem areas.

The following levels generate detail reports:

ACTLOG
The active log report presents counts and average elapsed time for reads, writes, and other I/O activity ordered by the log data set name.

ARCLOG
The archive log/BSDS report presents the archive log and BSDS read and write requests ordered by the log data set name.

BUFFER
The buffer pool report presents successful and unsuccessful asynchronous and synchronous (prefetch) read requests and write requests grouped by user-selected DB2 PM identifiers.

EDM The environmental descriptor manager pool report presents cursor table (CT), package table (PT), and database descriptor (DBD) references, loads from DASD, elapsed time for each load, and average section lengths grouped by user-selected DB2 PM identifiers.

XI The cross-invalidation report presents buffer refresh events due to aggregated cross invalidation by user-selected DB2 PM identifiers.

The default for level is SUMMARY.

DDNAME

Specifies the data set to which the report is written. You can specify any valid ddname including the default, provided that your JCL contains a DD statement for it. If a DD statement is omitted, it will be dynamically allocated to the SYSOUT message class of the job. The default ddname for report is IORPTDD.

ORDER

Specifies the DB2 PM identifiers and their sequence for sorting the report, and, in summary reports, which identifiers are used for aggregation. You can order by one, two, or three identifiers separated by a dash and specify up to five sets of the identifiers for each entry of ORDER separated by at least one blank. You can specify one entry of ORDER for each REPORT subcommand. The default for ORDER is PRIMAUTH-PLANNAME-BPID.

Notes:

1. ORDER can be used to sort the buffer pool, EDM pool, and cross-invalidation reports.
2. The EDM pool report contains the plan name and the database name. Ordering by these identifiers results in repetitious information.

Refer to “Chapter 1. DB2 PM Identifiers” on page 3 for definitions of DB2 PM identifiers.

ORDER Example

```
⋮
REPORT
   LEVEL (EDM)
   ORDER (PRIMAUTH-PLANNAME-REQLOC
          CONNECT-PLANNAME REQLOC-PRIMAUTH)
⋮
```

This command specifies that three EDM pool reports are produced:

- The first is ordered by requesting location within plan name within primary authorization ID.
- The second is ordered by plan name within connection ID.
- The third is ordered by primary authorization ID within requesting location.

INCLUDE/EXCLUDE

Includes or excludes data associated with specific DB2 PM identifiers. If you omit this option, all records are included.

Refer to “INCLUDE/EXCLUDE” on page 28 for more information on how to use the INCLUDE/EXCLUDE option.

Examples Using REPORT: *Example 1*:

```
⋮
REPORT
   FROM    (02/04/99,10:00:00.00)
   TO      (02/05/99,12:00:00.00)
   LEVEL   (SUMMARY)
   INCLUDE (LOCATION(R(LOCN01 LOCN05)))
⋮
```

This example specifies the following:

- A summary report
- Using records with the time and date range of 10:00 a.m. on 4 February 1998 to noon on 5 February 1998
- Data is included that is only associated with the location in the range of LOCN01 to LOCN05

Example 2:

```
⋮
REPORT
   FROM    (03/18/99,10:00:00.00)
   TO      (03/19/99,12:00:00.00)
   LEVEL   (BUFFER)
   ORDER   (CORRNAME-PRIMAUTH-PLANNAME)
   EXCLUDE (LOCATION(LOCN10 LOCN12 LOCN15 LOCN20))
⋮
```

This example specifies the following:

- A buffer pool report
- Sorted by plan name within primary authorization ID within correlation name
- Records are used with the time and date range of 10:00 a.m. on 18 March 1998 to noon on 19 March 1998
- Data is excluded that is associated with the following locations:
  - LOCN10
  - LOCN12
  - LOCN15
  - LOCN20

IOACTIVITY Command Example

```
⋮
IOACTIVITY
     REDUCE
        FROM (05/14/99,10:30:00.00)
        TO   (,11:00:00.00)
     REPORT
⋮
```

This example requests the following:

- Reduce only input data with a timestamp within the time range of 10:30 to 11:00 on 14 May 1998.
- Create a summary report (the default) with the default order of PLANNAME within PRIMAUTH.
- Write the report to the data set defined by the default ddname IORPTDD.

Summary and Detail Report Header

DB2 PM header information is printed at the top of each page of the summary and detail report.

```
   LOCATION: LOCATION1                    DB2 PERFORMANCE MONITOR (V6)                          PAGE: 4-2
      GROUP: GROUP2                    I/O ACTIVITY REPORT - EDM POOL              REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER4                                                                          TO: NOT SPECIFIED
  SUBSYSTEM: DB2D                          ORDER: PRIMAUTH-PLANNAME                  INTERVAL FROM: 06/04/99 00:01:00.00
DB2 VERSION: V6                                                                              TO: 06/04/99 00:45:22.95
```

Figure 314. I/O Activity Report Header Example

The report header contains the following information, described in the order left block, middle block, right block:

LOCATION
The DB2 reporting location. If the location name is not available, the DB2 subsystem ID is printed in this field.

GROUP
The data sharing group the DB2 subsystem belongs to.

MEMBER
The DB2 subsystem's member name.

SUBSYSTEM
The ID of the DB2 subsystem that generated the data.

DB2 VERSION
The DB2 version number of the subsystem that generated the data.

DB2 PERFORMANCE MONITOR (V6)
The product name and version.

Title - report type
The title of the report.

ORDER
If the ORDER option of the REPORT subcommand was used to arrange the report entries, the selected keywords are shown in this field.

PAGE The page number in the format *lll-nnnnnn*, where *lll* denotes the location number within the report, and *nnnnnn* the page number within the location.

REQUESTED FROM/TO
The FROM/TO dates and times specified in the REPORT subcommand. If both FROM and TO dates and times are omitted from the REPORT subcommand, the FROM/TO dates and times specified in GLOBAL are printed. If only the FROM date and time or only the TO date and time has been specified, NOT SPECIFIED is printed for the unspecified value.

If FROM/TO is not specified in REPORT or GLOBAL, NOT SPECIFIED appears for both the FROM and TO values.

If you have specified FROM/TO times without dates in REPORT or GLOBAL, ALL DATES is printed along with the specified times.

INTERVAL FROM
The start date and time of the first reduction interval covered by the report.

INTERVAL TO
The end date and time of the last reduction interval covered by the report.

Chapter 55. I/O Activity Summary Report

The I/O activity summary report provides an overview of system-wide I/O activity that is used to monitor trends and identify problem areas. It summarizes the information contained in the I/O activity detail reports for a location (refer to “Chapter 56. I/O Activity Detail Reports” on page 695).

The I/O activity summary report shows on a single page a block of entries for each of the I/O categories: buffer pool, EDM pool, active log, archive log/BSDS, and cross invalidation (XI).

The I/O summary report is produced if you specify the IOACTIVITY(REPORT) command and there is at least one I/O activity IFCID begin/end pair in the input data set satisfying the FROM/TO and INCLUDE/EXCLUDE criteria. You do not have to specify the SUMMARY level because this is the default.

The following command produces the I/O activity summary report shown in Figure 315.

```
⋮
IOACTIVITY
     REPORT
⋮
```

```
   LOCATION: DSNCAT                                        DB2 PERFORMANCE MONITOR (V6)                              PAGE: 2-1
      GROUP: DSNCAT                                         I/O ACTIVITY REPORT - SUMMARY                  REQUESTED FROM: NOT SPECIFIED
     MEMBER: V61B                                                                                                      TO: NOT SPECIFIED
  SUBSYSTEM: V61B                                                                                           INTERVAL FROM: 08/14/99 19:32:54.82
DB2 VERSION: V6                                                                                                        TO: 08/14/99 19:56:28.53

                                                                                      CT/PT/DBD   NOT IN               AVG LEN
BUFFER POOL                     TOTALS       AET       EDM POOL                      REFERENCES  EDM POOL        AET    (BYTES)
----------------------------  -------- ---------       --------------------------  ----------  --------  ---------  ---------

TOTAL I/O REQUESTS                  51  0.019885       CURSOR TABLE - HEADER                1         2   0.131381    7656.00
                                                       CURSOR TABLE - DIRECTORY             1         1   0.000568     228.00
TOTAL READ I/O REQUESTS             51  0.019885       CURSOR TABLE - RDS SECTION           9         9   0.022214    1475.11
  NON-PREFETCH READS                51                 -- TOTAL PLANS -----                11        12   0.030170    1923.64
  PREFETCH READS
    WITHOUT I/O                      0                 PACKAGE TABLE - HEADER               0         0        N/C       0.00
    WITH I/O                         0                 PACKAGE TABLE - DIRECTORY            0         0        N/C       0.00
    PAGES READ                       0                 PACKAGE TABLE - RDS SECTION          0         0        N/C       0.00
    PAGES READ / SUCC READ        0.00                 -- TOTAL PACKAGES --                 0         0        N/C       0.00

TOTAL WRITE REQUESTS                 0       N/C       DATABASE DESCRIPTORS                 0         0        N/C       0.00
  SYNCHRONOUS WRITES                 0       N/C
   COUPLING FACILITY CASTOUTS        0       N/C
   PAGES WRITTEN PER WRITE        0.00
  ASYNCHRONOUS WRITES                0       N/C
   COUPLING FACILITY CASTOUTS        0       N/C
   PAGES WRITTEN PER WRITE        0.00

ACTIVE LOG              TOTALS       AET     ARCHIVE LOG              TOTALS       AET     BOOTSTRAP DATASET      TOTALS       AET
-------------------- -------- ---------     ---------------------- -------- ---------     -------------------- -------- ---------

TOTAL WAITS                 22  0.018384                                                   TOTAL WAITS                25  0.051894

READ REQUESTS                0       N/C     READ REQUESTS                 0       N/C     READ REQUESTS              13  0.078868
                                               DASD READ                   0       N/C
                                               TAPE READ                   0       N/C

WRITE REQUESTS              22  0.018384     OFFLOAD REQUESTS              0       N/C     WRITE REQUESTS             12  0.022673
CONT. CI / WRITE          1.00               BLOCKS / OFFLOAD           0.00

OTHER WAITS                  0       N/C     OTHER WAITS                   0       N/C     CROSS-INVALIDATION ACTIVITY      TOTALS
  ALLOCATE                   0       N/C       ALLOCATE                    0       N/C     ----------------------------  --------
  DEALLOCATE                 0       N/C       DEALLOCATE                  0       N/C
  OPEN                       0       N/C       OPEN                        0       N/C     SYNCHRONOUS READS                    27
  CLOSE                      0       N/C       CLOSE                       0       N/C       REFRESHED FROM GROUP BPOOL         27
                                               HSM RECALL                  0       N/C       REFRESHED FROM DASD                 0
                                               CATALOG LOCATE              0       N/C
                                               MULTI-DATA SET TAPE         0       N/C     SEQUENTIAL PREFETCHES                 0
                                               TAPE VOL POSITIONING        0       N/C       REFRESHED FROM GROUP BPOOL          0
                                               WTOR ISSUED                 0       N/C       REFRESHED FROM DASD                 0
                                               DATA SET UNAVAILABLE        0       N/C
                                               PHYSICAL UNIT UNAV.         0       N/C
                                               RDR SERV.UNAVAILABLE        0       N/C

I/O ACTIVITY REPORT COMPLETE
```

Figure 315. Example I/O Activity Summary Report

Field Descriptions

The I/O activity summary report is divided into the following sections:

- BUFFER POOL
- EDM POOL
- ACTIVE LOG
- ARCHIVE LOG
- BOOTSTRAP DATASET
- CROSS-INVALIDATION ACTIVITY

BUFFER POOL

This section of the summary report contains selected fields from the buffer pool report. The following fields are printed in the report:

TOTAL I/O REQUESTS
The total number of I/O requests (TOTALS) and the average elapsed time per I/O request (AET).

TOTAL READ I/O REQUESTS
The total number of I/O read requests (TOTALS) and the average elapsed time per read request (AET).

TOTAL WRITE REQUESTS
The total number of write I/O requests (TOTALS) and the average elapsed time per write request (AET).

The write requests are divided into two categories: synchronous writes and asynchronous writes.

SYNCHRONOUS WRITES
The number of synchronous writes (TOTALS) and the average elapsed time per synchronous write request (AET).

ASYNCHRONOUS WRITES
The number of asynchronous writes (TOTALS) and the average elapsed time per asynchronous write (AET).

EDM POOL

This section of the summary report contains selected fields from the EDM pool report. The following fields are printed in the report:

CURSOR TABLE - HEADER
The number of load requests for cursor table headers (CT/PT/DBD REFERENCES).

The number of cursor table header loads not in the EDM pool (NOT IN EDM POOL).

The average elapsed time of a cursor table header load (AET).

The average length of a loaded cursor table header in bytes (AVG LEN (BYTES)).

CURSOR TABLE - DIRECTORY
The number of load requests for cursor table directories (CT/PT/DBD REFERENCES).

The number of cursor table directory loads not in the EDM pool (NOT IN EDM POOL).

The average elapsed time of a cursor table directory load (AET).

The average length of a loaded cursor table directory in bytes (AVG LEN (BYTES)).

CURSOR TABLE - RDS SECTION
The number of load requests for cursor table RDS sections (CT/PT/DBD REFERENCES).

The number of cursor table RDS section loads not in the EDM pool (NOT IN EDM POOL).

The average elapsed time of a cursor table RDS section load (AET).

The average section length of a loaded cursor table RDS section in bytes (AVG LEN (BYTES)).

TOTAL PLANS

The number of load requests for plans; that is, the sum of CT/PT/DBD references for cursor table header, directory, and RDS section (CT/PT/DBD REFERENCES).

The number of plan loads not in the EDM pool (NOT IN EDM POOL).

The average elapsed time per plan load (AET).

The average section length of a loaded plan in bytes (AVG LEN (BYTES)).

PACKAGE TABLE - HEADER

The number of load requests for package table headers (CT/PT/DBD REFERENCES).

The number of package table header loads not in the EDM pool (NOT IN EDM POOL).

The average elapsed time of a package table header load (AET).

The average length of a loaded package table header in bytes (AVG LEN (BYTES)).

PACKAGE TABLE - DIRECTORY

The number of load requests for package table directories (CT/PT/DBD REFERENCES).

The number of package table directory loads not in the EDM pool (NOT IN EDM POOL).

The average elapsed time of a package table directory load (AET).

The average length of a loaded package table directory in bytes (AVG LEN (BYTES)).

PACKAGE TABLE - RDS SECTION

The number of load requests for package table RDS sections (CT/PT/DBD REFERENCES).

The number of package table RDS section loads not in the EDM pool (NOT IN EDM POOL).

The average elapsed time of a package table RDS section load (AET).

The average section length of a package table RDS section in bytes (AVG LEN (BYTES)).

TOTAL PACKAGES

The number of load requests for package tables; that is, the sum of CT/PT/DBD references for the package table header, directory, and RDS section (CT/PT/DBD REFERENCES).

The number of package table loads not in the EDM pool (NOT IN EDM POOL).

The average elapsed time per package table load (AET).

The average section length of a loaded package table in bytes (AVG LEN (BYTES)).

DATABASE DESCRIPTORS

The number of load requests for database descriptors . (CT/PT/DBD REFERENCES).

The number of DBD loads not in the EDM pool (NOT IN EDM POOL).

The average elapsed time of a database descriptor load (AET).

The average length of a loaded database descriptor in bytes (AVG LEN (BYTES)).

ACTIVE LOG

This section of the summary report contains selected fields from the active log report. The following fields are printed in the report:

TOTAL WAITS
The total number of waits for read and write requests and other waits (TOTALS) and the average elapsed time of an I/O wait of any type (AET).

READ REQUESTS
The number of read requests (TOTALS) and the average elapsed time of a read request (AET).

WRITE REQUESTS
The number of write requests (TOTALS) and the average elapsed time of a write request (AET).

CONT. CI / WRITE
The number of contiguous control intervals per write request.

OTHER WAITS
The total number of waits for resource allocation and deallocation, and the number of waits to open and close data sets (TOTALS).

The average elapsed time of all other waits (AET).

The next four rows relate to waits other than waits for read or write requests.

ALLOCATE
The number of waits for resource allocation (TOTALS) and the average elapsed time of a wait for resource allocation (AET).

DEALLOCATE
The number of waits for resource deallocation (TOTALS) and the average elapsed time of waits for resource deallocation (AET).

OPEN The number of waits to open data sets (TOTALS) and the average elapsed time of waits to open data sets (AET).

CLOSE
The number of waits to close data sets (TOTALS) and the average elapsed time of waits to close data sets (AET).

ARCHIVE LOG

This section of the summary report contains selected fields from the archive log report. The following fields are printed in the report:

READ REQUESTS
The total number of archive read requests (TOTALS) and the average elapsed time of an archive read request (AET).

Archive read requests are subdivided into the following categories:

DASD READ
The total number of reads from the DASD and (TOTALS) the average elapsed time of reads from the DASD (AET).

TAPE READ
The total number of reads from the tape (TOTALS) and the average elapsed time of reads from the tape (AET).

OFFLOAD REQUESTS
The total number of archive offloads (TOTALS) and the average elapsed time per archive offload (AET).

BLOCKS / OFFLOAD
The number of blocks of data written per offload.

OTHER WAITS
Waits other than read or write requests. The total elapsed time (TOTALS) and the average elapsed time of all other waits (AET).

BOOTSTRAP DATASET

TOTAL WAITS
The total number of waits due to read and write requests for the bootstrap data set (TOTALS) and the average duration of bootstrap data set waits (AET).

READ REQUESTS
The total number of BSDS reads (TOTALS) and the average elapsed time per read from BSDS (AET).

WRITE REQUESTS
The total number of writes to the BSDS (TOTALS) and the average elapsed time per BSDS write (AET).

CROSS-INVALIDATION ACTIVITY

This section of the summary report contains selected fields from the cross-invalidation report. The following fields are printed in the report:

SYNCHRONOUS READS
The number of cross-invalidated pages which are refreshed via synchronous read.

REFRESHED FROM GROUP BPOOL
The number of cross-invalidated pages which are refreshed from the group buffer pool via synchronous read.

REFRESHED FROM DASD
The number of cross-invalidated pages which are refreshed from the DASD via synchronous read.

SEQUENTIAL PREFETCH
The number of cross-invalidated pages which are refreshed via sequential prefetch.

REFRESHED FROM GROUP BPOOL
The number of cross-invalidated pages which are refreshed from the group buffer pool via sequential prefetch.

REFRESHED FROM DASD
The number of cross-invalidated pages which are refreshed from the DASD via sequential prefetch.

Chapter 56. I/O Activity Detail Reports

A separate detail report is produced for each category of I/O activity. Totals are accumulated for most columns in the report. The information in the *Total* column on each detail report for grand totals also appears in the I/O activity summary report. The I/O categories are:

- Buffer pool activity
- EDM pool activity
- Active log activity
- Archive log / BSDS activity
- Cross invalidation activity

Buffer Pool Report

The buffer pool report provides information about the movement of database pages between the DASD and the main storage buffers. It presents information about the number of read and write operations, the amount of read and write requests, and the average wait times.

The following command produces the buffer pool report shown in Figure 316.

```
⋮
IOACTIVITY
     REPORT
        LEVEL(BUFFER)
⋮
```

```
   LOCATION: DSNCAT                          DB2 PERFORMANCE MONITOR (V6)                                PAGE: 1-1
      GROUP: DSNCAT                       I/O ACTIVITY REPORT - BUFFER POOL                  REQUESTED FROM: NOT SPECIFIED
     MEMBER: SSDQ                                                                                      TO: NOT SPECIFIED
  SUBSYSTEM: SSDQ                            ORDER: PRIMAUTH-PLANNAME-BPID                    INTERVAL FROM: 08/14/99 19:32:54.82
DB2 VERSION: V6                                                                                        TO: 08/14/99 19:56:04.31
                    -- I/O REQUEST ---  ---------------- READ  REQUESTS -------------  --------- WRITE REQUEST ---------
PRIMAUTH                                                ------- WITH I/O -------
 PLANNAME                                                                 PAGES/  W/OUT                CAST           PAGES/    DB
  BPID                     TOTAL       AET     TOTAL TYPE        AET       %   READ  I/O %    TOTAL TYPE  OUT        AET  WRITE  OPEN
--------------------  -------- ---------  -------- ----- --------- ------ ------ ------  -------- ----- ---- --------- ------  ----
SYSOPR
 'BLANK'
  BP0                       15  0.040408         0 -           N/C   0.00   0.00   0.00        15 ASYNC NO    0.040408   1.20     0
  BP2                        3  0.043966         0 -           N/C   0.00   0.00   0.00         3 ASYNC NO    0.043966   1.00     0
 **** SUBTOTAL  ****
 'BLANK'                    18  0.041001         0 -           N/C   0.00   0.00   0.00        18 ASYNC NO    0.041001   1.17     0
T3270A
 NOPID
  BP0                       40  0.021737        40 SYNCH  0.021737 100.00   1.00   0.00         0 -               N/C   0.00    11
  BP2                       27  0.018343        27 SYNCH  0.018343 100.00   1.00   0.00         0 -               N/C   0.00     0
 **** SUBTOTAL  ****
 NOPID                      67  0.020370        67 SYNCH  0.020370 100.00   1.00   0.00         0 -               N/C   0.00    11
**** GRAND TOTAL ***        85  0.024739        67 SYNCH  0.020370 100.00   1.00   0.00        18 ASYNC NO    0.041001   1.17    11
```

Figure 316. I/O Activity Buffer Pool Report (Part 1 of 3)

```
   LOCATION: DSNCAT                          DB2 PERFORMANCE MONITOR (V6)                          PAGE: 2-1
      GROUP: DSNCAT                       I/O ACTIVITY REPORT - BUFFER POOL                REQUESTED FROM: NOT SPECIFIED
     MEMBER: V61B                                                                                    TO: NOT SPECIFIED
  SUBSYSTEM: V61B                            ORDER: PRIMAUTH-PLANNAME-BPID                   INTERVAL FROM: 08/14/99 19:33:47.74
DB2 VERSION: V6                                                                                      TO: 08/14/99 19:56:28.53
                    -- I/O REQUEST ---  ---------------- READ  REQUESTS -------------  --------- WRITE REQUEST ---------
PRIMAUTH                                                ------- WITH I/O -------
 PLANNAME                                                                 PAGES/  W/OUT                 CAST           PAGES/    DB
  BPID                    TOTAL       AET     TOTAL TYPE        AET      %   READ  I/O %    TOTAL TYPE  OUT       AET  WRITE  OPEN
--------------------  -------- ---------  -------- ----- --------- ------ ------ ------  -------- ----- ---- --------- ------  ----
T3270A
 NOPID
  BP0                       27  0.020603        27 SYNCH  0.020603 100.00   1.00   0.00         0 -               N/C   0.00    11
  BP2                       24  0.019078        24 SYNCH  0.019078 100.00   1.00   0.00         0 -               N/C   0.00     0
 **** SUBTOTAL  ****
 NOPID                      51  0.019885        51 SYNCH  0.019885 100.00   1.00   0.00         0 -               N/C   0.00    11
```

Figure 316. I/O Activity Buffer Pool Report (Part 2 of 3)

```
   LOCATION: DSNCAT                          DB2 PERFORMANCE MONITOR (V6)                          PAGE: 2-2
      GROUP: DSNCAT                       I/O ACTIVITY REPORT - BUFFER POOL                REQUESTED FROM: NOT SPECIFIED
     MEMBER: V61B                                                                                    TO: NOT SPECIFIED
  SUBSYSTEM: V61B                            ORDER: PRIMAUTH-PLANNAME-BPID                   INTERVAL FROM: 08/14/99 19:33:47.74
DB2 VERSION: V6                                                                                      TO: 08/14/99 19:56:28.53
I/O ACTIVITY REPORT COMPLETE
```

Figure 316. I/O Activity Buffer Pool Report (Part 3 of 3)

The following is a description of each column printed in the buffer pool report:

DB2 PM Identifiers
The buffer pool report presents data summarized by DB2 PM identifiers. The report can be ordered by up to three DB2 PM identifiers. The identifiers used to sort the report are printed in the leftmost column. They are printed whenever they change. The second and third identifiers are indented to appear under the relevant column subheading. Refer to “Chapter 1. DB2 PM Identifiers” on page 3 for descriptions of DB2 PM identifiers.

Note: Blank or null DB2 PM identifiers are denoted by the word 'BLANK'.

I/O REQUEST

TOTAL
The total number of I/O requests.

AET The average elapsed time per I/O request.

READ REQUESTS

TOTAL
The number of read I/O requests of a specific type.

TYPE The type of read request. The field can contain one of the following values:

SYNCH
Synchronous read request

SEQPF
Sequential prefetch requests (determined at bind time)

DYNPF
Dynamic prefetch request (triggered at run time by sequential detection logic)

LSTPF
List prefetch request

If there are no read requests, a dash (-) is printed

WITH I/O AET
The average elapsed time for a read of a specific type.

WITH I/O %
The percentage of total read requests of a particular type that resulted in an I/O.

WITH I/O PAGES/READ
Pages read per successful read request of a particular type.

W/OUT I/O %
The percentage of total read requests of a particular type that did not result in an I/O. This can occur because all the pages requested by a prefetch read were already in the buffer pool.

WRITE REQUEST

TOTAL
The number of write I/O requests of a specific type. Up to two lines are generated, depending on the write type.

For synchronous writes: count of matching IFCID 8 and 9 record pairs

For asynchronous writes: count of matching IFCID 9 and 10 record pairs

TYPE The type of write request. The field can contain one of the following values:

SYNCH
Synchronous write request

ASYNC
Asynchronous write request

If there are no write requests, a dash (-) is printed.

CASTOUT
The number of synchronous and asynchronous writes due to coupling facility castouts. This field contains one of the following values:

YES The write operations were initiated due to a coupling facility castout.

NO The write operations were initiated as a normal write I/O.

AET The average elapsed time per write of a specific type.

PAGES/WRITE
The number of pages written per write of a specific type.

DB OPEN
The number of database open requests.

SUBTOTAL
When a report is ordered by three identifiers and there is more than one third-level identifier reported under it, a subtotal is printed each time the second-level identifier changes.

TOTAL
When a report is ordered by two or three identifiers and there is more than one second-level identifier reported under it, a total is printed each time the first-level identifier changes.

GRAND TOTAL
A grand total is printed at the end of each location if there is more than one first-level identifier reported.

EDM Pool Report

The EDM pool report provides information about the number of cursor table, package table, or database directory requests, loads from the DASD, their average elapsed times, and the average section lengths of the loaded data items.

Note: The DB2 PM statistics reports and traces include EDM pool statistics. Refer to Part 7. The Statistics Report Set for more information.

The following command produces the EDM pool report shown in Figure 317.

```
⋮
IOACTIVITY
     REPORT
        LEVEL (EDM)
⋮
```

```
   LOCATION: LOCATION1                    DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-1
      GROUP: GROUP1                      I/O ACTIVITY REPORT - EDM POOL                REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER1                                                                            TO: NOT SPECIFIED
  SUBSYSTEM: DB2A                           ORDER: PRIMAUTH-PLANNAME                   INTERVAL FROM: 06/01/99 00:01:00.00
DB2 VERSION: V6                                                                                 TO: 09/03/99 20:45:22.95

                                                                                                                    AVERAGE
PRIMAUTH                                                                                                 ELAPSED    SECTION
 PLANNAME                                                                          CT/PT/DBD     NOT IN     TIME     LENGTH
                       PACKAGE / DBD / PLAN NAME          TYPE                    REFERENCE   EDM POOL   PER LOAD   (BYTES)
------------------------ ---------------------------------- ------------------------- ---------  ---------  --------- -----------

AUTH_10
 PLAN_10               PLAN: PLAN_00                      CURSOR TABLE - HEADER           1        201   0.120000      200.00

                       PLAN: PLAN_01                      CURSOR TABLE - DIRECTORY        1        301   0.130000      300.00

                       PLAN: PLAN_02                      CURSOR TABLE - RDS SECTION      1        401   0.140000      400.00
                                                          PLANNAME TOTAL                  3        903   0.130000      300.00

                       DBD: 10                            DATABASE DESCRIPTOR             1        101   0.110000      100.00

                       PACKAGE: LOCN- LOCATION_DB2A       PACKAGE TABLE - HEADER          1        501   0.150000      500.00
                                COLL- COLLECTION_DB2A
                                PKID- PACKAGE_DB2A
                                CTKN- X'C3E3D56DC4C2F2C1'

                       PACKAGE: LOCN- LOCATION_LOCATION1
                                COLL- COLLECTION_SYD1
                                PKID- PACKAGE_LOCATION1   PACKAGE TABLE - RDS SECTION    1        701   0.170000      700.00
                                CTKN- X'C3E3D56DE2E8C4F1'

                       PACKAGE: LOCN- LOCATION_SYD2
                                COLL- COLLECTION_SYD2     PACKAGE TABLE - DIRECTORY       1        601   0.160000      600.00
                                PKID- PACKAGE_SYD2
                                CTKN- X'C3E3D56DE2E8C4F2'
                                                          PACKAGE TOTAL                   3       1803   0.160000      600.00
```

Figure 317. I/O Activity EDM Pool Report (Part 1 of 5)

```
   LOCATION: LOCATION1                        DB2 PERFORMANCE MONITOR (V6)                           PAGE: 2-1
      GROUP: GROUP1                          I/O ACTIVITY REPORT - EDM POOL               REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER2                                                                                 TO: NOT SPECIFIED
  SUBSYSTEM: DB2B                              ORDER: PRIMAUTH-PLANNAME                    INTERVAL FROM: 06/02/99 00:01:00.00
DB2 VERSION: V6                                                                                      TO: 09/03/99 20:45:22.95

                                                                                                                  AVERAGE
PRIMAUTH                                                                                               ELAPSED    SECTION
 PLANNAME                                                                        CT/PT/DBD    NOT IN      TIME     LENGTH
                          PACKAGE / DBD / PLAN NAME          TYPE                       REFERENCE  EDM POOL  PER LOAD    (BYTES)
------------------------- ---------------------------------- --------------------------- --------- --------- --------- -----------

AUTH_10
 PLAN_10                  PLAN: PLAN_00                      CURSOR TABLE - HEADER              1       201  0.120000      200.00

                          PLAN: PLAN_01                      CURSOR TABLE - DIRECTORY           1       301  0.130000      300.00

                          PLAN: PLAN_02                      CURSOR TABLE - RDS SECTION         1       401  0.140000      400.00
                                                             PLANNAME TOTAL                     3       903  0.130000      300.00

                          DBD: 10                            DATABASE DESCRIPTOR                1       101  0.110000      100.00

                          PACKAGE: LOCN- LOCATION_DB2A       PACKAGE TABLE - HEADER             1       501  0.150000      500.00
                                   COLL- COLLECTION_DB2A
                                   PKID- PACKAGE_DB2A
                                   CTKN- X'C3E3D56DC4C2F2C1'

                          PACKAGE: LOCN- LOCATION_LOCATION1
                                   COLL- COLLECTION_SYD1
                                   PKID- PACKAGE_LOCATION1   PACKAGE TABLE - RDS SECTION        1       701  0.170000      700.00
                                   CTKN- X'C3E3D56DE2E8C4F1'

                          PACKAGE: LOCN- LOCATION_SYD2
                                   COLL- COLLECTION_SYD2     PACKAGE TABLE - DIRECTORY          1       601  0.160000      600.00
                                   PKID- PACKAGE_SYD2
                                   CTKN- X'C3E3D56DE2E8C4F2'
                                                             PACKAGE TOTAL                      3      1803  0.160000      600.00
```

Figure 317. I/O Activity EDM Pool Report (Part 2 of 5)

```
   LOCATION: LOCATION1                        DB2 PERFORMANCE MONITOR (V6)                           PAGE: 3-1
      GROUP: GROUP2                          I/O ACTIVITY REPORT - EDM POOL               REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER3                                                                                 TO: NOT SPECIFIED
  SUBSYSTEM: DB2C                              ORDER: PRIMAUTH-PLANNAME                    INTERVAL FROM: 06/03/99 00:01:00.00
DB2 VERSION: V6                                                                                      TO: 09/03/99 20:45:22.95

                                                                                                                  AVERAGE
PRIMAUTH                                                                                               ELAPSED    SECTION
 PLANNAME                                                                        CT/PT/DBD    NOT IN      TIME     LENGTH
                          PACKAGE / DBD / PLAN NAME          TYPE                       REFERENCE  EDM POOL  PER LOAD    (BYTES)
------------------------- ---------------------------------- --------------------------- --------- --------- --------- -----------

AUTH_10
 PLAN_10                  PLAN: PLAN_00                      CURSOR TABLE - HEADER              1       201  0.120000      200.00

                          PLAN: PLAN_01                      CURSOR TABLE - DIRECTORY           1       301  0.130000      300.00

                          PLAN: PLAN_02                      CURSOR TABLE - RDS SECTION         1       401  0.140000      400.00
                                                             PLANNAME TOTAL                     3       903  0.130000      300.00

                          DBD: 10                            DATABASE DESCRIPTOR                1       101  0.110000      100.00

                          PACKAGE: LOCN- LOCATION_DB2A       PACKAGE TABLE - HEADER             1       501  0.150000      500.00
                                   COLL- COLLECTION_DB2A
                                   PKID- PACKAGE_DB2A
                                   CTKN- X'C3E3D56DC4C2F2C1'

                          PACKAGE: LOCN- LOCATION_LOCATION1
                                   COLL- COLLECTION_SYD1
                                   PKID- PACKAGE_LOCATION1   PACKAGE TABLE - RDS SECTION        1       701  0.170000      700.00
                                   CTKN- X'C3E3D56DE2E8C4F1'

                          PACKAGE: LOCN- LOCATION_SYD2
                                   COLL- COLLECTION_SYD2     PACKAGE TABLE - DIRECTORY          1       601  0.160000      600.00
                                   PKID- PACKAGE_SYD2
                                   CTKN- X'C3E3D56DE2E8C4F2'
                                                             PACKAGE TOTAL                      3      1803  0.160000      600.00
```

Figure 317. I/O Activity EDM Pool Report (Part 3 of 5)

```
   LOCATION: LOCATION1                    DB2 PERFORMANCE MONITOR (V6)                          PAGE: 4-1
      GROUP: GROUP2                     I/O ACTIVITY REPORT - EDM POOL                REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER4                                                                            TO: NOT SPECIFIED
  SUBSYSTEM: DB2D                          ORDER: PRIMAUTH-PLANNAME                    INTERVAL FROM: 06/04/99 00:01:00.00
DB2 VERSION: V6                                                                                 TO: 09/03/99 20:45:22.95

                                                                                                                  AVERAGE
PRIMAUTH                                                                                                ELAPSED   SECTION
 PLANNAME                                                                          CT/PT/DBD    NOT IN     TIME    LENGTH
                        PACKAGE / DBD / PLAN NAME          TYPE                   REFERENCE  EDM POOL  PER LOAD  (BYTES)
------------------------ ---------------------------------- ---------------------- ---------  --------- --------- ----------

AUTH_10
 PLAN_10                PLAN: PLAN_00                      CURSOR TABLE - HEADER          1        201  0.120000     200.00

                        PLAN: PLAN_01                      CURSOR TABLE - DIRECTORY       1        301  0.130000     300.00

                        PLAN: PLAN_02                      CURSOR TABLE - RDS SECTION     1        401  0.140000     400.00
                                                           PLANNAME TOTAL                 3        903  0.130000     300.00

                        DBD: 10                            DATABASE DESCRIPTOR            1        101  0.110000     100.00

                        PACKAGE: LOCN- LOCATION_DB2A       PACKAGE TABLE - HEADER         1        501  0.150000     500.00
                                 COLL- COLLECTION_DB2A
                                 PKID- PACKAGE_DB2A
                                 CTKN- X'C3E3D56DC4C2F2C1'

                        PACKAGE: LOCN- LOCATION_LOCATION1
                                 COLL- COLLECTION_SYD1
                                 PKID- PACKAGE_LOCATION1   PACKAGE TABLE - RDS SECTION    1        701  0.170000     700.00
                                 CTKN- X'C3E3D56DE2E8C4F1'

                        PACKAGE: LOCN- LOCATION_SYD2
                                 COLL- COLLECTION_SYD2     PACKAGE TABLE - DIRECTORY      1        601  0.160000     600.00
                                 PKID- PACKAGE_SYD2
                                 CTKN- X'C3E3D56DE2E8C4F2'
                                                           PACKAGE TOTAL                  3       1803  0.160000     600.00
```

Figure 317. I/O Activity EDM Pool Report (Part 4 of 5)

```
   LOCATION: LOCATION1                    DB2 PERFORMANCE MONITOR (V6)                          PAGE: 4-2
      GROUP: GROUP2                     I/O ACTIVITY REPORT - EDM POOL                REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER4                                                                            TO: NOT SPECIFIED
  SUBSYSTEM: DB2D                          ORDER: PRIMAUTH-PLANNAME                    INTERVAL FROM: 06/04/99 00:01:00.00
DB2 VERSION: V6                                                                                 TO: 09/03/99 20:45:22.95

I/O ACTIVITY REPORT COMPLETE
```

Figure 317. I/O Activity EDM Pool Report (Part 5 of 5)

The following is a description of each column printed in the EDM pool report:

DB2 PM Identifiers

The EDM pool report presents data summarized by DB2 PM identifiers. The report can be ordered by up to three DB2 PM identifiers. The identifiers used to sort the report are printed in the leftmost column. They are printed whenever they change. The second and third identifiers are indented to appear under the relevant column subheading. Refer to “Chapter 1. DB2 PM Identifiers” on page 3 for descriptions of DB2 PM identifiers.

Note: Blank or null DB2 PM identifiers are denoted by the word 'BLANK'.

PACKAGE / DBD / PLAN NAME

The name of the cursor table, package table, or database directory. The package name is printed on four lines, and consists of the following fields:

LOCN Location name

COLL Collection identifier

PKID Package identifier

CTKN Consistency token

Derivation:

- *Package*:
  - Location name: DB2 field QW0029LN or QW0030LN
  - Collection identifier: DB2 field QW0029CI or QW0030CI
  - Package identifier: DB2 field QW0029PI or QW0030PI
  - Consistency token: DB2 field QW0029CT or QW0030CT.
- *Database*: DB2 field QW0029DB
- *Plan*: DB2 field QW0029PL or QW0030PL.

TYPE The type of data being accessed.

CT/PT/DBD REFERENCE
The number of cursor table, package table, or database directory requests performed by the data type specified in the TYPE column.

NOT IN EDM POOL
The number of times cursor table, package table, or database directory was not found in the EDM pool. If it is not found in the EDM pool, the request can be satisfied from the buffer pool or the DASD.

Derivation: DB2 field QW0030DC when the data type is database descriptor, from the field QW0030CC when the data type is cursor table or extension table, and from the field QW0030GC when the data type is package table of matching IFCID 29 and 30 record pairs

ELAPSED TIME PER LOAD
The average elapsed time of loads from the buffer pool or DASD.

AVERAGE SECTION LENGTH (BYTES)
The average section length of a loaded data item identified in the TYPE column.

TYPE TOTAL
When the data contains two or more EDM records with the same data type and the same DB2 PM identifiers, a type total line is printed with the following heading:

- DBD TOTAL for type DBD
- PLANNAME TOTAL for type CT
- PACKAGE TOTAL for type PT

SUBTOTAL
When a report is ordered by three identifiers and there is more than one third-level identifier reported under it, a subtotal is printed each time the second-level identifier changes.

TOTAL
When a report is ordered by two or three identifiers and there is more than one second-level identifier reported under it, a total is printed each time the first-level identifier changes.

GRAND TOTAL
A grand total is printed at the end of each location if there is more than one first-level identifier reported.

Active Log Report

The active log report provides information about the writing and retrieving of log records. It presents the number of reads, writes, and non-I/O waits related to the active log and the average elapsed times spent waiting for these events.

The report is ordered by the data set identifier.

The following command produces the active log report shown in Figure 318.

```
⋮
IOACTIVITY
     REPORT
        LEVEL (ACTLOG)
⋮
```

```
   LOCATION: DSNCAT                          DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-1
      GROUP: DSNCAT                           I/O ACTIVITY REPORT - ACTLOG                REQUESTED FROM: NOT SPECIFIED
     MEMBER: SSDQ                                                                                    TO: NOT SPECIFIED
  SUBSYSTEM: SSDQ                                                                          INTERVAL FROM: 08/14/99 19:32:54.82
DB2 VERSION: V6                                                                                    TO: 08/14/99 19:56:04.31

DATASET ID    I/O REQ   READ REQ  --WRITE REQUESTS--  ------------  OTHER WAITS  ------------
                TOTAL      TOTAL      TOTAL CI/WRITE      ALLOC   DEALLOC      OPEN      CLOSE
                  AET        AET        AET                 AET       AET       AET        AET
----------  ---------  ---------  ---------  --------  --------- --------- --------- ---------
ACTLG101           11          0         11     1.00          0         0         0          0
              0.014589        N/C   0.014589                N/C       N/C       N/C        N/C

ACTLG201           11          0         11     1.00          0         0         0          0
              0.018092        N/C   0.018092                N/C       N/C       N/C        N/C

TOTAL              22          0         22     1.00          0         0         0          0
              0.016340        N/C   0.016340                N/C       N/C       N/C        N/C

I/O ACTIVITY REPORT COMPLETE
```

Figure 318. I/O Activity Active Log Report

The following is a description of each column printed in the active log report:

DATASET ID
The 8-byte ID that identifies the active log data set where the reported activity occurs. It has the value ACTLG*cxx*, where *c* is the copy number and *xx* is the sequence number of the active log data set.

Derivation: derived from DB2 fields QW0034DI, QW0036DI, and QW0038DI.

I/O REQ

TOTAL
The total number of I/O requests.

AET The average elapsed time of all waits.

READ REQ

TOTAL
The total number of read requests.

AET The average elapsed time of a read request.

WRITE REQUESTS

TOTAL
The total number of write requests.

AET The average elapsed time of a write request.

CI/WRITE
The number of control intervals per write.

OTHER WAITS

ALLOC
The number of waits for resource allocation.

AET The average elapsed time of a wait for resource allocation.

DEALLOC
The number of waits for resource deallocation.

AET The average elapsed time of waits for resource deallocation.

OPEN The number of waits to open data sets.

AET The average elapsed time of a wait to open data sets.

CLOSE
The number of waits to close data sets.

AET The average elapsed time of a wait to close data sets.

TOTAL
The total of the report columns and the average elapsed times of the events are printed for each location, if more than one data set ID is printed.

Archive Log/BSDS Report

The archive log/BSDS report provides information about the writing of log records and the retrieval of log data. It also contains information about the bootstrap data set that controls the movement of full active log data sets to the archive log.

The report presents the following activity types:

- Archive waits
- Archive read requests
- Archive offload requests
- BSDS read requests
- BSDS write requests

The following command produces the archive log/BSDS report in Figure 319.

```
.
.
.
IOACTIVITY
     REPORT
        LEVEL (ARCLOG)
.
.
.
```

```
   LOCATION: LOCATION1                    DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-1
      GROUP: GROUP2                       I/O ACTIVITY REPORT - ARCLOG                REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER4                                                                            TO: NOT SPECIFIED
  SUBSYSTEM: DB2D                                                                    INTERVAL FROM: 06/04/99 00:01:00.00
DB2 VERSION: V6                                                                                 TO: 09/03/99 20:45:22.95

ARCHIVE LOG ACTIVITY ------------------------------------------------------------------------------------------------------------------------

DATA SET   WAIT TYPE         TOTAL       AET   OTHER WAITS                  TOTAL       AET
--------   -------------- -------- ---------   -------------------------- -------- ---------
00000014   READ FROM DASD       0       N/C   ALLOCATE                          0       N/C
           READ FROM TAPE       0       N/C   DEALLOCATE                        0       N/C
           OFFLOAD              0       N/C   OPEN                              0       N/C
           OTHER                2  0.410000   CLOSE                             0       N/C
                                              HSM RECALL                        0       N/C
           BLOCKS/OFFLOAD     N/C             CATALOG LOCATE                    0       N/C
                                              MULTI DATA SET TAPE VOLUME        0       N/C
                                              TAPE VOLUME POSITIONING           0       N/C
                                              WTOR ISSUED                       0       N/C
                                              DATA SET UNAVAILABLE              0       N/C
                                              PHYSICAL UNIT UNAVAILABLE         2  0.410000
                                              READER SERVICE UNAVAILABLE        0       N/C

DATA SET   WAIT TYPE         TOTAL       AET   OTHER WAITS                  TOTAL       AET
--------   -------------- -------- ---------   -------------------------- -------- ---------
00000015   READ FROM DASD       0       N/C   ALLOCATE                          0       N/C
           READ FROM TAPE       0       N/C   DEALLOCATE                        0       N/C
           OFFLOAD              0       N/C   OPEN                              0       N/C
           OTHER                2  0.420000   CLOSE                             0       N/C
                                              HSM RECALL                        0       N/C
           BLOCKS/OFFLOAD     N/C             CATALOG LOCATE                    0       N/C
                                              MULTI DATA SET TAPE VOLUME        0       N/C
                                              TAPE VOLUME POSITIONING           0       N/C
                                              WTOR ISSUED                       0       N/C
                                              DATA SET UNAVAILABLE              0       N/C
                                              PHYSICAL UNIT UNAVAILABLE         0       N/C
                                              READER SERVICE UNAVAILABLE        2  0.420000

TOTAL      WAIT TYPE         TOTAL       AET   OTHER WAITS                  TOTAL       AET
--------   -------------- -------- ---------   -------------------------- -------- ---------
           READ FROM DASD       2  0.230000   ALLOCATE                          2  0.310000
           READ FROM TAPE       2  0.240000   DEALLOCATE                        2  0.320000
           OFFLOAD              2  0.250000   OPEN                              2  0.330000
           OTHER               24  0.365000   CLOSE                             2  0.340000
                                              HSM RECALL                        2  0.350000
           BLOCKS/OFFLOAD   10.00             CATALOG LOCATE                    2  0.360000
                                              MULTI DATA SET TAPE VOLUME        2  0.370000
                                              TAPE VOLUME POSITIONING           2  0.380000
                                              WTOR ISSUED                       2  0.390000
                                              DATA SET UNAVAILABLE              2  0.400000
                                              PHYSICAL UNIT UNAVAILABLE         2  0.410000
                                              READER SERVICE UNAVAILABLE        2  0.420000
```

Figure 319. I/O Activity Archive Log Report (Part 1 of 2)

```
   LOCATION: LOCATION1                     DB2 PERFORMANCE MONITOR (V6)                      PAGE: 1-2
      GROUP: GROUP2                        I/O ACTIVITY REPORT - ARCLOG            REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER4                                                                        TO: NOT SPECIFIED
  SUBSYSTEM: DB2D                                                                INTERVAL FROM: 06/04/99 00:01:00.00
DB2 VERSION: V6                                                                             TO: 09/03/99 20:45:22.95


BOOTSTRAP DATA SET ACTIVITY ----------------

DATA SET   WAIT TYPE         TOTAL       AET
--------   -------------- -------- ---------
BSDS0001   READ                 2  0.180000
           WRITE                0       N/C
           READ AND WRITE       2  0.180000

DATA SET   WAIT TYPE         TOTAL       AET
--------   -------------- -------- ---------
BSDS0002   READ                 2  0.190000
           WRITE                0       N/C
           READ AND WRITE       2  0.190000

DATA SET   WAIT TYPE         TOTAL       AET
--------   -------------- -------- ---------
BSDS0003   READ                 0       N/C
           WRITE                2  0.260000
           READ AND WRITE       2  0.260000

TOTAL      WAIT TYPE         TOTAL       AET
--------   -------------- -------- ---------
           READ                 4  0.185000
           WRITE                2  0.260000
           READ AND WRITE       6  0.210000
                                                                            TO: 09/03/99 20:45:22.95

I/O ACTIVITY REPORT COMPLETE
```

Figure 319. I/O Activity Archive Log Report (Part 2 of 2)

Figure 319 is split into two main sections: the archive log activity data and the BSDS activity data. If no archive log data exists, then no archive log section is printed, and if no BSDS data exists, then no BSDS section is printed.

Archive Log Activity

The following is a description of each column printed in the archive log activity section of the archive log/BSDS report.

DATA SET

The 8-byte ID that identifies the archive log data set where the reported activity occurs. It has the value *cxxxxxxx*, where *c* is the copy number and *xxxxxxx* is the sequence number. The sequence number is the same as the last seven characters of the data set name.

Derivation: derived from DB2 fields QW0036DI, QW0040DI, and QW0114DI.

WAIT TYPE

READ FROM DASD

The total number of waits and the average elapsed time of of a wait for archive log reads from the DASD.

READ FROM TAPE

The total number of waits and the average elapsed time of a wait of archive log reads from the tape.

OFFLOAD

The total number of waits for archive log write requests and the average elapsed time of waits per archive log write.

OTHER
The total number of non-I/O waits and the average elapsed time of non-I/O waits on the archive log data set.

OTHER WAITS
The following fields identify the other waits section.

ALLOCATE
The total number of waits and the average elapsed time of a wait for resource allocation.

DEALLOCATE
The total number of waits and the average elapsed time of a wait for resource deallocation.

OPEN The total number of waits and the average elapsed time of a wait to open a data set.

CLOSE
The total number of waits and the average elapsed time of a wait to close a data set.

HSM RECALL
The total number of waits and the average elapsed time of a wait for HSM to recall data sets.

CATALOG LOCATE
The total number of waits and the average elapsed time of a wait to locate data sets through the catalog.

MULTI DATA SET TAPE VOLUME
The total number of waits and the average elapsed time per wait for multi-data set tape volume.

TAPE VOLUME POSITIONING
The total number of waits and the average elapsed time per wait for tape volume positioning.

WTOR ISSUED
The total number of waits and the average elapsed time of waits due to a write-to-operator message being issued.

DATA SET UNAVAILABLE
The total number of waits and the average elapsed time of a wait due to a data set being unavailable.

PHYSICAL UNIT UNAVAILABLE
The total number of waits and the average elapsed time of a wait due to an unavailable physical unit.

READER SERVICE UNAVAILABLE
The total number of waits and the average elapsed time per wait for an unavailable reader service task.

TOTAL
The total of the report columns and the average elapsed times of the events are printed for each location, if more than one data set ID is printed.

Bootstrap Data Set Activity

The following field descriptions are for the bootstrap data set activity section of the archive log/BSDS report.

DATA SET
The 8-byte ID that identifies the BSDS data set where the reported activity occurs. It can have either of the following values:

- BSDS0001
- BSDS0002

Derivation: derived from DB2 fields QW0034DI and QW0119DI.

WAIT TYPE

READ The total number of BSDS reads. and the average elapsed time per BSDS read.

WRITE
The total number of BSDS writes and the average elapsed time per BSDS write.

READ AND WRITE
The total number of BSDS reads and writes and the average elapsed time per BSDS read and write.

TOTAL
The totals of the report columns and the average elapsed times of the events are printed for each location, if more than one data set ID is printed.

Cross-Invalidation Report

Cross-invalidation (XI) renders a higher percentage of the buffer pool data invalid. It has the effect of reducing the buffer pool size and thus the buffer pool hit ratio. Buffer pool pages must be continually refreshed when high cross-invalidation levels are reached. This can be a significant overhead in data sharing if workloads between DB2 systems are not properly balanced.

The cross-invalidation report presents buffer refresh events due to cross invalidation summarized by selected DB2 PM identifiers. If two DB2 systems compete for read/write interest on a page set or partition, a certain amount of buffer cross-invalidation activity occurs to maintain DB2 buffer pool coherency between the two systems.

The following command produces the cross-invalidation report in Figure 320.

```
⋮
IOACTIVITY
     REPORT
        LEVEL (XI)
⋮
```

```
   LOCATION: DSNCAT                        DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-1
      GROUP: DSNCAT                  I/O ACTIVITY REPORT - CROSS INVALIDATION          REQUESTED FROM: NOT SPECIFIED
     MEMBER: SSDQ                                                                              TO: NOT SPECIFIED
  SUBSYSTEM: SSDQ                            ORDER: PRIMAUTH-PLANNAME                   INTERVAL FROM: 08/14/99 19:32:54.82
DB2 VERSION: V6                                                                                 TO: 08/14/99 19:56:04.31

PRIMAUTH
 PLANNAME                                                                                -SYNCHRONOUS READS-   -SEQUENTIAL PREFETCHES-
                     PAGE                                                                  GBPOOL       DASD      GBPOOL       DASD
-------------------  ------------------------------------------------------------------   --------   --------   --------   --------

T3270A
 NOPID               DB=TPCCE1   OB=TDIST000 PIECE#=0  PAGE#=X'000002' BPID=BP0             3          0          0          0
                     DB=TPCCE1   OB=TNORD000 PIECE#=0  PAGE#=X'000001' BPID=BP0             1          0          0          0
                     DB=TPCCE1   OB=TNORD000 PIECE#=0  PAGE#=X'000014' BPID=BP0             3          0          0          0
                     DB=TPCCE1   OB=TODLN000 PIECE#=0  PAGE#=X'000001' BPID=BP0             2          0          0          0
                     DB=TPCCE1   OB=TODLN000 PIECE#=0  PAGE#=X'000594' BPID=BP0             3          0          0          0
                     DB=TPCCE1   OB=TORDR000 PIECE#=0  PAGE#=X'000001' BPID=BP0             1          0          0          0
                     DB=TPCCE1   OB=TORDR000 PIECE#=0  PAGE#=X'000029' BPID=BP0             3          0          0          0
                     DB=TPCCE1   OB=TSTCK000 PIECE#=0  PAGE#=X'000179' BPID=BP0             3          0          0          0
                     DB=TPCCE1   OB=TSTCK000 PIECE#=0  PAGE#=X'003A55' BPID=BP0             3          0          0          0
                     DB=TPCCE1   OB=XNORD000 PIECE#=0  PAGE#=X'000013' BPID=BP2             3          0          0          0
                     DB=TPCCE1   OB=XODLN000 PIECE#=0  PAGE#=X'000035' BPID=BP2             3          0          0          0
                     DB=TPCCE1   OB=XORDR000 PIECE#=0  PAGE#=X'00001A' BPID=BP2             3          0          0          0

                     *SUM OF NOPID             *                                          31          0          0          0


I/O ACTIVITY REPORT COMPLETE
```

Figure 320. I/O Activity Cross-Invalidation Report

The following is a description of each column printed in the cross-invalidation report:

DB2 PM Identifiers
The XI report presents data summarized by DB2 PM identifiers. The report can be ordered by up to three DB2 PM identifiers. The identifiers used to sort the report are printed in the leftmost column. They are printed whenever they change. The second and third identifiers are indented to appear under the relevant column subheading. Refer to “Chapter 1. DB2 PM Identifiers” on page 3 for descriptions of DB2 PM identifiers.

Note: Blank or null DB2 PM identifiers are denoted by the word 'BLANK'.

PAGE The name of the page involved in the cross invalidation. The name consists of the following parts:

DB Database name

OB Page set name

PIECE#
Page set piece number

PAGE#
Page number

BPID Buffer pool ID

If DATABASE or PAGESET are selected in the ORDER option, DB or OB are not shown as part of the page name.

SYNCHRONOUS READS
The number of times the page was refreshed via a synchronous read for a particular combination of DB2 PM identifiers and cross-invalidated page:

GBPOOL
From the group buffer pool.

DASD From the DASD.

SEQUENTIAL PREFETCHES
The number of times the page was refreshed via a sequential prefetch for a particular combination of DB2 PM identifiers and cross-invalidated page.

GBPOOL
From the group buffer pool.

DASD From the DASD.

SUM OF
The totals for all pages within a combination of DB2 PM identifiers if two or more entries are printed in the PAGE column.

Part 12. The Locking Report Set

This part of the *DB2 PM Report Reference* describes the Locking report set. It is divided into the following chapters:

Locking

- “Chapter 57. Introduction to the Locking Report Set” on page 713 provides an overview of the Locking report set.
- “Chapter 58. General Locking Information” on page 715 describes the input to Locking reports, member-scope, and group-scope reporting.
- “Chapter 59. Lock Suspension Report” on page 729 describes the fields shown in the Lock suspension report.
- “Chapter 60. Lockout Report” on page 735 describes the fields shown in the lockout report.
- “Chapter 61. Locking Trace” on page 739 describes the fields specific to deadlock trace.
- “Timeout Trace” on page 744 describes the fields specific to timeout trace.
- “Lockout Trace” on page 747 gives a short overview of the lockout trace.
- “Lock Suspension Trace” on page 748 describes the fields specific to lock suspension trace.
- “Lock Detail Trace” on page 756 describes the fields specific to lock detail trace.

Chapter 57. Introduction to the Locking Report Set

The DB2 PM Locking report set provides various levels of detail about concurrency control within DB2 in the form of reports, traces, and a file data set. It shows information on:

- DB2 transaction locks, which are locks on table spaces, tables, pages, or rows and are used primarily to control access by SQL statements.
- DB2 drain locks and DB2 claims, which control access by DB2 utilities and commands.
- DB2 lock avoidance techniques and related locking data like page latch waits.
- Global locks in a data sharing environment.

The Locking reports summarize all user activity related to lock suspensions and lockouts (DB2 PM uses the term *lockout* as an aggregate name for both the timeout and deadlock), and then presents this information based on DB2 PM identifiers.

The Locking traces provide information for every occurrence of the various types of lock events.

The Locking file data set is created by the FILE subcommand and contains records for each lock, claim, or drain and for each successful lock avoidance occurrence.

You use Locking reports and traces to:

- Analyze, in detail, locking activity in DB2 systems.
- Identify potential deadlock situations by analyzing detail lock requests.
- Determine the average time (by DB2 resource and workload category) attributable to lock suspension delays.
- Measure the amount of timeouts and deadlocks occurring within the system.
- Determine the users involved in a timeout or deadlock and the resources held.
- Analyze deadlock and timeout situations in the system and determine the participants.

The following Locking reports are available:

- The *lock suspension report* is a summary of lock suspensions across the reporting interval for a unique combination of selected DB2 PM identifiers. In addition to the number of occurrences and elapsed times, information is given on the cause of the suspension and the reason for resuming processing.
- The *lockout report* is a summary of the users and resources involved in timeout and deadlock situations. Both the user holding the resource and the users waiting for the resource are identified, along with the number of occurrences and other statistics.

The following Locking traces are available:

- The *deadlock trace* contains one entry for every occurrence of a deadlock.
- The *timeout trace* contains one entry for every occurrence of a timeout.
- The *lockout trace* lists each timeout and deadlock occurrence individually.
- The *lock suspension trace* lists each lock suspension occurrence individually.
- The *lock detail trace* contains complete information of the locking activity in a DB2 system, or a group of DB2 systems, in a data sharing environment. It lists all locking-related events including all IMS/VS resource lock manager (IRLM)

requests, IRLM suspensions, timeouts, deadlocks, claim and drain activities, lock-avoidance occurrences, and inter-DB2 requests in a data sharing environment.

DB2 locking activity is controlled by IRLM. It communicates with IRLM by means of IRLM requests, such as LOCK, CHANGE, QUERY, and QUIT.

There are a number of cases when an IRLM request cannot be satisfied and the agent requesting that service is suspended. The most common reason for suspension is that the requested service (for example, lock request) addresses an object that is already locked and has an incompatible lock state. The suspension of an agent can be resolved in one of the following ways:

- When the cause for the suspension disappears, for example the locked resource is released
- When the agent waits for the resource for longer than a preset interval, in which case a timeout occurs and control is passed back to DB2
- When a deadlock is detected as the cause for the suspension and one of the deadlocked application processes is rolled back by the DB2 subsystem

The accounting and statistics reports provide an overview of locking activity. Statistics reports contain the number of lock suspensions within the system, or the number of deadlocks within a given time interval. Accounting reports contain the number of lock suspensions, timeouts, and deadlocks on a thread basis. Accounting class 3 times show the amount of time the thread waited due to lock and latch suspensions or claims and drain suspensions. When more detailed information is needed, locking reports and traces are useful.

Serviceability values are printed in hexadecimal notation on a report or trace.

Chapter 58. General Locking Information

Tuning DB2

This part of the *DB2 PM Report Reference* identifies and describes the specific DB2 data which is reported for the purpose of tuning DB2. For general tuning advice on DB2, refer to the DB2 Administration Guide 'Performance, Monitoring, and Tuning' chapters for the specific release of DB2.

This chapter contains information common to all Locking traces and reports:

- Input to the Locking report set
- A description of member-scope and group-scope traces and reports
- A description of the report and trace layout

Input to Locking

The DB2 IFCIDs used as input for the Locking reports, traces, and file data sets are shown in Table 84. You must know the input IFCIDs if you do not use the collect report data facility supplied with the Online Monitor.

Table 84. Input to Locking

Locking Reports, Traces, and File Data Sets	IFCIDs	DB2 Trace Type and Class
Lock suspension report or trace	44, 45, 105, 107, 213, 214, 215, 216, 226, 227	Performance 4, 6, and 17
Lockout report or trace	105, 107, 172, 196	Performance 6 or Statistics 3
Deadlock trace	105, 107, 172	Performance 6 or Statistics 3
Timeout trace	105, 107, 196	Performance 6 or Statistics 3
Lock detail trace	20, 21, 44, 45, 105, 107, 172, 196, 211, 212, 213, 214, 215, 216, 218, 223, 226, 227, 251, 257, 259	Performance 4, 6, 7, 17, 20, and 21
File data set	21, 211, 212, 223	Performance 7 and 17

To get the IFCIDs 105 and 107 for the Lockout report or trace, the deadlock trace, or the timeout trace, you must specify the START TRACE command.

The lock suspension report only contains matched IFCID pairs, namely 44/45, 213/214, 215/216, and 226/227.

Member-Scope and Group-Scope Traces and Reports

The information in this section is only applicable to DB2 data sharing environments.

Member-Scope Traces and Reports

Member-scope traces present events in chronological sequence within the DB2 subsystem (member) where the events occurred, whereas reports show these events aggregated by the DB2 PM identifiers you have specified. DB2 PM can

present data from several DB2 members within a data sharing group. The data in member-scope reports is presented by a combination of location, group, subsystem, and member. Whenever one of the values changes, a new page is started and the page number is initialized.

An example of a member-scope locking trace is shown in Figure 321.

```
  LOCATION: SYS1DSN3                          DB2 PERFORMANCE MONITOR (V6)                              PAGE: 1-1
      GROUP: DSN3                                LOCKING TRACE - DEADLOCK                     REQUESTED FROM: 02/02/99 01:03:07.00
     MEMBER: S511                                                                                        TO: NOT SPECIFIED
  SUBSYSTEM: S511                                                                               ACTUAL FROM: 02/20/99 09:50:14.98
 DB2 VERSION: V6                                      SCOPE: MEMBER                               PAGE DATE: 02/20/99
0PRIMAUTH CORRNAME CONNTYPE
 ORIGAUTH CORRNMBR INSTANCE     EVENT TIMESTAMP          --- L O C K   R E S O U R C E ---
 PLANNAME CONNECT               RELATED TIMESTAMP EVENT    TYPE      NAME                     EVENT SPECIFIC DATA
 ------------------------------ ----------------- -------- --------- ----------------------- ----------------------------------------
 BNK      BNK      DRDA         09:50:14.98847800 DEADLOCK                                    COUNTER =    2      WAITERS =    2
 BNK      'BLANK'  B00AA3F5AF77 N/P                                                           TSTAMP  =02/20/99 09:50:14.97
 DSNESPRR SERVER                                           DATAPAGE  DB  =269                 HASH    =X'00043402'
 REQLOC  :9.12.10.230                                                OB  =2                   ---------- BLOCKER is HOLDER -----------
 ENDUSER :BNKUSER                                                    PAGE=X'000002'           LUW=N/P
 WSNAME  :BNKWS                                                                               MEMBER  =S511       CONNECT =SERVER
 TRANSAC :BENKS TRANSACTION                                                                   PLANNAME=DISTSERV   CORRNAME=BNK
                                                                                              DURATION=MANUAL+1   CORRNMBR='BLANK'
                                                                                              STATE   =S          PRIMAUTH=BNK
                                                                                              ENDUSER =BNKUSER
                                                                                              WSNAME  =BNKWS
                                                                                              TRANSAC =BENKS TRANSACTION
                                                                                              ---------------- WAITER ----------------
                                                                                              LUW=N/P
                                                                                              MEMBER  =S511       CONNECT =TSO
                                                                                              PLANNAME=DSNESPRR   CORRNAME=NKA1
                                                                                              DURATION=COMMIT     CORRNMBR='BLANK'
                                                                                              REQUEST =CHANGE     PRIMAUTH=NKA1
                                                                                              STATE   =X          WORTH   =   18

                                                           DATAPAGE  DB  =269                 HASH    =X'00053406'
                                                                     OB  =2                   ---------- BLOCKER is HOLDER -----------
                                                                     PAGE=X'000006'           LUW=N/P
                                                                                              MEMBER  =S511       CONNECT =TSO
                                                                                              PLANNAME=DSNESPRR   CORRNAME=NKA1
                                                                                              DURATION=MANUAL+1   CORRNMBR='BLANK'
                                                                                              STATE   =S          PRIMAUTH=NKA1
                                                                                              ---------------- WAITER ----------------
                                                                                              LUW=N/P
                                                                                              MEMBER  =S511       CONNECT =SERVER
                                                                                              PLANNAME=DISTSERV   CORRNAME=BNK
                                                                                              DURATION=COMMIT     CORRNMBR='BLANK'
                                                                                              REQUEST =CHANGE     PRIMAUTH=BNK
                                                                                              ENDUSER =BNKUSER
                                                                                              WSNAME  =BNKWS
                                                                                              TRANSAC =BENKS TRANSACTION
```

Figure 321. Member-Scope Locking Trace

Group-Scope Traces and Reports

In group-scope traces, events are reported in a chronological sequence within the DB2 data sharing group, regardless of which member of the group actually generated the events. The member name is printed in the body of the trace for each reported event, so that it is easy to see the member where the event occurred. Similarly, group-scope reports show events that are aggregated by the DB2 PM identifiers you specified. Data in group-scope reports is presented by member.

An example of a group-scope locking trace is shown in Figure 322 on page 717.

```
   LOCATION: USIBMSYSTDB2                    DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-1
      GROUP: USIBMSYSTDB2                     LOCKING REPORT - SUSPENSION                REQUESTED FROM: NOT SPECIFIED
                                                                                                      TO: NOT SPECIFIED
                                             ORDER: DATABASE-PAGESET                     INTERVAL FROM: 03/14/99 19:32:58.89
DB2 VERSION: V6                                   SCOPE: GROUP                                        TO: 03/14/99 19:56:04.31

DATABASE                                                                  --SUSPEND REASONS-- ---------- R E S U M E   R E A S O N S ----------
 PAGESET          --- L O C K   R E S O U R C E --- TOTAL    LOCAL  GLOB.  S.NFY ---- NORMAL ----  TIMEOUT/CANCEL  --- DEADLOCK ---
  MEMBER          TYPE      NAME                    SUSPENDS LATCH  IRMLQ  OTHER NMBR         AET NMBR         AET NMBR         AET
------------------ --------- ----------------------- -------- -----  -----  ----- ---- ---------- ---- ---------- ---- ----------
'BLANK'
 'BLANK'
  SSDQ             ALTERBUF  BPID=BP0                      5     0      0      0    5    0.001645    0         N/C    0         N/C
                                                                0      0      5
                   SCA ACCS  N/A                           2     0      0      0    2    0.001674    0         N/C    0         N/C
                                                                0      0      2

                   ** SUM OF SSDQ            **            7     0      0      0    7    0.001653    0         N/C    0         N/C
                                                                0      0      7

  V41B             GBP CAST  BPID=GBP2                     1     0      0      0    1    0.001395    0         N/C    0         N/C
                                                                0      0      1
                   GBP S/S   BPID=GBP0                     3     0      0      0    3    0.002451    0         N/C    0         N/C
                                                                0      0      3

                   ** SUM OF V41B            **            4     0      0      0    4    0.002187    0         N/C    0         N/C
                                                                0      0      4

 *GROUP TOTAL*
 'BLANK'                                                   11     0      0      0   11    0.001847    0         N/C    0         N/C
                                                                0      0     11

TPCCE1
 TCUST000
  SSDQ             OPENLOCK  N/P                           1     0      0      0    1    0.001677    0         N/C    0         N/C
                                                                0      0      1

AUSDB01
 SYDPS01
  SSDQ             TREEPLCK  N/P                           1     0      0      0    1    0.001445    0         N/C    0         N/C
                                                                0      0      1

  V41B             P/P PLCK  PAGE=X'800000'                2     0      0      0    2    8.240814    0         N/C    0         N/C
                             BPID=BP2                           0      0      2

 *GROUP TOTAL*
 SYDPS01                                                   3     0      0      0    3    5.494357    0         N/C    0         N/C
                                                                0      0      3

 SYDPS02
  V41B             P/P CAST  BPID=BP2                      1     0      0      0    1   16.776381    0         N/C    0         N/C
                                                                0      0      1

*TOTAL*
AUSDB01                                                    4     0      0      0    4    8.314863    0         N/C    0         N/C
                                                                0      0      4

*GRAND TOTAL*                                             16     0      0      0   16    2.080090    0         N/C    0         N/C
                                                                0      0     16
```

Figure 322. Group-Scope Locking Trace

DB2 PM Identifiers Used in Locking

In addition to the DB2 PM identifiers described in “Chapter 1. DB2 PM Identifiers” on page 3 Locking reports and traces use two other identifiers to show the type of resource and event type:

The DB2 PM identifiers used in Locking describe the following:

RESOURCETYPE—Resource type
The type of lock resource. You can specify one of the following values:

DATAPAGE
Data page locking

DATABASE
Locking of the DBD

PAGESET
Page set locking

DATASET
Locking of partitioned data sets

SKCT Skeleton cursor table locking

INDEX
Index page locking

TABLE
Table locking

SKPT Skeleton package table locking

COLLECT
Collection ID locking

DRAIN
All types of drain locking

ROW Data row lock

OTHER
All unlisted resource types

TYPE—Event type
Specifies which event types are to be included in, or excluded from, the lock detail trace. The valid values for this field are shown in Table 85.

Table 85. Event Types

Type	Events
IRLMREQ	Lock, unlock, change, query, and notify requests
CLAIMREQ	Claim acquire, claim change, and claim release
DRAINREQ	Drain request and drain release
PLOCKREQ	Page set or partition as well as page P-lock requests
IRLMSUSP	The beginning of lock, unlock, change, query, and notify suspensions
DRAINSUSP	The beginning of drain suspensions
LATCHSUSP	The beginning of page latch suspensions
IRLMRES	The end (resumption) of lock, unlock, change, query, and notify suspensions
DRAINRES	The end (resumption) of drain suspensions
LATCHRES	The end (resumption) of page latch suspensions
TIMEOUT	Timeouts
DEADLOCK	Deadlocks
LOCKSUMMARY	Lock summary events
LOCKAVOID	Successful lock avoidance events

The default is *all* event types.

Note: TYPE can also be used with the REDUCE and FILE subcommands of locking, with the following limitations:

- Valid types for REDUCE are: IRLMRES, DRAINRES, and LATCHRES.
- Valid types for FILE are: IRLMREQ, CLAIMREQ, DRAINREQ, and LOCKAVOID.

If values other than those listed are used with INCLUDE, REDUCE, or FILE, an empty report or file is produced.

If values not relevant to REDUCE or FILE are used with EXCLUDE, the event type is not filtered.

The LOCKING Command

You use the LOCKING command to reduce data, generate reports, traces, and file data sets on locking-related DB2 data. The command can be used once in a job step. However, it can be used in the same job step with commands of the other report sets. The following subcommands are associated with the LOCKING command:

- REDUCE
- REPORT
- TRACE
- FILE

You can choose between two methods for entering DB2 PM commands:

- **The Interactive Report Facility (IRF)**

  The IRF provides a series of interactive menus and panels you can use to specify the commands and options required to generate reports and traces, as well as review and edit your selections. You can either generate the command stream and submit the job in background, or execute your job in foreground. Refer to the *DB2 PM Batch User's Guide* for more information on the IRF.
- **The DB2 PM Command Language**

  You can use an editor to enter the DB2 PM commands in the proper syntax, specifying the appropriate subcommands, options, and keywords, and the JCL required to execute the job.

This chapter is intended for the user who wants to build a command stream using the DB2 PM command language.

Building a Command Stream

Figure 323 is a sample of the JCL required to produce locking reports and traces. A description of the DD statements follows the sample.

```
//DB2PM   JOB (INSTALLATION DEPENDENCIES)
//*
//* ================================================================*
//*         D B 2  P M   R E P O R T   G E N E R A T I O N          *
//* ================================================================*
//*
//        EXEC PGM=DB2PM
//* FOLLOWING ARE DB2PM SYSTEM DDNAMES
//STEPLIB  DD  DSN=DGO.V6R1M0.SDGOLOAD,DISP=SHR
//DPMPARMS DD  DSN=DGO.V6R1M0.DPMPARMS,DISP=SHR
//INPUTDD  DD  DSN=DGO.V6R1M0.DPMIN61,DISP=SHR
//DPMLOG   DD  SYSOUT=*
//SYSOUT   DD  SYSOUT=*
//JOBSUMDD DD  SYSOUT=*
//SYSPRMDD DD  SYSOUT=*
//DPMOUTDD DD  DSN=DGO.V6R1M0.DPMOUT.DATA,DISP=OLD
//DISTDD   DD  DSN=DGO.V6R1M0.DIST.DATA,DISP=OLD
//SYSUDUMP DD  DUMMY
//* FOLLOWING ARE DB2PM REPORT SET DDNAMES
//LOWORK   DD  DSN=DGO.V6R1M0.LO.WORKDD,DISP=OLD
//LORPTDD  DD  SYSOUT=*
//LOTRCDD1 DD  SYSOUT=*
//LOTRCDD2 DD  SYSOUT=*
//LOTRCDD3 DD  SYSOUT=*
//LOTRCDD4 DD  SYSOUT=*
//LOTRCDD5 DD  SYSOUT=*
//LOFILDD1 DD  DSN=DGO.V6R1M0.LOFIL.DATA,DISP=OLD
//* FOLLOWING IS THE DB2PM COMMAND STREAM
//SYSIN   DD  *

  ⋮
  LOCKING
       TRACE
          LEVEL (DETAIL)
       TRACE
          LEVEL (DEADLOCK)
       TRACE
          LEVEL (SUSPENSION)
       TRACE
          LEVEL (LOCKOUT)
       TRACE
          LEVEL (TIMEOUT)
       REPORT
          LEVEL (SUSPENSION LOCKOUT)
       FILE
  ⋮
  EXEC
```

Figure 323. Sample JCL for Requesting Locking Functions

Most of the DD statements with a SYSOUT destination do not have to be specified because they are dynamically allocated by DB2 PM. See “DD Statements” on page 10 for descriptions and more information.

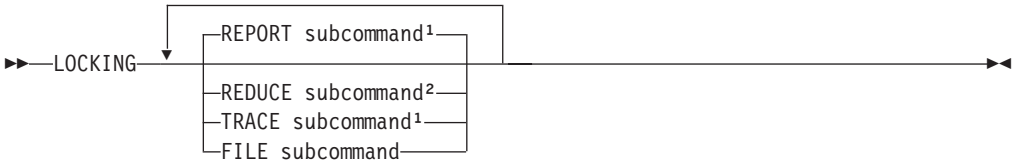
Notes:

1. There is an advantage in omitting DPMOUTDD from your JCL. For more information, see the description of DPMOUTDD on page “DPMOUTDD” on page 13.
2. If you do not include the EXEC statement in you JCL, no report is produced. The sysntax of your JCL is checked and written to the DPMLOG dataset together with any information, warning or error messages raised.

Using the LOCKING Command

You use the LOCKING command to generate Locking reports, traces, and data sets. The subcommands are described in detail, together with their various options, in the following sections.

The command can be used once in a job step.



Notes:

1. You can specify both REPORT and TRACE up to 5 times.
2. You cannot specify REDUCE without specifying at least one REPORT.

REDUCE and FILE can be specified only once.

Figure 324. Syntax of the LOCKING Command

REDUCE Subcommand

You use the REDUCE subcommand to limit the volume of data that is input to subsequent subcommands. REDUCE consolidates records with certain common characteristics into one record. REDUCE can be used once in a LOCKING command.

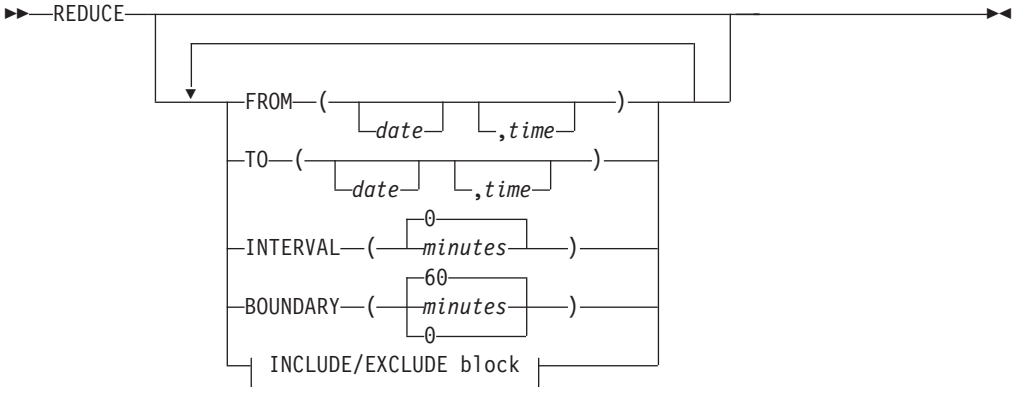


Figure 325. Syntax of the REDUCE Subcommand

See “Subcommand Options” on page 19 for descriptions of the options used with this subcommand.

Example Using REDUCE:

```
⋮
REDUCE
   FROM     (02/04/99,10:00:00.00)
   TO       (02/05/99,12:00)
   INTERVAL (60)
⋮
```

This example specifies that data is to be reduced between 10:00 a.m. on 4 February 1999 and noon on 5 February 1999. The records are to be reduced into 60-minute intervals.

REPORT Subcommand

You use the REPORT subcommand to generate reports from records. Up to five REPORT subcommands can be specified within each LOCKING command.

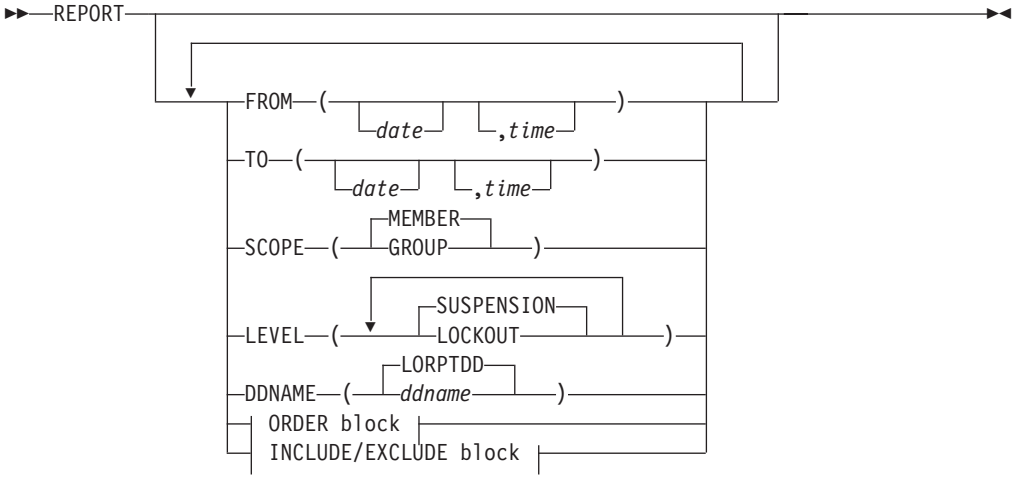


Figure 326. Syntax of the REPORT Subcommand

The following options can be used with the REPORT subcommand:

LEVEL
Specifies the level of the report. Both the SUSPENSION and LOCKOUT options can be used together in the same REPORT subcommand.

SUSPENSION
Generates a lock suspension report.

LOCKOUT
Generates a lockout report.

The default level is SUSPENSION.

See “Subcommand Options” on page 19 for descriptions of the options used with this subcommand.

Examples Using REPORT: *Example 1*:

```
⋮
REPORT
   LEVEL   (SUSPENSION)
   ORDER   (PLANNAME)
   INCLUDE (LOCATION(R(LOCN01 LOCN05)))
⋮
```

This example specifies the following:

- A lock suspension report
- Sorted by plan name

- Data is included that is only associated with the location in the range of LOCN01 to LOCN05

Example 2:

```
⋮
REPORT
   FROM    (03/18/99,10:00:00.00)
   TO      (03/19/99,12:00:00.00)
   LEVEL   (LOCKOUT)
   ORDER   (CORRNAME-PRIMAUTH-PLANNAME)
   EXCLUDE (LOCATION(LOCN10 LOCN12 LOCN15 LOCN20))
⋮
```

This example specifies the following:

- A lockout report
- Sorted by plan name within primary authorization ID within correlation name
- Records are used with the time and date range of 10:00 a.m. on 18 March 1999 to noon on 19 March 1999
- Data is excluded that is associated with the following locations:
  - LOCN10
  - LOCN12
  - LOCN15
  - LOCN20

TRACE Subcommand

You use the TRACE subcommand to produce traces with an entry for every DB2 locking event.

Up to five traces can be requested in a job step.

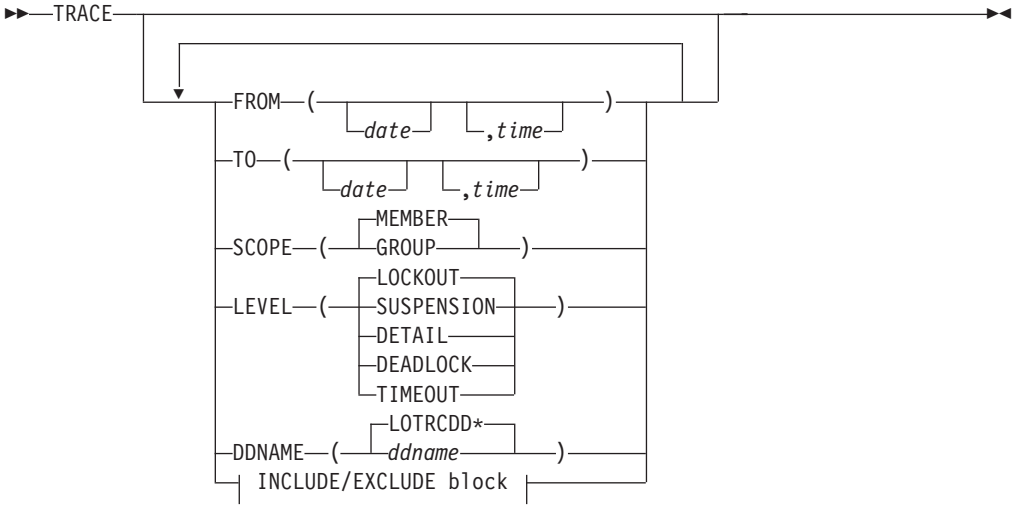


Figure 327. Syntax of the TRACE Subcommand

LEVEL

Specifies the type of trace and the amount of detail. One LEVEL option can be specified for each TRACE subcommand:

DETAIL
Generates a lock detail trace.

SUSPENSION
Generates a lock suspension trace.

LOCKOUT
Generates a lockout trace.

DEADLOCK
Generates a deadlock trace.

TIMEOUT
Generates a timeout trace.

The default is LOCKOUT.

See "Subcommand Options" on page 19 for descriptions of the options used with this subcommand.

Example Using TRACE:

```
⋮
TRACE
   FROM (03/18/99,10:00:00.00)
   TO   (03/18/99,10:10:00.00)
TRACE
   FROM (03/18/99,11:00:00.00)
   TO   (03/18/99,11:10:00.00)
TRACE
   FROM (03/18/99,12:00:00.00)
   TO   (03/18/99,12:10:00.00)
⋮
```

This example specifies that:

- Three lockout (default) traces are produced for the time intervals specified.
- Each trace covers a unique 10-minute period of time on the same day.
- Each trace is written to the data set defined by the default ddname for the trace.

FILE Subcommand

You use the FILE subcommand to format unreduced DB2 data and store it in sequential data sets suitable for use by the DB2 load utility. The records can be placed in DB2 tables and you can produce reports using a reporting facility such as Query Management Facility (QMF).

Note: FILE is used to format lock detail records (from IFCIDs 21, 211, 212, and 223) describing IRLM requests, claim and drain requests, and successful commit_LSN events. Only one file data set can be generated in a job step.

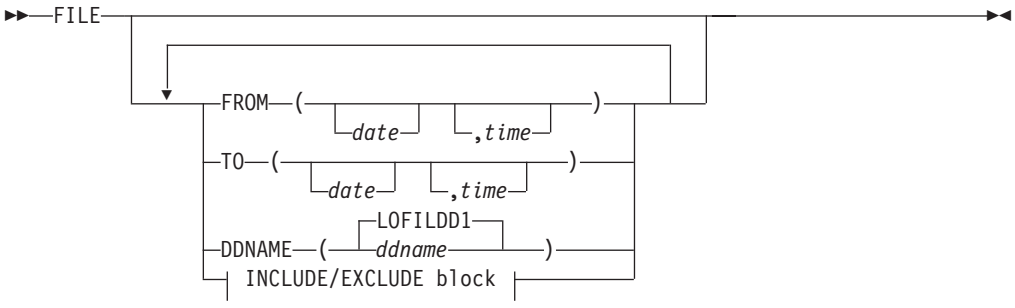


Figure 328. Syntax of the FILE Subcommand

See “Subcommand Options” on page 19 for descriptions of the options used with the FILE subcommand.

Example Using FILE:

```
⋮
FILE
     INCLUDE (PRIMAUTH(SYSADM))
⋮
```

This command generates a data set on the default ddname LOFILDD1. The data set contains detailed information about the locking requests made by the primary authorization ID SYSADM.

Using the EXEC Command

This command instructs DB2 PM to execute the commands in the job stream. Enter EXEC as the last DB2 PM command in SYSIN. If you do not include EXEC, DB2 PM checks the command syntax and writes it, together with any information, warning, or error messages generated. The command stream is not executed.

Figure 329. Syntax of the EXEC Command

Headers Used in Locking Reports and Traces

The Locking Report Header

The report header is similar for all reports and is shown here. All other report sections differ depending on the type of report and are described in the respective report chapters. Figure 330 shows the layout of a report header, where the letter x is a placeholder marking the maximum size of the data section of each field.

```
   LOCATION: xxxxxxxxxxxxxxxx          DB2 PERFORMANCE MONITOR (V6)                    PAGE: 1-n
      GROUP: xxxxxxxx                  LOCKING REPORT - xxxxxxxxxx          REQUESTED FROM: mm/dd/yy hh:mm:ss.nn
     MEMBER: xxxxxxxx                                                                   TO: mm/dd/yy hh:mm:ss.nn
  SUBSYSTEM: xxxx                             ORDER: xxxxxx                   INTERVAL FROM: mm/dd/yy hh:mm:ss.nn
DB2 VERSION: Vn Rn                            SCOPE: xxxxxx                                 TO: mm/dd/yy hh:mm:ss.nn
```

Figure 330. Layout of a Report Header

The Locking Trace Header

All traces have the same layout. Figure 331 shows what it looks like. The letter x is a placeholder marking the maximum size of the data section of each field.

```
   LOCATION: xxxxxxxxxxxxxxxx                DB2 PERFORMANCE MONITOR (V6)                        PAGE: 1-n
      GROUP: xxxxxxxx                                                                 REQUESTED FROM: mm/dd/yy hh:mm:ss.nn
     MEMBER: xxxxxxxx                         LOCKING TRACE - xxxxxxxxxx                            TO: mm/dd/yy hh:mm:ss.nn
  SUBSYSTEM: xxxx                                                                      ACTUAL FROM: mm/dd/yy hh:mm:ss.nn
DB2 VERSION: Vn Rn                                 SCOPE: xxxxxx                        PAGE DATE: mm/dd/yy
```

Figure 331. Locking Trace Layout

The trace is ordered by the event timestamp.

Field Descriptions

Headings are printed on all reports and traces at the start of each page. Locking reports and traces carry the following header information:

LOCATION
Location name of the DB2 subsystem.

GROUP
Name of the data-sharing group.

MEMBER
Group member name of the DB2 subsystem.

SUBSYSTEM
Name of the DB2 subsystem.

DB2 VERSION
Version and release number of the DB2 subsystem.

DB2 PM version

REPORT or TRACE type
For report, this can be:

- SUSPENSION
- LOCKOUT

For trace, this can be:

- DEADLOCK
- TIMEOUT
- SUSPENSION
- LOCKOUT
- DETAIL

ORDER
The DB2 PM identifiers by which lock events are grouped are shown here.

SCOPE
Scope of the report or trace, this can be MEMBER or GROUP. A member-scope report or trace shows data from a group for each individual member. In a group-scope report or trace, the data from individual members is consolidated and presented for the entire group.

PAGE Page number and total pages of the report.

REQUESTED FROM/TO
Start and end times specified by the FROM and TO statements. If either FROM or TO, or both, are not specified, NOT SPECIFIED is printed in the relevant field.

INTERVAL FROM/TO
Time of the first and last reduction interval covered by a report. If REDUCE is not specified, the INTERVAL defaults to 0 and the timestamps of the first and last events are printed.

ACTUAL FROM/TO
The timestamps of the first and last events on a trace within a location, group, subsystem, or member.

PAGE DATE
The date of the timestamps printed on this page of a trace. A date change causes a page break.

Chapter 59. Lock Suspension Report

The lock suspension report summarizes all lock suspension activities across a specified time period. The suspensions are reported by any combination of up to three DB2 PM identifiers. The report summarizes the lock suspension activities of:

- An IRLM request (except when the resource type is a drain lock).
- An IRLM request where the resource type is a drain lock.
- A drain request where the claim count is not zero.

  This suspension occurs when the agent making the drain request has to wait for the claim count on the particular resource to become zero.
- A suspension of a page latch request.

  This suspension occurs when the agent making the page latch request has to wait for a page which is currently being held by another agent.

The lock suspension report is produced if level SUSPENSION is specified in the REPORT subcommand. The ORDER subcommand specifies by which DB2 PM identifiers the report is to be sorted.

Every suspension results in a normal resume or a lockout (deadlock or timeout), or is canceled (in the case of page latch suspensions). In any case, and if the suspension delay is unacceptable, review the plans and associated tables and indexes. For example, if there are long suspensions on indexes for applications that have a high update rate, the number of index subpages might need to be increased.

The following sections show the layout of a suspension report and describe the various fields of the report. At the end of this chapter you find an example of a suspension report.

Layout of the Suspension Report

Figure 332 shows the layout of a suspension report. The letter x is a placeholder marking the maximum size of a field.

The report presents data summarized by DB2 PM identifiers. The report can be sorted by up to three identifiers.

```
   LOCATION: xxxxxxxxxxxxxxxx                    DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-n
      GROUP: xxxxxxxx                            LOCKING REPORT - SUSPENSION                 REQUESTED FROM: mm/dd/yy hh:mm:ss.nn
     MEMBER: xxxxxxxx                                                                                 TO: mm/dd/yy hh:mm:ss.nn
  SUBSYSTEM: xxxx                                       ORDER: xxxxxx                        INTERVAL FROM: mm/dd/yy hh:mm:ss.nn
DB2 VERSION: Vn Rn                                      SCOPE: xxxxxx                                  TO: mm/dd/yy hh:mm:ss.nn

IDENT1xx
 IDENT2xx                                                        --SUSPEND REASONS-- ---------  R E S U M E    R E A S O N S  ---------
  IDENT3xx          --- L O C K   R E S O U R C E --- TOTAL    LOCAL  GLOB.  S.NFY ---- NORMAL ----  TIMEOUT/CANCEL  --- DEADLOCK ---
   MEMBER           TYPE      NAME                   SUSPENDS LATCH  IRLMQ  OTHER NMBR         AET NMBR         AET NMBR         AET
------------------ --------- ---------------------- -------- -----  -----  ----- ---- ----------- ---- ----------- ---- -----------
xxxxxxxxxxxxxxxx   xxxxxxxxx xxxxxxxxxxxxxxxxxxxxxxx nnnnnnnn nnnnn  nnnnn  nnnnn nnnn ssss.nnnnnn nnnn ssss.nnnnnn nnnn ssss.nnnnnn
 xxxxxxxxxxxxxxxx            xxxxxxxxxxxxxxxxxxxxxxx          nnnnn  nnnnn  nnnnn
  xxxxxxxxxxxxxxxx           xxxxxxxxxxxxxxxxxxxxxxx
   xxxxxxxx                  xxxxxxxxxxxxxxxxxxxxxxx

                  xxxxxxxxx xxxxxxxxxxxxxxxxxxxxxxx nnnnnnnn nnnnn  nnnnn  nnnnn nnnn ssss.nnnnnn nnnn ssss.nnnnnn nnnn ssss.nnnnnn
                            xxxxxxxxxxxxxxxxxxxxxxx          nnnnn  nnnnn  nnnnn
                            xxxxxxxxxxxxxxxxxxxxxxx
                            xxxxxxxxxxxxxxxxxxxxxxx

                  .
                  .
                  .

                  *SUM OF xxxxxxxxxxxxxxxx*         nnnnnnnn nnnnn  nnnnn  nnnnn nnnn ssss.nnnnnn nnnn ssss.nnnnnn nnnn ssss.nnnnnn
                                                             nnnnn  nnnnn  nnnnn
 .
 .
 .

   *GROUP TOTAL*                                    nnnnnnnn nnnnn  nnnnn  nnnnn nnnn ssss.nnnnnn nnnn ssss.nnnnnn nnnn ssss.nnnnnn
                                                             nnnnn  nnnnn  nnnnn
  *SUBTOTAL*                                        nnnnnnnn nnnnn  nnnnn  nnnnn nnnn ssss.nnnnnn nnnn ssss.nnnnnn nnnn ssss.nnnnnn
                                                             nnnnn  nnnnn  nnnnn
 *TOTAL*                                           nnnnnnnn nnnnn  nnnnn  nnnnn nnnn ssss.nnnnnn nnnn ssss.nnnnnn nnnn ssss.nnnnnn
                                                             nnnnn  nnnnn  nnnnn
*GRAND TOTAL*                                      nnnnnnnn nnnnn  nnnnn  nnnnn nnnn ssss.nnnnnn nnnn ssss.nnnnnn nnnn ssss.nnnnnn
                                                             nnnnn  nnnnn  nnnnn
```

Figure 332. Layout of a Suspension Report

Field Descriptions

The header information to this report is described in "Headers Used in Locking Reports and Traces" on page 725. See also "Chapter 1. DB2 PM Identifiers" on page 3.

IDENT1XX, IDENT2XX, IDENT3XX
These mark the positions where the order criteria are listed and reported.

In group-scope reports, MEMBER is automatically added as the second, third, or fourth identifier.

If you specify DATABASE, PAGESET, or both, in the ORDER option, the database name, page set name, or both names, are removed from the resource name. In this case, 'BLANK' is printed.

LOCK RESOURCE TYPE
The type of resource on which the suspended request is made. Valid values are shown in Table 86.

Table 86. Lock Resource Type

Type	Description
DATAPAGE	Data page locking
DATABASE	Locking of the DBD
PAGESET	Nonpartitioned table spaces and indexes. Drained at the page set level.
PART NSPL	Partitions of partitioned table spaces and indexes using the non-SPL (selective partition locking) scheme. Applies to DB2 Version 4 and higher.

Table 86. Lock Resource Type (continued)

Type	Description
PART SPL	Partitions of partitioned table spaces and indexes using the SPL (selective partition locking) scheme. Applies to DB2 Version 6.
DATASET	Partitions of partitioned table spaces and indexes. Applies to DB2 versions prior to DB2 Version 4.
SKCT	Skeleton cursor table locking
INDEXPAGE	Index page locking
OPENLOCK	Page set or data set open lock
TABLE	Table locking
HASH-ANC	Hash anchor lock
SKPT	Skeleton package table
COLLECT	Collection ID
DRAIN CS	Cursor stability drain lock
DRAIN RR	Repeatable read drain lock
DRAIN W	Write drain lock
BINDLOCK	Autobind lock and remote bind lock for the serialization of local autobinds or packages, remote binds, and remote rebinds of packages
ROW	Data row locking
INDEXEOF	Index end-of-file lock
GBP CAST	Group buffer pool level castout P-lock
P/P CAST	Page set and partition level castout P-lock
RLF PLCK	RLF P-lock
DBD PLCK	DBD P-lock
CATM MIG	CATMAINT migration lock
CATM CAT	CATMAINT convert catalog lock
CATM DIR	CATMAINT convert directory lock
LPL/GREC	Database group exception LPL/GRECP lock
UTIL UID	Utility UID lock
UTIL EXC	Utility exclusive execution lock
DBALLOC	Start and stop lock on the database allocation table
SYSLGRNG	Buffer manager SYSLGRNG recording lock
UTILSER	Utility serialization lock
MASSDEL	Mass delete lock
ALTERBUF	Alter buffer pool lock
GBP S/S	Group buffer pool start and stop lock
TREEPLCK	Index tree P-lock
P/P PLCK	Page set and partition P-lock
PAGEPLCK	Page P-lock
CDB PLCK	DDF communications database P-lock
SCA ACCS	SCA access for restart or redo information
EXCP UPD	Database group exception update lock
RPR_DBD	Repair DBD test and diagnose lock

Table 86. Lock Resource Type (continued)

Type	Description
DBCMD SER	Database command serialization
PAGE	Resource involved in page latch suspensions
LOB	Large object

Note: For a suspended request where the resource type is not supplied, *N/P* is printed.

LOCK RESOURCE NAME

The name on which the suspended request is made. Each part of the lock resource name is printed on a separate line. The abbreviations shown in the report are explained, in alphabetical order, in Table 87.

Table 87. Lock Resource Name Abbreviations

Abbreviation	Description
ANCH	Anchor point ID
BPID	Buffer pool ID
COLL	Collection name
CKTN	Consistency token
DB	Database name
HASH	Database group exception hash class
OB	Object name
PAGE	Physical page
PART	Partition
PKID	Package name
PLAN	Plan name
RMID	Resource manager ID
ROW	Data row
SUBP	Subpage
UID	Utility ID
ROWI	Row ID for LOB
VER#	Version number of LOB

Notes:

1. The database names and object names are translations obtained from the IFCID 105 and 107 records. If these records are not available, the decimal representation of the database and object names are printed.
2. If you specify DATABASE, PAGESET, or both, in the ORDER option, the database name, page set name, or both names, are removed from the resource name and printed in the DB2 PM identifier column. If the name only consists of the database and page set, *N/P* is printed in the resource name column. If the resource name does not contain the database and page set, 'BLANK' is printed in the DB2 PM identifier column and all resource name parts are printed in the lock resource block.

TOTAL SUSPENDS

The number of suspensions for the particular combination of DB2 PM identifiers.

SUSPEND REASONS

The reason why a particular request was suspended. The requests composing the particular combination of DB2 PM identifiers and lock resource can be suspended for several reasons. The SUSPEND REASONS column shows all reasons identified by the IRLM resume records. Therefore, the sum of the counts in this column can differ from the TOTAL SUSPENDS count.

The categorized reasons for suspension are:

LOCAL
Local resource contention. This occurs when you request access to a local resource that is locked.

LATCH
IRLM latch contention. This occurs when the IRLM needs to serialize a resource. For example, the IRLM serializes the adding and removing of locks to the lock table. The lock table is latched for a short period of time, and the resulting suspensions, if any, are brief.

GLOB.
Global contention. This occurs when you request access to a global resource that is locked.

IRLMQ
IRLM queued request.

S.NFY Intersystem message sending.

OTHER
Suspensions other than those listed here. Suspensions reported as OTHER are either serviceability values, drain suspensions, contentions with retained locks, or page latch suspensions.

RESUME REASONS

The reasons for resumption of the suspended tasks. The reason can be normal, timeout, deadlock, and canceled (canceled only applies to page latch suspensions).

NORMAL NMBR
The number of suspensions that ended when the task resumed normal processing after completion of the lock request. In page latch suspensions, this is the number of suspensions where the latch requester was not canceled.

NORMAL AET
The average elapsed time of a suspension that ended in the task resuming normally. In page latch suspensions, this is the average elapsed time of a suspension where the latch requester was not canceled.

The format for this field is *ssss.nnnnnn*.

TIMEOUT NMBR
The number of waits to access locked resources that resulted in exceeding a preset time interval.

TIMEOUT AET
The average elapsed time of a resumption due to a timeout.

The format for this field is *ssss.nnnnnn*.

CANCEL NMBR
The number of page latch suspensions that ended with the latch requester being canceled.

CANCEL AET
The average elapsed time of a page latch suspension that ended with the latch requester being canceled.

The format for this field is *ssss.nnnnnn*.

DEADLOCK NMBR
The number of deadlocks.

DEADLOCK AET
The average duration of a deadlock.

The format for this field is *ssss.nnnnnn*.

SUM OF
The sum printed for the lowest-level identifier when there is more than one combination of request type, resource type, and lock resource reported under it.

GROUP TOTAL
The sum of report entries that belong to a data sharing group if more than one member of the group is reported for a particular combination of DB2 PM identifiers. A GROUP TOTAL only appears in group-scope reports.

SUBTOTAL
When a report is ordered by three identifiers and there is more than one third-level identifier reported under it, a subtotal is printed each time the second-level identifier changes.

TOTAL
When a report is ordered by two or three identifiers and there is more than one second-level identifier reported under it, a total is printed each time the first-level identifier changes.

GRAND TOTAL
If there is more than one first-level identifier reported, a grand total is printed at the end of each group in a group-scope report or at the end of each member in a member-scope report.

Suspension Report Example

Figure 333 on page 735 shows a sample suspension report, produced by the following command:

```
⋮
LOCKING
     REPORT
⋮
```

```
   LOCATION: USIBMSYSTDB2                    DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-1
      GROUP: USIBMSYSTDB2                     LOCKING REPORT - SUSPENSION                REQUESTED FROM: NOT SPECIFIED
     MEMBER: DB2P                                                                                    TO: NOT SPECIFIED
  SUBSYSTEM: DB2P                            ORDER: PRIMAUTH-PLANNAME                    INTERVAL FROM: 03/25/99 21:56:23.02
DB2 VERSION: V6                                   SCOPE: MEMBER                                      TO: 03/25/99 22:15:03.21
```

PRIMAUTH / PLANNAME	--- L O C K R E S O U R C E --- TYPE	NAME	TOTAL SUSPENDS	--SUSPEND REASONS-- LOCAL LATCH	GLOB. IRLMQ	S.NFY OTHER	R E S U M E R E A S O N S ---- NORMAL ---- NMBR	AET	TIMEOUT/CANCEL NMBR	AET	--- DEADLOCK --- NMBR	AET
ADMF001												
DSNTEP3	INDEXEOF	DB =DSNDB06	1	0	0	0	1	0.938008	0	N/C	0	N/C
		OB =DSNKDX02		1	0	0						
		PART= 1										
DSNUTIL	UTILSER	N/A	1	0	0	0	1	0.375616	0	N/C	0	N/C
				1	0	0						
TOTAL												
ADMF001			2	0	0	0	2	0.656812	0	N/C	0	N/C
				2	0	0						
ADMF004												
DSNTEP3	N/P	N/P	3	0	0	0	3	0.568704	0	N/C	0	N/C
				3	0	0						
	ROW	DB =DBBB3101	1	0	0	0	1	0.755721	0	N/C	0	N/C
		OB =TPBB3102		1	0	0						
		PAGE=X'00000008'										
		ROW =X'02'										
	ROW	DB =DBBB3101	1	1	0	0	1	33.762317	0	N/C	0	N/C
		OB =TPBB3102		0	0	0						
		PAGE=X'003000BF'										
		ROW =X'04'										
	ROW	DB =DBBB3101	1	1	0	0	1	9.437925	0	N/C	0	N/C
		OB =TPBB3102		0	0	0						
		PAGE=X'003000BF'										
		ROW =X'05'										
	** SUM OF DSNTEP3 **		6	2	0	0	6	7.610346	0	N/C	0	N/C
				4	0	0						
SYSADM												
DSNTEP5	DATAPAGE	DB =DSNDB06	3	1	0	0	2	0.087749	1	74.579866	0	N/C
		OB =SYSDBASE		0	0	2						
		PAGE=X'00000632'										
	INDEXPAGE	DB =DSNDB01	2	1	0	0	1	0.001192	0	N/C	1	35.642858
		OB =DSNSTP01		0	0	1						
		PAGE=X'00000037'										
		SUBP=X'00'										
	INDEXPAGE	DB =DSNDB01	3	0	0	0	2	2.540019	0	N/C	1	9.867599
		OB =DSNSTP02		1	0	2						
		PAGE=X'00000022'										
		SUBP=X'02'										
	SKPT	COLL=IVLDD4C1	1	1	0	0	1	23.386573	0	N/C	0	N/C
		PKID=IVLDD4C		0	0	0						
		CTKN=14DEF4A9021EECE8										
	** SUM OF DSNTEP5 **		9	3	0	0	6	4.773883	1	74.579866	2	22.755228
				1	0	5						
GRAND TOTAL			17	5	0	0	14	5.401357	1	74.579866	2	22.755228
				7	0	5						

Figure 333. Lock Suspension Report

Chapter 60. Lockout Report

The lockout report summarizes timeouts and deadlocks occurring within a specified period of time. The report shows the number of times an agent, identified by up to three DB2 PM identifiers, has been timed out or involved in a deadlock when requesting a particular resource. In addition, it shows the other contenders for the resource and the number of times they act as holders or waiters.

The lockout report is produced if level LOCKOUT is specified in the REPORT subcommand and if there is at least one combination of a lockout agent's identifier satisfying the FROM/TO and INCLUDE/EXCLUDE criteria.

The ORDER subcommand specifies by which DB2 PM identifiers the report is to be sorted. You can specify up to three identifiers.

The following sections show the layout of a lockout report and describe the various fields of the report. At the end of this chapter you find an example of a lockout report.

Layout of the Lockout Report

Figure 334 shows the layout of a lockout report. The letter x is a placeholder marking the maximum size of a field.

```
   LOCATION: xxxxxxxxxxxxxxxx                    DB2 PERFORMANCE MONITOR (V6)                        PAGE: 1-n
      GROUP: xxxxxxxx                            LOCKING REPORT - LOCKOUT                 REQUESTED FROM: mm/dd/yy hh:mm:ss.nn
     MEMBER: xxxxxxxx                                                                              TO: mm/dd/yy hh:mm:ss.nn
  SUBSYSTEM: xxxx                                       ORDER: xxxxxx                     INTERVAL FROM: mm/dd/yy hh:mm:ss.nn
DB2 VERSION: Vn Rn                                      SCOPE: xxxxxx                                TO: mm/dd/yy hh:mm:ss.nn

xxxxxxxx
 xxxxxxxx
  xxxxxxxx          --- L O C K   R E S O U R C E ---                    ---------------- A G E N T S ----------------  BLOCKER/
   MEMBER           TYPE      NAME                    TIMEOUTS DEADLOCKS  MEMBER   PLANNAME CONNECT CORRNAME  CORRNMBR  HOLDER WAITER
------------------ --------- ----------------------- -------- ---------  -------- -------- -------- -------- --------  ------ ------
xxxxxxxxxxxxxxxx   xxxxxxxxx xxxxxxxxxxxxxxxxxxxxxxx    nnnnn     nnnnn
 xxxxxxxxxxxxxxxx             xxxxxxxxxxxxxxxxxxxxxxx                     xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx   nnnnn  nnnnn
  xxxxxxxxxxxxxxxx            xxxxxxxxxxxxxxxxxxxxxxx                     xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx   nnnnn  nnnnn
   xxxxxxxx                   xxxxxxxxxxxxxxxxxxxxxxx                     .
                                                                          .
                                                                          .

                   xxxxxxxxx xxxxxxxxxxxxxxxxxxxxxxx    nnnnn     nnnnn  xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx   nnnnn  nnnnn
                             xxxxxxxxxxxxxxxxxxxxxxx                     .
                             xxxxxxxxxxxxxxxxxxxxxxx                     .
                                                                         .

                   ** LOCKOUTS FOR xxxxxxxx       **    nnnnn     nnnnn
 .
 .
 .

   *GROUP TOTAL*                                        nnnnn     nnnnn
  *SUBTOTAL*                                            nnnnn     nnnnn
 *TOTAL*                                                nnnnn     nnnnn
*GRAND TOTAL*                                          nnnnn     nnnnn
```

Figure 334. Layout of a Lockout Report

Field Descriptions

This section describes all fields except for the report header, which is described in “Headers Used in Locking Reports and Traces” on page 725.

LOCK RESOURCE TYPE
The type of resource involved in the lockout. Valid values are shown in Table 86.

LOCK RESOURCE NAME
The name of the resource on which the timeout or deadlock occurred. Each part of the lock resource name is printed on a separate line. The abbreviations shown in the report are explained, in alphabetical order, in Table 87 on page 732.

TIMEOUTS
The number of times the resource was involved in a timeout.

DEADLOCKS
The number of times the resource was involved in a deadlock.

AGENTS
The agents in contention for the resource during the lockout. This block consists of the following columns:

MEMBER
The agent's member name. In a non-data-sharing environment, this field shows *N/P*.

PLANNAME
The agent's plan name or the word SYSTEM if there is contention with a retained lock.

CONNECT
The agent's connection name.

CORRNAME
The agent's correlation name.

CORRNMBR
The agent's correlation number.

BLOCKER/HOLDER

For timeouts, the number of times the agent held the resource during the lockout.

For deadlocks, the number of times the agent was the blocker, either as a holder or a waiter.

WAITER
The number of times the agent waited for the resource during the lockout.

LOCKOUTS FOR
The number of timeout and deadlock records aggregated for the currently reported set of DB2 PM identifiers.

For timeouts, this value is equivalent to the sum of the entries in the TIMEOUTS column.

A deadlock record involves several resources. Therefore, this value differs from the sum of the entries in the DEADLOCKS column.

GROUP TOTAL
The sum of report entries that belong to a data sharing group if more than one member of the group is reported for a particular combination of the DB2 identifiers. A GROUP TOTAL only appears in group-scope reports.

SUBTOTAL
When a report is ordered by three identifiers and there is more than one third-level identifier reported under it, a subtotal is printed each time the second-level identifier changes.

TOTAL
When a report is ordered by two or three identifiers and there is more than one second-level identifier reported under it, a total is printed each time the first-level identifier changes.

GRAND TOTAL
If there is more than one first-level identifier reported, a grand total is printed at the end of each group in a group-scope report or at the end of each member in a member-scope report.

Lockout Report Example

Figure 335 shows a sample lockout report, produced by the following command:

```
⋮
LOCKING
     REPORT
        LEVEL (LOCKOUT)
⋮
```

```
   LOCATION: USIBMSYSTDB2                    DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-1
      GROUP: N/A                               LOCKING REPORT - LOCKOUT                  REQUESTED FROM: NOT SPECIFIED
     MEMBER: N/A                                                                                    TO: NOT SPECIFIED
  SUBSYSTEM: DB2P                             ORDER: PRIMAUTH-PLANNAME                   INTERVAL FROM: 03/21/99 22:03:34.46
DB2 VERSION: V6                                    SCOPE: MEMBER                                    TO: 03/22/99 22:33:31.90


PRIMAUTH          --- L O C K   R E S O U R C E ---                    ---------------- A G E N T S ----------------  BLOCKER/
 PLANNAME         TYPE      NAME                    TIMEOUTS DEADLOCKS  MEMBER   PLANNAME CONNECT  CORRNAME CORRNMBR  HOLDER WAITER
---------------- --------- ---------------------- -------- ---------  -------- -------- -------- -------- --------  ------ ------
ADMF001
 ABTEPR1          DATABASE  DB  =ABTE2DB2                1         0  N/P      ABTEPR2  BATCH    RUNPL2   'BLANK'        1      0
                  DATAPAGE  DB  =DSNDB06                 1         0  N/P      DBCMPRG  SSTR     DBCM02   'BLANK'        2      0
                            OB  =SYSDBASE
                            PAGE=X'00000140'

                  ** LOCKOUTS FOR ABTEPR1    **          2         0

 DSNBIND          DATAPAGE  DB  =DSNDB06                 1         0  N/P      ABTEPR2  BATCH    RUNPL2   'BLANK'        1      0
                            OB  =SYSDBASE
                            PAGE=X'00000147'

                  ** LOCKOUTS FOR DSNBIND    **          1         0

*TOTAL*
ADMF001                                                 3         0

SYSOPR
 'BLANK'          DATABASE  DB  =ABTE2DB1                2         4  N/P      ABTEPR1  BATCH    RUNPL1   'BLANK'        6      0
                  DATABASE  DB  =ABTE2DB2                1         0  N/P      ABTEPR1  BATCH    RUNPL1   'BLANK'        1      0
                  DATAPAGE  DB  =DSNDB06                 0         1  N/P      ABTEPR1  BATCH    RUNPL1   'BLANK'        0      1
                            OB  =SYSDBASE
                            PAGE=X'00000140'
                  DATAPAGE  DB  =DSNDB06                 1         0  N/P      ABTEPR2  BATCH    RUNPL2   'BLANK'        1      0
                            OB  =SYSDBASE
                            PAGE=X'00000147'
                  DATAPAGE  DB  =DSNDB06                 1         3  N/P      ABTEPR1  BATCH    RUNPL1   'BLANK'        1      3
                            OB  =SYSDBASE
                            PAGE=X'00000167'

                  ** LOCKOUTS FOR 'BLANK'    **          5         4

*GRAND TOTAL*                                           8         4
```

Figure 335. Lockout Report

Chapter 61. Locking Trace

The layout for locking traces is the same for each trace apart from the event-specific data. Figure 336 shows the general layout of the locking trace and describes the common fields.

The following sections show the layout the event specific section for each trace and describe the fields shown. At the end of each section you find an example of a trace.

```
   LOCATION: XXXXXXXXXXXXXXXX                    DB2 PERFORMANCE MONITOR (V6)                          PAGE: L-N
      GROUP: XXXXXXXX                                                                 REQUESTED FROM: MM/DD/YY HH:MM:SS.NN
     MEMBER: XXXXXXXX                             LOCKING TRACE - REPORTTYPE                             TO: MM/DD/YY HH:MM:SS.NN
  SUBSYSTEM: XXXX                                                                      ACTUAL FROM: MM/DD/YY HH:MM:SS.NN
DB2 VERSION: VN RN                                      SCOPE: MEMBER                    PAGE DATE: MM/DD/YY

PRIMAUTH CORRNAME CONNTYPE
ORIGAUTH CORRNMBR INSTANCE     EVENT TIMESTAMP           --- L O C K   R E S O U R C E ---
PLANNAME CONNECT               RELATED TIMESTAMP EVENT   TYPE      NAME                    EVENT SPECIFIC DATA
------------------------------ ----------------- -------- --------- ----------------------- ----------------------------------------

XXXXXXXX XXXXXXXX XXXXXXXX     HH:MM:SS.NNNNNNNN XXXXXXXX XXXXXXXXX XXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXX XXXXXXXX XXXXXXXXXXX N/P               XXXXXXXXX          XXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXX XXXXXXXX                                                   XXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
REQLOC:  XXXXXXXXXXXXXXX                                            XXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                                                                    XXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                                                                                            XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

⋮
```

Figure 336. Layout of a Deadlock Trace

Field Descriptions

This section describes all fields except for the trace header and the DB2 PM identifiers, for details of the trace header see “Headers Used in Locking Reports and Traces” on page 725. DB2 PM identifiers are described in “Chapter 1. DB2 PM Identifiers” on page 3. The descriptions start with the timestamp block and move to the right.

REPORTTYPE
This can be:

- DEADLOCK
- TIMEOUT
- LOCKOUT
- SUSPENSION
- DETAIL

EVENT TIMESTAMP
The time at which the deadlock occurred. The trace is sorted and printed in the order of this timestamp. The format of this timestamp is *hh:mm:ss.nnnnnnnn*.

RELATED TIMESTAMP
The timestamp of the suspended request that was selected as the victim of this deadlock event. This field only shows a value for suspension and detail traces. For other traces, this field always shows *N/P* because the related suspension event is not reported.

EVENT
The Locking event. This varies according to the type of trace.

LOCK RESOURCE TYPE
The type of locked resource. The values for the locked resource types are shown in Table 86.

LOCK RESOURCE NAME
The name of the resource. Each part of the lock resource name is printed on a separate line. The format of the name depends on the resource type as shown in Table 87.

EVENT SPECIFIC DATA
The layout and content of the event specific data varies according to the reported event and is described in the sections following.

Deadlock Trace

The deadlock trace contains an entry for every occurrence of a deadlock during a specified time period. The trace shows when the deadlock occurred and provides details on the resources involved in the deadlock and information about the threads that held the resource or waited to use the resource. If the resource was held by more than one agent and not all of them were actively involved in the deadlock, the holder data cannot be determined and is not printed.

The data specific to the deadlock. For each resource involved in a deadlock there is a block of waiter's data and a block of blocker's data.

A blocker is a thread that prevents the victim form getting its lock. The blocker can be a holder of the lock or another waiter (one that came in before the victim) that is incompatible with the holder's lock.

The format of the deadlock-specific data is shown in Figure 337.

Trace Data Specific to Deadlock Event

```
COUNTER =xxxxx      WAITERS =xxxxx
TSTAMP  =xxxxxxxxxxxxxxxxxxx
HASH    =X'hhhhhhhh'
-------- BLOCKER IS HOLDER ------------
LUW=xxxxxxxx.xxxxxxxx.xxxxxxxxxxxx.xxxxx
MEMBER  =xxxxxxxx   CONNECT =xxxxxxxx
PLANNAME=xxxxxxxx   CORRNAME=xxxxxxxx
DURATION=xxxxxxxx   CORRNMBR=xxxxxxxx
STATE   =xxxxx      PRIMAUTH=xxxxxxxx
ENDUSER =xxxxxxxxxx
TRANSAC =xxxxxxxxxxx
WSNAME  =xxxxxxxxxxx
-------------- WAITER ------------------
LUW=xxxxxxxx.xxxxxxxx.xxxxxxxxxxx.xxxxx
MEMBER  =xxxxxxxx   CONNECT =xxxxxxxx
PLANNAME=xxxxxxxx   CORRNAME=xxxxxxxx
DURATION=xxxxxxxx   CORRNMBR=xxxxxxxx
REQUEST =xxxxxx     PRIMAUTH=xxxxxxxx
STATE   =xxxxx      WORTH   =xxxxx
.
.
.
```

Figure 337. The Format of Deadlock-Specific Data

The individual fields have the following meaning:

COUNTER
The deadlock interval counter.

WAITERS
The number of waiters involved in the deadlock.

TSTAMP
The time when the deadlock occurred.

HASH The lock resource hash value.

LUW The ID of the blocker's or waiter's logical unit of work.

MEMBER
The blocker's or waiter's member name. In a non-data-sharing environment, this field contains *N/P*.

CONNECT
The holder's or waiter's connection name.

PLANNAME
The blocker's or waiter's plan name.

CORRNAME
The blocker's or waiter's correlation name.

DURATION
The lock duration of the deadlock blocker or waiter. Valid values are shown in Table 88.

Table 88. Lock Duration

Duration	Description
MANUAL	Varies depending on the ISOLATION parameter

Table 88. Lock Duration (continued)

Duration	Description
MANUAL+1	Temporary change of consistency level from CS to RR during bind and DDL
COMMIT	Until commit
COMMIT+1	Past commit; applies to locks needed to maintain the position for a cursor opened WITH HOLD
ALLOCATN	Until deallocation
PLAN	For the duration of the plan
UTILITY	For the duration of the utility execution
INTEREST	For the duration of P-locks
FREE ALL	Until all locks are freed

CORRNMBR
The holder's or waiter's correlation number.

REQUEST
The waiter's request, which can be one of the following:

- LOCK
- UNLOCK
- CHANGE

WORTH
The waiter's worth value assigned by DB2.

STATE
The holder's or waiter's state or mode of the lock applied to the resource. Valid values are shown in Table 89.

Table 89. Lock State

State	Description
UPS	Unprotected share
IS	Intent share
IX	Intent exclusive
S	Share
U	Update
SIX	Share with intent exclusive
NSU	Nonshared update
X	Exclusive

ENDUSER
End user user ID. This field is not shown when this information is not present.

TRANSAC
The end user's transaction name. This field is not shown when this information is not present.

WSNAME
End user's workstatiobn name. This field is not shown when this information is not present.

Deadlock Trace Example

Figure 338 shows a sample deadlock trace, produced by the following command:

```
⋮
LOCKING
     TRACE
        LEVEL (DEADLOCK)
⋮
```

```
   LOCATION: SYS1DSN3                        DB2 PERFORMANCE MONITOR (V6)                              PAGE: 1-1
      GROUP: DSN3                              LOCKING TRACE - DEADLOCK                    REQUESTED FROM: 02/02/99 01:03:07.00
     MEMBER: S511                                                                                    TO: NOT SPECIFIED
  SUBSYSTEM: S511                                                                          ACTUAL FROM: 02/20/99 09:50:14.98
DB2 VERSION: V6                                      SCOPE: MEMBER                          PAGE DATE: 02/20/99

PRIMAUTH CORRNAME CONNTYPE
ORIGAUTH CORRNMBR INSTANCE     EVENT TIMESTAMP           --- L O C K   R E S O U R C E ---
PLANNAME CONNECT               RELATED TIMESTAMP EVENT   TYPE      NAME                    EVENT SPECIFIC DATA
------------------------------ ----------------- -------- --------- ----------------------- ----------------------------------------
BNK      BNK      TSO          09:50:14.98847800 DEADLOCK                                   COUNTER =    2      WAITERS =    2
BNK      'BLANK'  B00AA3F5AF77 N/P                                                          TSTAMP  =02/20/99 09:50:14.97
DSNESPRR TSO                                           DATAPAGE  DB  =PARLDABA            HASH    =X'00043402'
REQLOC  :SYS1DSN4                                                  OB  =TAB1TS             ---------- BLOCKER is HOLDER --*VICTIM*-
ENDUSER:BNKUSER                                                   PAGE=X'000002'          LUW=DSN3.IPVAM511.B00AA3F5AF77
WSNAME  :BNKWS                                                                            MEMBER  =S511       CONNECT =TSO
TRANSAC :BENKS TRANSACTION                                                                PLANNAME=DSNESPRR   CORRNAME=BNK
                                                                                          DURATION=MANUAL+1   CORRNMBR='BLANK'
                                                                                          STATE   =S          PRIMAUTH=BNK
                                                                                          ENDUSER =BNKUSER
                                                                                          WSNAME  =BNKWS
                                                                                          TRANSAC =BENKS TRANSACTION
                                                                                          ---------------- WAITER -----------------
                                                                                          LUW=DSN3.IPVAM511.B00AA725AE77
                                                                                          MEMBER  =S511       CONNECT =TSO
                                                                                          PLANNAME=DSNESPRR   CORRNAME=NKA1
                                                                                          DURATION=COMMIT     CORRNMBR='BLANK'
                                                                                          REQUEST =CHANGE     PRIMAUTH=NKA1
                                                                                          STATE   =X          WORTH   =   18

                                                       DATAPAGE  DB  =PARLDABA            HASH    =X'00053406'
                                                                 OB  =TAB1TS              ---------- BLOCKER is HOLDER -----------
                                                                 PAGE=X'000006'           LUW=DSN3.IPVAM511.B00AA725AE77
                                                                                          MEMBER  =S511       CONNECT =TSO
                                                                                          PLANNAME=DSNESPRR   CORRNAME=NKA1
                                                                                          DURATION=MANUAL+1   CORRNMBR='BLANK'
                                                                                          STATE   =S          PRIMAUTH=NKA1
                                                                                          ---------------- WAITER -------*VICTIM*-
                                                                                          LUW=DSN3.IPVAM511.B00AA3F5AF77
                                                                                          MEMBER  =S511       CONNECT =TSO
                                                                                          PLANNAME=DSNESPRR   CORRNAME=BNK
                                                                                          DURATION=COMMIT     CORRNMBR='BLANK'
                                                                                          REQUEST =CHANGE     PRIMAUTH=BNK
                                                                                          STATE   =X          WORTH   =   17
                                                                                          ENDUSER =BNKUSER
                                                                                          WSNAME  =BNKWS
                                                                                          TRANSAC =BENKS TRANSACTION
```

Figure 338. Deadlock Trace (Part 1 of 2)

```
   LOCATION: SYS1DSN3                        DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-2
      GROUP: DSN3                              LOCKING TRACE - DEADLOCK                  REQUESTED FROM: 02/02/99 01:03:07.00
     MEMBER: S511                                                                                    TO: NOT SPECIFIED
  SUBSYSTEM: S511                                                                        ACTUAL FROM: 02/20/99 09:50:14.98
DB2 VERSION: V6                                    SCOPE: MEMBER                           PAGE DATE: 02/20/99

PRIMAUTH CORRNAME CONNTYPE
ORIGAUTH CORRNMBR INSTANCE     EVENT TIMESTAMP           --- L O C K   R E S O U R C E ---
PLANNAME CONNECT               RELATED TIMESTAMP EVENT   TYPE      NAME                    EVENT SPECIFIC DATA
------------------------------ ----------------- -------- --------- ----------------------- ----------------------------------------

BNK      BNK      TSO          10:11:00.69183581 DEADLOCK                                   COUNTER =    3      WAITERS =    3
BNK      'BLANK'  B00AAC5D2906 N/P                                                          TSTAMP  =02/20/99 10:11:00.68
DSNESPRR TSO                                             DATAPAGE  DB  =PARLDABA          HASH    =X'00053406'
                                                                   OB  =TAB1TS           ---------- BLOCKER is HOLDER --*VICTIM*-
                                                                   PAGE=X'000006'        LUW=DSN3.IPVAM511.B00AAC5D2906
                                                                                         MEMBER  =S511       CONNECT =TSO
                                                                                         PLANNAME=DSNESPRR   CORRNAME=BNK
                                                                                         DURATION=MANUAL+1   CORRNMBR='BLANK'
                                                                                         STATE   =S          PRIMAUTH=BNK
                                                                                         ---------------- WAITER ----------------
                                                                                         LUW=DSN3.IPVAM511.B00AAC7F4BD2
                                                                                         MEMBER  =S511       CONNECT =TSO
                                                                                         PLANNAME=DSNESPRR   CORRNAME=NKA
                                                                                         DURATION=COMMIT     CORRNMBR='BLANK'
                                                                                         REQUEST =CHANGE     PRIMAUTH=NKA
                                                                                         STATE   =X          WORTH   =   18
                                                         DATAPAGE  DB  =PARLDABA          HASH    =X'00043402'
                                                                   OB  =TAB1TS           ---------- BLOCKER is HOLDER -----------
                                                                   PAGE=X'000002'        LUW=DSN3.IPVAM511.B00AAC5C9A73
                                                                                         MEMBER  =S511       CONNECT =TSO
                                                                                         PLANNAME=DSNESPRR   CORRNAME=NKA1
                                                                                         DURATION=MANUAL+1   CORRNMBR='BLANK'
                                                                                         STATE   =S          PRIMAUTH=NKA1
                                                                                         ---------------- WAITER -------*VICTIM*-
                                                                                         LUW=DSN3.IPVAM511.B00AAC5D2906
                                                                                         MEMBER  =S511       CONNECT =TSO
                                                                                         PLANNAME=DSNESPRR   CORRNAME=BNK
                                                                                         DURATION=COMMIT     CORRNMBR='BLANK'
                                                                                         REQUEST =CHANGE     PRIMAUTH=BNK
                                                                                         STATE   =X          WORTH   =   17

                                                         DATAPAGE  DB  =PARLDABA          HASH    =X'00053406'
                                                                   OB  =TAB1TS           -----------BLOCKER IS WAITER------------
                                                                   PAGE=X'000006'        LUW=DSN3.IPVAM511.B00AAC7F4BD2
                                                                                         MEMBER  =S511       CONNECT =TSO
                                                                                         PLANNAME=DSNESPRR   CORRNAME=NKA
                                                                                         DURATION=COMMIT     CORRNMBR='BLANK'
                                                                                         STATE   =X          PRIMAUTH=NKA
                                                                                         ---------------- WAITER ----------------
                                                                                         LUW=DSN3.IPVAM511.B00AAC5C9A73
                                                                                         MEMBER  =S511       CONNECT =TSO
                                                                                         PLANNAME=DSNESPRR   CORRNAME=NKA1
                                                                                         DURATION=MANUAL     CORRNMBR='BLANK'
                                                                                         REQUEST =LOCK       PRIMAUTH=NKA1
                                                                                         STATE   =S          WORTH   =   18
```

Figure 338. Deadlock Trace (Part 2 of 2)

Timeout Trace

The timeout trace shows when a timeout occurred and provides details of the resource involved in the timeout event and information about the threads that held the resource or waited to use the resource.

The following sections show the layout of event-specific information for a timeout trace and describe the fields reported. At the end of this chapter you find an example of a timeout trace.

Trace Data Specific to Timeout Event

The details related to the timeout. The format of the timeout-specific data is shown in Figure 339.

```
REQUEST =xxxxxx     aaaaaaaaaaaaa
STATE   =xxxxx      ZPARM INTERVAL=xxxxx
DURATION=xxxxxxxx   INTERV.COUNTER=xxxxx
HASH    =X'hhhhhhhh'
------------ HOLDERS/WAITERS -----------
HOLDER
LUW=xxxxxxxx.xxxxxxxx.xxxxxxxxxxx.xxxxx
MEMBER  =xxxxxxxx   CONNECT =xxxxxxxx
PLANNAME=xxxxxxxx   CORRNAME=xxxxxxxx
DURATION=xxxxxxxx   CORRNMBR=xxxxxxxx
STATE   =xxxxx      PRIMAUTH=xxxxxxxx
ENDUSER =xxxxxxxxxx
TRANSAC =xxxxxxxxxxx
WSNAME  =xxxxxxxxxxx
WAITER
LUW=xxxxxxxx.xxxxxxxx.xxxxxxxxxxx.xxxxx
MEMBER  =xxxxxxxx   CONNECT =xxxxxxxx
PLANNAME=xxxxxxxx   CORRNAME=xxxxxxxx
DURATION=xxxxxxxx   CORRNMBR=xxxxxxxx
STATE   =xxxxx      PRIMAUTH=xxxxxxxx

.
.
.
```

Figure 339. The Format of Timeout-Specific Data

The individual fields have the following meaning:

REQUEST
The timeout request, which can be either of the following:

- LOCK
- CHANGE

aaaaaaaaaaaaa
Stands for the timeout attribute CONDITIONAL or UNCONDITIONAL.

STATE
The state or mode of the lock applied to the resource. Valid values are shown in Table 89.

ZPARM INTERVAL
The timeout interval (ZPARM value), which is the timeout value specified on the installation panel DSNTIPX or in the ZPARM name STORTIME in DSN6SYSP.

DURATION
The length of time for which the lock was held. Valid values are shown in Table 90.

Table 90. Lock Duration

Duration	Description
MANUAL	Varies depending on the ISOLATION parameter
MANUAL+1	Temporary change of consistency level from CS to RR during bind and DDL
COMMIT	Until commit
COMMIT+1	Past commit; applies to locks needed to maintain the position for a cursor opened WITH HOLD
ALLOCATN	Until deallocation

Table 90. Lock Duration (continued)

Duration	Description
PLAN	Lock held for the duration of the plan
UTILITY	For the duration of the utility execution
FREE ALL	Until all locks are freed
X'00'	The suspension reason is a retained lock

The DURATION attribute controls when locks are released. As a general rule, a lock is only released when an agent makes an unlock request with a duration longer than, or equal to, the longest lock duration specified for the resource by that agent.

You increase lock durations using either a lock request or a change request. Lock durations are decreased using a change request.

INTERV.COUNTER
The number of timeout intervals that can occur before the agent is timed out.

HASH The lock resource hash value.

The following fields are printed for each holder/waiter of the reported lock resource:

LUW The ID of the holder's or waiter's logical unit of work. If the reason for the suspension is a retained lock, this field contains the word SYSTEM.

MEMBER
The holder's or waiter's DB2 member name. In a non-data-sharing environment, *N/P* is printed.

CONNECT
The holder's or waiter's connection name. If the reason for the suspension is a retained lock, this field contains the word SYSTEM.

PLANNAME
The holder's or waiter's plan name. If the reason for the suspension is a retained lock, this field contains the word SYSTEM.

CORRNAME
The holder's or waiter's correlation name. If the reason for the suspension is a retained lock, this field contains the word SYSTEM.

DURATION
The lock duration of the timeout holder or waiter. Valid values are shown in Table 90.

CORRNMBR
The holder's or waiter's correlation number. If the reason for the suspension is a retained lock, this field contains the word SYSTEM.

STATE
The holder's or waiter's state or mode of the lock applied to the resource. Valid values are shown in Table 89.

ENDUSER
End user user ID. This field is not shown when this information is not present.

TRANSAC
The end user's transaction name. This field is not shown when this information is not present.

WSNAME
End user's workstatiobn name. This field is not shown when this information is not present.

Timeout Trace Example

Figure 340 shows a sample timeout trace, produced by the following command:

```
⋮
LOCKING
     TRACE
        LEVEL (TIMEOUT)
⋮
```

```
   LOCATION: SYS1DSN3                        DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-1
      GROUP: DSN3                               LOCKING TRACE - TIMEOUT                  REQUESTED FROM: 02/02/99 01:03:07.00
     MEMBER: S511                                                                                   TO: NOT SPECIFIED
  SUBSYSTEM: S511                                                                        ACTUAL FROM: 02/20/99 09:45:49.83
DB2 VERSION: V6                                      SCOPE: MEMBER                        PAGE DATE: 02/20/99

PRIMAUTH CORRNAME CONNTYPE
ORIGAUTH CORRNMBR INSTANCE     EVENT TIMESTAMP            --- L O C K   R E S O U R C E ---
PLANNAME CONNECT               RELATED TIMESTAMP EVENT    TYPE      NAME                  EVENT SPECIFIC DATA
------------------------------ ----------------- -------- --------- --------------------- ----------------------------------------
NKA1     NKA1     TSO          09:45:49.83827912 TIMEOUT  DATAPAGE  DB  =PARLDABA         REQUEST =CHANGE     UNCONDITIONAL
NKA1     'BLANK'  B00AA4A7620D N/P                                   OB  =TAB1TS           STATE   =X          ZPARM INTERVAL=   60
DSNESPRR TSO                                                        PAGE=X'000002'        DURATION=COMMIT     INTERV.COUNTER=    1
                                                                                          HASH    =X'00043402'
                                                                                          ------------ HOLDERS/WAITERS -----------
                                                                                          HOLDER
                                                                                          LUW=N/P
                                                                                          MEMBER  =S511       CONNECT =TSO
                                                                                          PLANNAME=DSNESPRR   CORRNAME=BNK
                                                                                          DURATION=MANUAL     CORRNMBR='BLANK'
                                                                                          STATE   =S          PRIMAUTH=BNK
                                                                                          ENDUSER =BNKUSER
                                                                                          WSNAME  =BNKWS
                                                                                          TRANSAC =BENKS TRANSACTION
```

Figure 340. Timeout Trace

Lockout Trace

The lockout trace contains details of timeout and deadlock events. You generate it by using the following command:

```
⋮
LOCKING
     TRACE
        LEVEL (LOCKOUT)
⋮
```

For information on the layout of a lockout trace, refer to "Deadlock Trace" on page 740 and "Timeout Trace" on page 744.

Figure 341 on page 748 shows an example of a lockout trace, produced by the command shown.

```
    LOCATION: SYS1DSN3                          DB2 PERFORMANCE MONITOR (V6)                              PAGE: 1-2
       GROUP: DSN3                                 LOCKING TRACE - LOCKOUT                    REQUESTED FROM: 02/02/99 01:03:07.00
      MEMBER: S511                                                                                        TO: NOT SPECIFIED
   SUBSYSTEM: S511                                                                                  ACTUAL FROM: 02/20/99 09:45:49.83
 DB2 VERSION: V6                                        SCOPE: MEMBER                                 PAGE DATE: 02/20/99
PRIMAUTH CORRNAME CONNTYPE
ORIGAUTH CORRNMBR INSTANCE     EVENT TIMESTAMP            --- L O C K   R E S O U R C E ---
PLANNAME CONNECT               RELATED TIMESTAMP EVENT    TYPE      NAME                    EVENT SPECIFIC DATA
------------------------------ ----------------- -------- --------- ----------------------- ----------------------------------------
NKA1     NKA1     TSO          09:45:49.83827912 TIMEOUT  DATAPAGE  DB  =PARLDABA           REQUEST =CHANGE     UNCONDITIONAL
NKA1     'BLANK'  B00AA4A7620D N/P                                   OB  =TAB1TS            STATE   =X          ZPARM INTERVAL=   60
DSNESPRR TSO                                                        PAGE=X'000002'         DURATION=COMMIT     INTERV.COUNTER=    1
                                                                                           HASH    =X'00043402'
                                                                                           ------------ HOLDERS/WAITERS -----------
                                                                                           HOLDER
                                                                                           LUW=N/P
                                                                                           MEMBER  =S511       CONNECT =TSO
                                                                                           PLANNAME=DSNESPRR   CORRNAME=BNK
                                                                                           DURATION=MANUAL     CORRNMBR='BLANK'
                                                                                           STATE   =S          PRIMAUTH=BNK
                                                                                           ENDUSER =BNKUSER
                                                                                           WSNAME  =BNKWS
                                                                                           TRANSAC =BENKS TRANSACTION
                                                   DATAPAGE  DB  =PARLDABA                 HASH    =X'00053406'
                                                             OB  =TAB1TS                   ---------- BLOCKER is HOLDER -----------
                                                             PAGE=X'000006'                LUW=DSN3.IPVAM511.B00AA725AE77
                                                                                           MEMBER  =S511       CONNECT =TSO
                                                                                           PLANNAME=DSNESPRR   CORRNAME=NKA1
                                                                                           DURATION=MANUAL+1   CORRNMBR='BLANK'
                                                                                           STATE   =S          PRIMAUTH=NKA1
                                                                                           ---------------- WAITER -------*VICTIM*-
                                                                                           LUW=DSN3.IPVAM511.B00AA3F5AF77
                                                                                           MEMBER  =S511       CONNECT =TSO
                                                                                           PLANNAME=DSNESPRR   CORRNAME=BNK
                                                                                           DURATION=COMMIT     CORRNMBR='BLANK'
                                                                                           REQUEST =CHANGE     PRIMAUTH=BNK
                                                                                           STATE   =X          WORTH   =   17
                                                                                           ENDUSER =BNKUSER
                                                                                           WSNAME  =BNKWS
                                                                                           TRANSAC =BENKS TRANSACTION
BNK      BNK      TSO          09:50:14.98847800 DEADLOCK                                 COUNTER =    2      WAITERS =    2
BNK      'BLANK'  B00AA3F5AF77 N/P                                                        TSTAMP  =02/20/99 09:50:14.97
DSNESPRR TSO                                       DATAPAGE  DB  =PARLDABA              HASH    =X'00043402'
REQLOC  :SYS1DSN4                                            OB  =TAB1TS               ---------- BLOCKER is HOLDER --*VICTIM*-
ENDUSER:BNKUSER                                             PAGE=X'000002'            LUW=DSN3.IPVAM511.B00AA3F5AF77
WSNAME  :BNKWS                                                                        MEMBER  =S511       CONNECT =TSO
TRANSAC :BENKS TRANSACTION                                                            PLANNAME=DSNESPRR   CORRNAME=BNK
                                                                                      DURATION=MANUAL+1   CORRNMBR='BLANK'
                                                                                      STATE   =S          PRIMAUTH=BNK
                                                                                      ENDUSER =BNKUSER
                                                                                      WSNAME  =BNKWS
                                                                                      TRANSAC =BENKS TRANSACTION
                                                                                      ---------------- WAITER ----------------
                                                                                      LUW=DSN3.IPVAM511.B00AA725AE77
                                                                                      MEMBER  =S511       CONNECT =TSO
                                                                                      PLANNAME=DSNESPRR   CORRNAME=NKA1
                                                                                      DURATION=COMMIT     CORRNMBR='BLANK'
                                                                                      REQUEST =CHANGE     PRIMAUTH=NKA1
                                                                                      STATE   =X          WORTH   =   18
 LOCKING TRACE COMPLETE
```

Figure 341. Lockout Trace

Lock Suspension Trace

The lock suspension trace identifies applications that have been suspended after a lock was requested on a resource that is not available. The trace shows an entry for the suspension of each of the following:

- An IRLM request (except when the resource type is a drain lock).
- An IRLM request where the resource type is a drain lock.
- A drain request where the claim count is not zero.

  This suspension occurs when the agent making the drain request has to wait for the claim count on the particular resource to become zero.
- A page latch request.

  This suspension occurs when the agent making the page latch request has to wait for a page that is currently being held by another agent.

The lock suspension trace is produced if level SUSPENSION is specified in the TRACE subcommand and if there is at least one pair of IFCIDs 44/45, 213/214, 215/216, or 226/227 in the input data set satisfying the FROM/TO and INCLUDE/EXCLUDE criteria.

The following sections show the layout of a lock suspension trace and describe the various fields of the trace. At the end of this chapter you find an example of a lock suspension trace.

Trace-Specific Data to Lock Suspension Events

This section shows details related to the various suspension, and resume events. The format of the data for these events is shown in Figure 342 through Figure 350 on page 754.

1. — LOCK, UNLOCK, CHANGE and NOTIFY SUSPEND

```
DURATION=xxxxxxxx STATE=xxxxx XES PROP=x
ORIG.RSN=xxxxx xxxxxxxxxx     XES FORC=x
aaaaaaaaaaaaaaaaaaaa          XES ASYN=x
PARENT  =xxxxxxxx
HASH    =X'hhhhhhhh'
```

Figure 342. The Format of the Data Specific to LOCK, UNLOCK, CHANGE, and NOTIFY SUSPEND

DURATION
The length of time the lock is held. Valid values are shown in Table 91.

Table 91. Lock Duration - IRLM SUSPEND

Duration	Description
INTEREST	Duration of P-locks
MANUAL	Varies depending on the ISOLATION parameter
MANUAL+1	Temporary change of consistency level from CS to RR during bind and DDL
COMMIT	Until commit
COMMIT+1	Past commit; applies to locks needed to maintain the position for a cursor opened WITH HOLD
ALLOCATN	Until deallocation
PLAN	For the duration of the plan
UTILITY	For the duration of the utility execution
FREE ALL	Until all locks are freed
N/A	Not applicable to NOTIFY SUSPEND

STATE
The state or mode of the lock applied to the resource. Valid values are shown in Table 89.

ORIG.RSN
The original reason for the suspension. The task remains suspended until all suspension causes are cleared. Valid values are shown in Table 92.

Table 92. Reason for Suspension - IRLM SUSPEND

Reason	Description
LOCAL CONTENTION	Local resource contention
LATCH CONTENTION	IRLM latch contention
INTER SYSTEM	Intersystem communication required to resolve the lock request
LS	Local storage cannot be exceeded in cross-memory mode
IQ	Queued IRLM request
NOTIFY MSG SENT	Intersystem message sending
RETAINED LOCK	Contention with a retained lock

PARENT
The parent token for explicit hierarchical locking.

HASH The lock hash value.

The following fields are printed if both of the following conditions are satisfied:

- The DB2 PM subsystem is a member of a data sharing group.
- It is an IRLM suspension.

aaaaaaaaaaaaaaaaaaaa
Stands for the lock attributes, which can be one or more of the following:

- MODIFY or NMODIFY
- GLOBAL or LOCAL
- P-LOCK or L-LOCK

XES PROP
An indicator whether or not IRLM propagated the request to XES. Possible values are Y(es) or N(o).

XES FORC
An indicator whether or not the lock was requested to be forced to XES. Possible values are Y(es) or N(o).

XES ASYN
An indicator whether or not IRLM sent the request asynchronously to XES. Possible values are Y(es) or N(o).

This field is only printed if XES PROP=Y.

2. — LOCK, UNLOCK, CHANGE, and NOTIFY RESUME

The format of the data for these events depends on whether these events occurred in a data sharing or non-data-sharing environment. Figure 343 shows the format in a data sharing environment, Figure 344 in a non-data-sharing environment.

```
SUSP.TIME =ss.nnnnnn LOCAL CONTENTION=Y
DURATION  =xxxxxxxx  LATCH CONTENTION=Y*
STATE     =xxxxx     IRLM QUEUED REQ =N
RESUME RSN=xxxxxxxx  GLOBAL CONT.    =Y
XES PROP  =x         NOTIFY MSG SENT =N
XES FORC  =x         bbbbbbbbbbbbbbbbbb
XES ASYN  =x         RETAINED LOCK   =Y
aaaaaaaaaaaaaaaaaaaa
PARENT  =X'hhhhhhhh'
HASH    =X'hhhhhhhh'
```

Figure 343. The Format of the Data Specific to LOCK, UNLOCK, CHANGE, and NOTIFY RESUME - Data Sharing

```
SUSP.TIME =ss.nnnnnn  LOCAL CONTENTION=Y
RESUME RSN=xxxxxxxx   LATCH CONTENTION=Y*
                      IRLM QUEUED REQ =N
```

Figure 344. The Format of the Data Specific to LOCK, UNLOCK, CHANGE, and NOTIFY RESUME - Non-Data Sharing

The individual fields have the following meaning:

SUSP.TIME
The duration of the suspension.

DURATION
The length of time the lock is held. For a list of possible values, refer to Table 91 on page 749.

STATE
The state or mode of the lock applied to the resource. For a list of possible values, refer to Table 89 on page 742.

RESUME RSN
The reason for resumption. Valid values are shown in Table 93.

Table 93. Reason for Resume - IRLM Requests

Reason	Description
NORMAL	The suspended task resumed normally when the resource became available.
DEADLOCK	The suspended task resumed after a deadlock.
TIMEOUT	The suspended task resumed when a preset time interval expired.
IDENTIFY	The suspended task is resumed after an identify call to IRLM.

XES PROP
An indicator whether or not IRLM propagated the request to XES. Possible values are Y(es) or N(o).

XES FORC
An indicator whether or not the lock was requested to be forced to XES. Possible values are Y(es) or N(o).

XES ASYN
An indicator whether or not IRLM sent the request asynchronously to XES. Possible values are Y(es) or N(o).

This field is only printed if XES PROP=Y.

aaaaaaaaaaaaaaaaaaaa
Stands for the lock attributes, which can be one or more of the following:

- MODIFY or NMODIFY
- GLOBAL or LOCAL
- P-LOCK or L-LOCK

PARENT
The parent token for explicit hierarchical locking.

HASH The lock hash value.

A request can be suspended for several reasons. For example, the original reason may have been an IRLM latch contention, then the request may first have hit local contention and, after it was resolved, global level contention. The fields in the right block show whether or not a particular reason for suspension was encountered, which is indicated by Y(es) or N(o). The original reason is marked with an asterisk (*).

LOCAL CONTENTION
The local resource contention.

LATCH CONTENTION
The IRLM latch contention.

IRLM QUEUED REQ
The IRLM queued request. This request is only valid for IRLM suspensions.

GLOBAL CONT.
The global contention. Intersystem communication is required to resolve the lock request. This reason applies to data sharing environments only.

NOTIFY MSG SENT
Intersystem message sending. This reason only applies to data sharing environments and IFCID 44 suspensions.

bbbbbbbbbbbbbbbbbb
Only applies if it is an IRLM suspension and the global contention is hit (GLOBAL CONT.=Y). If these conditions are satisfied, it can be one of the following values:

IRLM GLOBAL CONT
The request hit IRLM global resource contention.

XES GLOBAL CONT
The request hit XES global resource contention.

FALSE CONTENTION
The request hit neither of the previous contentions.

RETAINED LOCK
Indicates whether there was contention with a retained lock.

3. — QUERY SUSPEND

The format of the data for this event is shown in Figure 345.

```
ORIG.RSN=xxxxx xxxxxxxxxx
```

Figure 345. The Format of the Data Specific to QUERY SUSPEND

This field shows the original reason for suspension. For a list of possible values, refer to Table 92 on page 750.

4. — QUERY RESUME

The data specific to this event is derived from the IFCIDs 44/45 and 213/214. The format of the data for this event is shown in Figure 346.

```
SUSP.TIME =s.nnnnnn  LOCAL CONTENTION=Y
RESUME RSN=xxxxxxxx  LATCH CONTENTION=Y*
                     IRLM QUEUED REQ =N
```

Figure 346. The Format of the Data Specific to QUERY RESUME

For a description of the fields shown, refer to “LOCK, UNLOCK, CHANGE, and NOTIFY RESUME” on page 750.

5. — DRAIN SUSPEND

The format of the data for this event is shown in Figure 347.

```
CLAIM NO=nnnnn  CLASS=xxxxx
```

Figure 347. The Format of the Data Specific to DRAIN SUSPEND

The individual fields have the following meaning:

CLAIM NO
The number of claims held on this resource.

CLASS
The claim class. Valid values are shown in Table 94.

Table 94. Claim Classes - DRAIN SUSPEND

Class	Description
CS	Cursor stability read
RR	Repeatable read
WRITE	Write

6. — DRAIN RESUME

The data specific to this event is derived from the IFCIDs 215 and 216. The format of the data for this event is shown in Figure 348.

```
SUS.TIME=s.nnnnnn  CLASS   =xxxxx
RESM.RSN=xxxxxxxx  CLAIM NO=nnnnn
```

Figure 348. The Format of the Data Specific to DRAIN RESUME

The individual fields have the following meaning:

SUS.TIME
The duration of the suspension.

CLASS
The claim class. Valid values are shown in Table 94 on page 753.

RESM.RSN
The reason for resumption. Valid values are shown in Table 95.

Table 95. Reason for Resume - DRAIN RESUME

Reason	Description
NORMAL	The suspended task resumed normally when the resource became available.
TIMEOUT	The suspended task resumed when a preset time interval expired.

CLAIM NO
The number of claims held on this resource.

7. — LATCH SUSPEND

The format of the data for this event is shown in Figure 349.

```
TYPE=xxxxxxxxx
```

Figure 349. The Format of the Data Specific to LATCH SUSPEND

The field shown represents the type of the latch. It can have one of the following values:

Table 96. Latch Types - LATCH SUSPEND

Type	Description
SHARED	S latch
EXCLUSIVE	X latch

8. — LATCH RESUME

The format of the data for this event is shown in Figure 350.

```
SUS.TIME=s.nnnnnn   TYPE=xxxxxxxxx
STATUS  =xxxxxxxxx
```

Figure 350. The Format of the Data Specific to LATCH RESUME

The individual fields have the following meaning:

SUS.TIME
The duration of the suspension.

TYPE The type of latch. Valid values are shown in Table 96.

STATUS
The latch status. It can have one of the following values:

Table 97. Latch Status - LATCH RESUME

Status	Description
NORMAL	Normal completion of a page latch wait.

Table 97. Latch Status - LATCH RESUME (continued)

Status	Description
CANCELLED	The page latch wait was canceled before the latch was obtained. For example, the agent representing the latch was abnormally terminated during a page latch wait.

Lock Suspension Trace Example

Figure 351 on page 756 shows a sample lock suspension trace produced by the following command:

```
⋮
LOCKING
     TRACE
        LEVEL (SUSPENSION)
⋮
```

```
   LOCATION: USIBMSYSTDB2                    DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-1
      GROUP: USIBMSYSTDB2                     LOCKING TRACE - SUSPENSION                  REQUESTED FROM: NOT SPECIFIED
     MEMBER: DB2Q                                                                                    TO: NOT SPECIFIED
  SUBSYSTEM: DB2Q                                                                       ACTUAL FROM: 03/14/99 19:33:17.42
DB2 VERSION: V6                                    SCOPE: MEMBER                          PAGE DATE: 03/14/99

PRIMAUTH CORRNAME CONNTYPE
ORIGAUTH CORRNMBR INSTANCE     EVENT TIMESTAMP           --- L O C K   R E S O U R C E ---
PLANNAME CONNECT               RELATED TIMESTAMP EVENT   TYPE      NAME                    EVENT SPECIFIC DATA
------------------------------ ----------------- ------- --------- ----------------------- ----------------------------------------
T3270A   NOPID    IMS-MPP      19:33:17.42944643 LOCK    OPENLOCK  DB  =TPCCE1             DURATION=MANUAL   STATE=X     XES PROP=Y
T3270A   0002     A9BA4BA9A1A6                    SUSPEND           OB  =TSTCK000           ORIG.RSN=INTER SYSTEM         XES FORC=N
NOPID    IMSA                                                                             NMODIFY GLOBAL L-LOCK         XES ASYN=Y
                                                                                          PARENT  =X'01020010'
                                                                                          HASH    =X'00002240'

                               19:33:17.43110459 LOCK    OPENLOCK  DB  =TPCCE1             SUSP.TIME =0.001658  LOCAL CONTENTION=N
                               19:33:17.42944643 RESUME            OB  =TSTCK000           DURATION  =MANUAL    LATCH CONTENTION=N
                                                                                          STATE     =X         IRLM QUEUED REQ =N
                                                                                          RESUME RSN=NORMAL    GLOBAL CONT.    =N*
                                                                                          XES PROP  =Y         NOTIFY MSG SENT =N
                                                                                          XES FORC  =N
                                                                                          XES ASYN  =Y         RETAINED LOCK   Y
                                                                                          NMODIFY GLOBAL L-LOCK
                                                                                          PARENT  =X'01020010'
                                                                                          HASH    =X'00002240'

SYSOPR   TLPLKP   'BLANK'      19:34:12.48749093 LOCK    GBP CAST  BPID=GBP0              DURATION=INTEREST STATE=S     XES PROP=Y
SYSOPR   KPD002   A9BA4771D452                    SUSPEND                               ORIG.RSN=INTER SYSTEM         XES FORC=N
'BLANK'  SSDQ                                                                             NMODIFY GLOBAL P-LOCK         XES ASYN=Y
                                                                                          HASH    =X'00000000'

                               19:34:29.49145978 LOCK    GBP CAST  BPID=GBP0              SUSP.TIME =17.00397  LOCAL CONTENTION=N
                               19:34:12.48749093 RESUME                                  DURATION  =INTEREST  LATCH CONTENTION=N
                                                                                          STATE     =S         IRLM QUEUED REQ =N
                                                                                          RESUME RSN=NORMAL    GLOBAL CONT.    =N*
                                                                                          XES PROP  =Y         NOTIFY MSG SENT =N
                                                                                          XES FORC  =N
                                                                                          XES ASYN  =Y         RETAINED LOCK   =Y
                                                                                          NMODIFY GLOBAL P-LOCK
                                                                                          HASH    =X'00000000'

T3270A   NOPID    IMS-MPP      19:36:28.73824331 LOCK    PAGEPLCK  DB  =TPCCE1             DURATION=INTEREST STATE=S     XES PROP=Y
T3270A   0002     A9BA4BA9A1A6                    SUSPEND           OB  =XNORD000           ORIG.RSN=INTER SYSTEM         XES FORC=Y
NOPID    IMSA                                                     PAGE=X'00000001'        NMODIFY GLOBAL P-LOCK         XES ASYN=Y
                                                                  BPID=BP0                HASH    =X'000201CF'

                               19:36:28.78801059 LOCK    PAGEPLCK  DB  =TPCCE1             SUSP.TIME =0.049767  LOCAL CONTENTION=N
                               19:36:28.73824331 RESUME            OB  =XNORD000           DURATION  =INTEREST  LATCH CONTENTION=N
                                                                  PAGE=X'00000001'        STATE     =S         IRLM QUEUED REQ =N
                                                                  BPID=BP0                RESUME RSN=NORMAL    GLOBAL CONT.    =N*
                                                                                          XES PROP  =Y         NOTIFY MSG SENT =N
                                                                                          XES FORC  =Y
                                                                                          XES ASYN  =Y         RETAINED LOCK   =Y
                                                                                          NMODIFY GLOBAL P-LOCK
                                                                                          HASH    =X'000201CF'

                               19:38:08.26353303 QUERY   P/P PLCK  BPID=BP0               ORIG.RSN=IRLM QUEUED REQ
                                                 SUSPEND

                               19:38:08.28854759 QUERY   P/P PLCK  BPID=BP0               SUSP.TIME =0.025015  LOCAL CONTENTION=N
                               19:38:08.26353303 RESUME                                  RESUME RSN=NORMAL    LATCH CONTENTION=N
                                                                                                               IRLM QUEUED REQ =Y*
                               19:38:08.50217306 CHANGE  N/P       N/P                   DURATION=INTEREST STATE=U     XES PROP=Y
                                                 SUSPEND                                  ORIG.RSN=INTER SYSTEM         XES FORC=N
                                                                                          NMODIFY LOCAL  P-LOCK         XES ASYN=Y
                                                                                          HASH    =X'00000000'

                               19:38:08.50358343 CHANGE  N/P       N/P                   SUSP.TIME =0.001410  LOCAL CONTENTION=N
                               19:38:08.50217306 RESUME                                  DURATION  =INTEREST  LATCH CONTENTION=N
                                                                                          STATE     =U         IRLM QUEUED REQ =N
                                                                                          RESUME RSN=NORMAL    GLOBAL CONT.    =N*
                                                                                          XES PROP  =Y         NOTIFY MSG SENT =N
                                                                                          XES FORC  =N
                                                                                          XES ASYN  =Y         RETAINED LOCK   =Y
                                                                                          NMODIFY LOCAL  P-LOCK
                                                                                          HASH    =X'00000000'
```

Figure 351. Lock Suspension Trace

Lock Detail Trace

The lock detail trace describes all locking events in a DB2 system. It includes those that can be viewed in separate traces, which are suspension, timeout, and deadlock events. In this way, you get a global view of the entire locking activity in the system.

You determine which locking events you want to see in a lock detail trace. You do this in the TRACE command by specifying the TYPE identifier in the INCLUDE/EXCLUDE option.

The lock detail trace is produced if level DETAIL is specified on the TRACE command and if there is at least one IFCID in the input data set that satisfies the FROM/TO and INCLUDE/EXCLUDE criteria.

The following sections show the layout of a detail trace and describe the various fields of the trace. At the end of this chapter you find an example of a detail trace.

Trace Data Specific to Data Lock Detail

This section shows event specific data not already described for previous traces.

1. — LOCK SUMMARY

The format of the data for this event is shown in Figure 352.

```
MAX PAGE & ROW LOCKS=XXXXXX   LOCKAV=XXX
SHARED ESCAL=XXXXXX  EXCLUS.ESCAL=XXXXXX

MAX PAGE & ROW LOCKS=XXXXXX   LOCKAV=XXX
TABLESPACE TYPE=XXXXXXXXXXX   SIZE=XXXXX
TABLES WITH ESCALATIONS=XXXXXX
MAX STATE=XXXXX    PRE-ESCAL.STATE=XXXXX
```

Figure 352. The Format of the Data Specific to LOCK SUMMARY

The individual fields have the following meaning:

MAX PAGE & ROW LOCKS
The maximum number of page or row locks across all table spaces held concurrently for the thread.

If IFCID 20 is not present, *N/A* is printed in this field.

LOCKAV
Indicates if lock avoidance techniques are used within this unit of work across all table spaces. Possible values are Y(es) or N(o).

If IFCID 218 is not present, *N/A* is printed in this field.

SHARED ESCAL
The number of escalations to shared mode for the thread:

- For segmented table spaces, the number of tables that have escalated
- For partitioned table spaces using selective partition locking (SPL), the number of partitions that have escalated
- For simple and partitioned table spaces, the number of table spaces that have escalated

If IFCID 20 is not present, *N/A* is printed in this field.

EXCLUS.ESCAL
The number of escalations to exclusive mode for the thread:

- For segmented table spaces, the number of tables that have escalated

- For partitioned table spaces using selective partition locking (SPL), the number of partitions that have escalated
- For simple and partitioned table spaces, the number of table spaces that have escalated

If IFCID 20 is not present, *N/A* is printed in this field.

The following fields are printed once for each table space:

MAX PAGE & ROW LOCKS
The maximum number of page or row locks per table space held concurrently by the thread.

If IFCID 20 is not present, *N/A* is printed in this field.

LOCKAV
Indicates if lock avoidance techniques are used for this table space. Possible values are Y(es) or N(o).

If IFCID 218 is not present, *N/A* is printed in this field.

TABLE SPACE TYPE
The table space type:

SIMPLE
Simple table spaces

SEGMENTED
Segmented table spaces

PARTITIONED
Partitioned table spaces

PARTIT.-SPL
Partitioned table spaces using selective partition locking (SPL)

If IFCID 20 is not present, the table space type is not printed.

SIZE The lock size used, which can be one of the following:
- PAGE
- ROW
- TABLE

TABLES WITH ESCALATIONS
The number of tables within the table space for which escalations occurred. This field is only printed for segmented table spaces or partitioned table spaces using SPL.

If IFCID 20 is not present, *N/A* is printed in this field.

MAX STATE
The highest lock state for the table space. This field is only printed for simple table spaces or partitioned table spaces not using SPL.

If IFCID 20 is not present, *N/A* is printed in this field.

Possible values are shown in Table 98.

Table 98. Lock State

State	Description
IS	Intent share

Table 98. Lock State (continued)

State	Description
IX	Intent exclusive
S	Share
U	Update
SIX	Share with intent exclusive

PRE-ESCAL.STATE
The lock state before escalations. A list of values is shown in Table 98 on page 758. If no escalation occurred, *NO ESCALATIONS* is printed.

This field is only printed for simple table spaces or partitioned table spaces not using SPL.

If IFCID 20 is not present, *N/P* is printed.

2. — LOCK, UNLOCK, and CHANGE REQUESTs

The format of the data for these events is shown in Figure 353.

```
DURATION=xxxxxxxx STATE=xxxxx XES PROP=x
RSN CODE=xxxxxxxx RTNCD=xx    XES FORC=x
aaaaaaaaaaaaaaaaaaaa          XES ASYN=x
PARENT  =xxxxxxxx CACHE=xxx
OWNER   =xxxxxxxx HASH=X'hhhhhhhh'
```

Figure 353. The Format of the Data Specific to LOCK, UNLOCK, and CHANGE REQUESTs

The individual fields have the following meaning:

DURATION
The length of time the lock is held. Valid values are shown in Table 99.

Table 99. Lock Duration—IRLM Requests

Duration	Description
INTEREST	Duration used for P-locks
MANUAL	Varies depending on the ISOLATION parameter
MANUAL+1	Temporary change of consistency level from CS to RR during bind and DDL
COMMIT	Until commit
COMMIT+1	Past commit; applies to locks needed to maintain the position for a cursor opened WITH HOLD
ALLOCATN	Until deallocation
PLAN	For the duration of the plan
UTILITY	For the duration of the utility execution
FREE ALL	Until all locks are freed
N/A	Not applicable for NOTIFY SUSPEND

The duration controls when locks are released. A lock is usually only released when an agent makes an unlock request with a duration longer, or equal to, the longest lock duration the agent specified for the resource.

You can increase lock durations using either a lock request or a change request.

STATE
The state or mode of the lock applied to the resource. Valid values are shown in Table 100.

Table 100. Lock State—IRLM Requests

State	Description
IS	Intent share
IX	Intent exclusive
S	Share
U	Update
SIX	Share with intent exclusive
NSU	Nonshared update
X	Exclusive
N/A	Not applicable for NOTIFY SUSPEND

RTNCD
The return code issued in response to the request. The possible return codes are shown in Table 101.

Table 101. Return Codes—IRLM Requests

Code	Description
0	Successful completion
4	Successful completion, lock state unchanged
8	Unsuccessful completion, system error
12	Unsuccessful completion, logic error in request
16	Unsuccessful completion, request specification not valid

RSN CODE
The reason code issued in response to the request. The reason code is not applicable for lock avoidance (N/A is printed).

The remaining fields are only printed if the DB2 subsystem is a member of a data sharing group.

aaaaaaaaaaaaaaaaaaaa
Stands for the lock attributes, which can be:

- MODIFY or NMODIFY
- GLOBAL or LOCAL
- P-LOCK or L-LOCK

PARENT
The parent lock token if one was specified for explicit hierarchical locking. The field is only printed for LOCK REQUESTs.

If this field is not 0, the request applies to a child of a parent that has already been locked.

CACHE
The cached state of a P-lock. For the state values, refer to Table 100.

This field is only applicable and printed for page set and partition P-locks.

OWNER
The member name of the owner of a retained lock that caused this request to be denied and the owner of the lock that caused this request to time out. If neither of these conditions exist, this field is not printed.

HASH The lock hash value.

XES PROP
An indicator whether or not IRLM propagated the request to XES. Possible values are Y(es) or N(o).

XES FORC
An indicator whether or not the lock was requested to be forced to XES. Possible values are Y(es) or N(o).

XES ASYN
An indicator whether or not IRLM sent the request asynchronously to XES. Possible values are Y(es) or N(o).

This field is only printed if XES PROP=Y.

3. — QUERY REQUESTs

The format of the data for this event is shown in Figure 354.

```
RSN CODE=xxxxxxxx RTNCD=xx
```

Figure 354. The Format of the Data Specific to QUERY REQUESTs

For an explanation of the individual fields refer to page 760.

4. — CLAIM ACQUIRE, CHANGE, and RELEASE

The format of the data for this event is shown in Figure 355.

```
DURATION=xxxxxxxx  CLASS=xxxxx
RSN CODE=xxxxxxxx  RTNCD=x
```

Figure 355. The Format of the Data Specific to CLAIM ACQUIRE, CHANGE and RELEASE

The individual fields have the following meaning:

DURATION
The duration of the claim. The values for this field are shown in Table 102.

Table 102. Claim Duration—Claim Requests

Duration	Description
COMMIT	Until commit
COMMIT+1	Past commit; applies to locks needed to maintain the position for a cursor opened WITH HOLD
ALLOCATN	Until deallocation

CLASS
The claim class of the claim request. The values for this field are shown in Table 103.

Table 103. Claim Classes—Claim Requests

Class	Description
CS	Cursor stability read
RR	Repeatable read
WRITE	Write

RSN CODE
The reason code issued in response to the request. The values for this field are shown in Table 104.

Table 104. Reason Codes—Claim Requests

Code	Description
0	Successful claim
00C90080	Unsuccessful claim, resource is started
00C90081	Unsuccessful claim, resource is stopped
00C90082	Unsuccessful claim, resource is used by a utility
00C90083	Unsuccessful claim, resource is used by a utility that allows R/O access only
00C90086	Unsuccessful claim, resource is started for utility-only access
00C90088	Unsuccessful claim, deadlock
00C9008E	Unsuccessful claim, timeout on drain lock
00C90092	Unsuccessful claim, IRLM out-of-storage condition
00C90093	Unsuccessful claim, IRLM error
00C90097	Unsuccessful claim, resource has an image copy pending
00C900A0	Unsuccessful claim, resource has recovery pending
00C900A3	Unsuccessful claim, resource has a check pending

RTNCD
The return code issued in response to the request. The values for this field are shown in Table 105.

Table 105. Return Codes—Claim Requests

Code	Description
0	Successful completion
4	Logical claim needed
8	Unsuccessful completion

5. — DRAIN REQUEST, PSEUDO, and RELEASE

The format of the data for this event is shown in Figure 356.

```
STATE   =xxxxx     CLASS=xxxxx
RSN CODE=xxxxxxxx  RTNCD=x
```

Figure 356. The Format of the Data Specific to DRAIN REQUEST, PSEUDO, and RELEASE

The individual fields have the following meaning:

STATE
The lock state. It is only applicable to DRAIN REQUEST. Possible values

are shown in Table 106.

Table 106. Lock State—Drain Requests

State	Description
IX	Intent exclusive
X	Exclusive

CLASS
The claim class of the drain request. The values for this field are shown in Table 107.

Table 107. Claim Classes—Drain Requests

Class	Description
CS	Cursor stability read
RR	Repeatable read
WRITE	Write

RSN CODE
The reason code issued in response to the request. The values for this field are shown in Table 108.

Table 108. Reason Codes—Drain Requests

Code	Description
0	Successful claim
00C90088	Unsuccessful claim, deadlock
00C9008E	Unsuccessful claim, timeout
00C90092	Unsuccessful claim, IRLM out-of-storage condition
00C90093	Unsuccessful claim, IRLM error

RTNCD
The return code issued in response to the request. The values for this field are shown in Table 109.

Table 109. Return Codes—Drain Requests

Code	Description
0	Successful completion
8	Unsuccessful completion

6. — LOCK AVOIDANCE

This event does not have event-specific data.

7. — P-LOCK REQUESTs

P-lock requests include the following events:

- ***Page set or partition P-lock request or page set or partition P-lock negotiation request***

  These P-locks track inter-DB2 interest on a linear page set (table space or index) or a partition of a partitioned page set.

  The cached state of the page set or partition P-lock tells DB2 which data sharing protocols must be used to maintain inter-DB2 buffer coherency for the page set or partition. For example, a cached state of IS tells DB2 that whenever a page belonging to that page set or partition is read into the buffer pool, the page must

be registered to the coupling facility for cross-invalidation purposes. If the cached state were SIX, then no such coupling facility page registration would be necessary.

Normally the P-lock is held by DB2 in the cached state. The P-lock state determines whether or not the page set or partition is GBP-dependent:

– If the page set or partition P-lock is held in S or X, then the page set or partition is not GBP-dependent.
– Otherwise, the page set or partition is GBP-dependent.

- ***Page P-lock request or page P-lock negotiation request***

  These P-locks preserve the inter-DB2 cached page (buffer) coherency when subpage concurrency protocols are used and the page set or partition is actively R/W shared between two or more DB2 systems. The most common cases of subpage concurrency are row-level locking and type-1 index minipages.

Note: Page P-locking can add a significant overhead to data sharing if inter-DB2 workloads are not properly balanced. Class 21 is added to monitor these events without having to use the costly Class 7. However, page P-lock events are recorded in Class 7 as well. Therefore, if Class 7 and 21 are both active, two records are reported for the same event.

The format of the data for these events is shown in Figure 357 and Figure 358.

```
REQUEST=xxxxxx    OBJECT=xxxxxxxxxxx
MEMBER =xxxxxxxx  REQUESTED STATE =xxxxx
OLD STATE=xxxxx   OLD CACHED STATE=xxxxx
NEW STATE=xxxxx   NEW CACHED STATE=xxxxx
aaaaaaaaaaaaaaaaaaaaaaa
```

Figure 357. The Format of the Data Specific to Page Set or Partition P-Lock Requests

```
REQUEST=xxxxxx    OBJECT=xxxxxxxxxxxxxxx
MEMBER =xxxxxxxx  REQUESTED STATE=xxxxx
OLD STATE=xxxxx   NEW STATE=xxxxx
aaaaaaaaaaaaaaaaaaaaaaa
```

Figure 358. The Format of the Data Specific to Page P-Lock Requests

The individual fields have the following meaning:

REQUEST
The IRLM request type, which can be one of the following:

- LOCK
- UNLOCK
- CHANGE
- EXIT

OBJECT
The DB2 object type, which can be one of the following:

- TABLESPACE
- INDEXSPACE
- DATA PAGE
- HEADER PAGE

- INDEX PAGE
- SPACE MAP PAGE

MEMBER
A DB2 member name that depends on the request type:

- For exit requests, the name of the DB2 member in conflict with this member's currently held P-lock state.
- For lock, unlock, and change requests, for which P-lock is rejected, the name of the DB2 member in conflict with this request.
- In all other cases, *N/A*.

REQUESTED STATE
The requested lock state. It only applies to lock, change, and exit requests.

For exit requests, this is the P-lock state requested by the member causing the P-lock exit of this member. If the request from the other member was not in conflict with the state of this member, this field shows *NH*.

The values for this field are shown in Table 110.

Table 110. Lock State

State	Description
NH	Not held
IS	This DB2 has R/O interest on the page set or partition and one or more other DB2s in the group have R/W interest
IX	This DB2 has R/W interest on the page set or partition, one or more other DB2s in the group have R/O interest, and one or more can also have R/O interest
S	This DB2 has R/O interest on the page set or partition and no other DB2 in the group has R/W interest but one or more can have R/O interest
SIX	This DB2 has R/W interest on the page set or partition and no other DB2 in the group has R/W interest but one or more can have R/O interest
NSU	Nonshared update
X	This DB2 has R/W interest on the page set or partition and no other DB2 in the group has any interest
RD	Request denied

OLD STATE
The previously held P-lock state.

The values for this field are shown in Table 110.

NEW STATE
The newly held P-lock state.

The values for this field are shown in Table 110.

OLD CACHED STATE
The previous P-lock cached state.

The values for this field are shown in Table 110.

NEW CACHED STATE
The new P-lock cached state.

The values for this field are shown in Table 110.

aaaaaaaaaaaaaaaaaaaaaaaa
Stands for the P-lock attributes, which can be one or more of the following:

- UNCONDITIONAL or CONDITIONAL.
- RESTART or NONRESTART. Such a request instructs IRLM to convert a retained lock held by the DB2 system into an active lock. If the requested lock is not retained, IRLM grants the request as normal.
- MODIFY or NONMODIFY.

8. — NOTIFY REQUESTs

In some cases, DB2 data sharing uses the IRLM notify request to maintain non-buffer pool cache coherency between DB2 systems in the group. Examples of a notify request usage are DBD coherency and High Used RBA (HURBA) for a data set.

The format of the data for this event is shown in Figure 359.

```
TYPE=xxxxxxxx   STATE  =xxxxx
WAIT=xxx        HOLDERS=xxxxx
```

Figure 359. The Format of the Data Specific to NOTIFY REQUESTs

The individual fields have the following meaning:

TYPE The type of notify operation. Possible values are SEND or RECEIVE.

STATE
The lock state. For a list of possible values, refer to Table 100 on page 760.

If this field contains one of the listed values, only those lock holders owning the lock in the specified state are notified.

N/A in this field means that the notify message is sent to all DB2 systems holder of the lock, regardless of the state they hold it in.

This field is not applicable or printed if TYPE=RECEIVE.

WAIT Indicates if the request is synchronous, that is, suspended until all responses are received, in which case WAIT=YES is printed, or asynchronous, that is, WAIT=NO.

HOLDERS
The number of holders notified.

This field is not applicable or printed if TYPE=RECEIVE.

Lock Detail Trace Example

Figure 360 on page 767 shows a sample lock detail trace, produced by the following command:

```
⋮
LOCKING
     TRACE
        LEVEL (DETAIL)
⋮
```

```
   LOCATION: USIBMSYSTDB2                    DB2 PERFORMANCE MONITOR (V5)                          PAGE: 1-4
      GROUP: USIBMSYSTDB2                       LOCKING TRACE - DETAIL                  REQUESTED FROM: NOT SPECIFIED
     MEMBER: DB2U                                                                                    TO: NOT SPECIFIED
  SUBSYSTEM: DB2U                                                                       ACTUAL FROM: 08/14/96 19:32:57.03
DB2 VERSION: V5                                  SCOPE: MEMBER                           PAGE DATE: 08/14/96

PRIMAUTH CORRNAME CONNTYPE
ORIGAUTH CORRNMBR INSTANCE     EVENT TIMESTAMP           --- L O C K   R E S O U R C E ---
PLANNAME CONNECT               RELATED TIMESTAMP EVENT   TYPE      NAME                  EVENT SPECIFIC DATA
------------------------------ ----------------- ------- --------- --------------------- ----------------------------------------
USER005  NOPID    IMS-MPP      19:32:57.03444843 LOCK    PAGESET   DB  =DSNDB01          DURATION=ALLOCATN STATE=IS    XES PROP=N
USER005  0002     A9BA4BA9A1A6                   REQUEST           OB  =SCT02             RSN CODE=X'20'    RTNCD= 4    XES FORC=N
NOPID    IMSA                                                                           NMODIFY GLOBAL L-LOCK
                                                                                        HASH    =X'00000BC0'

                               19:32:57.05134612 LOCK    DATAPAGE  DB  =DSNDB01          DURATION=MANUAL   STATE=S     XES PROP=N
                                                 REQUEST           OB  =SCT02             RSN CODE= 0       RTNCD= 0    XES FORC=N
                                                                   PAGE=X'0000009A'       NMODIFY GLOBAL L-LOCK
                                                                                          PARENT  =X'03E490C8'
                                                                                          HASH    =X'00019A5F'

                               19:32:57.07211528 LOCK    SKCT      PLAN=NOPID            DURATION=INTEREST STATE=IS    XES PROP=Y
                                                 REQUEST                                  RSN CODE= 0       RTNCD= 0    XES FORC=N
                                                                                          NMODIFY GLOBAL P-LOCK         XES ASYN=N
                                                                                          HASH    =X'11969789'

                               19:32:57.07269878 UNLOCK  DATAPAGE  DB  =DSNDB01          DURATION=MANUAL   STATE=S     XES PROP=N
                               19:32:57.05134612 REQUEST           OB  =SCT02             RSN CODE= 0       RTNCD= 0    XES FORC=N
                                                                   PAGE=X'0000009A'       NMODIFY GLOBAL L-LOCK
                                                                                          HASH    =X'00019A5F'

                               19:32:58.89454559 LOCK    OPENLOCK  DB  =TPCCE1          DURATION=MANUAL   STATE=X     XES PROP=Y
                                                 SUSPEND           OB  =TCUST000          ORIG.RSN=INTER SYSTEM         XES FORC=N
                                                                                          NMODIFY GLOBAL L-LOCK         XES ASYN=Y
                                                                                          PARENT  =X'01020006'
                                                                                          HASH    =X'00002080'

                               19:32:58.89622303 LOCK    OPENLOCK  DB  =TPCCE1          SUSP.TIME =0.001677  LOCAL CONTENTION=N
                               19:32:58.89454559 RESUME            OB  =TCUST000          DURATION  =MANUAL    LATCH CONTENTION=N
                                                                                          STATE     =X         IRLM QUEUED REQ =N
                                                                                          RESUME RSN=NORMAL    GLOBAL CONT.    =N*
                                                                                          XES PROP  =Y         NOTIFY MSG SENT =N
                                                                                          XES FORC  =N
                                                                                          XES ASYN  =Y         RETAINED LOCK   =Y
                                                                                          NMODIFY GLOBAL L-LOCK
                                                                                          PARENT  =X'01020006'
                                                                                          HASH    =X'00002080'

                               19:32:58.89633406 LOCK    OPENLOCK  DB  =TPCCE1          DURATION=MANUAL   STATE=X     XES PROP=Y
                                                 REQUEST           OB  =TCUST000          RSN CODE= 0       RTNCD= 0    XES FORC=N
                                                                                          NMODIFY GLOBAL L-LOCK         XES ASYN=Y
                                                                                          HASH    =X'00002080'

                               19:32:58.89738515 LOCK    GBP CONV  DB  =TPCCE1          DURATION=MANUAL   STATE=S     XES PROP=Y
                                                 REQUEST           OB  =TCUST000          RSN CODE= 0       RTNCD= 0    XES FORC=N
                                                                                          NMODIFY GLOBAL L-LOCK         XES ASYN=N
                                                                                          HASH    =X'00000403'

                               19:32:58.89859378 LOCK    P/P PLCK  DB  =TPCCE1          DURATION=INTEREST STATE=S     XES PROP=Y
                                                 REQUEST           OB  =TCUST000          RSN CODE= 0       RTNCD= 0    XES FORC=N
                                                                   BPID=BP0               NMODIFY GLOBAL P-LOCK         XES ASYN=N
                                                                                          CACHE   =S
                                                                                          HASH    =X'00000402'

                               19:32:58.89876712 P-LOCK  P/P PLCK  DB  =TPCCE1          REQUEST=LOCK      OBJECT=TABLESPACE
                                                 REQUEST           OB  =TCUST000          MEMBER =N/A       REQUESTED STATE=S
                                                                   BPID=BP0               OLD STATE=NH      OLD CACHED STATE=NH
                                                                                          NEW STATE=S       NEW CACHED STATE=S
                                                                                          CONDITIONAL   RESTART    NONMODIFY

                               19:32:58.89943440 UNLOCK  GBP CONV  DB  =TPCCE1          DURATION=MANUAL   STATE=X'00' XES PROP=Y
                               19:32:58.89738515 REQUEST           OB  =TCUST000          RSN CODE= 0       RTNCD= 0    XES FORC=N
                                                                                          NMODIFY LOCAL  L-LOCK         XES ASYN=N
                                                                                          HASH    =X'00000000'

                               19:32:59.91957718 UNLOCK  OPENLOCK  DB  =TPCCE1          DURATION=MANUAL   STATE=X     XES PROP=Y
                               19:32:58.89633406 REQUEST           OB  =TCUST000          RSN CODE= 0       RTNCD= 0    XES FORC=N
                                                                                          NMODIFY GLOBAL L-LOCK         XES ASYN=N
                                                                                          HASH    =X'00002080'
```

Figure 360. Lock Detail Trace Example (Part 1 of 2)

```
19:32:59.93528409 LOCK     DATAPAGE  DB  =TPCCE1
                  AVOIDANCE          OB  =TCUST000
                                     PAGE=X'00000002'

19:33:02.09291456 LOCK     DATAPAGE  DB  =TPCCE1           DURATION=MANUAL   STATE=U     XES PROP=Y
                  REQUEST            OB  =TSTCK000         RSN CODE= 0       RTNCD= 0    XES FORC=N
                                     PAGE=X'00003A55'      NMODIFY GLOBAL L-LOCK         XES ASYN=N
                                                           PARENT  =X'03E494C8'
                                                           HASH    =X'000055FA'

19:33:02.09579509 CHANGE   DATAPAGE  DB  =TPCCE1           DURATION=COMMIT   STATE=X     XES PROP=Y
19:33:02.09291456 REQUEST            OB  =TSTCK000         RSN CODE= 0       RTNCD= 0    XES FORC=N
                                     PAGE=X'00003A55'      MODIFY  GLOBAL L-LOCK         XES ASYN=N
                                                           HASH    =X'000055FA'

19:33:02.35630903 CLAIM    PAGESET   DB  =TPCCE1           CLASS=WRITE
N/P               RELEASE           OB  =TSTCK000         RSN CODE= 0        RTNCD= 0

19:33:02.35708056 LOCK     ALL                             MAX PAGE & ROW LOCKS=   11    LOCKAV=YES
                  SUMMARY  PAGESETS                        SHARED ESCAL=    0   EXCLUS.ESCAL=    0


                           PAGESET   DB  =DSNDB01          MAX PAGE & ROW LOCKS=    1    LOCKAV=NO
                                     OB  =SCT02            TABLESPACE TYPE=UNSEGMENTED   SIZE=PAGE
                                                           MAX STATE=IS       NO ESCALATIONS


                           PAGESET   DB  =TPCCE1           MAX PAGE & ROW LOCKS=    1    LOCKAV=YES
                                     OB  =TCUST000         TABLESPACE TYPE=UNSEGMENTED   SIZE=PAGE
                                                           MAX STATE=IS       NO ESCALATIONS


                           PAGESET   DB  =TPCCE1           MAX PAGE & ROW LOCKS=    3    LOCKAV=NO
                                     OB  =TSTCK000         TABLESPACE TYPE=UNSEGMENTED   SIZE=PAGE
                                                           MAX STATE=IX       NO ESCALATIONS


19:33:02.36281765 UNLOCK   N/P       N/P                   DURATION=COMMIT   STATE=X'00' XES PROP=Y
MASS              REQUEST                                  RSN CODE=X'02'    RTNCD= 4    XES FORC=N
                                                           NMODIFY LOCAL  L-LOCK         XES ASYN=N
                                                           HASH    =X'00000000'
```

Figure 360. Lock Detail Trace Example (Part 2 of 2)

Chapter 62. The Locking File Data Set

The locking file data set creates a sequential data set of formatted DB2 locking detail records that can be loaded into the DB2 PM performance database using the DB2 load utility. Use the performance database to produce tailored reports using a reporting facility such as Query Management Facility (QMF). See “Part 8. The Performance Database” on page 557 for more information.

The locking file data set contains a record for each occurrence of the following events:

- A LOCK, UNLOCK, CHANGE, or QUERY request processed by DB2
- A request to acquire a claim, change a claim duration, or release a claim
- A request to release a drain on a claim class
- Whenever lock avoidance is successful

The output of the FILE command is a sequential variable blocked data set.

The content of the output data set is determined by the FILE command options you specify, and by the input SMF/GTF records processed.

Descriptions of the of the layouts of these records can be found in the SDGOSAMP library. The member name is DGOLDFIL.

Part 13. The Record Trace Report Set

This part of the *DB2 PM Report Reference* describes the record trace report set. It is divided into the following chapters:

- Chapter 63. Introduction to the Record Trace Report Set gives a brief description of the different record trace levels available and the record trace input data.
- Chapter 64. General Record Trace Information contains information which is common to all record trace levels. This includes information on the trace headers, the DB2 PM identifiers used in the record traces, how large and missing values are reported, and elapsed time formats.
- The Summary Record Trace describes the summary record trace.
- The Short and Long Record Traces describes the short and long record traces.
- “Chapter 65. Record Descriptions” on page 799 shows the layout of each IFCID and describes the fields contained.
- Chapter 66. The Dump Record Trace describes the dump record trace. Each field presented in the trace is identified and described.

Chapter 63. Introduction to the Record Trace Report Set

DB2 PM record traces present a listing of user-selectable DB2 trace records in an input data set that is sorted by the requested sequence. The following levels of detail are available:

- *Summary* record traces list all user-selected records together with a description, but do not present any record data. You use the summary record trace to obtain a listing of all user-selected records in an input data set. You can use this listing to determine what events occurred during the DB2 trace.
- *Short* record traces present nonserviceability data from the user-selected records that appear on other DB2 PM reports. You use the short record trace to access the DB2 nonserviceability data used by other reports. Some long IFCIDs (for example, system statistics) are presented similar to summary record traces, namely without record data.
- *Long* record traces present serviceability and nonserviceability data from all user-selected records. You use the long record trace to access the DB2 serviceability and nonserviceability data in user-selected records.
- *Dump* record traces present all user-selected records in the standard hexadecimal dump format. You use the dump record trace to view data in input records that might contain unprintable characters.

Important Note

Record traces do not summarize or average data. All records that meet the selection criteria are presented in the requested sequence.

The trace can show a large amount of data. Consider the data volume when requesting a record trace. Specify appropriate selection criteria.

Chapter 64. General Record Trace Information

This chapter contains information common to all record traces. Information is provided on the following:

- Input to record traces
- Identifiers used by record trace
- Interpretation of trace headers
- The methods of reporting large values and missing values
- Elapsed time formats

Input to Record Traces

Input to the record trace report set consists of all types of DB2 instrumentation data. The DB2 trace types and classes used by record trace are listed in Table 111:

Table 111. DB2 Trace Types and Classes Used by Record Trace

DB2 Trace Type	DB2 Class	DB2 IFCID
Statistics	1	1, 2, 105, 106, 202
	2	152
	3	172, 196, 250, 261, 262, 313
	4	191, 192, 193, 194, 195, 203, 204, 205, 206, 207, 208, 209, 210, 235, 236, 238, 267, 268
	5	230
Accounting	1	3, 106, 239
	2	232
	3	6, 7, 8, 9, 32, 33, 44, 45, 117, 118, 127, 128, 170, 171, 174, 175, 213, 214, 215, 216, 226, 227, 242, 243
	4	151
	5	187
	7	232, 240
	8	6, 7, 8, 9, 32, 33, 44, 45, 117, 118, 127, 128, 170, 171, 174, 175, 213, 214, 215, 216, 226, 227, 241 242, 243
Audit	1	140
	2	141
	3	142
	4	143
	5	144
	6	145
	7	55, 83, 87, 169, 313
	8	23, 24, 25
	9	146

Table 111. DB2 Trace Types and Classes Used by Record Trace (continued)

DB2 Trace Type	DB2 Class	DB2 IFCID
Monitor	1	1, 2, 106, 124, 129, 147, 148, 149, 150, 202, 230, 254, 306
	2	232
	3	6, 7, 8, 9, 32, 33, 44, 45, 51, 52, 56, 57, 117, 118, 127, 128, 170, 171, 174, 175, 213, 214, 215, 216, 226, 227, 242, 243
	4	155
	5	187
	6	185
	7	232, 240
	8	6, 7, 8, 9, 32, 33, 44, 45, 51, 52, 56, 57, 117, 118, 127, 128, 170, 171, 174, 175, 213, 214, 215, 216, 226, 227, 241, 242, 243
Performance	1	1, 2, 31, 42, 43, 76, 77, 78, 79, 102, 103, 105, 106, 107, 153
	2	3, 68, 69, 70, 71, 72, 73, 74, 75, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 106, 174, 175
	3	22, 53, 55, 58, 59, 60, 61, 62, 63, 64, 65, 66, 92, 95, 96, 97, 106, 112, 177, 233, 237
	4	6, 7, 8, 9, 10, 29, 30, 105, 106, 107, 127, 128, 226, 227
	5	32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 104, 106, 114, 115, 116, 117, 118, 119, 120, 228, 229
	6	20, 44, 45, 105, 106, 107, 172, 196, 213, 214, 218
	7	21, 105, 106, 107, 223
	8	13, 14, 15, 16, 17, 18, 105, 106, 107, 125, 221, 222, 231, 305
	9	26, 27, 28, 95, 96, 106
	10	23, 24, 25, 90, 91, 105, 106, 107, 108, 109, 110, 111, 201, 256
	11	46, 47, 48, 49, 50, 51, 52, 56, 57, 93, 94, 106, 113
	12	98, 99, 100, 101
	13	11, 12, 19, 105, 106, 107
	14	67, 106, 121, 122
	15	154
	16	157, 158, 159, 160, 161, 162, 163, 167, 183
	17	211, 212, 213, 214, 215, 216
	20	249, 250, 251, 256, 257, 261, 262, 267, 268
	21	255, 259, 263
	22	314

Table 111. DB2 Trace Types and Classes Used by Record Trace (continued)

DB2 Trace Type	DB2 Class	DB2 IFCID
Global	1	106
	2	106
	3	0, 38, 46, 47, 48, 49, 50, 51, 52, 56, 57, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 93, 94, 106, 114, 115, 116, 117, 174, 175, 228, 229, 252, 260, 265, 266, 267, 268
	4	106
	5	190, 249
	6	156
	7	164, 165, 166
	8	168
	9	180, 181, 182

DB2 PM Identifiers Used in Record Traces

DB2 trace records contain identifiers that are used by DB2 PM to group data, order reports, identify trace records, include or exclude specific data, and graph data. These identifiers describe the object on which DB2 PM is reporting.

The following list shows the DB2 PM identifiers available for the record traces . For full descriptions of these identifiers, see “Chapter 1. DB2 PM Identifiers” on page 3.

All identifiers assocated with Record Trace can be used with the INCLUDE/EXCLUDE option, see “INCLUDE/EXCLUDE” on page 28 for more information.

The RECTRACE Command

You use the RECTRACE command to generate traces and file data sets. The command can be used once in a job step. However, it can be used in the same job step with commands of the other report sets. The following subcommands are associated with the RECTRACE command:

- TRACE
- FILE

You can choose between two methods for entering DB2 PM commands:

- **The Interactive Report Facility (IRF)**

  The IRF provides a series of interactive menus and panels you can use to specify the commands and options required to generate reports and traces, as well as review and edit your selections. You can either generate the command stream and submit the job in background, or execute your job in foreground. Refer to the *DB2 PM Batch User's Guide* for more information on the IRF.
- **The DB2 PM Command Language**

  You can use an editor to enter the DB2 PM commands in the proper syntax, specifying the appropriate subcommands, options, and keywords, and the JCL required to execute the job.

This chapter is intended for the user who wants to build a command stream using the DB2 PM command language.

Building a Command Stream

Figure 361 is a sample of the JCL required to produce record traces. For details about the JCL and DD statements used, see “Chapter 2. The DB2 PM Command Stream” on page 9.

```
//DB2PM   JOB (INSTALLATION DEPENDENCIES)
//*
//* ================================================================*
//*         D B 2  P M   R E P O R T   G E N E R A T I O N          *
//* ================================================================*
//*
//        EXEC PGM=DB2PM
//* FOLLOWING ARE DB2PM SYSTEM DDNAMES
//STEPLIB  DD  DSN=DGO.V6R1M0.SDGOLOAD,DISP=SHR
//DPMPARMS DD  DSN=DGO.V6R1M0.DPMPARMS,DISP=SHR
//INPUTDD  DD  DSN=DGO.V6R1M0.DPMIN61,DISP=SHR
//DPMLOG   DD  SYSOUT=*
//SYSOUT   DD  SYSOUT=*
//JOBSUMDD DD  SYSOUT=*
//SYSPRMDD DD  SYSOUT=*
//DPMOUTDD DD  DSN=DGO.V6R1M0.DPMOUT.DATA,DISP=OLD
//SYSUDUMP DD  DUMMY
//* FOLLOWING ARE DB2PM REPORT SET DDNAMES
//RTTRCDD1 DD  SYSOUT=*
//RTFILDD1 DD  DSN=DGO.V6R1M0.RTFIL.DATA,DISP=OLD
//RTWORK   DD  DSN=DGO.V6R1M0.RT.WORKDD,DISP=OLD
//* FOLLOWING IS THE DB2PM COMMAND STREAM
//SYSIN   DD  *
  RECTRACE
       TRACE
          LEVEL   (LONG)
          SORTBY  (TIMESTAMP)
       FILE
  EXEC
```

Figure 361. Sample JCL for Requesting Record Trace Functions

The DB2 PM command language shown in Figure 361 is not appropriate in all circumstances. You must modify it to meet your requirements.

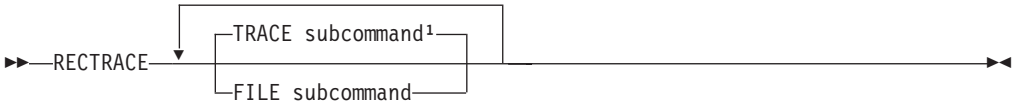
Most of the DD statements with a SYSOUT destination do not have to be specified because they are dynamically allocated by DB2 PM. See the individual DD statement descriptions for more information.

Note: The DB2 PM command stream is only processed if EXEC is included as the last command. Otherwise, DB2 PM only checks the syntax.

Using the RECTRACE Command

You use the RECTRACE command to generate record traces and data sets. The subcommands are described in detail, together with their various options, in the following sections.

The command can be used once in a job step.



Note: 1. You can specify TRACE up to 5 times.

Figure 362. Syntax of the RECTRACE Command

Using the TRACE Subcommand

You use the TRACE subcommand to produce traces with an entry for every IFCID available.

Up to five traces can be requested in a job step.

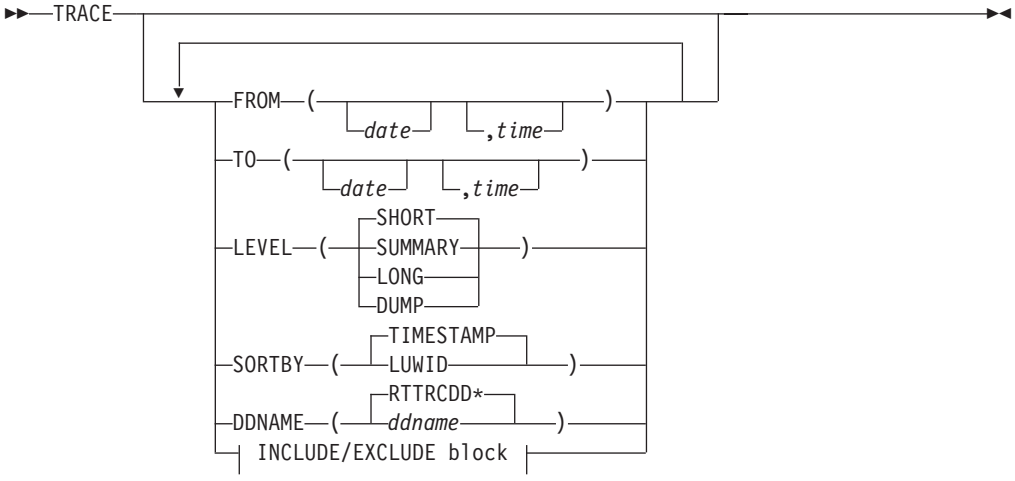


Figure 363. Syntax of the TRACE Subcommand

The following options can be used with the TRACE subcommand:

FROM/TO
Limits the range of records included in the trace by date and time.

Refer to “FROM/TO” on page 21 for more information on how to use the FROM/TO option.

LEVEL
Selects the amount of detail in the trace. You can specify one of the following options:

SUMMARY
Produces a trace that lists all user-selected records in the input data set.

SHORT
Produces a trace that includes all user-selected records that are used in other DB2 PM reports.

LONG Produces a trace that includes all user-selected records. Serviceability data is also reported.

DUMP Produces a trace that presents all user-selected records in hexadecimal dump format. The entire record is dumped.

The default for LEVEL is SHORT.

SORTBY
Sorts the events within each location. You can specify either of the following:

LUWID
Records are sorted by timestamp within thread within location.

TIMESTAMP
Records are sorted by timestamp within location.

One entry of SORTBY can be specified for each TRACE subcommand. TIMESTAMP is the default.

DDNAME
Specifies the data set to which the trace is written.

INCLUDE/EXCLUDE
Includes or excludes data associated with specific DB2 PM identifiers. If you omit this option, all records are included. See “DB2 PM Identifiers used with INCLUDE/EXCLUDE” on page 30 for a list of valid identifiers for this option.

Refer to “INCLUDE/EXCLUDE” on page 28 for more information on how to use the INCLUDE/EXCLUDE option.

Refer to “Chapter 1. DB2 PM Identifiers” on page 3 for definitions of DB2 PM identifiers.

Using the FILE Subcommand

You use the FILE subcommand to format DB2 data and store it in sequential data sets suitable for use by the DB2 load utility. The records can be placed in DB2 tables and you can produce reports using a reporting facility such as Query Management Facility (QMF).

FILE is used to format record trace records from IFCIDs 22, 63, 96, and 125.

Only one file data set can be generated in a job step.

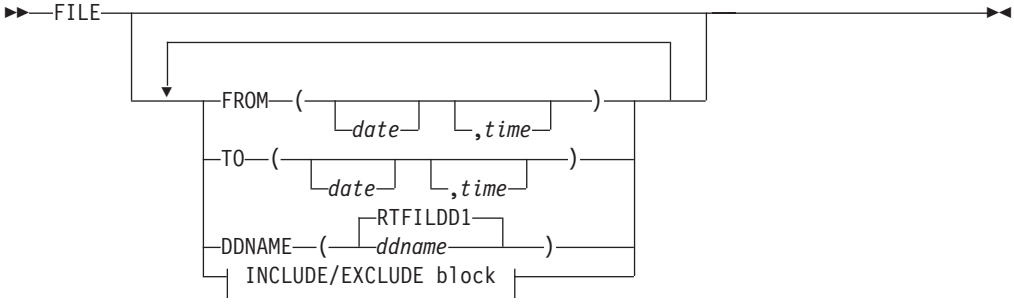


Figure 364. Syntax of the FILE Subcommand

The following options are used with the FILE subcommand:

FROM/TO
Limits the range of records included in the data set by date and time.

Refer to “FROM/TO” on page 21 for more information on how to use the FROM/TO option.

DDNAME
Specifies the ddname to which the file data set is written.. If you omit the DDNAME option, the default value is applied. The default ddname is RTFILDD1.

INCLUDE/EXCLUDE
Includes or excludes data associated with specific DB2 PM identifiers.

Refer to “INCLUDE/EXCLUDE” on page 28 for more information on how to use the INCLUDE/EXCLUDE option.

Refer to “Chapter 1. DB2 PM Identifiers” on page 3 for definitions of DB2 PM identifiers.

RECTRACE Command Example

```
⋮
RECTRACE
     TRACE
        FROM    (,08:00:00)
        TO      (,08:10:00)
        INCLUDE (PRIMAUTH(UID0001 UID0002 UID0003))
        EXCLUDE (PLANNAME(PLIT2A01 PLIT2A02))
     FILE
        INCLUDE (PRIMAUTH(SYSADM))
⋮
⋮
⋮
EXEC
```

This example requests a record trace that:

- Includes records generated between 08:00 and 08:10 on each day included
- Includes records with PRIMAUTH:
  - UID0001
  - UID0002
  - UID0003
- Excludes records with PLANNAME:
  - PLIT2A01
  - PLIT2A02
- Generates a data set on ddname RTFILDD1 by default. The data set contains detailed information about the IFCIDs generated by the primary authorization ID SYSADM.

Note: If the `EXEC` statement is ommitted, no trace is produced. The syntax of your command stream is checked and is written to the DPMLOG data set together with any error, warning, or information messages produced. All statements after the EXEC are ignored.

Headers Used in Record Trace

A header is printed at the top of each page. A change of date causes a page break.

```
   LOCATION: STM4D61Y                        DB2 PERFORMANCE MONITOR (V6)                              PAGE: 1-1
      GROUP: N/P                                  RECORD TRACE - LONG                        REQUESTED FROM: NOT SPECIFIED
     MEMBER: N/P                                                                                        TO: NOT SPECIFIED
  SUBSYSTEM: Y61Y                                                                                  ACTUAL FROM: 01/29/99 23:48:01.86
DB2 VERSION: V6                                                                                      PAGE DATE: 01/29/99
PRIMAUTH CONNECT   INSTANCE      END_USER       WS_NAME                       TRANSACT
ORIGAUTH CORRNAME  CONNTYPE      RECORD TIME    DESTNO ACE IFC  DESCRIPTION   DATA
PLANNAME CORRNMBR                TCB CPU TIME             ID
 -------- -------- ----------- ---------------- ------ --- --- -------------- ----------------------------------------------------------
SOF      BATCH    B1BAA2A382C5 'ANDREW          'ANDREWS_PC'                  'BLANK'
SOF      ZSQLASA1 TSO         23:48:01.86220375     41   1   3 ACCOUNTING    NETWORKID:  Y61Y      LUNAME:  STM4Y61Y  LUWSEQ:     1
POCDRIV6 'BLANK'              N/P
         3----------------------------------------------------------------------------------------------------------------------------
```

The following information is reported in the trace header:

PRIMAUTH
The authorization ID under which the transaction is running. Derived from the DB2 field QWHCAID.

ORIGAUTH
The original authorization ID under which the transaction started. Derived from the DB2 field QWHCOPID.

PLANNAME
The DB2 plan name. Derived from the DB2 field QWHCPLAN.

CONNECT
The connection ID. Derived from the DB2 field QWHCCN.

CORRNAME
The correlation name. Derived from the DB2 field QWHCCV.

CORRNMBR
The correlation number. Derived from the DB2 field QWHCCV.

CONNTYPE
The type of connection being used to interface with DB2. Derived from the DB2 field QWHCCST.

INSTANCE
The unique number assigned to a thread. Derived from the DB2 field QWHSUNIQ.

RECORD TIME
The timestamp contained in the trace record. The format is hours, minutes, seconds, and hundred-millionths of a second. Derived from the DB2 field QWHSSTCK.

TCB CPU TIME
The CPU time stored in the trace record. The format is minutes, seconds, and hundred-millionths of a second. Derived from the DB2 field QWHUCPU.

DEST SEQ NO
The destination sequence number. Derived from the DB2 field QWHSWSEQ.

ACE The relative number of the agent control element address in the ACE cross-reference table. This table is printed at the end of each location for every trace specified. Derived from the DB2 field QWHSACE.

IFCID The instrumentation facility component identification (DB2 trace record type). Derived from the DB2 field QWHSIID.

DESCRIPTION
A brief description of the IFCID record. The description indicates whether

the record contains accounting, statistics, or performance data. For performance data, the description also indicates the event.

DATA The data is printed in the standard hexadecimal dump format. The character format is on the right.

The Summary Record Trace

The summary record trace can be used to list all records in the same sequence as an input data set.

You can use this listing to check which records are in the DB2 instrumentation trace data. The short trace and long traces are normally too bulky for this purpose.

The summary record trace can be used with all the selection options such as INCLUDE/EXCLUDE and FROM/TO.

The following command produces the summary record trace shown in Figure 365.

```
⋮
RECTRACE
     TRACE
        FROM  (,01:30:00)
        TO    (,02:00:00)
        LEVEL (SUMMARY)
⋮
```

```
1   LOCATION: STLEC1                          DB2 PERFORMANCE MONITOR (V6)                                  PAGE: 1-1
      GROUP: DSNCAT                             RECORD TRACE - SUMMARY                      REQUESTED FROM: ALL      17:38:00.00
     MEMBER: V61A                                                                                        TO: DATES    17:40:00.00
  SUBSYSTEM: V61A                                                                                 ACTUAL FROM: 06/23/99 17:38:00.83
 DB2 VERSION: V6                                                                                    PAGE DATE: 06/23/99
0PRIMAUTH CONNECT   INSTANCE      END_USER       WS_NAME                        TRANSACT
 ORIGAUTH CORRNAME  CONNTYPE      RECORD TIME    DESTNO ACE IFC  DESCRIPTION    DATA
 PLANNAME CORRNMBR                TCB CPU TIME             ID
 -------- -------- ----------- ---------------- ------ --- --- -------------- ----------------------------------------------------
 USRT014  BATCH    B0A5B5E18F4B 'BLANK'          'BLANK'                        'BLANK'
 USRT014  T1240108 TSO         17:38:00.83013800   1090   1  62 DDL        --> NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
 DSNTEP3  'BLANK'                     0.06558954                    START
                               17:38:00.83614593   1091   1  16 INSERT     --> 'BLANK'
                                      0.06917288                    SCAN BEGIN    NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
                               17:38:00.83750325   1092   1  18 SCAN END   <-- 'BLANK'
                                      0.07052663                                  NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
                               17:38:00.83769850   1093   1 141 AUDIT DDL      'BLANK'
                                      0.07072063                    GRANT         NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
                               17:38:00.83789881   1094   1  58 END SQL    <-- 'BLANK'
                                      0.07092088                                  NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
                               17:38:00.93980206   1095   1   3 ACCOUNTING     'BLANK'
                                      0.08128632                                  NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
 USRT013  BATCH    B0A5B5F673C2 'BLANK'          'BLANK'                        'BLANK'
 USRT013  T1240109 TSO         17:38:23.09739218   1096   2 233 CALL STORED    NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
 PLJP0147 'BLANK'                     0.06441099                    PROCEDURE -->
                               17:38:30.75605387   1097   2  16 INSERT     --> 'BLANK'
                                      0.05800369                    SCAN BEGIN    NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
                               17:38:31.25112743   1098   2 233 CALL STORED    'BLANK'
                                      0.07773494                    PROCEDURE --> NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
                               17:38:52.40182268   1099   2  16 INSERT     --> 'BLANK'
                                      0.05575259                    SCAN BEGIN    NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
                               17:38:55.09447712   1100   2  17 SEQ. SCAN  --> 'BLANK'
                                      0.08326543                    BEGIN         NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
                               17:38:55.29068537   1101   2  18 SCAN END   <-- 'BLANK'
                                      0.09006213                                  NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
                               17:38:55.38712487   1102   2  16 INSERT     --> 'BLANK'
                                      0.09367793                    SCAN BEGIN    NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
                               17:38:55.41357343   1103   2  17 SEQ. SCAN  --> 'BLANK'
                                      0.11081268                    BEGIN         NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
                               17:38:55.41526831   1104   2  18 SCAN END   <-- 'BLANK'
                                      0.11159518                                  NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
                               17:38:55.44928231   1105   2  16 INSERT     --> 'BLANK'
                                      0.11490438                    SCAN BEGIN    NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
                               17:38:56.70450237   1106   2  17 SEQ. SCAN  --> 'BLANK'
                                      0.13236778                    BEGIN         NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
                               17:38:56.72342318   1107   2  16 INSERT     --> 'BLANK'
                                      0.13788218                    SCAN BEGIN    NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
                               17:38:56.73690150   1108   2  16 INSERT     --> 'BLANK'
                                      0.13986363                    SCAN BEGIN    NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
                               17:38:56.92114768   1109   2 233 CALL STORED    'BLANK'
                                      0.07857034                    PROCEDURE <-- NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
                               17:38:56.92144693   1110   2  18 SCAN END   <-- 'BLANK'
                                      0.07886559                                  NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
                               17:38:56.96434293   1111   2  16 INSERT     --> 'BLANK'
                                      0.09435964                    SCAN BEGIN    NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
                               17:38:56.98754043   1112   2  16 INSERT     --> 'BLANK'
                                      0.09626779                    SCAN BEGIN    NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
                               17:38:57.07396062   1113   2 233 CALL STORED    'BLANK'
                                      0.06625079                    PROCEDURE <-- NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
```

Figure 365. Example of the Summary Record Trace (Part 1 of 2)

```
    LOCATION: STLEC1                          DB2 PERFORMANCE MONITOR (V6)                                  PAGE: 1-5
      GROUP: DSNCAT                             RECORD TRACE - SUMMARY                      REQUESTED FROM: ALL      17:38:00.00
     MEMBER: V61A                                                                                        TO: DATES    17:40:00.00
  SUBSYSTEM: V61A                                                                                 ACTUAL FROM: 06/23/99 17:38:00.83
 DB2 VERSION: V6
0      ACE        ACE          ACE        ACE          ACE        ACE          ACE        ACE          ACE        ACE
      NUMBER    ADDRESS       NUMBER    ADDRESS       NUMBER    ADDRESS       NUMBER    ADDRESS       NUMBER    ADDRESS
      ______  __________      ______  __________      ______  __________      ______  __________      ______  __________
           1  X'0583C8F8'          2  X'0583CE38'
 RECORD TRACE COMPLETE
```

Figure 365. Example of the Summary Record Trace (Part 2 of 2)

ACE Cross-Reference Table

For every trace specified, an ACE cross-reference table is printed at the end of each location. The columns of the ACE cross-reference table are:

ACE NUMBER
The cross-reference number for the hexadecimal address of the agent control element. The lowest valid cross-reference number is 1. 0 indicates that the ACE address is not available.

ACE ADDRESS
The hexadecimal address of the agent control element.

Field Descriptions

This section describes the general format of the IFCID records presented in the summary record trace. The records are presented in the requested sequence. There is one entry on the report for each record selected from the input data set, so the report can show more than one record of the same IFCID record type. Use the RECORD TIME field on the report to distinguish between records with the same IFCID record type.

Notes:

1. An arrow (-->) pointing to the right on the trace indicates the beginning of an event.
2. An arrow (<--) pointing to the left on the trace indicates the end of an event.

Logical Unit of Work Identifiers

The logical unit of work identifiers are shown in the DATA column in front of the formatted data:

```
NETWORKID:  APCNET    LUNAME:  SYDAPC4   LUWSEQ:     1
```

NETWORKID
The network ID.

LUNAME
The name of the logical unit.

LUWSEQ
The sequence number of the logical unit of work.

DDF Data

DDF data is only printed if there is a DDF header. The following is printed in the DATA column after the formatted record:

```
REQUESTING LOCATION:  USIBMSYSTDB2
REQUESTING TIMESTAMP: 03/18/96 18:54:53.90530718
AR NAME: USIBMSYSTDB2         PRDID: DB2 V5    M0
```

REQUESTING LOCATION
The location requesting the work.

REQUESTING TIMESTAMP
The timestamp of the requester location.

AR NAME
The name of the application requester.

PRDID
The name, version, release, and modification level of the product making the request.

Accounting Token

All record trace reports show the value (in hexadecimal) of the accounting token in the DATA column when it contains a value other than blanks or binary zeros.

The accounting token is used to correlate CICS records with DB2 records for the same task. If TOKENI=YES for TYPE=INIT, TOKENE=YES for TYPE=ENTRY, or both applies, in the resource control table, then the CICS LUWID minus the commit count (2 bytes) is passed to this field.

The first 8 bytes contain the network name, and the following 8 bytes contain the LUNAME. The final 6 bytes are the unique value.

```
ACCTKN X'00000000000000000000000000000000000000000000000000'
```

The Short and Long Record Traces

The short and long record traces are similar. The short record trace reports non-serviceability data from records which are used by other subcomponents of the batch component. Serviceability records and fields are not printed on the short record trace. Only the occurrence of large records such as statistics, accounting, and system parameters is shown.

The long record trace reports all instrumentation facility records including statistics, accounting, and performance records. The DB2 field names of serviceability fields are printed, as well as the occurrence of the serviceability records shown in Table 112.

Table 112. Serviceability Records

IFCID 46	IFCID 56	IFCID 99	IFCID 178	IFCID 238
IFCID 47	IFCID 57	IFCID 100	IFCID 179	IFCID 247
IFCID 48	IFCID 80	IFCID 101	IFCID 180	IFCID 248
IFCID 49	IFCID 81	IFCID 164	IFCID 181	IFCID 252
IFCID 50	IFCID 93	IFCID 165	IFCID 182	IFCID 260
IFCID 51	IFCID 94	IFCID 166	IFCID 186	IFCID 265
IFCID 52	IFCID 98	IFCID 168	IFCID 190	IFCID 266

Depending on the record layout, the records are presented in either the DATA column or the full width of the report page.

If there is no data present for an IFCID, `NO DATA` is printed. If any unexpected data is found, it is printed in dump format. The dump format is also used for IFCID 0.

The Short Record Trace

The short record trace can be used to list selected records from an input data set. It selects and formats nonserviceability data from the user-selected records that appear on other DB2 PM reports.

You use the short record trace to access the DB2 nonserviceability data used by DB2 PM, and to access data not presented in other reports.

Some long records (for example, system statistics) are ignored by the short record trace and some records are shown in abbreviated form.

The short record trace can be used with all the selection options such as INCLUDE/EXCLUDE and FROM/TO.

The following command produces the short record trace example shown in Figure 366 on page 794.

```
⋮
RECTRACE
     TRACE
        FROM  (,01:30:00)
        TO    (,03:30:00)
⋮
```

```
    LOCATION: STLEC1                          DB2 PERFORMANCE MONITOR (V6)                                PAGE: 1-1
       GROUP: DSNCAT                              RECORD TRACE - SHORT                  REQUESTED FROM: ALL      17:38:00.00
      MEMBER: V61A                                                                                TO: DATES    17:40:00.00
   SUBSYSTEM: V61A                                                                     ACTUAL FROM: 06/23/99 17:38:00.83
 DB2 VERSION: V6                                                                         PAGE DATE: 06/23/99
0PRIMAUTH CONNECT   INSTANCE      END_USER       WS_NAME                        TRANSACT
 ORIGAUTH CORRNAME  CONNTYPE      RECORD TIME    DESTNO ACE IFC  DESCRIPTION    DATA
 PLANNAME CORRNMBR                TCB CPU TIME             ID
 -------- -------- ----------- ---------------- ------ --- --- -------------- ------------------------------------------------------------
 USRT014  BATCH    B0A5B5E18F4B 'BLANK'          'BLANK'                        'BLANK'
 USRT014  T1240108 TSO         17:38:00.83013800   1090   1  62 DDL        --> NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
 DSNTEP3  'BLANK'                     0.06558954                 START          STATEMENT TYPE: GRANT
                                                                                OBJECT TYPE   : NO OBJECT
                                                                                OBJECT NAME   : N/P
                              17:38:00.83614593   1091   1  16 INSERT     --> 'BLANK'
                                     0.06917288                 SCAN BEGIN     NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
                                                                                DBID DSNDB06      REC ID          143  SQL TYPE
                                                                                OBID SYSPKAGE     TRIGGER LEVEL     0
                                                                                CUB  X'7ED77E28'  WORKFILE TYPE    NW
                              17:38:00.83750325   1092   1  18 SCAN END   <-- 'BLANK'
                                     0.07052663                                 NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
         |-------------------------------------------------------------------------------------------------------------------------------
         |CUB  X'7ED77E28'
         |.....................................................................................................................
         |DATA TYPE       SEQD ROW PROC          0 ROW EXAM          0 STG1-QUAL          0 STG2-QUAL         0 ROW INSRT         1
         |ROW UPDTE          0 ROW DELET         0 PAGES             2 RI SCAN            0 RI DELET          0
         |LOB SCAN           0 LOB UPDTE         0
         |-------------------------------------------------------------------------------------------------------------------------------
                              17:38:00.83769850   1093   1 141 AUDIT DDL      'BLANK'
                                     0.07072063                 GRANT          NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
                                                                                GRANTOR: USRT014   REASON:  'BLANK' RETURN:          0
                                                                                OBJECT:  PACKAGE          OPTIONS: X'0400000000000000'
                                                                                SQL STMT: GRANT EXECUTE ON PACKAGE COJP00.SPJP47P1 TO
                                                                                           USRT013
                              17:38:00.83789881   1094   1  58 END SQL    <-- 'BLANK'
                                     0.07092088                                 NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
         |-------------------------------------------------------------------------------------------------------------------------------
         |LOCATION NAME: STLEC1                PKG COLLECTION ID: DSNTEP3               PRECOMPILER TIMESTAMP: X'1610807812419D80'
         |PROGRAM NAME : DSNTEP3               STATEMENT NUMBER :      1391   SQLCODE :           0       SQLSTATE:    00000
         |.....................................................................................................................
         |DATA TYPE       INDX ROW PROC          3 ROW EXAM          1 STG1-QUAL          2 STG2-QUAL         0 ROW INSRT         0
         |ROW UPDTE          0 ROW DELET         0 PAGES             6 RI SCAN            0 RI DELET          0
         |LOB SCAN  3804616900 LOB UPDTE         0
         |DATA TYPE       SEQD ROW PROC          0 ROW EXAM          0 STG1-QUAL          1 STG2-QUAL         1 ROW INSRT         0
         |ROW UPDTE          0 ROW DELET         1 PAGES             0 RI SCAN            0 RI DELET          3
         |LOB SCAN           0 LOB UPDTE      51808
         |-------------------------------------------------------------------------------------------------------------------------------
                              17:38:00.93980206   1095   1   3 ACCOUNTING     'BLANK'
                                     0.08128632                                 NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
                                                                                ACCOUNTING DATA
 USRT013  BATCH    B0A5B5F673C2 'BLANK'          'BLANK'                        'BLANK'
 USRT013  T1240109 TSO         17:38:23.09739218   1096   2 233 CALL STORED    NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
 PLJP0147 'BLANK'                     0.06441099                 PROCEDURE -->
         |-------------------------------------------------------------------------------------------------------------------------------
         |LOCATION NAME: STLEC1                  |STATEMENT NO :   393             CONSISTENCY TOKEN: X'1614B6A91737146C'  ENTRY/EXIT TYPE: ENT
         |ROUTINE NAME : SPJP47P1            ROUTINE TYPE     : PROCEDURE           SCHEMA NAME    : JOE
         |-------------------------------------------------------------------------------------------------------------------------------
```

Figure 366. Example of the Short Record Trace (Part 1 of 2)

```
    LOCATION: STLEC1                          DB2 PERFORMANCE MONITOR (V6)                                PAGE: 1-14
       GROUP: DSNCAT                              RECORD TRACE - SHORT                  REQUESTED FROM: ALL      17:38:00.00
      MEMBER: V61A                                                                                TO: DATES    17:40:00.00
   SUBSYSTEM: V61A                                                                     ACTUAL FROM: 06/23/99 17:38:00.83
 DB2 VERSION: V6
0       ACE         ACE           ACE         ACE           ACE         ACE           ACE         ACE           ACE         ACE
        NUMBER      ADDRESS       NUMBER      ADDRESS       NUMBER      ADDRESS       NUMBER      ADDRESS       NUMBER      ADDRESS
        ______  ____________      ______  ____________      ______  ____________      ______  ____________      ______  ____________
             1  X'0583C8F8'           2  X'0583CE38'
 RECORD TRACE COMPLETE
```

Figure 366. Example of the Short Record Trace (Part 2 of 2)

The Long Record Trace

The long record trace can be used to list selected records from an input data set. It lists and formats all data from user-selected records.

You use the long record trace to produce a formatted report of all data in the selected trace records.

The long record trace can be used with all the selection options such as INCLUDE/EXCLUDE and FROM/TO.

Important Note

Be careful when requesting a long record trace. The trace can show a great amount of data.

Consider limiting the size of the report with the INCLUDE, EXCLUDE, FROM, and TO options of the TRACE subcommand as described in “Using the TRACE Subcommand” on page 785.

The following command produces the long record trace example in Figure 367.

```
⋮
RECTRACE
     TRACE
        FROM  (,20:15:00)
        TO    (,20:30:00)
        LEVEL (LONG)
⋮
```

```
1   LOCATION: STLEC1                          DB2 PERFORMANCE MONITOR (V6)                                PAGE: 1-1
      GROUP: DSNCAT                               RECORD TRACE - LONG                      REQUESTED FROM: ALL      17:38:00.00
     MEMBER: V61A                                                                                      TO: DATES    17:40:00.00
  SUBSYSTEM: V61A                                                                          ACTUAL FROM: 06/23/99 17:38:00.93
 DB2 VERSION: V6                                                                             PAGE DATE: 06/23/99
0PRIMAUTH CONNECT   INSTANCE      END_USER       WS_NAME                       TRANSACT
 ORIGAUTH CORRNAME  CONNTYPE      RECORD TIME    DESTNO ACE IFC  DESCRIPTION   DATA
 PLANNAME CORRNMBR                TCB CPU TIME             ID
 -------- -------- ----------- ---------------- ------ --- --- ------------- ------------------------------------------------------------
 USRT014  BATCH    B0A5B5E18F4B 'BLANK'          'BLANK'                       'BLANK'
 USRT014  T1240108 TSO         17:38:00.93980206   1095   1   3 ACCOUNTING    NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
 DSNTEP3  'BLANK'                    0.08128632
          |-------------------------------------------------------------------------------------------------------------------------
          |                                          INSTRUMENTATION ACCOUNTING DATA
          |CLASS 1 BEGINNING STORE CLOCK TIME 06/23/99 17:38:00.813726   ENDING STORE CLOCK TIME  06/23/99 17:38:00.939638
          |        ELAPSED TIME                              0.125912
          |        BEGINNING MVS TCB TIME                    0.058068   ENDING MVS TCB TIME                      0.081108
          |        MVS TCB TIME                              0.023040
          |        BEGINNING SRB ASCB TIME                   0.073280   ENDING SRB ASCB TIME                    0.075341
          |        SRB ASCB TIME                             0.002061   CONVERSION FACTOR                           51808
          |        STORED PROCEDURES TCB TIME                0.000000   PAR.TASKS         0         PAR.TOKEN X'00000000'
          |        NETWORK ID VALUE                 'BLANK'             COMMITS           1         ROLLBACKS           0
          |        REASON ACCT INVOKED        DEALLOCATION-NORMAL PROGRAM TERMINATION                PROGRAMS            0
          |CLASS 2 DB2 ELAPSED TIME                          0.035153   TRIGGER ELAPSED TIME             39863 20:37:01.3
          |        TCB TIME                                  0.013481   TRIGGER TCB TIME                 39863 20:37:01.3
          |        STORED PROC. TCB TIME                     0.000000   STORED PROC. ENTRY/EXITS                    0
          |        SRB ASCB TIME                             0.000032   NON-ZERO CLASS 2                       YES
          |        DB2 ENTRY/EXIT EVENTS                            9
          |CLASS 3 LOCK/LATCH SUSP TIME                      0.000000   LOCK/LATCH SUSP EVENTS                      0
          |        SYNCHRONOUS I/O SUSP TIME                 0.000000   SYNCHRONOUS I/O SUSP EVENTS                 0
          |        OTHER READ SUSP TIME                      0.000000   OTHER READ SUSP EVENTS                      0
          |        OTHER WRITE SUSP TIME                     0.000000   OTHER WRITE SUSP EVENTS                     0
          |        SERV.TASK SWITCH SUSP TIME                0.010157   SERV.TASK SWITCH SUSP EVENTS               2
          |        PAGE LATCH SUSP TIME                      0.000000   PAGE LATCH SUSP EVENTS                      0
          |        STORED PROCEDURE SUSP TIME                0.000000   STORED PROCEDURE EVENTS                    0
          |        NOTIFY MESSAGES SUSP TIME                 0.000000   NOTIFY MESSAGES EVENTS                     0
          |        GLOBAL CONTENT. SUSP TIME                 0.000000   GLOBAL CONTENTION EVENTS                  0
          |                                                             NON-ZERO CLASS 3                       YES
          |WLM SERVICE CLASS                                 N/P
          |.........................................................................................................................
          |                                                LOGGING
          |        NUMBER OF LOG RECORDS WRITTEN                    9   TOTAL BYTES WRITTEN              X'00000000038A'
          |.........................................................................................................................
          |                                                  SQL CALL DATA
          |SELECT              0  LOCK TABLE           0  CREATE TABLE          0  ALTER TABLE          0  DROP TABLE           0
          |INSERT              0  GRANT                1  CREATE INDEX          0  ALTER INDEX          0  DROP INDEX           0
          |UPDATE              0  REVOKE               0  CREATE TSPAC          0  ALTER TSPAC          0  DROP TSPAC           0
          |DELETE              0  SET HOST VAR         0  CREATE DBASE          0  ALTER DBASE          0  DROP DBASE           0
          |PREPARE             1  SET CURR.SQL         0  CREATE STGRP          0  ALTER STGRP          0  DROP STGRP           0
          |DESCRIBE            1  SET CURR.DEG         0  CREATE SYNON          0                          DROP SYNON           0
          |DESCR.TABLE         0  SET RULES            0  CREATE VIEW           0                          DROP VIEW            0
          |OPEN                0  SET PATH             0  CREATE ALIAS          0                          DROP ALIAS           0
          |CLOSE               0  CONNECT TYP1         0  CREATE T.TAB          0                          DROP PACKAGE         0
          |FETCH               0  CONNECT TYP2         0  CREATE A.TAB          0
          |                       SET CONNECT          0  CREATE DIST           0                          DROP DIST            0
          |                       RELEASE              0  CREATE FUNC           0  ALTER FUNC           0  DROP FUNC            0
          |                       ASSOC LOCATOR        0  CREATE PROC           0  ALTER PROC           0  DROP PROC            0
          |                       ALLOC CURSOR         0  CREATE TRIG           0                          DROP TRIG            0
          |-------------------------------------------------------------------------------------------------------------------------
```

Figure 367. Example of the Long Record Trace (Part 1 of 4)

```
   LOCATION: STLEC1                          DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-2
      GROUP: DSNCAT                               RECORD TRACE - LONG                  REQUESTED FROM: ALL      17:38:00.00
     MEMBER: V61A                                                                                    TO: DATES    17:40:00.00
  SUBSYSTEM: V61A                                                                      ACTUAL FROM: 06/23/99 17:38:00.93
 DB2 VERSION: V6                                                                         PAGE DATE: 06/23/99
0PRIMAUTH CONNECT   INSTANCE      END_USER       WS_NAME                       TRANSACT
 ORIGAUTH CORRNAME  CONNTYPE      RECORD TIME    DESTNO ACE IFC  DESCRIPTION   DATA
 PLANNAME CORRNMBR                TCB CPU TIME             ID
 -------- -------- ---------- ---------------- ------ --- --- -------------- ------------------------------------------------------------
 USRT014  BATCH    B0A5B5E18F4B 'BLANK'          'BLANK'
 USRT014  T1240108 TSO         17:38:00.93980206   1095   1   3 ACCOUNTING
 DSNTEP3  'BLANK'                    0.08128632
          |-------------------------------------------------------------------------------------------------------------------------
          |                       HOLD LOCATOR          0  COMMENT ON            0  INCRMT BIND         0
          |                       FREE LOCATOR          0  LABEL ON              0
          |                                                RENAME TABLE         0
          |.........................................................................................................................
          |                                                RID LIST PROCESSING
          |RID LIST SUCCESSFUL           0   RID LIST NOT USED-LIMIT EXCEEDED          0    RID LIST NOT USED-NO STORAGE           0
          |.........................................................................................................................
          |                                              QUERY PARALLELISM
          |MAXIMUM DEGREE           0  REDUCED DEG-NO BUF           0  FALL TO SEQ-CURSOR          0  FALL TO SEQ-NOESA            0
          |GROUPS EXECUTED          0  EXECUTED AS PLANNED          0  FALL TO SEQ-NO BUF          0  FALL TO SEQ-ENCLV            0
          |PARALL.DISABLED         NO  SINGLE DB2-C.PARM=N          0  SINGLE DB2 ISO LVL          0  REFORM PARAL CONF            0
          |PARALL.GROUPS           0  MEMBERS SKIPPED              0                                 REFORM PARAL BUFF            0
          |.........................................................................................................................
          |                                                OPTIMIZATION
          |REOPTIMIZATION           0  PREP_STMT_MATCH              0  IMPLICIT_PREPARES           0  CACHE_LIMIT_EXCEED           0
          |                           PREP_STMT_NO_MATCH           0  PREP_FROM_CACHE            0  PREP_STMT_PURGED             0
          |.........................................................................................................................
          |                                              NESTED SQL ACTIVITY
          |MAX CASCAD LVL           0
          |CALL STATEMENTS          0  PROCEDURE ABENDS             0  CALL TIMEOUTS              0  CALL REJECTS                 0
          |STMT TRIGGER             0  ROW TRIGGER                 15  SQL ERROR TRIGG            4
          |.........................................................................................................................
          |                                                ROWID
          |DIRECT ACCESS                0   INDEX USED                              0    TABLE SPACE SCAN USED                  0
          |.........................................................................................................................
          |                                              MISCELLANEOUS
          |MAX STO LOB VALUE            0
          |.........................................................................................................................
          |                                    BUFFER MANAGER ACCOUNTING DATA
          |BUFFER POOL ID            0  SYNCHRON.WRITE          0  DYNAMIC PREFETCH            0  PAGES READ ASYN-HPOOL          0
          |GETPAGES                 15  SYNCHRON. READ          0  PAGES READ ASYN-PAR          0  HPOOL READS                    0
          |GETPAGES FAIL-PAR         0  SEQ. PREFETCH           0  HPOOL WRITES                 0  HPOOL READS-FAILED             0
          |BUFFER UPDATES            4  LIST PREFETCH           0  HPOOL WRITES-FAILED          0
          |.........................................................................................................................
          |                                              LOCKING DATA
          |DEADLOCKS                 0  LOCK REQUEST            9  LOCK SUSPENSIONS            0  CLAIM REQUESTS                 8
          |TIMEOUTS                  0  UNLOCK REQUEST          4  LATCH SUSPENSIONS           0  CLAIM REQ. FAILED              0
          |ESCALATIONS(SHR)          0  QUERY REQUEST           0  OTHER SUSPENSIONS           0  DRAIN REQUESTS                 0
          |ESCALATIONS(EXC)          0  CHANGE REQUEST          4                                 DRAIN REQ. FAILED              0
          |MAX LOCK HELD             2  OTHER REQUEST           0
          |.........................................................................................................................
          |                                          RESOURCE LIMIT FACILITY
          |RES LIMIT SCOPE          0             RLF TABLE ID              'BLANK'  LIMIT IN CPU 16 MICROSEC             0
          |RES LIMIT TYPE   LIMIT                 LIMIT IN SERVICE UNITS          0  HIGHEST CPU 16 MICROSEC USED         0
          |.........................................................................................................................
          |-------------------------------------------------------------------------------------------------------------------------
```

Figure 367. Example of the Long Record Trace (Part 2 of 4)

```
    LOCATION: STLEC1                          DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-3
       GROUP: DSNCAT                               RECORD TRACE - LONG                  REQUESTED FROM: ALL      17:38:00.00
      MEMBER: V61A                                                                                    TO: DATES    17:40:00.00
   SUBSYSTEM: V61A                                                                       ACTUAL FROM: 06/23/99 17:38:00.93
 DB2 VERSION: V6                                                                           PAGE DATE: 06/23/99
0PRIMAUTH CONNECT   INSTANCE      END_USER       WS_NAME                        TRANSACT
 ORIGAUTH CORRNAME  CONNTYPE      RECORD TIME    DESTNO ACE IFC  DESCRIPTION    DATA
 PLANNAME CORRNMBR                TCB CPU TIME             ID
 -------- -------- ----------- ----------------- ------ --- --- -------------- ----------------------------------------------------
 USRT014  BATCH    B0A5B5E18F4B 'BLANK'          'BLANK'
 USRT014  T1240108 TSO         17:38:00.93980206   1095   1   3 ACCOUNTING
 DSNTEP3  'BLANK'                    0.08128632
          |-------------------------------------------------------------------------------------------------------------------------
          |                           INITIAL DB2 REQUESTER AND MVS CORRELATION DATA
          |BYTES:    96               PRODUCT ID: DB2                                  PRODUCT VERSION: V06R01M0
          |LOCATION: STLEC1           NET ID    : USIBMSY          LU NAME : SYEC1DB2          CONNECT: BATCH
          |CONNTYPE: BATCH            CORRNAME  : T1240108         CORRNMBR: 'BLANK'           AUTHID : USRT014
          |PLANNAME: DSNTEP3
          |MVS ACCOUNTING DATA: USER=FEYCOOP
          |.........................................................................................................................
          |                                          DATA SHARING LOCKING DATA
          |LOCK REQUESTS          0     LOCK - XES          2     SUSPENSIONS - IRLM         0     INCOMPATIBLE LOCK         0
          |UNLOCK REQUESTS        0     UNLOCK - XES        1     SUSPENSIONS - XES          0     NOTIFY SENT               0
          |CHANGE REQUESTS        0     CHANGE - XES        1     SUSPENSIONS - FALSE        0
          |-------------------------------------------------------------------------------------------------------------------------
```

Figure 367. Example of the Long Record Trace (Part 3 of 4)

```
    LOCATION: STLEC1                          DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-15
       GROUP: DSNCAT                               RECORD TRACE - LONG                  REQUESTED FROM: ALL      17:38:00.00
      MEMBER: V61A                                                                                    TO: DATES    17:40:00.00
   SUBSYSTEM: V61A                                                                       ACTUAL FROM: 06/23/99 17:38:00.93
 DB2 VERSION: V6
0       ACE         ACE          ACE         ACE          ACE         ACE          ACE         ACE          ACE         ACE
       NUMBER     ADDRESS       NUMBER     ADDRESS       NUMBER     ADDRESS       NUMBER     ADDRESS       NUMBER     ADDRESS
       ______  ____________     ______  ____________     ______  ____________     ______  ____________     ______  ____________
          1    X'0583C8F8'          2    X'0583CE38'          3    X'0583CAB8'
 RECORD TRACE COMPLETE
```

Figure 367. Example of the Long Record Trace (Part 4 of 4)

Chapter 65. Record Descriptions

0 - Global Record

This shows the data from IFCID 0. The data is printed in the standard hexadecimal dump format. The character format is on the right.

```
|-------------------------------------------------------------------------------------------------------------------------------
|0000  XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX   XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX  | CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
|0020  XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX   XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX  | CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
...
|-------------------------------------------------------------------------------------------------------------------------------
```

1 - System Stats

System statistics shows the data from IFCID 1.

IFCID 1

```
------------------------------------------------------------------------------------------------------------------------
                                                     CPU TIME DATA
PROCEDURE NAME PROC    TCB TIME               0.02000   SRB TIME               0.03000   ADDR SPACE ASID X'0004'   ASCB X'00000005'
........................................................................................................................
                                                  DESTINATION RELATED DATA
DEST NAME  GTF   SEQNO          2  RECS WRITTEN          3  RECS NOT WRITTEN          4  BUFFER ERRORS        5
                                   NOT ACTIVE ERRORS     6  RECS NOT ACCEPTED         7  WRITER FAILURES      8
                                   QWSBOTH1              9  QWSBOTH2                 10
                                   QWSBOTH3             11  QWSBOTH4                 12
........................................................................................................................
                                                        IFCID DATA
IFCID       1 IFCID SEQNO          2  RECS WRITTEN          3  RECS NOT WRITTEN          4  RECS NOT DESIRED      5
                                      BUFFER NOT AVAILABLE  6  COLLECT FAILURES          7
                                      QWSCOTH1              8  QWSCOTH2                  9
........................................................................................................................
                                               SUBSYSTEM SERVICES DATA
IDENTIFY          1  CREATE THREAD         3  UR INDOUBT                11  COMMIT PH 2              7
ROLLBACK          8  SIGNON                2  UR INDOUBT RESOLV          5  COMMIT PH 1              6
SSAM EOM         13  TERMIN.THREAD         4  EXITS                     10  SYNCHS                   9
SSAM EOT         12  CRT.THRD QUED        15  SUBS.INT.CALLS            14  READ ONLY COMMIT        16
........................................................................................................................
                                                   DB2 COMMAND DATA
DISPLAY DB            1  DISPLAY THRD          2  DISP UTIL           3  DISP TRACE         13  DISPL RLIMIT           18
START DB              6  START TRACE           7  START DB2           8  START RLIM         16  STOP DB                 9
STOP TRACE           10  STOP DB2             11  STOP RLIM          17  RECOV BSDS          4  RECOV INDOUBT           5
MODIFY TRACE         19  TERM UTILITY         12  START DDF          20  STOP DDF           21  CANCEL THREAD          22
DISPL LOCATN         23  UNREC CMDS           15  ARCH LOG           24  SET ARCH           27  DISPL ARCH             28
RESET INDOUBT        29  ALTER BUFFER         25  DISP BUF           26  DISP GROUP          5  DISP PROCEDURE          1
RESET GENERIC        20  ALTER GBPOOL         10  DISP GBPOOL        15  START PROC          1  STOP PROCEDURE          1
........................................................................................................................
                                                 CHECKPOINT AND IFI DATA
CHECKPOINT COUNT         1  REASON STATISTICS INVOKED:        2                  HIGH USED RBA X'0000000000000003'
IFI ABENDS            4  IFI READA         7  DCAP.LOG REC.RETRIEVED        10  DCAP.DATA ROWS RETURNED        13
IFI UNRECOG.          5  IFI READS         8  DCAP.LOG READS                11  DCAP.DATA DESC.RETURNED        14
IFI COMMANDS          6  IFI WRITE         9  DCAP.LOG REC.RETURNED         12  DCAP.DESCRIBES                 15
                                                                                DCAP.TABLES RETURNED           16
........................................................................................................................
                                                     QVLS DATA
QVLSLC01         1  QVLSLC02         2  QVLSLC03         3  QVLSLC04         4  QVLSLC05         5  QVLSLC06         6
QVLSLC07         7  QVLSLC08         8  QVLSLC09         9  QVLSLC10        10  QVLSLC11        11  QVLSLC12        12
QVLSLC13        13  QVLSLC14        14  QVLSLC15        15  QVLSLC16        16  QVLSLC17        17  QVLSLC18        18
QVLSLC19        19  QVLSLC20        20  QVLSLC21        21  QVLSLC22        22  QVLSLC23        23  QVLSLC24        24
QVLSLC25        25  QVLSLC26        26  QVLSLC27        27  QVLSLC28        28  QVLSLC29        29  QVLSLC30        30
QVLSLC31        31  QVLSLC32        32
........................................................................................................................
                                                     QVAS DATA
QVASSUSP          1   QVASXSUS          2   QVASXSUT          3   QVASXAUS          4   QVASXAUT          5
QVASXSRS          6   QVASXSRT          7   QVASADUR          8   QVASADDL          9   QVASADIR         10
........................................................................................................................
                                                     QSST DATA
QSSTGPLF          1   QSSTFPLF          2   QSSTFREF          3   QSSTEXPF          4   QSSTCONF          5
QSSTGPLV          6   QSSTFPLV          7   QSSTFREV          8   QSSTEXPV          9   QSSTCONV         10
QSSTGETM         11   QSSTFREM         12   QSSTRCNZ         13   QSSTCONT         14   QSSTCRIT         15
QSSTABND         16
........................................................................................................................
                                                DDF DATA BY LOCATION
REMOTE LOCATION  TRANS. S COMMIT S  SQL SENT BYTS SENT CON.SENT LIM BLOCK PREPARE S COM.PH2 S COM.RSP S FORGET S THR.INDB
                 TRANS. R COMMIT R  SQL RCVD BYTS RCVD CON.RCVD MSGS BUFF PREPARE R COM.PH2 R COM.RSP R FORGET R RLOC.COM
                          ROLLBK S ROWS SENT MSGS SENT CON.QUED BLKS SENT LSTAGNT S BCK.PH2 S BCK.RSP S          RLOC.BCK
                          ROLLBK R ROWS RCVD MSGS RCVD REM BIND BLKS RCVD LSTAGNT R BCK.PH2 R BCK.RSP R
---------------- -------- -------- -------- --------- -------- --------- --------- --------- --------- -------- --------
USIBMSYSTDB2           12       14        2         6        8        19        24        28        34       32       38
                       13       15        3         7        9        21        25        29        35       33       39
                                16        4        10       18        22        26        30        36                40
                                17        5        11       20        23        27        31        37
........................................................................................................................
                                                  LOG MANAGER DATA
READS FROM BUFFER           5  WRITE NO WAIT         2  ARCH.READ ALLOC.         12  LOOK-AHEAD MOUNT ATT.         16
READS FROM ACTIVE           6  WRITE FORCE           3  ARCH.WRITE ALLOC.        13  LOOK-AHEAD MOUNT SUC.         17
READS FROM ARCHIVE          7  WRITE WAIT            1  TAPE VOL.CONTEN.          8  READ DELAY-UNAV.RES.          15
BSDS ACCESS REQUESTS        9  WRITE LOG BUF        11  CI CREATED-ACTIVE        10
UNAVAIL.LOG BUFFER          4                           CI OFFLOADED             14
........................................................................................................................
                                                  GLOBAL DDF DATA
DBAT QUEUED-MAX ACTIVE        1  INACTIVE DBATS-CUR.        7  COLD START CONN.         2  RESYNCHR. ATT.          4
CONV.DEALL.-MAX CONNEC        6  INACTIVE DBATS-HWM         8  WARM START CONN.         3  RESYNCHR. SUC.          5
ACTIVE DBATS-CURRENT         12  ACTIVE DBATS-HWM          38  TOTAL DBATS-HWM         89
------------------------------------------------------------------------------------------------------------------------
```

CPU Time Data

The record contains one data section for each procedure. The following data is printed for each section in the record:

PROCEDURE NAME
The last 4 characters of the procedure used to start the address space, or a constant identifier. Derived from the DB2 field QWSAPROC.

TCB TIME
The accumulated job step time (TCB) for the address space. Derived from the DB2 field QWSAEJST.

SRB TIME
The accumulated SRB time for the address space. Derived from the DB2 field QWSASRBT.

ADDR SPACE ASID
The ASID of the address space. Derived from the DB2 field QWSAASID.

ASCB The ASCB token. Derived from the DB2 field QWSAASCB.

Destination-Related Data

The record contains one data section for each destination. The following data is printed for each section in the record:

DEST NAME
The name of the external destination:

GTF Generalized trace facility

SMF System management facilities

RES Resident trace table (not accumulated)

OPN Special destination for IFI READA buffered records

All other values are shown in hexadecimal. Derived from the DB2 field QWSBNM.

SEQNO
The unique destination sequence of the last record written to the destination. Derived from the DB2 field QWSBWSEQ.

RECS WRITTEN
The number of records written to the destination. Derived from the DB2 field QWSBSRSW.

RECS NOT WRITTEN
The number of records not written to the destination. Derived from the DB2 field QWSBSRNW.

BUFFER ERRORS
The number of SMF buffer-overrun errors. Derived from the DB2 field QWSBSBUF.

NOT ACTIVE ERRORS
The number of times SMF was not active. Derived from the DB2 field QWSBSACT.

RECS NOT ACCEPTED
The number of records not accepted by the destination writer. Derived from the DB2 field QWSBSRNA.

WRITER FAILURES
The number of write failures to the destination. Derived from the DB2 field QWSBSWF.

IFCID 1

IFCID Data

The record contains one data section for each active IFCID. The following data is printed for each section in the record:

IFCID The IFCID for the following statistics. Derived from the DB2 field QWSCIID.

IFCID SEQNO
The last sequence number used for this IFCID. Derived from the DB2 field QWSCISEQ.

RECS WRITTEN
The number of records successfully written for this IFCID. Derived from the DB2 field QWSCSRSW.

RECS NOT WRITTEN
The number of records not written to this IFCID. Derived from the DB2 field QWSCSRNW.

RECS NOT DESIRED
The number of records not desired. Derived from the DB2 field QWSCSRND.

BUFFER NOT AVAILABLE
The number of errors due to the buffer not being available. Derived from the DB2 field QWSCSBNA.

COLLECT FAILURES
The number of collection failures. Derived from the DB2 field QWSCSCF.

Subsystem Services Data

IDENTIFY
The number of successful identify requests. Derived from the DB2 field Q3STIDEN.

CREATE THREAD
The number of successful create thread requests. This number does not include DBATs. Derived from the DB2 field Q3STCTHD.

UR INDOUBT
The number of indoubt units of recovery. A unit of recovery is indoubt when a failure occurs after a successful prepare, but before a successful commit. Derived from the DB2 field Q3STINDT.

COMMIT PH 2
The number of successful commit phase-2 requests, including successfully committed agents associated with threads that use the Recoverable Resource Manager Services Attach Facility (RRSAF).

If commit ph 1 (PREPAREs) is not equal to commit ph 2 (COMMITs), the unaccounted-for-work units have either been rolled back or become indoubt. Derived from the DB2 field Q3STCOMM.

ROLLBACK
The number of successful rollback requests, including successfully aborted agents associated with threads that use the Recoverable Resource Manager Services Attach Facility (RRSAF).

This field indicates the number of times a unit of recovery was backed out because of one of the following conditions:

Application program abend

Application rollback request

Application canceled by operator

Thread abend due to resource shortage

Application deadlock

Derived from the DB2 field Q3STABRT.

SIGNON
The number of successful signon requests. This is the number of times the user signs on to identify a new user to IMS and CICS, but not to TSO. Derived from the DB2 field Q3STSIGN.

UR INDOUBT RESOLV
The number of times requests to handle indoubt work units were successfully processed. It includes successful indoubt resolutions for agents associated with threads that use the Recoverable Resource Manager Services Attach Facility (RRSAF). Derived from the DB2 field Q3STRIUR.

COMMIT PH 1
The number of successful prepare-to-commit requests (commit phase 1), including successfully prepared agents associated with threads that use the Recoverable Resource Manager Services Attach Facility (RRSAF). Derived from the DB2 field Q3STPREP.

SSAM EOM
The number of times MVS deleted non-DB2 address spaces while connected to DB2. Derived from the DB2 field Q3STMEOM.

TERMIN.THREAD
The number of successful terminate requests. This field also indicates the number of times a thread is terminated. Derived from the DB2 field Q3STTERM.

EXITS The number of successful DSN3EXIT requests. Derived from the DB2 field Q3STEXIT.

SYNCHS
The number of successful single-phase commits. TSO applications use the synchronize request; IMS/VS and CICS applications use the prepare and commit sequence to commit work. DBATs executed on the reporting location are not included. Derived from the DB2 field Q3STSYNC.

SSAM EOT
The number of times non-DB2 tasks abended while connected to DB2. Derived from the DB2 field Q3STMEOT.

CRT.THRD QUED
The number of queued create thread requests. This number does not include DBATs. Derived from the DB2 field Q3STCTHW.

SUBS.INT.CALLS
The number of subsystem interface calls processed. Derived from the DB2 field Q3STSSSI.

READ ONLY COMMIT
The number of read-only commits. Derived from the DB2 field Q3STRDON.

IFCID 1

DB2 Command Data

DISPLAY DB
The number of DISPLAY DATABASE commands. The number includes both normal and abnormal completions. Derived from the DB2 field Q9STCTR0.

DISPLAY THRD
The number of DISPLAY THREAD commands. The number includes both normal and abnormal completions. Derived from the DB2 field Q9STCTR1.

DISP UTIL
The number of DISPLAY UTILITY commands. The number includes both normal and abnormal completions. Derived from the DB2 field Q9STCTR2.

DISP TRACE
The number of DISPLAY TRACE commands. The number includes both normal and abnormal completions. Derived from the DB2 field Q9STCTRC.

DISPL RLIMIT
The number of DISPLAY RLIMIT commands. The number includes both normal and abnormal completions. Derived from the DB2 field Q9STCTRG.

START DB
The number of START DATABASE commands. The number includes both normal and abnormal completions. Derived from the DB2 field Q9STCTR5.

START TRACE
The number of START TRACE commands. The number includes both normal and abnormal completions. Derived from the DB2 field Q9STCTR6.

START DB2
The number of START DB2 commands. The number includes both normal and abnormal completions. Derived from the DB2 field Q9STCTR7.

START RLIM
The number of START RLIMIT commands. The number includes both normal and abnormal completions. Derived from the DB2 field Q9STCTRE.

STOP DB
The number of STOP DATABASE commands. The number includes both normal and abnormal completions. Derived from the DB2 field Q9STCTR8.

STOP TRACE
The number of STOP TRACE commands. The number includes both normal and abnormal completions. Derived from the DB2 field Q9STCTR9.

STOP DB2
The number of STOP DB2 commands. The number includes both normal and abnormal completions. Derived from the DB2 field Q9STSCRA.

STOP RLIM
The number of STOP RLIMIT commands. The number includes both normal and abnormal completions. Derived from the DB2 field Q9STCTRF.

RECOV BSDS
The number of RECOVER BSDS commands. The number includes both normal and abnormal completions. Derived from the DB2 field Q9STCTR3.

RECOV INDOUBT
The number of RECOVER INDOUBT commands. The number includes both normal and abnormal completions. Derived from the DB2 field Q9STCTR4.

MODIFY TRACE
The number of MODIFY TRACE commands. The number includes both normal and abnormal completions. Derived from the DB2 field Q9STCTRH.

TERM UTILITY
The number of TERM UTILITY commands. The number includes both normal and abnormal completions. Derived from the DB2 field Q9STCTRB.

START DDF
The number of START DDF commands. The number includes normal and abnormal completions. Derived from the DB2 field Q9STCTRI.

STOP DDF
The number of STOP DDF commands. The number includes normal and abnormal completions. Derived from the DB2 field Q9STCTRJ.

CANCEL THREAD
For DB2 Version 4 and subsequent releases, this is the number of threads canceled (including DDF and non-DDF threads). Derived from the DB2 field Q9STCTRK.

DISPL LOCATN
The number of DISPLAY LOCATION commands. The number includes normal and abnormal completions. Derived from the DB2 field Q9STCTRL.

UNREC CMDS
The number of unrecognized commands. The number is incremented if a command verb or primary keyword cannot be recognized. Derived from the DB2 field Q9STEROR.

ARCH LOG
The number of ARCHIVE LOG commands. The number includes normal and abnormal completions. Derived from the DB2 field Q9STCTRM.

SET ARCH
The number of SET ARCHIVE commands. The number includes normal and abnormal completions. Derived from the DB2 field Q9STCTRP.

DISPL ARCH
The number of DISPLAY ARCHIVE commands. The number includes normal and abnormal completions. Derived from the DB2 field Q9STCTRQ.

RESET INDOUBT
The number of RESET INDOUBT commands. The number includes normal and abnormal completions. Derived from the DB2 field Q9STCTRR.

ALTER BUFFER
The number of ALTER BUFFERPOOL commands. The number includes normal and abnormal completions. Derived from the DB2 field Q9STCTRN.

DISP BUF
The number of DISPLAY BUFFERPOOL commands. The number includes normal and abnormal completions. Derived from the DB2 field Q9STCTRO.

DISP GROUP
The number of DISPLAY GROUP commands executed. Derived from the DB2 field Q9STCTRX.

DISP PROCEDURE
The number of DISPLAY PROCEDURE commands executed. Derived from the DB2 field Q9STCTRU.

RESET GENERIC
The number of RESET GENERICLU commands executed. Derived from the DB2 field Q9STCTRD.

ALTER GBPOOL
The number of ALTER GROUPBUFFERPOOL commands executed. Derived from the DB2 field Q9STCTRS.

DISP GBPOOL
The number of DISPLAY GROUPBUFFERPOOL commands executed. Derived from the DB2 field Q9STCTRT.

START PROC
The number of START PROCEDURE commands executed. Derived from the DB2 field Q9STCTRV.

STOP PROCEDURE
The number of STOP PROCEDURE commands executed. Derived from the DB2 field Q9STCTRW.

Checkpoint and IFI Data

CHECKPOINT COUNT
The number of checkpoints DB2 has taken since startup. Derived from the DB2 field QWSDCKPT.

REASON STATISTICS INVOKED
The reason why statistics records were written. Derived from the DB2 field QWSDRINV.

HIGH USED RBA
The high-used RBA address of the log. Derived from the DB2 field QWSDLR.

IFI ABENDS
The number of IFI abends. Derived from the DB2 field QWSDSCA.

IFI READA
The number of IFI READA requests. Derived from the DB2 field QWSDSCRA.

DCAP.LOG REC.RETRIEVED
The number of log records retrieved for which data capture processing was invoked. Derived from the DB2 field QWSDCDLC.

DCAP.DATA ROWS RETURNED
The number of data capture data rows returned. Derived from the DB2 field QWSDCDDR.

IFI UNRECOG.
The number of IFI unrecognized functions. Derived from the DB2 field QWSDSCU.

IFI READS
The number of IFI reads requests. Derived from the DB2 field QWSDSCRS.

DCAP.LOG READS
The number of data capture log reads performed. Derived from the DB2 field QWSDCDLR.

DCAP.DATA DESC.RETURNED
The number of data capture data descriptions returned. Derived from the DB2 field QWSDCDDD.

IFI COMMANDS
The number of IFI command requests. Derived from the DB2 field QWSDSCCO.

IFI WRITE
The number of IFI write requests. Derived from the DB2 field QWSDSCWR.

DCAP.LOG REC.RETURNED
The number of data capture log records returned. Derived from the DB2 field QWSDCDRR.

DCAP.DESCRIBES
The number of data capture describes. Derived from the DB2 field QWSDCDMB.

DCAP.TABLES RETURNED
The number of data capture tables returned. Derived from the DB2 field QWSDCDTB.

DDF Data by Location

REMOTE LOCATION
The name of the remote location. Derived from the DB2 field QLSTLOCN.

TRANS. S
The number of transactions migrated to the remote location. Derived from the DB2 field QLSTTRNS.

COMMIT S
The number of commit requests sent to the remote location. Derived from the DB2 field QLSTCOMS.

SQL SENT
The number of SQL statements sent to the remote location. Derived from the DB2 field QLSTSQLS.

BYTS SENT
The number of bytes of data sent to the remote location. Derived from the DB2 field QLSTBYTS.

CON.SENT
The number of conversations that were initiated from the requester location. A conversation is a specific instance of using TCP/IP or SNA LU6.2 to transfer information between a requester and a server. It is a logical connection between a requester and a server. This value is maintained at the requester location. Derived from the DB2 field QLSTCNVS.

LIM BLOCK
The number of times a switch was made from continuous block mode to limited block mode. Derived from the DB2 field QLSTCBLB.

PREPARE S
The number of prepare requests sent to the remote location. Derived from the DB2 field QLSTPRSE.

COM.PH2 S
The number of two-phase commit requests sent to the remote location. Derived from the DB2 field QLSTCRSE.

COM.RSP S
The number of vote yes responses sent to the remote location. Derived from the DB2 field QLSTVYSE.

FORGET S
The number of forget responses sent to the remote location. Derived from the DB2 field QLSTRRSE.

THR.INDB
The number of threads that went indoubt with the remote location as the coordinator. Derived from the DB2 field QLSTINDT.

TRANS. R
The number of transactions migrated from the remote location. Derived from the DB2 field QLSTTRNR.

COMMIT R
The number of commit requests received from the remote location. Derived from the DB2 field QLSTCOMR.

SQL RCVD
The number of SQL statements received from the remote location. Derived from the DB2 field QLSTSQLR.

BYTS RCVD
The number of bytes of data received from the remote location. Derived from the DB2 field QLSTBYTR.

CON. RCVD
The number of conversations with the local location that were initiated by the remote location. Derived from the DB2 field QLSTCNVR.

MSGS BUFF
The number of blocks in the message buffer if block fetch is being used. Derived from the DB2 field QLSTBROW.

PREPARE R
The number of prepare requests received from the remote location. Derived from the DB2 field QLSTPRRC.

COM.PH2 R
The number of two-phase commit requests received from the remote location. Derived from the DB2 field QLSTCRRC.

COM.RSP R
The number of vote yes responses received from the remote location. Derived from the DB2 field QLSTVYRC.

FORGET R
The number of forget responses received from the remote location. Derived from the DB2 field QLSTRRRC.

RLOC.COM
The number of commit operations performed with the remote location as the coordinator. Derived from the DB2 field QLSTCPTR.

ROLLBK S
The number of rollback requests sent to the remote location. Derived from the DB2 field QLSTABRS.

ROWS SENT
The number of rows of data sent to the remote location. Derived from the DB2 field QLSTROWS.

MSGS SENT
The number of messages sent to the remote location. A message is a group of characters and control bit sequences transferred on a single

TCP/IP or SNA call. This value is maintained at the location where the messages originated. Derived from the DB2 field QLSTMSGS.

CON.QUED
The number of conversation requests queued by DDF waiting for allocation. Derived from the DB2 field QLSTCNVQ.

BLKS SENT
The number of blocks sent to the remote location using block fetch. Derived from the DB2 field QLSTBTBF.

LSTAGNT S
The number of last agent requests sent to the remote location. Derived from the DB2 field QLSTLASE.

BCK.PH2 S
The number of backout requests sent to the remote location. Derived from the DB2 field QLSTBKSE.

BCK.RSP S
The number of backout responses sent to the remote location. Derived from the DB2 field QLSTVNSE.

RLOC.BCK
The number of rollback operations performed with the remote location as the coordinator. Derived from the DB2 field QLSTRBTR.

ROLLBK R
The number of rollback requests received from the remote location. Derived from the DB2 field QLSTABRR.

ROWS RCVD
The number of rows of data received from the remote location. Derived from the DB2 field QLSTROWR.

MSGS RCVD
The number of messages received from the remote location. Derived from the DB2 field QLSTMSGR.

REM BIND
The number of SQL statements that were bound for remote access using system-directed access. Derived from the DB2 field QLSTRBND.

BLKS RCVD
The number of blocks received from the remote location using block fetch. Derived from the DB2 field QLSTBRBF.

LSTAGNT R
The number of last agent requests received from the remote location. Derived from the DB2 field QLSTLARC.

BCK.PH2 R
The number of backout requests received from the remote location. Derived from the DB2 field QLSTBKRC.

BCK.RSP R
The number of backout responses received from the remote location. Derived from the DB2 field QLSTVNRC.

IFCID 1

Log Manager Data

READS FROM BUFFER
The number of log reads satisfied from output buffers. Derived from the DB2 field QJSTRBUF.

WRITE NO WAIT
The number of nowait log write requests. Nowait indicates that the log record is written to the log buffer and immediately to the log data set. Derived from the DB2 field QJSTWRNW.

ARCH.READ ALLOC.
The number of archive log read allocations. A high number indicates the need for either more or larger active log data sets. Derived from the DB2 field QJSTALR.

LOOK-AHEAD MOUNT ATT.
The number of “look-ahead” (tape volume) mounts attempted. The difference between this field and the LOOK-AHEAD MOUNT SUC. field is the number of failed attempts. Derived from the DB2 field QJSTLAMA.

READS FROM ACTIVE
The number of log reads satisfied from active log data sets. Derived from the DB2 field QJSTRACT.

WRITE FORCE
The number of force log write requests. Force indicates that the log record is written to the log buffer, forcing the buffer to be written to the log data set on DASD. Derived from the DB2 field QJSTWRF.

ARCH.WRITE ALLOC
The number of archive log write allocations. Derived from the DB2 field QJSTALW.

LOOK-AHEAD MOUNT SUC.
The number of “look-ahead” (tape volume) mounts that were successful. Derived from the DB2 field QJSTLAMS.

READS FROM ARCHIVE
The number of log reads satisfied from archive log data sets. Derived from the DB2 field QJSTRARY.

WRITE WAIT
The number of wait log write requests. Wait indicates that the log record is first written to the log buffer and then to the log data set. Derived from the DB2 field QJSTWRW.

TAPE VOL.CONTEN.
The number of agents forced to wait due to the tape volume being used by another agent. Derived from the DB2 field QJSTTVC.

READ DELAYED-UNAV.RES.
The number of read accesses delayed due to unavailable resources. This can be caused by not having allocated enough tape units. Derived from the DB2 field QJSTWUR.

BSDS ACCESS REQUESTS
The number of BSDS access requests. Derived from the DB2 field QJSTBSDS.

WRITE LOG BUF
The number of calls to the log write routine. This does not represent the number of physical log I/Os. Derived from the DB2 field QJSTBFWR.

CI CREATED - ACTIVE
The number of active log output control intervals created. Derived from the DB2 field QJSTBFFL.

UNAVAIL.LOG BUFFER
The number of waits because of unavailable output log buffers. Derived from the DB2 field QJSTWTB.

CI OFFLOADED
The number of control intervals offloaded. Derived from the DB2 field QJSTCIOF

Global DDF Data

DBAT QUEUED-MAX ACTIVE
The number of times a DBAT was queued because the MAX REMOTE ACTIVE value on the DSNTIPE installation panel was reached. Derived from the DB2 field QDSTQDBT.

INACTIVE DBATS-CUR.
The current number of inactive DBATs. Derived from the DB2 field QDSTQCIT.

COLD START CONN.
The number of cold start connections with the remote location. Derived from the DB2 field QDSTCSTR.

RESYNCHR. ATT.
The number of resynchronization connections attempted with the remote location. Derived from the DB2 field QDSTRSAT.

CONV.DEALL.-MAX CONNEC
The number of conversations that were deallocated because the MAX REMOTE CONNECTED value on the DSNTIPE installation panel was reached. Derived from the DB2 field QDSTQCRT.

INACTIVE DBATS-HWM
The maximum number of inactive threads. Derived from the DB2 field QDSTQMIT.

WARM START CONN.
The number of warm start connections with the remote location. Derived from the DB2 field QDSTWSTR.

RESYNCHR. SUC.
The number of resynchronization connection attempts that succeeded with the remote location. Derived from the DB2 field QDSTRSSU.

ACTIVE DBATS-CURRENT
The current number of active database access threads. Derived from the DB2 field QDSTCNAT.

ACTIVE DBATS-HWM
The maximum number of active database access threads. Derived from the DB2 field QDSTHWAT.

TOTAL DBATS-HWM
The maximum number of active and inactive database access threads. Derived from the DB2 field QDSTHWDT.

2 - DB Statistics

Database statistics shows the data from IFCID 2.

```
-------------------------------------------------------------------------------------------------------------------------
                                                SQL CALL DATA
SELECT              8  LOCK TABLE           0  CREATE TABLE          3  ALTER TABLE          0  DROP TABLE            0
INSERT             62  GRANT              30  CREATE INDEX          3  ALTER INDEX          0  DROP INDEX            0
UPDATE              8  REVOKE             47  CREATE TSPAC          3  ALTER TSPAC          0  DROP TSPAC            6
DELETE              4  SET HOST VAR        0  CREATE DBASE          3  ALTER DBASE          0  DROP DBASE            3
PREPARE           159  SET CURR.SQL        0  CREATE STGRP          1  ALTER STGRP          0  DROP STGRP            2
DESCRIBE          156  SET CURR.DEG        0  CREATE SYNON          0                          DROP SYNON            0
DESCR.TABLE         0  SET RULES          0  CREATE VIEW           0                          DROP VIEW             0
OPEN               13  SET PATH           1  CREATE ALIAS          0                          DROP ALIAS            0
CLOSE              13  CONNECT TYP1       0  CREATE T.TAB          0                          DROP PACKAGE          0
FETCH             123  CONNECT TYP2       0  CREATE A.TAB          0
                       SET CONNECT        0  CREATE DIST           0                          DROP DIST             0
                       RELEASE            0  CREATE FUNC           0  ALTER FUNC           0  DROP FUNC             0
                       ASSOC LOCATOR      4  CREATE PROC           2  ALTER PROC           0  DROP PROC             4
                       ALLOC CURSOR       4  CREATE TRIG           0                          DROP TRIG             0
                       HOLD LOCATOR       0  COMMENT ON            0  INCRMT BIND          2
                       FREE LOCATOR       0  LABEL ON              0
                                             RENAME TABLE          0
.........................................................................................................................
                                             RID LIST PROCESSING
RID LIST SUCCESSFUL           0   RID LIST NOT USED-LIMIT EXCEEDED          0    RID LIST NOT USED-NO STORAGE           0
.........................................................................................................................
                                             QUERY PARALLELISM
MAXIMUM DEGREE            0  REDUCED DEG-NO BUF           0  FALL TO SEQ-CURSOR          0  FALL TO SEQ-NOESA            0
GROUPS EXECUTED           0  EXECUTED AS PLANNED          0  FALL TO SEQ-NO BUF          0  FALL TO SEQ-ENCLV            0
PARALL.DISABLED         N/A  SINGLE DB2-C.PARM=N          0  SINGLE DB2 ISO LVL          0  REFORM PARAL CONF            0
PARALL.GROUPS             0  MEMBERS SKIPPED              0                                 REFORM PARAL BUFF            0
.........................................................................................................................
                                          NESTED SQL ACTIVITY
MAX CASCAD LVL           24
CALL STATEMENTS           4  PROCEDURE ABENDS             0  CALL TIMEOUTS               0  CALL REJECTS                 0
STMT TRIGGER      546570496  ROW TRIGGER         3638813411  SQL ERROR TRIGGER          24
.........................................................................................................................
                                                ROWID
DIRECT ACCESS                 0   INDEX USED                              0    TABLE SPACE SCAN USED                 0
.........................................................................................................................
                                          MISCELLANEOUS
MAX STO LOB VALUE             0
.........................................................................................................................
                                       SERVICE CONTROLLER DATA
PLAN ALLOC.ATTMP             30  PACK.ALLOC.ATTMP            29  OPEN DATASETS - HWM           120  AUTHORIZ.ATTEMPTS          712
PLAN ALLOC.SUCC.             30  PACK.ALLOC.SUCC.            29  OPEN DATASETS - CURR.          70  AUTHORIZ.SUCCESS.          712
PLANS BOUND                   0  PACKAGES BOUND               0  DS NOUSE,NOCLOSE-HWM          129  AUTH.SUCC-NO CAT.           19
BIND PLAN (ADD)               0  BIND PACK (ADD)              0  DS NOUSE,NOCLOSE-CURR.         51  AUTH.SUCC-PUBLIC             0
BIND PLAN (REPL)              0  BIND PACK (REPL)             0  DS CLOSED-THRESH.REACH          0  PKG-AUTH.SUCC               28
AUTOB.PLAN ATTMP              1  AUTOB.PACK ATTMP             0  R/W TO R/O CONVERSIONS          98  PKG-AUTH.SUCC-PUB            0
AUTOB.PLAN SUCC.              1  AUTOB.PACK SUCC.             0                                      PKG-AUTH.UNSUCC              1
REBIND PLAN COMM              0  REBIND PACK COMM             0                                      PKG-AUTHID OWRTN             0
REBIND PLAN ATTM              0  REBIND PACK ATTM             0                                      PKG-ENTRY  OWRTN             0
PLANS REBOUND                 0  PACKAGES REBOUND             0                                      RTN-AUTH.SUCC       1234567890
FREE PLAN COMMND              0  FREE PACKAGE COM             0                                      RTN-AUTH.SUCC-PUB   1234567890
FREE PLAN ATTMPT              0  FREE PACK ATTMPT             0                                      RTN-AUTH.UNSUCC     1234567890
PLANS FREED                   0  PACKAGES FREED               0                                      RTN-AUTHID OWRTN    1234567890
TEST BINDS                    0  AUTOB.INV.RES.ID             0                                      RTN-ENTRY OWRTN     1234567890
QTREOPN                    2268                                                                      RTN.CACHE NO ADD    1234567890
-------------------------------------------------------------------------------------------------------------------------
```

```
                                    BUFFER POOL ACTIVITY
BUFFER POOL ID                    0
CURRENT ACTIVE BUFFERS           18  GETPAGE REQUESTS                  21202  BUFFER UPDATES                    7969
UNAVAIL.BUFFER-VPOOL FULL         0  GETPAGE REQUESTS-SEQUENTIAL         442  PAGES WRITTEN                      925
NUMBER OF DATA SET OPENS        109  SYNCHRONOUS READS                   481  SYNCHRONOUS WRITES                 161
BUFFERS ALLOCATED-VPOOL         500  SYNCHRONOUS READS-SEQUENTIAL          7  ASYNCHRONOUS WRITES                298
BUFFERS ALLOCATED-HPOOL        1000  SEQUENTIAL PREFETCH REQUESTS         36  HORIZ.DEFER. WRITE THRESHOLD         0
HPOOL BUFFERS BACKED             68  SEQUENTIAL PREFETCH READS            26  VERTIC.DEFER.WRITE THRESHOLD         0
DFHSM MIGRATED DATA SETS          0  PAGES READ VIA SEQ.PREFETCH         355  DM CRITICAL THRESHOLD                0
DFHSM RECALL TIMEOUTS             0  LIST PREFETCH REQUESTS                0  WRITE ENGINE NOT AVAILABLE           0
HPOOL EXPANS. OR CONTRACT.        0  LIST PREFETCH READS                   0  SYNCHR. HIPERPOOL WRITE             71
VPOOL EXPANS. OR CONTRACT.        0  PAGES READ VIA LIST PREFETCH          0  ASY.HPOOL WRITE-NO ASY.D.MOV         1
VPOOL OR HPOOL EXP.FAILURE        0  DYNAMIC PREFETCH REQUESTS            10  HPOOL WRTE FAIL-NO ASY.D.MOV       443
                                     DYNAMIC PREFETCH READS                7  ASY.HPOOL WRITE-ASY.D.MOVER          0
                                     PAGES READ VIA DYN.PREFETCH          71  HPOOL WRTE FAIL-ASY.D.MOVER          0
CONCUR.PREF.I/O STREAMS-HWM       0  PREFETCH DISABLED-NO BUFFER           0  PAGE-INS REQUIRED FOR WRITE         49
PREF.I/O STREAMS REDUCTION        0  PREF.DISABLED-NO READ ENGINE          0  MAX WORKFILES CONCURR.USED           2
PARALLEL QUERY REQUESTS           0  SYNCHRONOUS HIPERPOOL READS           0  MERGE PASSES REQUESTED               4
PARALL.QUERY REQ.REDUCTION        0  ASY.HPOOL READS-NO ASY.D.MOV          0  MERGE PASS DEGRADED-LOW BUFF         0
PREF.QUANT.REDUCED TO 1/2         0  HPOOL READ FAIL-NO ASY.D.MOV          4  WORKFILE REQ.REJCTD-LOW BUFF         0
PREF.QUANT.REDUCED TO 1/4         0  ASY.HPOOL READS-ASY.D.MOVER           0  WORKFILE REQ-ALL MERGE PASS          8
GETPAGE OPERATIONS-FAILED         0  HPOOL READ FAIL-ASY.D.MOVER           0  WORKFILE NOT CREATED-NO BUFF         0
                                     PAGE-INS REQUIRED FOR READ          573  WORKFILE PREF.NOT SCHEDULED          0
                                                                              WORKFILE PAGES TO DESTRUCT          12
                                                                              WORKFILE PAGES NOT WRITTEN          12

BUFFER POOL ID                    1
CURRENT ACTIVE BUFFERS            0  GETPAGE REQUESTS                    204  BUFFER UPDATES                     58
UNAVAIL.BUFFER-VPOOL FULL         0  GETPAGE REQUESTS-SEQUENTIAL          51  PAGES WRITTEN                      31
NUMBER OF DATA SET OPENS          8  SYNCHRONOUS READS                    12  SYNCHRONOUS WRITES                 15
BUFFERS ALLOCATED-VPOOL           0  SYNCHRONOUS READS-SEQUENTIAL          4  ASYNCHRONOUS WRITES                10
BUFFERS ALLOCATED-HPOOL           0  SEQUENTIAL PREFETCH REQUESTS          6  HORIZ.DEFER. WRITE THRESHOLD         0
HPOOL BUFFERS BACKED              0  SEQUENTIAL PREFETCH READS             6  VERTIC.DEFER.WRITE THRESHOLD         0
DFHSM MIGRATED DATA SETS          0  PAGES READ VIA SEQ.PREFETCH          27  DM CRITICAL THRESHOLD                0
DFHSM RECALL TIMEOUTS             0  LIST PREFETCH REQUESTS                0  WRITE ENGINE NOT AVAILABLE           0
HPOOL EXPANS. OR CONTRACT.        0  LIST PREFETCH READS                   0  SYNCHR. HIPERPOOL WRITE              0
VPOOL EXPANS. OR CONTRACT.        0  PAGES READ VIA LIST PREFETCH          0  ASY.HPOOL WRITE-NO ASY.D.MOV         0
VPOOL OR HPOOL EXP.FAILURE        0  DYNAMIC PREFETCH REQUESTS             0  HPOOL WRTE FAIL-NO ASY.D.MOV         0
                                     DYNAMIC PREFETCH READS                0  ASY.HPOOL WRITE-ASY.D.MOVER          0
                                     PAGES READ VIA DYN.PREFETCH           0  HPOOL WRTE FAIL-ASY.D.MOVER          0
CONCUR.PREF.I/O STREAMS-HWM       0  PREFETCH DISABLED-NO BUFFER           0  PAGE-INS REQUIRED FOR WRITE          0
PREF.I/O STREAMS REDUCTION        0  PREF.DISABLED-NO READ ENGINE          0  MAX WORKFILES CONCURR.USED           0
PARALLEL QUERY REQUESTS           0  SYNCHRONOUS HIPERPOOL READS           0  MERGE PASSES REQUESTED               0
PARALL.QUERY REQ.REDUCTION        0  ASY.HPOOL READS-NO ASY.D.MOV          0  MERGE PASS DEGRADED-LOW BUFF         0
PREF.QUANT.REDUCED TO 1/2         0  HPOOL READ FAIL-NO ASY.D.MOV          0  WORKFILE REQ.REJCTD-LOW BUFF         0
PREF.QUANT.REDUCED TO 1/4         0  ASY.HPOOL READS-ASY.D.MOVER           0  WORKFILE REQ-ALL MERGE PASS          0
GETPAGE OPERATIONS-FAILED         0  HPOOL READ FAIL-ASY.D.MOVER           0  WORKFILE NOT CREATED-NO BUFF         0
                                     PAGE-INS REQUIRED FOR READ           39  WORKFILE PREF.NOT SCHEDULED          0
                                                                              WORKFILE PAGES TO DESTRUCT           0
                                                                              WORKFILE PAGES NOT WRITTEN           0
                                    DATA MANAGER DATA
RIDLIST MAX BLOCKS                0  RIDLIST TERMINATED-RDS LIMIT          0  RIDLIST TERMINATED-NO STORAGE        0
RIDLIST CURRENT BLOCKS            0  RIDLIST TERMINATED-DM LIMIT           0  RIDLIST TERMINATED-PROC.LIMIT        0
COLUMNS BYPASSED                  0
                                      LOCKING DATA
DEADLOCKS                         0  LOCK REQUEST                    11366  LOCK SUSPENSIONS                     0  CLAIM REQUESTS                1023
TIMEOUTS                          0  UNLOCK REQUEST                   4500  LATCH SUSPENSIONS                    2  CLAIM REQ. FAILED                0
ESCALATIONS(SHR)                  0  QUERY REQUEST                      48  OTHER SUSPENSIONS                   52  DRAIN REQUESTS                  56
ESCALATIONS(EXC)                  0  CHANGE REQUEST                    832                                          DRAIN REQ. FAILED                0
MAX LOCK HELD                   N/A  OTHER REQUEST                      2
                                       EDM POOL DATA
PAGES IN POOL                   450  CT PAGES                          0  PT PAGES                    2  DBD PAGES                 21
FREE PAGES                      425  CT REQUESTS                      12  PT REQUESTS               101  DBD REQUESTS             106
EDM POOL FULL                     0  CT NOT IN POOL                    3  PT NOT IN POOL             48  DBD NOT IN POOL           11
CACHE INSERTS                     0  CACHE REQUESTS                    0  CACHE PAGES USED            0
                                     SKCT PAGES                        1  SKPT PAGES                  1
                                  GROUP BUFFER POOLS ACTIVITY DATA
GROUP BUFFER POOL ID              0
SYN.READS(XI)-DATA RETURNED       0   SYN.READS(NF)-DATA RETURNED      0   ASYNC.READS-DATA RETURNED      0
SYN.READS(XI)-NO DATA RET.        0   SYN.READS(NF)-NO DATA RET.       0   ASYNC.READS-NO DATA RET.       0
CLEAN PAGES SYNC.WRITTEN          0   PAGES CASTOUT                    0   WRITE ENGINE UNAVAILABLE       0
CHANGED PAGES SYNC.WRITTEN        0   CASTOUT CLASS THRESHOLD          0   READ FAILED-NO STORAGE         0
CLEAN PAGES ASYNC.WRITTEN         0   GROUP BP CASTOUT THRESHOLD       0   WRITE FAILED-NO STORAGE        0
CHANGED PAGES ASYNC.WRITTEN       0   CASTOUT ENGINE UNAVAILABLE       0   REG.PAGE LIST (RPL) REQ.       0
CHANGED PGS READ AFTER RPL        0   CLEAN PAGES READ AFTER RPL       0   WRITE TO SEC-GBP               0
```

IFCID 2

```
READ STORAGE STATS                  0   GBP CHECKPOINTS TRIGGERED           0   WRITE SEC-GBP FAILED              0
DELETE NAME                         0   PARTICIPATION IN REBUILD            0
UNREGISTER PAGE                     0   UNLOCK CASTOUT                      0   DELETE NAME LIST SEC-GBP          0
REGISTER PAGE                       0   READ CASTOUT CLASS                  0   DELETE PAGE FROM SEC-GBP          1
EXPLICIT X-INVALID                  0   READ CASTOUT STATISTICS             0   READ CASTOUT STATS SEC-GBP        0
                                        READ DIRECTORY INFO                 0
-------------------------------------------------------------------------------------------------------------------
                                          DATA SHARING LOCKING DATA
LOCK REQUESTS (P-LOCKS)           383     SYNCH.XES - LOCK REQUESTS       4044     SUSPENDS - IRLM GLOBAL CONT        0
UNLOCK REQUESTS (P-LOCKS)         106     SYNCH.XES - CHANGE REQUESTS      204     SUSPENDS - XES GLOBAL CONT         0
CHANGE REQUESTS (P-LOCKS)         173     SYNCH.XES - UNLOCK REQUESTS     3662     SUSPENDS - FALSE CONTENTION        0
NOTIFY MESSAGES SENT               86     ASYNCH.XES - RESOURCES             0     INCOMPATIBLE RETAINED LOCK         0
NOTIFY MESSAGES RECEIVED            0     P-LOCK/NOTIFY EXITS ENGINES      500     P-LOCK/NFY EX.ENGINE UNAVAIL       0
PSET/PART P-LOCK NEGOTIATION        0     PAGE P-LOCK NEGOTIATION            0     OTHER P-LOCK NEGOTIATION           0
P-LOCK CHANGE DURING NEG.           0
-------------------------------------------------------------------------------------------------------------------
```

SQL Call Data

SELECT
The number of SQL SELECT statements. Derived from the DB2 field QXSELECT.

INSERT
The number of SQL INSERT statements. Derived from the DB2 field QXINSRT.

UPDATE
The number of SQL UPDATE statements. Derived from the DB2 field QXUPDTE.

DELETE
The number of SQL DELETE statements. Derived from the DB2 field QXDELET.

PREPARE
The number of SQL PREPARE statements. Derived from the DB2 field QXPREP.

DESCRIBE
The number of SQL DESCRIBE statements, including the number of DESCRIBE CURSOR and DESCRIBE PROCEDURES statements issued by the SQL application. Derived from the DB2 field QXDESC.

DESCR.TABLE
The number of SQL DESCRIBE TABLE statements. Derived from the DB2 field QXDSCRTB.

OPEN The number of SQL OPEN CURSOR statements. Derived from the DB2 field QXOPEN.

CLOSE
The number of SQL CLOSE CURSOR statements. Derived from the DB2 field QXCLOSE.

FETCH
The number of SQL FETCH CURSOR statements. Derived from the DB2 field QXFETCH.

LOCK TABLE
The number of SQL LOCK TABLE statements. Derived from the DB2 field QXLOCK.

GRANT
The number of SQL GRANT statements. Derived from the DB2 field QXGRANT.

REVOKE
The number of SQL REVOKE statements. Derived from the DB2 field QXREVOK.

SET HOST VAR
The number of SQL SET HOST VARIABLE statements. Derived from the DB2 field QXSETHV.

SET CURR.SQL
The number of SQL SET CURRENT SQLID statements. Derived from the DB2 field QXSETSQL.

SET CURR.DEG
The number of SQL SET CURRENT DEGREE statements. Derived from the DB2 field QXSETCDG.

SET RULES
The number of SQL SET CURRENT RULES statements. Derived from the DB2 field QXSETCRL.

SET PATH
The number of SQL SET CURRENT PATH statements. Derived from the DB2 field QXSETPTH.

CONNECT TYP1
The number of SQL CONNECT TYPE 1 statements. Derived from the DB2 field QXCON1.

CONNECT TYP2
The number of SQL CONNECT TYPE 2 statements. Derived from the DB2 field QXCON2.

SET CONNECT
The number of SQL SET CONNECT statements. Derived from the DB2 field QXSETCON.

RELEASE
The number of SQL RELEASE statements. Derived from the DB2 field QXREL.

ASSOC LOCATOR
The number of SQL ASSOCIATE LOCATORS statements executed. Derived from the DB2 field QXALOCL.

ALLOC CURSOR
The number of SQL ALLOCATE CURSOR statements executed. Derived from the DB2 field QXALOCC.

HOLD LOCATOR
The number of SQL HOLD LOCATOR statements executed. Derived from the DB2 field QXHOLDL.

FREE LOCATOR
The number of SQL FREE LOCATOR statements executed. Derived from the DB2 field QXFREEL.

CREATE TABLE
The number of SQL CREATE TABLE statements. Derived from the DB2 field QXCRTAB.

ALTER TABLE
The number of SQL ALTER TABLE statements. Derived from the DB2 field QXALTTA.

IFCID 2

DROP TABLE
The number of SQL DROP TABLE statements. Derived from the DB2 field QXDRPTA.

CREATE INDEX
The number of SQL CREATE INDEX statements. Derived from the DB2 field QXCRINX.

ALTER INDEX
The number of SQL ALTER INDEX statements. Derived from the DB2 field QXALTIX.

DROP INDEX
The number of SQL DROP INDEX statements. Derived from the DB2 field QXDRPIX.

CREATE TSPAC
The number of SQL CREATE TABLESPACE statements. Derived from the DB2 field QXCTABS.

ALTER TSPAC
The number of SQL ALTER TABLESPACE statements. Derived from the DB2 field QXALTTS.

DROP TSPAC
The number of SQL DROP TABLESPACE statements. Derived from the DB2 field QXDRPTS.

CREATE DBASE
The number of SQL CREATE DATABASE statements. Derived from the DB2 field QXCRDAB.

ALTER DBASE
The number of SQL ALTER DATABASE statements. Derived from the DB2 field QXALDAB.

DROP DBASE
The number of SQL DROP DATABASE statements. Derived from the DB2 field QXDRPDB.

CREATE STGRP
The number of SQL CREATE STORAGE GROUP statements. Derived from the DB2 field QXCRSTG.

ALTER STGRP
The number of SQL ALTER STORAGE GROUP statements. Derived from the DB2 field QXALTST.

DROP STGRP
The number of SQL DROP STORAGE GROUP statements. Derived from the DB2 field QXDRPST.

CREATE SYNON
The number of SQL CREATE SYNONYM statements. Derived from the DB2 field QXCRSYN.

DROP SYNON
The number of SQL DROP SYNONYM statements. Derived from the DB2 field QXDRPSY.

CREATE VIEW
The number of SQL CREATE VIEW statements. Derived from the DB2 field QXDEFVU.

DROP VIEW
The number of SQL DROP VIEW statements. Derived from the DB2 field QXDRPVU.

CREATE ALIAS
The number of SQL CREATE ALIAS statements. Derived from the DB2 field QXCRALS.

DROP ALIAS
The number of SQL DROP ALIAS statements. Derived from the DB2 field QXDRPAL.

CREATE T.TAB
The number of SQL CREATE GLOBAL TEMPORARY TABLE statements. Derived from the DB2 field QXCRGTT.

DROP PACKAGE
The number of SQL DROP PACKAGE statements. Derived from the DB2 field QXDRPPKG.

CREATE A.TAB
The number of SQL CREATE AUXILIARY TABLE statements. Derived from the DB2 field QXCRATB.

CREATE DIST TYPE
The number of SQL CREATE DISTINCT TYPE statements. Derived from the DB2 field QXCRDIST

DROP DIST TYPE
The number of SQL DROP DISTINCT TYPE statements. Derived from the DB2 field QXDRDIST.

CREATE FUNCTION
The number of SQL CREATE FUNCTION statements. Derived from the DB2 field QXCRUDF.

ALTER FUNCTION
The number of SQL ALTER FUNCTION statements. Derived from the DB2 field QXALUDF.

DROP FUNCTION
The number of SQL DROP FUNCTION statements. Derived from the DB2 field QXDRPFN.

CREATE PROCEDURE
The number of SQL CREATE PROCEDURE statements. Derived from the DB2 field QXCRPRO.

ALTER PROCEDURE
The number of SQL ALTER PROCEDURE statements. Derived from the DB2 field QXALPRO.

DROP PROCEDURE
The number of SQL DROP PROCEDURE statements. Derived from the DB2 field QXDRPPR.

CREATE TRIGGER
The number of SQL CREATE TRIGGER statements. Derived from the DB2 field QXCRTRIG.

DROP TRIGGER
The number of SQL DROP TRIGGER statements. Derived from the DB2 field QXDRPTR.

IFCID 2

COMMENT ON
The number of SQL COMMENT ON statements. Derived from the DB2 field QXCMTON.

INCRMT BIND
The number of SQL INCREMENTAL BIND statements. This total does not include PREPAREs. Derived from the DB2 field QXINCRB.

LABEL ON
The number of SQL LABEL ON statements. Derived from the DB2 field QXLABON.

RENAME TABLE
The number of SQL RENAME TABLE statements executed. Derived from the DB2 field QXRNTAB.

RID List Processing

RID LIST SUCCESSFUL
The number of times that any combination of multiple index access path and RID pool processing was used or invoked. Derived from the DB2 field QXMIAP.

RID LIST NOT USED-LIMIT EXCEEDED
The number of times that any combination of multiple index access path and RID pool processing was not used or invoked because the number of RIDs retrieved exceeded the maximum limit. Derived from the DB2 field QXMRMIAP.

RID LIST NOT USED-NO STORAGE
The number of times that any combination of multiple index access path and RID pool processing was not used or invoked because no storage was available for RIDs. Derived from the DB2 field QXNSMIAP.

Query Parallelism

MAXIMUM DEGREE
The maximum degree of parallelism executed among all the parallel groups to indicate the extent to which parallelism applies. Derived from the DB2 field QXMAXDEG.

REDUCED DEG-NO BUF
The total number of parallel groups executed in reduced parallel degree due to the shortage of storage or contention on the buffer pool. Derived from the DB2 field QXREDGRP.

FALL TO SEQ-CURSOR
The total number of parallel groups that fell back to sequential mode because of a cursor that can be used for update or delete. Derived from the DB2 field QXDEGCUR.

FALL TO SEQ-NOESA
The total number of parallel groups that fell back to sequential mode because of a lack of ESA sort support. Derived from the DB2 field QXDEGESA.

GROUPS EXECUTED
The total number of parallel groups that have been executed. Derived from the DB2 field QXTOTGRP.

EXECUTED AS PLANNED
The total number of parallel groups executed in the planned parallel degree due to sufficient buffer pool availability. Derived from the DB2 field QXNORGRP.

FALL TO SEQ-NO BUF
The total number of parallel groups that fall back to sequential mode because of a shortage of storage or contention on the buffer pool. Derived from the DB2 field QXDEGBUF.

FALL TO SEQ-ENCLV
The total number of parallel groups executed in sequential mode due to unavailability of MVS/ESA enclave services. Derived from the DB2 field QXDEGENC.

PARALL.DISABLED
This field always shows N/A.

SINGLE DB2-C.PARM=N
The total number of parallel groups executed on a single DB2 due to the COORDINATOR subsystem parameter being set to NO. Derived from the DB2 field QXCOORNO.

SINGLE DB2 ISO LVL
The total number of parallel groups executed on a single DB2 because the plan or package was bound with an ISOLATION value of repeatable read or read stability. Derived from the DB2 field QXISORR.

PARALL.GROUPS
The total number of parallel groups that DB2 intended to run across the data sharing group. This number is only incremented at the parallelism coordinator at run time. Derived from the DB2 field QXXCBPNX.

MEMBER SKIPPED
The number of times the parallelism coordinator had to bypass a DB2 when distributing tasks because one or more DB2 members did not have enough buffer pool storage. The number in this field is only incremented at the parallelism coordinator once per parallel group, even though more than one DB2 might have lacked buffer pool storage for that parallel group. It is also only incremented when the buffer pool is defined to allow for parallelism. For example, if VPXPSEQT=0 on an assistant, DB2 does not send parallel work there and the number in this field is not incremented. Derived from the DB2 field QXXCSKIP.

REFORM PARAL CONF
The total number of parallel groups in which DB2 reformulated the the parallel portion of the access path because of a change in the number of active DB2 members or because of a change in the processor models on which they run from bind time to run time. This counter is only updated on the parallelism coordinator at run time. Derived from QXREPOP1.

REFORM PARAL BUFF
The total number of parallel groups in which DB2 reformulated the the parallel portion of the access path because there were insufficient buffer pool resources. This counter is only updated on the parallelism coordinator at run time. Derived from QXREPOP2.

IFCID 2

Nested SQL Activity

CALL STATEMENTS
The number of SQL CALL statements executed. Derived from the DB2 field QXCALL.

PROCEDURE ABENDS
The number of times a called SQL procedure terminated abnormally. Derived from the DB2 field QXCALLAB.

CALL TIMEOUTS
The number of times an SQL CALL statement timed out waiting to be scheduled. Derived from the DB2 field QXCALLTO.

CALL REJECTS
The number of times an SQL CALL statement was rejected. Derived from the DB2 field QXCALLRJ.

MAX CASCAD LVL
The maximum level of SQL cascading. This includes cascading due to triggers, UDFs or stored procedures. Derived from QXCASCDP.

STATEMENT TRIGGER
The number of times a statement trigger was activated. Derived from QXSTTRG.

ROW TRIGGER
The number of times a row trigger was activated. Derived from QXROWTRG.

SQL ERROR TRIG
The number SQL errors that occurred during the execution of triggered actions. This includes errors from UDFs and stored procedures, called by triggers, that passed back a negative return code.

ROWID

DIRECT ACCESS
The number of times that direct row access was successful. Derived from QXROIMAT.

INDEX USED
The number of times an index was used to find a record. Derived from QXROIINX.

TABLE SPACE SCAN USED
The number of times that a table or table space was used to find a record. Derived from QXROITS.

Miscellaneous

MAX STO LOB VALUES
The maximum storage used for LOB values.

Service Controller Data

PLAN ALLOC.ATTMP
The number of times DB2 was requested to create a thread for the user. This does not include allocations for DB2 system agents. Derived from the DB2 field QTALLOCA.

PACK.ALLOC.ATTMP
The number of attempts to allocate a package. Derived from the DB2 field QTPKALLA.

OPEN DATASETS - HWM
The maximum number of data sets open concurrently since DB2 was last started. Derived from the DB2 field QTMAXDS.

AUTHORIZ.ATTEMPTS
The number of authorization checks performed for plans. Derived from the DB2 field QTAUCHK.

PLAN ALLOC.SUCC.
The number of successfully bound plan allocations. Derived from the DB2 field QTALLOC.

PACK.ALLOC.SUCC.
The number of packages successfully allocated. Derived from the DB2 field QTPKALL.

OPEN DATASETS - CURR.
The number of data sets currently open. This number is not accumulated but is a snapshot of the current value. Derived from the DB2 field QTDSOPN.

AUTHORIZ.SUCCESS.
The number of successful authorization checks performed for authorized plans. Derived from the DB2 field QTAUSUC.

PLANS BOUND
The number of plans bound successfully and kept for future agent allocations. Derived from the DB2 field QTPLNBD.

PACKAGES BOUND
The number of packages bound. Derived from the DB2 field QTPKGBD.

DS NOUSE,NOCLOSE-HWM
The maximum number of free page set blocks in free page set block chains since the last statistics interval. This field only applies to page sets specified as CLOSE(YES), which are not in use, but not physically closed. Derived from the DB2 field QTMAXPB.

AUTH.SUCC-NO CAT.
The number of successful authorization checks not using the catalog. This includes plan cache checks and public checks. Derived from the DB2 field QTAUCCH.

BIND PLAN (ADD)
The total number of successful and unsuccessful BIND ADD subcommands issued. Derived from the DB2 field QTBINDA.

BIND PACK (ADD)
The number of BIND ADD PACKAGE subcommands issued. Derived from the DB2 field QTBINDPA.

DS NOUSE,NOCLOSE-CURR.
The number of data sets specified as CLOSE(YES) that are not currently in use, but not physically closed due to the slow close process. This is the value current when DB2 collects statistics. Derived from the DB2 field QTSLWDD.

AUTH.SUCC-PUBLIC
The number of successful authorization checks based on execute authority granted to public. Derived from the DB2 field QTAUPUB.

BIND PLAN (REPL)
The total number of successful and unsuccessful BIND REPLACE subcommands issued. Derived from the DB2 field QTBINDR.

BIND PACK (REPL)
The number of BIND REPLACE PACKAGE subcommands issued. Derived from the DB2 field QTBINDPR.

DS CLOSED-THRESH.REACH
The number of data sets closed by DRAIN. Derived from the DB2 field QTDSDRN.

PKG-AUTH.SUCC
The number of successful package EXECUTE authorization checks without accessing the DB2 catalog. Derived from the DB2 field QTPACAUT.

AUTOB.PLAN ATTMP
The number of times automatic bind was attempted. Derived from the DB2 field QTABINDA.

AUTOB.PACK ATTMP
The number of attempts to autobind a package. Derived from the DB2 field QTAUTOBA.

R/W TO R/O CONVERSIONS
The number of infrequently updated data sets that are converted from R/W to R/O state. A data set is considered to be infrequently updated if it is 5 consecutive DB2 checkpoints or 60 minutes since the last update. For table space data sets, switching from R/W to R/O state involves closing the SYSLGRNG entry. Derived from the DB2 field QTPCCT.

PKG-AUTH.SUCC-PUB
The number of successful package EXECUTE authorization checks without accessing the DB2 catalog. Package EXECUTE authority was granted to PUBLIC in the package authorization cache. Derived from the DB2 field QTPACPUB.

AUTOB.PLAN SUCC.
The number of successful automatic binds. Derived from the DB2 field QTABIND.

AUTOB.PACK SUCC.
The number of packages successfully autobound. Derived from the DB2 field QTPKABND.

LOGICAL REOPEN SUCCESS
The number of times that a data set specified as CLOSE(YES) and currently not in use, did not need to be reopened due to the slow close process. Derived from the DB2 field QTREOPN.

PKG-AUTH.UNSUCC
The number of unsuccessful package EXECUTE authorization checks in the package authorization cache. No applicable entry was found. Therefore, DB2 catalog access is required. Derived from the DB2 field QTPACNOT.

REBIND PLAN COMM
The number of REBIND subcommands issued. Derived from the DB2 field QTREBIND.

REBIND PACK COMM
The number of REBIND PACKAGE subcommands issued. Derived from the DB2 field QTRBINDP.

PKG-AUTHID OWRTN
The number of times an authorization ID was overwritten to add another one to the package authorization cache. Derived from the DB2 field QTPACOW1.

REBIND PLAN ATTM
The number of attempts to rebind a plan. This number can be larger than REBINDS, because several plan identifiers can be specified on a single REBIND command. Derived from the DB2 field QTRBINDA.

REBIND PACK ATTM
The number of attempts to rebind a package. Derived from the DB2 field QTRBNDPA.

PKG-ENTRY OWRTN
The number of times an entry for a collection-id.package-id or another one to the package authorization cache. Derived from the DB2 field QTPACOW2.

PLANS REBOUND
The number of times a plan was successfully rebound. Derived from the DB2 field QTPLNRBD.

PACKAGES REBOUND
The number of packages successfully rebound. Derived from the DB2 field QTPKGRBD.

RTN-AUTH.SUCC
Number of times the routine authorization cache has been checked successfully for the EXECUTE authority on a stored procedure or user defined function. The DB2 catalog was not accessed. Derived from QTRACAUT.

FREE PLAN COMMND
The number of FREE subcommands issued. Derived from the DB2 field QTFREE.

FREE PACKAGE COM
The number of FREE PACKAGE subcommands issued. Derived from the DB2 field QTFREEP.

RTN-AUTH.SUCC-PUB
Number of times the routine authorization cache has been checked successfully for the EXECUTE authority on a stored procedure or user defined function. The DB2 catalog was not accessed because EXECUTE authority had been granted to PUBLIC. Derived from the DB2 field QTRACPUB.

FREE PLAN ATTMPT
The number of attempts to free a plan. This number can be larger than FREE subcommands, because several plan identifiers can be specified on a single FREE subcommand. Derived from the DB2 field QTFREEA.

FREE PACK ATTMPT
The number of attempts to free a package. Derived from the DB2 field QTFREEAP.

RTN-AUTH.UNSUCC
Number of times the routine authorization cache has been checked unsuccessfully for the EXECUTE authority on a stored procedure or user defined function. No applicable entry was found. Derived from the DB2 field QTRACNOT.

PLANS FREED
The number of times plans were successfully freed. Derived from the DB2 field QTPLNFRD.

PACKAGES FREED
The number of packages successfully freed. Derived from the DB2 field QTPKGFRD.

RTN-AUTHID OWRTN
Number of times an individual authorization ID was overwritten in an entry of the routine authorization cache. Derived from the DB2 field QTACOW1.

TEST BINDS
The number of BIND subcommands issued without a plan identifier. Derived from the DB2 field QTTESTB.

AUTOB.INV.RES.ID
The number of automatic bind attempts with invalid resource IDs. These are requests to allocate a nonexistent plan identifier. Derived from the DB2 field QTINVRID.

RTN-ENTRY OWRTN
Number of times an entry in the routine authorization cache was overwritten.

An entry in the routine authorization cach applies either to a specific function or procedure, or it applies to all functions or all procedures of a specific schema. Derived from the DB2 field QTRACOW2.

RTN-CACHE NO ADD
Number of times an entry could not be added to the routine authorization cache because of an internal capacity constraint.

An entry in the routine authorization cach applies either to a specific function or procedure, or it applies to all functions or all procedures of a specific schema. Derived from the DB2 field QTRACNAC.

Buffer Pool Activity

The record contains one data section for each buffer pool. The following data is printed for each section in the record:

BUFFER POOL ID
The buffer pool ID. Derived from the DB2 field QBSTPID.

CURRENT ACTIVE BUFFERS
The number of the currently active (nonstealable) buffers. This number is not accumulated, but is a snapshot of the current value. Derived from the DB2 field QBSTCBA.

GETPAGE REQUESTS
The number of get page requests including conditional and nonconditional requests. Derived from the DB2 field QBSTGET.

BUFFER UPDATES
The number of updates performed against a page in the buffer pool. Derived from the DB2 field QBSTSWS.

UNAVAIL.BUFFER-VPOOL FULL
The number of get page failures due to the virtual buffer pool being full. Derived from the DB2 field QBSTXFL.

GETPAGE REQUESTS-SEQUENTIAL
The number of get page requests issued by sequential access requesters. Derived from the DB2 field QBSTSGT.

PAGES WRITTEN
The number of pages in the buffer pool written to DASD. Derived from the DB2 field QBSTPWS.

NUMBER OF DATA SET OPENS
The number of times a data set was successfully opened physically. This value is cumulative since the start of this statistics interval. Derived from the DB2 field QBSTDSO.

SYNCHRONOUS READS
The number of synchronous read I/O operations performed. Derived from the DB2 field QBSTRIO.

SYNCHRONOUS WRITES
The number of immediate writes for a data set. Immediate writes occur when:

- Any synchronous write is triggered
- An immediate write threshold is reached
- No deferred write engines are available

Derived from the DB2 field QBSTIMW.

BUFFERS ALLOCATED-VPOOL
The number of buffers allocated to the virtual buffer pool. Derived from the DB2 field QBSTVPL.

SYNCHRONOUS READS-SEQUENTIAL
The number of synchronous read I/Os issued by sequential access requesters. Derived from the DB2 field QBSTSIO.

ASYNCHRONOUS WRITES
The number of write I/O operations performed by the media manager for synchronous and asynchronous I/Os. Derived from the DB2 field QBSTWIO.

BUFFERS ALLOCATED-HPOOL
The number of buffers allocated to the hiperpool. Derived from the DB2 field QBSTHPL.

SEQUENTIAL PREFETCH REQUESTS
The number of sequential prefetch requests. Derived from the DB2 field QBSTSEQ.

HORIZ.DEFER. WRITE THRESHOLD
The number of times the deferred write threshold is reached. This happens either when less than 50 percent of the buffers are stealable, or when there are more than 64 updated buffers for a data set. Derived from the DB2 field QBSTDWT.

HPOOL BUFFERS BACKED
The number of hiperpool buffers which are backed by expanded storage. Derived from the DB2 field QBSTHBE.

SEQUENTIAL PREFETCH READS
The number of asynchronous read I/Os due to normal sequential prefetch. Derived from the DB2 field QBSTPIO.

VERTIC.DEFER.WRITE THRESHOLD
The number of times the vertical deferred write queue threshold was reached. Derived from the DB2 field QBSTDWV.

DFHSM MIGRATED DATA SETS
The number of times migrated data sets were encountered. Derived from the DB2 field QBSTMIG.

PAGES READ VIA SEQ.PREFETCH
The number of pages reads due to normal sequential prefetch. Derived from the DB2 field QBSTSPP.

DM CRITICAL THRESHOLD
The number of times the data manager buffer reached the critical threshold. This threshold is reached when less than 5 percent of the buffers are stealable. This field should be 0. Derived from the DB2 field QBSTDMC.

DFHSM RECALL TIMEOUTS
The number of recall timeouts. Derived from the DB2 field QBSTRTO.

LIST PREFETCH REQUESTS
The number of list prefetch requests. Derived from the DB2 field QBSTLPF.

WRITE ENGINE NOT AVAILABLE
The number of times a write engine is not available for an asynchronous write I/O. Derived from the DB2 field QBSTWEE.

HPOOL EXPANS. OR CONTRACT.
The number of successful hiperpool expansions or contractions due to the ALTER BUFFERPOOL command. Derived from the DB2 field QBSTHPA.

LIST PREFETCH READS
The number of asynchronous read I/Os due to a list prefetch. Derived from the DB2 field QBSTLIO.

SYNCHR. HIPERPOOL WRITE
The number of successful requests issued by DB2 to synchronously move a page from the virtual buffer pool to the hiperpool. Derived from the DB2 field QBSTHWR.

VPOOL EXPANS. OR CONTRACT.
The number of successful virtual buffer pool expansions or contractions due to the ALTER BUFFERPOOL command. Derived from the DB2 field QBSTVPA.

PAGES READ VIA LIST PREFETCH
The number of asynchronous page reads due to a list prefetch. Derived from the DB2 field QBSTLPP.

ASY.HPOOL WRITE-NO ASY.D.MOV
The number of successful requests issued by DB2 to asynchronously move a page from the virtual buffer pool to the hiperpool. Derived from the DB2 field QBSTHWA.

VPOOL OR HPOOL EXP.FAILURE
The number of virtual buffer pool or hiperpool expansion failures caused by a shortage of virtual storage. Derived from the DB2 field QBSTXFV.

DYNAMIC PREFETCH REQUESTS
The number of times dynamic prefetch was requested. Derived from the DB2 field QBSTDPF.

HPOOL WRTE FAIL-NO ASY.D.MOV
The number of unsuccessful write requests due to a shortage of expanded storage. Derived from the DB2 field QBSTHWF.

DYNAMIC PREFETCH READS
The number of asynchronous read I/Os due to a dynamic prefetch. Derived from the DB2 field QBSTDIO.

ASY.HPOOL WRITE-ASY.D.MOVER
The number of pages moved successfully from the virtual buffer pool to the hiperpool using the asynchronous data mover facility. Derived from the DB2 field QBSTAWA.

PAGES READ VIA DYN.PREFETCH
The number of asynchronous page reads due to a dynamic prefetch. Derived from the DB2 field QBSTDPP.

HPOOL WRTE FAIL-ASY.D.MOVER
The number of pages for which a write request that used the asynchronous data mover facility failed because the backing expanded storage was stolen or some other error occurred. Derived from the DB2 field QBSTAWF.

CONCUR.PREF.I/O STREAMS-HWM
The maximum number of concurrent prefetch I/O streams that have been allocated for this buffer pool for parallel queries. Derived from the DB2 field QBSTXIS.

PREFETCH DISABLED-NO BUFFER
The number of times sequential prefetch was disabled because no buffers were available. Derived from the DB2 field QBSTSPD.

PAGE-INS REQUIRED FOR WRITE
The number of writes with paging. Derived from the DB2 field QBSTWPI.

PREF.I/O STREAMS REDUCTION
The total number of requested prefetch I/O streams that were denied because of a lack of buffer pool storage space.

For example, if 100 prefetch I/O streams are requested and only 80 are granted, then 20 is added to this counter. Consider increasing the size of the buffer pool if this value is not 0.

The ratio of QBSTJIS to QBSTPQF gives the average degree of parallel query processing that was reduced because of insufficient buffer pool space. QBSTXIS gives the highest degree of parallel query processing that was reduced for one or more queries processed in parallel.

This counter is only applicable for non-work file page sets and when queries are processing in parallel in DB2. Derived from the DB2 field QBSTJIS.

PREF.DISABLED-NO READ ENGINE
The number of times sequential prefetch was disabled because of an unavailable read engine. Derived from the DB2 field QBSTREE.

MAX WORKFILES CONCURR.USED
The maximum number of work files concurrently allocated. Derived from the DB2 field QBSTWFM.

PARALLEL QUERY REQUESTS
The total number of requests made to get the support for the parallel query under this buffer pool. Derived from the DB2 field QBSTPQO.

SYNCHRONOUS HIPERPOOL READS
The number of successful requests to synchronously move a page from the hiperpool to the virtual buffer pool. Derived from the DB2 field QBSTHRE.

MERGE PASSES REQUESTED
The number of merge passes requested. Derived from the DB2 field QBSTWFR.

PARALL.QUERY REQ.REDUCTION
The total number of requests made to get support for the parallel query under this buffer pool but for which the parallel query went into reduced mode due to buffer pool shortage. Derived from the DB2 field QBSTPQF.

ASY.HPOOL READS-NO ASY.D.MOV
The number of successful requests to asynchronously move a page from the hiperpool to the virtual buffer pool. Derived from the DB2 field QBSTHRA.

MERGE PASS DEGRADED-LOW BUFF
The number of times that merge could not be efficiently performed due to buffer shortage. Derived from the DB2 field QBSTWFF.

PREF.QUANT.REDUCED TO 1/2
The total number of occurrences when prefetch quantity is reduced from normal to 50% of normal.

The normal size is dependent on the size of the buffer pool (4 KB or 32 KB). This counter indicates when DB2 had to reduce sequential prefetch quantity to continue to execute concurrently with parallel query processing. If this field contains a small number, it might be tolerable. This counter is applicable only in the case of parallel query processing. Derived from the DB2 field QBSTPL1.

HPOOL READ FAIL-NO ASY.D.MOV
The number of unsuccessful requests to move a page from the hiperpool to the virtual buffer pool. Derived from the DB2 field QBSTHRF.

WORKFILE REQ.REJCTD-LOW BUFF
The number of work files denied during merge processing because of insufficient buffer resources. Derived from the DB2 field QBSTWFD.

PREF.QUANT.REDUCED TO 1/4
The total number of occurrences when prefetch quantity was reduced to 1/4 for parallel queries. Derived from the DB2 field QBSTPL2.

ASY.HPOOL READS-ASY.D.MOVER
The number of pages moved successfully from the hiperpool to the virtual buffer pool using the asynchronous data mover facility. Derived from the DB2 field QBSTARA.

WORKFILE REQ-ALL MERGE PASS
The total number of work files requested during merge processing. Note that sort and non-sort-related processing are not included. Derived from the DB2 field QBSTWFT.

GETPAGE OPERATIONS-FAILED
The number of times a page requested for parallel query processing was unavailable because an I/O was in progress or the page was not found in the buffer pool. Derived from the DB2 field QBSTNGT.

HPOOL READ FAIL-ASY.D.MOVER
The number of pages for which a read request, using the asynchronous data mover facility, failed because the backing expanded storage was stolen or some other error occurred. Derived from the DB2 field QBSTARF.

WORKFILE NOT CREATED-NO BUFF
The number of work files that could not be created due to insufficient buffer resources. Derived from the DB2 field QBSTMAX.

PAGE-INS REQUIRED FOR READ
The number of reads with paging. Derived from the DB2 field QBSTRPI.

WORKFILE PREF.NOT SCHEDULED
The number of work prefetches rolled back due to the lack of prefetch quantity. Derived from the DB2 field QBSTWKPD.

WORKFILE PAGES TO DESTRUCT
The number of pages for which destructive read was requested. Derived from the DB2 field QBSTWDRP.

WORKFILE PAGES NOT WRITTEN
The number of pages dequeued from VDWQ for destructive read requests. Derived from the DB2 field QBSTWBVQ.

Data Manager Data

RIDLIST MAX BLOCKS
The highest number of internal blocks concurrently allocated for RID entries. Derived from the DB2 field QISTRHIG.

RIDLIST TERMINATED-RDS LIMIT
The number of times RID list processing was terminated because the number of RID entries exceeded the RDS limit. Derived from the DB2 field QISTRLLM.

RIDLIST TERMINATED-NO STORAGE
The number of times RID list processing was terminated because of insufficient storage. Derived from the DB2 field QISTRSTG.

RIDLIST CURRENT BLOCKS
The number of internal blocks currently allocated for RID entries. Derived from the DB2 field QISTRCUR.

RIDLIST TERMINATED-DM LIMIT
The number of times RID list processing was terminated because the number of RID entries exceeded the DM limit. Derived from the DB2 field QISTRPLM.

RIDLIST TERMINATED-PROC.LIMIT
The number of times RID list processing was terminated because of too many concurrent processes. Derived from the DB2 field QISTRMAX.

COLUMNS BYPASSED
The total number of columns (rows × columns) for which a select procedure was bypassed because the select procedure was invalidated by applying service to DB2. Derived from the DB2 field QISTCOLS.

IFCID 2

Locking Data

DEADLOCKS
The number of deadlocks. Derived from the DB2 field QTXADEA.

LOCK REQUEST
The number of lock requests. Derived from the DB2 field QTXALOCK.

LOCK SUSPENSIONS
The number of times a lock could not be obtained and the unit of work was suspended. Derived from the DB2 field QTXASLOC.

CLAIM REQUESTS
The number of claim requests. Derived from the DB2 field QTXACLNO.

TIMEOUTS
The number of times a unit of work was suspended for a time exceeding the timeout value. Derived from the DB2 field QTXATIM.

UNLOCK REQUEST
The number of unlock requests. Derived from the DB2 field QTXAUNLK.

LATCH SUSPENSIONS
The number of times a latch could not be obtained and the unit of work was suspended. Derived from the DB2 field QTXASLAT.

CLAIM REQ. FAILED
The number of unsuccessful claim requests. Derived from the DB2 field QTXACLUN.

ESCALATIONS(SHR)
The number of times a lock was escalated to shared. Derived from the DB2 field QTXALES.

QUERY REQUEST
The number of query requests. Derived from the DB2 field QTXAQRY.

OTHER SUSPENSIONS
The number of times a unit of work was suspended for reasons other than no lock or latch was available. Derived from the DB2 field QTXASOTH.

DRAIN REQUESTS
The number of drain requests. Derived from the DB2 field QTXADRNO.

ESCALATIONS(EXC)
The number of times a lock was escalated to exclusive. Derived from the DB2 field QTXALEX.

CHANGE REQUEST
The number of change requests. Derived from the DB2 field QTXACHG.

DRAIN REQ. FAILED
The number of unsuccessful drain requests. Derived from the DB2 field QTXADRUN.

MAX LOCK HELD
The maximum number of page locks or row locks held concurrently by a single application. Derived from the DB2 field QTXANPL.

OTHER REQUEST
The number of other IRLM requests. Derived from the DB2 field QTXAIRLM.

EDM Pool Data

PAGES IN POOL
The number of pages in the EDM buffer pool. This value is not accumulated, but is a snapshot value. Derived from the DB2 field QISEPAGE.

CT PAGES
The number of pages used for the cursor table. This value is not accumulated, but is a snapshot value. Derived from the DB2 field QISECT.

PT PAGES
The number of pages used for the package table. Derived from the DB2 field QISEKT.

DBD PAGES
The number of pages used for database descriptors. This value is not accumulated, but is a snapshot value. Derived from the DB2 field QISEDBD.

FREE PAGES
The number of free pages in the free chain. This value is not accumulated, but is a snapshot value. Derived from the DB2 field QISEFREE.

CT REQUESTS
The number of requests for cursor table sections. Derived from the DB2 field QISECTG.

PT REQUESTS
The number of requests for package table sections. Derived from the DB2 field QISEKTG.

DBD REQUESTS
The number of requests for a DBD (database descriptor). Derived from the DB2 field QISEDBDG.

EDM POOL FULL
The number of failures because of pool-full conditions. Derived from the DB2 field QISEFAIL.

CT NOT IN POOL
The number of times a cursor table section was loaded from DASD. Derived from the DB2 field QISECTL.

PT NOT IN POOL
The number of times a package table section was loaded from DASD. Derived from the DB2 field QISEKTL.

DBD NOT IN POOL
The number of times a database descriptor was loaded from DASD. Derived from the DB2 field QISEDBDL.

CACHE INSERTS
The number of inserts for the prepared statement cache.

Derivation : QISEDSI

CACHE REQUESTS
The number of requests for prepared statement cache sections.

Derivation : QISEDSG

CACHE PAGES USED
The number of pages used for prepared statement cache.

Derivation : QISEDSC

SKCT PAGES
The number of pages used for skeleton cursor tables. This value is not accumulated, but is a snapshot value. Derived from the DB2 field QISESKCT.

SKPT PAGES
The number of pages used for the skeleton package table. Derived from the DB2 field QISESKPT.

Group Buffer Pools Activity Data

The record contains one data section for each group buffer pool. The following data is printed for each section in the record:

GROUP BUFFER POOL ID
The group buffer pool identifier. Derived from the DB2 field QBGLGN.

SYN.READS(XI)-DATA RETURNED
The number of synchronous coupling facility read requests because the buffer was marked *invalid*. Data is returned from the group buffer pool. Derived from the DB2 field QBGLXD.

SYN.READS(XI)-NO DATA RET
The number of requests to read a page from the group buffer pool made because the page was invalidated in the member's buffer pool. The page was not found in the GBP and the page was recovered from DASD. Derived from the DB2 field QBGLGXR

SYN.READS(NF)-DATA RETURNED
The number of synchronous coupling facility read requests necessary because the requested page was not found in the buffer pool. Data is returned from the coupling facility. Derived from the DB2 field QBGLMD.

SYN.READS(NF)-NO DATA RET
The number of requests to read a page from the group buffer pool made because the page was not found in the member's buffer pool. The data was not found in the GBP and the page was retrieved from DASD. Derived from the DB2 field QBGLMR.

UNREGISTER PAGE
The number of coupling facility read requests to unregister a page. Derived from the DB2 field QBGLDG.

CLEAN PAGES SYNC.WRITTEN
The number of clean pages synchronously written to the group buffer pool. Derived from the DB2 field QBGLWC.

CHANGED PAGES SYNC.WRITTEN
The number of changed pages synchronously written to the group buffer pool. Derived from the DB2 field QBGLSW.

CLEAN PAGES ASYNC.WRITTEN
The number of clean pages asynchronously written to the group buffer pool. Derived from the DB2 field QBGLAC.

CHANGED PAGES ASYNC.WRITTEN
The number of changed pages asynchronously written to the group buffer pool. Derived from the DB2 field QBGLAW.

PAGES CASTOUT
The number of pages cast out. Derived from the DB2 field QBGLRC.

UNLOCK CASTOUT
The number of times DB2 issues an unlock request to the coupling facility for castout I/Os that have completed. Derived from the DB2 field QBGLUN.

READ CASTOUT CLASS
The number of requests to the group buffer pool to determine which pages are cached as changed and thus must be cast out. Derived from the DB2 field QBGLCC.

READ CASTOUT STATISTICS
The number of requests issued by the group buffer pool structure owner when the GBPOOLT threshold is reached to determine which castout classes have changed pages. Derived from the DB2 field QBGLCS.

READ DIRECTORY INFO
The number of requests to read the directory entries of all changed pages in the group buffer pool. Derived from the DB2 field QBGLRD.

READ STORAGE STATISTICS
The number of times DB2 requested statistics information from the group buffer pool. Derived from the DB2 field QBGLOS.

REGISTER PAGE
The number of coupling facility read requests to register a page. Derived from the DB2 field QBGLRG.

DELETE NAME
The number of times DB2 issued a request to the group buffer pool to delete directory and data entries associated with a given page set or partition. Derived from the DB2 field QBGLDN.

EXPLICIT CROSS-INVALIDATIONS
The number of explicit cross invalidations. Derived from the DB2 field QBGLEX.

CASTOUT CLASS THRESHOLD
The number of times a group buffer pool castout was initiated because the class castout threshold was detected. Derived from the DB2 field QBGLCT.

GROUP BP CASTOUT THRESHOLD
The number of times a group buffer pool castout was initiated because the group buffer pool castout threshold was detected. Derived from the DB2 field QBGLGT.

GBP CHECKPOINTS TRIGGERED
The number of group buffer pool checkpoints triggered by this member. Derived from the DB2 field QBGLCK.

PARTICIPATION IN GBP REBUILD
The number of group buffer pool rebuilds in which this member participated. For Group-scope reports and traces, N/A is printed. Derived from the DB2 field QBGLRB.

CASTOUT ENGINE UNAVAILABLE
The number of times the castout engine was not available. Derived from the DB2 field QBGLCN.

WRITE ENGINE UNAVAILABLE
The number of times a coupling facility write engine was not available for coupling facility writes. Derived from the DB2 field QBGLSU.

READ FAILED-NO STORAGE
The number of coupling facility read requests that could not complete due to a lack of coupling facility storage resources. Derived from the DB2 field QBGLRF.

WRITE FAILED-NO STORAGE
The number of coupling facility write requests that could not complete due to a lack of coupling facility storage resources. Derived from the DB2 field QBGLWF.

WRITE TO SEC-GBP
The number of coupling facility requests to write changed pages to the secondary group buffer pool for duplexing. Derived from the DB2 field QBGL2W.

WRITE TO SEC-GBP FAILED
The number of times a request to write to the secondary buffer pool failed. Derived from the DB2 field QBGL2F.

DELETE NAME LIST SEC-GBP
The number of DELETE NAME LIST requests to delete pages from the secondary group buffer pool that have just been cast out from the primary.Derived from the DB2 field QBGL2D.

DELETE PAGE FROM SEC-GBP
The number of requests to delete a page from the secondary group buffer pool. Derived from the DB2 field QBGL2N.

READ CASTOUT STATS SEC-GBP
The number of requests to read castout statistics for the secondary group buffer pool. Derived from the DB2 field QBGL2R.

Data Sharing Locking Data

LOCK REQUESTS (P-LOCKS)
The number of lock requests for physical locks. These lock requests are a subset of the LOCK REQUEST, field ID QTXALOCK, described on page 851. Derived from the DB2 field QTGSLPLK.

SYNCH.XES - LOCK REQUESTS
The number of lock requests propagated to MVS XES synchronously. Derived from the DB2 field QTGSLSLM.

SUSPENDS - IRLM GLOBAL CONT
The number of suspensions due to IRLM global contention. IRLM lock states were in conflict. Derived from the DB2 field QTGSIGLO.

UNLOCK REQUESTS (P-LOCKS)
The number of unlock requests for physical locks. These unlock requests are a subset of UNLOCK REQUEST, field ID QTXAUNLK, described on page 852. Derived from the DB2 field QTGSUPLK.

SYNCH.XES - CHANGE REQUESTS
The number of change requests propagated to MVS XES synchronously. Derived from the DB2 field QTGSCSLM.

SUSPENDS - XES GLOBAL CONT.
The number of suspensions due to MVS XES global contention. MVS XES lock states were in conflict but the IRLM lock states were not. Derived from the DB2 field QTGSSGLO.

CHANGE REQUESTS (P-LOCKS)
The number of change requests for physical locks. These change requests are a subset of CHANGE REQUEST, field ID QTXACHG, described on page 852. Derived from the DB2 field QTGSCPLK.

SYNCH.XES - UNLOCK REQUESTS
The number of resources propagated to MVS XES synchronously from unlock requests. Derived from the DB2 field QTGSUSLM.

SUSPENDS - FALSE CONTENTION
The number of suspensions due to false contention. This happens when different resource names hash to the same entry in the coupling facility lock table. This causes MVS XES to detect contention on the hash class; however, when MVS XES determines that there is no real conflict on the resource, the contention is called *false* . Derived from the DB2 field QTGSFLSE.

NOTIFY MESSAGES SENT
The number of notify messages sent. Derived from the DB2 field QTGSNTFY.

ASYNCH.XES - RESOURCES
The number of resources IRLM propagated to MVS XES asynchronously. Derived from the DB2 field QTGSKIDS.

INCOMPATIBLE RETAINED LOCK
The number of global lock or change requests denied or suspended due to an incompatible retained lock. Derived from the DB2 field QTGSDRTA.

NOTIFY MESSAGES RECEIVED
The number of notify messages received. Derived from the DB2 field QTGSNTFR.

P-LOCK/NOTIFY EXITS ENGINES
The maximum number of engines available for physical lock exit or notify exit requests. Derived from the DB2 field QTGSPEMX.

P-LOCK/NFY EX.ENGINE UNAVAIL
The number of times an engine is not available for physical lock exit or notify exit requests. Derived from the DB2 field QTGSPEQW.

PSET/PART P-LOCK NEGOTIATION
The number of times this DB2 was driven to negotiate a partition/page set physical lock due to changing inter-DB2 interest levels on the partition/page set. Derived from the DB2 field QTGSPPPE.

PAGE P-LOCK NEGOTIATION
The number of times this DB2 was driven to negotiate a page physical lock due to physical lock contention within DB2. Derived from the DB2 field QTGSPGPE.

OTHER P-LOCK NEGOTIATION
The number of times this DB2 was driven to negotiate another physical lock type (other than page set/partition or page). Derived from the DB2 field QTGSOTPE.

P-LOCK CHANGE DURING NEG.
The number of times a physical lock change request was issued during physical lock negotiation. Derived from the DB2 field QTGSCHNP.

3 - Accounting

Accounting shows the data from IFCID 3.

```
------------------------------------------------------------------------------------------------------------------------
                                        INSTRUMENTATION ACCOUNTING DATA
CLASS 1 BEGINNING STORE CLOCK TIME 01/29/99 23:48:01.862203   ENDING STORE CLOCK TIME  01/29/99 23:48:01.862203
        ELAPSED TIME                          0.000000   MVS TCB TIME                                16.74
        BEGINNING MVS TCB TIME                0.048066   ENDING MVS TCB TIME                      16.790378
        STORED PROC ELAPSED TIME              0.000000   CONVERSION FACTOR                            11742
        STORED PROCEDURE TCB TIME             0.000000   PAR.TASKS:         30       PAR.TOKEN: X'0816CAB8'
        UDF ELAPSED TIME                      0.000000   COMMITS  :         30       ROLLBACKS:           0
        UDF TCB TIME                          0.000000   PROGRAMS :          0
        NETWORK ID VALUE                 'BLANK'
        REASON ACCT INVOKED:       'DEALLOCATION-NORMAL PROGRAM TERMINATION'
CLASS 2 DB2 ELAPSED TIME                  1:31.676420   DB2 ENTRY/EXIT EVENTS                       20
        TCB TIME                            47.037619   NON-ZERO CLASS 2                           YES
        STORED PROC ELAPSED TIME              0.000000   STORED PROC. ENTRY/EXITS                     0
        STORED PROCEDURE TCB TIME             0.000000   UDF SQL ENTRY/EXITS EVENTS                   0
        UDF ELAPSED TIME                      0.000000
        UDF TCB TIME                          0.000000
        TRIG ELAP TIME UNDER ENCLAVE          0.000000
        TRIG TCB TIME UNDER ENCLAVE           0.000000
        TRIG ELAP TIME NOT UNDER ENCLAVE      0.000000
        TRIG TCB TIME NOT UNDER ENCLAVE       0.000000
CLASS 3 LOCK/LATCH SUSP TIME                 24.826803   LOCK/LATCH SUSP EVENTS                      98
        SYNCHRONOUS I/O SUSP TIME             1.280279   SYNCHRONOUS I/O SUSP EVENTS                550
        LOG WRITE I/O SUSP TIME               0.000000   LOG WRITE I/O SUSP EVENTS                    0
        OTHER READ SUSP TIME                  2.408453   OTHER READ SUSP EVENTS                     218
        OTHER WRITE SUSP TIME                 0.000000   OTHER WRITE SUSP EVENTS                      0
        UPDATE COMMIT SUSP TIME               0.000000   UPDATE COMMIT SUSP EVENTS                    0
        PAGE LATCH SUSP TIME                  0.000000   PAGE LATCH SUSP EVENTS                       0
        NOTIFY MESSAGES SUSP TIME             0.000000   NOTIFY MESSAGES EVENTS                       0
        GLOBAL CONTENT. SUSP TIME             0.000000   GLOBAL CONTENTION EVENTS                     0
        SCHED. STOR PROC SUSP TIME            0.000000   STORED PROCEDURE EVENTS                      0
        SCHED. UDF SUSP TIME                  0.000000   NON-ZERO CLASS 3                           YES
WLM SERVICE CLASS:                                N/P
ROLLUP DATA FOR PARALLEL CHILD TASKS              YES
........................................................................................................................
                                              LOGGING
        NUMBER OF LOG RECORDS WRITTEN                0   TOTAL BYTES WRITTEN              X'000000000000'
........................................................................................................................
                                             SQL CALL DATA
SELECT              0  LOCK TABLE           0  CREATE TABLE         0  ALTER TABLE          0  DROP TABLE           0
INSERT              0  GRANT                 0  CREATE INDEX         0  ALTER INDEX          0  DROP INDEX           0
UPDATE              0  REVOKE                0  CREATE TSPAC         0  ALTER TSPAC          0  DROP TSPAC           0
DELETE              0  SET HOST VAR          0  CREATE DBASE         0  ALTER DBASE          0  DROP DBASE           0
PREPARE             0  SET CURR.SQL          0  CREATE STGRP         0  ALTER STGRP          0  DROP STGRP           0
DESCRIBE            0  SET CURR.DEG          0  CREATE SYNON         0                          DROP SYNON           0
DESCR.TABLE         0  SET RULES             0  CREATE VIEW          0                          DROP VIEW            0
OPEN                0  SET PATH              0  CREATE ALIAS         0                          DROP ALIAS           0
CLOSE               0  CONNECT TYP1          0  CREATE T.TAB         0                          DROP PACKAGE         0
FETCH               0  CONNECT TYP2          1  CREATE A.TAB         0
                       SET CONNECT           0  CREATE DIST          0                          DROP DIST            0
                       RELEASE               0  CREATE FUNC          0  ALTER FUNC           0  DROP FUNC            0
                       ASSOC LOCATOR         0  CREATE PROC          0  ALTER PROC           0  DROP PROC            0
                       ALLOC CURSOR          0  CREATE TRIG          0                          DROP TRIG            0
                       HOLD LOCATOR          0  COMMENT ON           0  INCRMT BIND          0
                       FREE LOCATOR          0  LABEL ON             0
                                                RENAME TABLE         0
------------------------------------------------------------------------------------------------------------------------
```

```
                                                RID LIST PROCESSING
RID LIST SUCCESSFUL           0   RID LIST NOT USED-LIMIT EXCEEDED          0    RID LIST NOT USED-NO STORAGE           0
                                               QUERY PARALLELISM
MAXIMUM DEGREE           0  REDUCED DEG-NO BUF           0  FALL TO SEQ-CURSOR          0  FALL TO SEQ-NOESA           0
GROUPS EXECUTED          0  EXECUTED AS PLANNED          0  FALL TO SEQ-NO BUF          0  FALL TO SEQ-ENCLV           0
PARALL.DISABLED         NO  SINGLE DB2-C.PARM=N          0  SINGLE DB2 ISO LVL          0  REFORM PARAL CONF           0
PARALL.GROUPS            0  MEMBERS SKIPPED              0                                 REFORM PARAL BUFF           0
                                                 OPTIMIZATION
REOPTIMIZATION           0  PREP_STMT_MATCH              0  IMPLICIT_PREPARES           0  CACHE_LIMIT_EXCEED          0
                            PREP_STMT_NO_MATCH           0  PREP_FROM_CACHE             0  PREP_STMT_PURGED            0
                                              NESTED SQL ACTIVITY
MAX CASCAD LVL           0
CALL STATEMENTS          0  PROCEDURE ABENDS             0  CALL TIMEOUTS               0  CALL REJECTS                0
STMT TRIGGER             0  ROW TRIGGER                  6  SQL ERROR TRIGGER           0
                                                   ROWID
DIRECT ACCESS                0   INDEX USED                                  0    TABLE SPACE SCAN USED                  0
                                              MISCELLANEOUS
MAX STO LOB VALUE            0
                                        BUFFER MANAGER ACCOUNTING DATA
BUFFER POOL ID               0  SYNCHRON.WRITE           0  DYNAMIC PREFETCH            0  PAGES READ ASYN-HPOOL       0
GETPAGES                     6  SYNCHRON. READ           2  PAGES READ ASYN-PAR         0  HPOOL READS                 0
GETPAGES FAIL-PAR            0  SEQ. PREFETCH            0  HPOOL WRITES                0  HPOOL READS-FAILED          0
BUFFER UPDATES               0  LIST PREFETCH            0  HPOOL WRITES-FAILED         0
                                                 LOCKING DATA
DEADLOCKS                    0  LOCK REQUEST             2  LOCK SUSPENSIONS            0  CLAIM REQUESTS              1
TIMEOUTS                     0  UNLOCK REQUEST           1  LATCH SUSPENSIONS           0  CLAIM REQ. FAILED           0
ESCALATIONS(SHR)             0  QUERY REQUEST            0  OTHER SUSPENSIONS           0  DRAIN REQUESTS              0
ESCALATIONS(EXC)             0  CHANGE REQUEST           0                                 DRAIN REQ. FAILED           0
MAX LOCK HELD                0  OTHER REQUEST            0
                                          RESOURCE LIMIT FACILITY
RES LIMIT SCOPE          0             RLF TABLE ID              'BLANK'  LIMIT IN CPU 16 MICROSEC             0
RES LIMIT TYPE   LIMIT                 LIMIT IN SERVICE UNITS          0  HIGHEST CPU 16 MICROSEC USED         0
                                         DDF DATA BY LOCATION
REMOTE LOCATION     FLAGS COMMIT S  SQL SENT BYTS SENT CON.SENT LIM BLOCK PREPARE S COM.PH2 S COM.RSP S FORGET S THR.INDB
PRODUCT ID       TRANS. S COMMIT R  SQL RCVD BYTS RCVD CON.RCVD MSGS BUFF PREPARE R COM.PH2 R COM.RSP R FORGET R RLOC.COM
REQ.ELAPSED TIME TRANS. R ROLLBK S ROWS SENT MSGS SENT CON.QUED BLKS SENT LSTAGNT S BCK.PH2 S BCK.RSP S          RLOC.BCK
SER.ELAPSED TIME          ROLLBK R ROWS RCVD MSGS RCVD REM BIND BLKS RCVD LSTAGNT R BCK.PH2 R BCK.RSP R
SERVER CPU TIME                    CONV.ALLC CON.TERM CONV.OPEN
DBAT WAIT TIME
---------------- -------- --------  -------- --------- -------- --------- --------- --------- --------- -------- --------
STL713B          X'A0'           0         2       642        1         0         1         0         0        0         0
DB2 V6 R1 M0             1       0         0       832        0         0         0         0         0        1         0
        4.429902         0       0         0         2        0         0         0         0         0                  0
        0.000000                 0         0         3        0         0         0         0         0
        0.000000                                     1        0         1
        4.429902

STL713B          X'A0'           0         2       642        1         0         1         0         0        0         0
DB2 V6 R1 M0             1       0         0       832        0         0         0         0         0        1         0
        4.429902         0       0         0         2        0         0         0         0         0                  0
        0.000000                 0         0         3        0         0         0         0         0
        0.000000                                     1        0         1
        0.000000
                                INITIAL DB2 REQUESTER AND MVS CORRELATION DATA
BYTES:    91                    PRODUCT ID: DB2                                PRODUCT VERSION: V06R01M0
LOCATION: STL713A               NET ID    : USIBMSY          LU NAME : SYEC713A        CONNECT: TEST0001
CONNTYPE: MASS                  CORRNAME  : CTHDCORI         CORRNMBR: D001            AUTHID : SYSADM
PLANNAME: DONSQL1
MVS ACCOUNTING DATA: HADERLE
                                          IFI CLASS 5 TIMES AND DATA CAPTURE
IFI CALL ELAPSED TIME          0.000000           IFI CALL TCB CPU TIME          0.000000
DESCRIBES ELAPSED              0.000000           LOG EXTRACT ELAPSED            0.000000
IFI CALLS           0   LOG READS PERFORMED          0  LOG RECS CAPTURED           0  DATA DESCR. RETURNED        0
DESCRIBES           0   DATA ROWS RETURNED           0  LOG RECS RETURNED           0  TABLES RETURNED             0
```

IFCID 3

```
|.....................................................................................................
|                                          PACKAGE/DBRM ACCOUNTING DATA
|LOCATION: PMO6D661           COLLECTION       : PMDEV                          PACKAGE ID   : PARALC01
|TOKEN:  X'15C7A6331A688408'  SECTION NMB      :     1       PROGRAM TYPE : PACKAGE   SCHEMA NAME  : xxxxxxxx
|SQL STMTS:                1  USED BY STOR.PROC:    NO       NON-ZERO CLASS 8:  YES   ACTIVITY NAME: xxxxxxxx
|SUCC AUTH CHECK :       NO   LAST EXECUTED    :   YES       NON-ZERO CLASS 7:  YES   ACTIVITY TYPE: TRIGGER EXECUTING
|CLASS 7 BEGINNING STORE CLOCK TIME 10/30/98 09:36:20.052939   ENDING STORE CLOCK TIME  10/30/98 09:36:20.619607
|        BEGINNING TCB CPU TIME                     0.092405   ENDING TCB CPU TIME                      0.093365
|        TOTAL ELAPSED TIME                        17.219923   DB2 ENTRY/EXIT                                  4
|        TOTAL TCB TIME                             0.006152
|CLASS 8 LOCK/LATCH SUSP TIME                       0.000000   LOCK/LATCH SUSP EVENTS                          0
|        SYNCHRONOUS I/O SUSP TIME                  0.000000   SYNCHRONOUS I/O SUSP EVENTS                     0
|        OTHER READ SUSP TIME                       0.000000   OTHER READ SUSP EVENTS                          0
|        OTHER WRITE SUSP TIME                      0.000000   OTHER WRITE SUSP EVENTS                         0
|        SERV.TASK SWITCH SUSP TIME                16.589673   SERV.TASK SWITCH SUSP EVENTS                    4
|        ARCH.LOG(QUIES) SUSP TIME                  0.000000   ARCH.LOG(QUIES) SUSP EVENTS                     0
|        ARCH.LOG READ SUSP TIME                    0.000000   ARCH.LOG READ SUSP EVENTS                       0
|        DRAIN LOCK SUSP TIME                       0.000000   DRAIN LOCK SUSP EVENTS                          0
|        CLAIM RELEASE SUSP TIME                    0.000000   CLAIM RELEASE SUSP EVENTS                       0
|        PAGE LATCH SUSP TIME                       0.000000   PAGE LATCH SUSP EVENTS                          0
|        NOTIFY MESSAGES SUSP TIME                  0.000000   NOTIFY MESSAGE EVENTS                           0
|        GLOBAL CONTENT. SUSP TIME                  0.000000   GLOBAL CONTENTION EVENTS                        0
|        SCHED.STOR PROC SUSP TIME                  0.000000   STORED PROCEDURE EVENTS                         0
|        SCHED.UDF SUSP TIME                        0.000000   UDF EXECUTED                                    0
|                                                   0.000000   STORED PROCEDURE EXECUTED                       0
|.....................................................................................................
|                                        GROUP BUFFER POOLS ACTIVITY DATA
|GROUP BUFFER POOL ID           0  READ(NF)-DATA RETURNED          0  CLEAN PAGES WRITTEN            0
|READ(XI)-DATA RETURNED         0  READ(NF)-NO DATA RET.           0  CHANGED PAGES WRITTEN          0
|READ(XI)-NO DATA RET.          0  READ PREFETCH                   0  UNREGISTER PAGE                0
|EXPLICIT X-INVALID             0  WRITE TO SEC GBP                0
|.....................................................................................................
|                                          DATA SHARING LOCKING DATA
|LOCK REQUESTS          0     LOCK - XES          0     SUSPENSIONS - IRLM         0     INCOMPATIBLE LOCK         0
|UNLOCK REQUESTS        0     UNLOCK - XES        0     SUSPENSIONS - XES          0     NOTIFY SENT               1
|CHANGE REQUESTS        0     CHANGE - XES        0     SUSPENSIONS - FALSE        0
|.....................................................................................................
|                                          DATA SHARING ACCOUNTING DATA
|MEMBER NAMES: N/P
|.....................................................................................................
|                                       INSTRUMENTATION ACCOUNTING DATA OVERFLOW
|
|                 ARCH.LOG(QUIES) SUSP TIME                 0.000000   ARCH.LOG(QUIES) SUSP EVENTS                  0
|                 ARCH.LOG READ SUSP TIME                   0.000000   ARCH.LOG READ SUSP EVENTS                    0
|                 DRAIN LOCK SUSP TIME                      0.000000   DRAIN LOCK SUSP EVENTS                       0
|                 CLAIM RELEASE SUSP TIME                   0.000000   CLAIM RELEASE SUSP EVENTS                    0
|                 I/O SERVICE TASK SUSP TIME                0.000000   I/O SERVICE TASK SUSP EVENTS                 0
|                 SYSLGRNG SUSP TIME                        0.000000   SYSLGRNG SUSP EVENTS                         0
|                 DS MANAGER SUSP TIME                      0.000000   DS MANAGER SUSP EVENTS                       0
|                 OTHER SERVICE SUSP TIME                   0.001987   OTHER SERVICE SUSP EVENTS                    4
-----------------------------------------------------------------------------------------------------
```

Instrumentation Accounting Data

CLASS 1

BEGINNING STORE CLOCK TIME
The beginning store clock time for the period covered by this accounting record. Derived from the DB2 field QWACBSC.

ENDING STORE CLOCK TIME
The ending store clock time for the period covered by this accounting record. Derived from the DB2 field QWACESC.

ELAPSED TIME
The time covered by this accounting record. If the time cannot be calculated or the value is negative, N/C is printed in this field. Calculated from the DB2 field QWACESC − QWACBSC.

BEGINNING MVS TCB TIME
The beginning MVS CPU time. Derived from the DB2 field QWACBJST.

ENDING MVS TCB TIME
The ending MVS CPU time. Derived from the DB2 field QWACEJST.

STORED PROC ELAPSED TIME
The total elapsed time spent by the allied agent in stored procedures.

A stored procedure may initiate a trigger or invoke a user-defined function. The time spend there is not included in this counter. Derived from DB2 field QWACSPEA.

MVS TCB TIME
The amount of MVS CPU time used. If the time cannot be calculated or the value is negative, N/C is printed in this field. Calculated from the DB2 field QWACEJST − QWACBJST.

STORED PROCEDURE TCB TIME
The TCB time accumulated in DB2 for processing SQL CALL statements in the stored-procedures address space. This time is only calculated if accounting class 1 is active. Derived from the DB2 field QWACSPCP.

CONVERSION FACTOR
The CPU service unit conversion factor. This factor allows for converting CPU time to a common unit, called *service unit (SU)*. The conversion factor used depends on the machine being used. With the SU, you can add up CPU execution times across multiple DB2s running on different machines. Derived from the DB2 field QWACSUCV.

UDF ELAPSED TIME
The total elapsed time that the allied agent spent executing user-defined functions. Derived from DB2 field QWACUDEA.

PAR.TASKS
The number of parallel tasks created. For parallel tasks or if parallelism is not utilized, this value is 0. Derived from the DB2 field QWACPCNT.

PAR.TOKEN
Token used to correlate parallel task or utility task records with the records of the originating task or main utility task. Derived from the DB2 field QWACPACE.

ROLLBACKS
The number of rollback requests. This reflects the number of units of recovery, including rollbacks and attaches. Derived from DB2 field QWACABRT.

UDF TCB TIME
The total TCB time that the allied agent spent executing user-defined functions. Derived from DB2 field QWACUDCP.

NETWORK ID VALUE
The network ID. It is used with IMS and CICS. Derived from the DB2 field QWACNID.

COMMITS
The number of commit phase-2 requests. This field indicates the number of units of recovery that completed successfully. Derived from the DB2 field QWACCOMM.

REASON ACCT INVOKED
The reason why accounting was invoked. Derived from the DB2 field QWACRINV.

PROGRAMS
The number of packages or DBRMs for which package and DBRM level accounting was performed. Derived from the DB2 field QWACPKGN.

CLASS 2

IFCID 3

DB2 ELAPSED TIME
The accumulated elapsed time in DB2. Derived from the DB2 field QWACASC.

TCB TIME
The accumulated MVS CPU time spent in DB2. Derived from the DB2 field QWACAJST.

STORED PROC ELAPSED TIME
The total elapsed time spent by the allied agent in stored procedures.

A stored procedure may initiate a trigger or invoke a user-defined function. The time spend there is not included in this counter. Derived from DB2 field QWACSPEB.

NON-ZERO CLASS 2
Indicates whether there is non-zero accounting class 2 data. Derived from the DB2 field QWACFLGS.

STORED PROCEDURE TCB TIME
The total TCB time spent by the allied agent in stored procedures.

A stored procedure may initiate a trigger or invoke a user-defined function. The time spend there is not included in this counter.. Derived from the DB2 field QWACSPTT.

STORED PROC. ENTRY/EXITS
The number of SQL entry/exit events performed by stored procedures. Derived from the DB2 field QWACSPNE.

UDF ENTRY/EXIT EVENTS
The number of user-defined function entry/exit events processed. Derived from the DB2 field QWACUDNE.

UDF ELAPSED TIME
The total elapsed time that the allied agent spent executing user-defined functions. Derived from DB2 field QWACUDEB.

UDF TCB TIME
The total TCB time that the allied agent spent executing user-defined functions. Derived from DB2 field QWACUDTT.

TRIG ELAPSED TIME UNDER ENCLAVE
The accumulated elapsed time used for executing triggers under an enclave. Derived from the DB2 filed QWACTREE.

TRIG TCB TIME UNDER ENCLAVE
The accumulated TCB time used for executing triggers under an enclave. Derived from the DB2 filed QWACTRTE.

TRIG ELAPSED TIME NOT UNDER ENCLAVE
The accumulated elapsed time used when executing under the control of a trigger. This does not include the time used while in User Defined Functions or Stored Procedures that are called from the trigger. Derived from DB2 field QWACTRET.

TRIG TCB TIME UNDER NOT ENCLAVE
The accumulated TCB time used when executing under the control of a trigger. This does not include the time used while in User Defined Functions or Stored Procedures that are called from the trigger. Derived from DB2 field QWACTRTT.

CLASS 3

LOCK/LATCH SUSP TIME
The accumulated lock and latch time. Derived from the DB2 field QWACAWTL.

LOCK/LATCH SUSP EVENTS
The number of wait trace events processed for lock/latch. Derived from the DB2 field QWACARNL.

SYNCHRONOUS I/O SUSP TIME
The accumulated elapsed I/O wait time. Derived from the DB2 field QWACAWTI.

SYNCHRONOUS I/O SUSP EVENTS
The number of wait trace events processed for I/O. Derived from the DB2 field QWACARNE.

OTHER READ SUSP TIME
The accumulated read I/O wait time. Derived from the DB2 field QWACAWTR.

OTHER READ SUSP EVENTS
The number of suspensions due to read I/O. Derived from the DB2 field QWACARNR.

OTHER WRITE SUSP TIME
The accumulated write I/O wait time. Derived from the DB2 field QWACAWTW.

OTHER WRITE SUSP EVENTS
The number of suspensions due to write I/O. Derived from the DB2 field QWACARNW.

PAGE LATCH SUSP TIME
The accumulated wait time for page latch contention. Derived from the DB2 field QWACAWTP.

PAGE LATCH SUSP EVENTS
The number of page latch wait trace events processed. Derived from the DB2 field QWACARNH.

NOTIFY MESSAGES SUSP TIME
The elapsed time spent in waiting for suspensions processed for sending notify messages to other members in the data sharing group. Derived from the DB2 field QWACAWTG.

NOTIFY MESSAGES EVENTS
The number of wait trace events processed for sending notify messages to other members in the data sharing group. Derived from the DB2 field QWACARNG.

GLOBAL CONTENT. SUSP TIME
The elapsed time spent in waiting for suspensions due to global lock contentions. Derived from the DB2 field QWACAWTJ.

GLOBAL CONTENTION EVENTS
The number of wait trace events processed for group-level contentions in a data sharing environment. Derived from the DB2 field QWACARNJ.

SHED. STOR PROC SUSP TIME
The elapsed time spent in waiting for an available TCB before the stored procedure could be scheduled. Derived from the DB2 field QWACCAST.

IFCID 3

STORED PROCEDURE EVENTS
The number of wait trace events processed for an unavailable TCB needed for a stored procedure. Derived from the DB2 field QWACCANM.

SHED. UDF SUSP TIME
The elapsed time spent in waiting for an available TCB before the user-defined function could be scheduled. Derived from the DB2 field QWACUDST.

NON-ZERO CLASS 3
Indicates whether there is non-zero accounting class 3 data. Derived from the DB2 field QWACFLGS.

ROLLUP DATA FOR PARALLEL CHILD PROCESS
The field indicates whether to roll up accumulate query parallel task's accounting trace into originating task's accounting trace. Possible values are:

YES Originating task cut an additional accounting trace record with all roll up values from parallel tasks.

NO Each parallel task will produce its own accounting trace record.

Derived from DB2 field QWP1PROL.

Logging

NUMBER OF LOG RECORDS WRITTEN
The number of log records written. Derived from DB2 field QWACLRN.

TOTAL BYTES WRITTEN
The total number of log record bytes written. Derived from DB2 field QWACLRAB.

SQL Call Data

SELECT
The number of SQL SELECT statements. Derived from the DB2 field QXSELECT.

INSERT
The number of SQL INSERT statements. Derived from the DB2 field QXINSRT.

UPDATE
The number of SQL UPDATE statements. Derived from the DB2 field QXUPDTE.

DELETE
The number of SQL DELETE statements. Derived from the DB2 field QXDELET.

PREPARE
The number of SQL PREPARE statements. Derived from the DB2 field QXPREP.

DESCRIBE
The number of SQL DESCRIBE statements, including the number of DESCRIBE CURSOR and DESCRIBE PROCEDURES statements issued by the SQL application. Derived from the DB2 field QXDESC.

DESCR.TABLE
The number of SQL DESCRIBE TABLE statements. Derived from the DB2 field QXDSCRTB.

OPEN The number of SQL OPEN CURSOR statements. Derived from the DB2 field QXOPEN.

CLOSE
The number of SQL CLOSE CURSOR statements. Derived from the DB2 field QXCLOSE.

FETCH
The number of SQL FETCH CURSOR statements. Derived from the DB2 field QXFETCH.

LOCK TABLE
The number of SQL LOCK TABLE statements. Derived from the DB2 field QXLOCK.

GRANT
The number of SQL GRANT statements. Derived from the DB2 field QXGRANT.

REVOKE
The number of SQL REVOKE statements. Derived from the DB2 field QXREVOK.

SET HOST VAR
The number of SQL SET HOST VARIABLE statements. Derived from the DB2 field QXSETHV.

SET CURR.SQL
The number of SQL SET CURRENT SQLID statements. Derived from the DB2 field QXSETSQL.

SET CURR.DEG
The number of SQL SET CURRENT DEGREE statements. Derived from the DB2 field QXSETCDG.

SET RULES
The number of SQL SET CURRENT RULES statements. Derived from the DB2 field QXSETCRL.

SET PATH
The number of SQL SET CURRENT PATH statements. Derived from the DB2 field QXSETPTH.

CONNECT TYP1
The number of SQL CONNECT TYPE 1 statements. Derived from the DB2 field QXCON1.

CONNECT TYP2
The number of SQL CONNECT TYPE 2 statements. Derived from the DB2 field QXCON2.

SET CONNECT
The number of SQL SET CONNECT statements. Derived from the DB2 field QXSETCON.

RELEASE
The number of SQL RELEASE statements. Derived from the DB2 field QXREL.

ASSOC LOCATOR
The number of SQL ASSOCIATE LOCATORS statements executed. Derived from the DB2 field QXALOCL.

ALLOC CURSOR
The number of SQL ALLOCATE CURSOR statements executed. Derived from the DB2 field QXALOCC.

HOLD LOCATOR
The number of SQL HOLD LOCATOR statements executed. Derived from the DB2 field QXHOLDL.

FREE LOCATOR
The number of SQL FREE LOCATOR statements executed. Derived from the DB2 field QXFREEL.

CREATE TABLE
The number of SQL CREATE TABLE statements. Derived from the DB2 field QXCRTAB.

ALTER TABLE
The number of SQL ALTER TABLE statements. Derived from the DB2 field QXALTTA.

DROP TABLE
The number of SQL DROP TABLE statements. Derived from the DB2 field QXDRPTA.

CREATE INDEX
The number of SQL CREATE INDEX statements. Derived from the DB2 field QXCRINX.

ALTER INDEX
The number of SQL ALTER INDEX statements. Derived from the DB2 field QXALTIX.

DROP INDEX
The number of SQL DROP INDEX statements. Derived from the DB2 field QXDRPIX.

CREATE TSPAC
The number of SQL CREATE TABLESPACE statements. Derived from the DB2 field QXCTABS.

ALTER TSPAC
The number of SQL ALTER TABLESPACE statements. Derived from the DB2 field QXALTTS.

DROP TSPAC
The number of SQL DROP TABLESPACE statements. Derived from the DB2 field QXDRPTS.

CREATE DBASE
The number of SQL CREATE DATABASE statements. Derived from the DB2 field QXCRDAB.

ALTER DBASE
The number of SQL ALTER DATABASE statements. Derived from the DB2 field QXALDAB.

DROP DBASE
The number of SQL DROP DATABASE statements. Derived from the DB2 field QXDRPDB.

CREATE STGRP
The number of SQL CREATE STORAGE GROUP statements. Derived from the DB2 field QXCRSTG.

ALTER STGRP
The number of SQL ALTER STORAGE GROUP statements. Derived from the DB2 field QXALTST.

DROP STGRP
The number of SQL DROP STORAGE GROUP statements. Derived from the DB2 field QXDRPST.

CREATE SYNON
The number of SQL CREATE SYNONYM statements. Derived from the DB2 field QXCRSYN.

DROP SYNON
The number of SQL DROP SYNONYM statements. Derived from the DB2 field QXDRPSY.

CREATE VIEW
The number of SQL CREATE VIEW statements. Derived from the DB2 field QXDEFVU.

DROP VIEW
The number of SQL DROP VIEW statements. Derived from the DB2 field QXDRPVU.

CREATE ALIAS
The number of SQL CREATE ALIAS statements. Derived from the DB2 field QXCRALS.

DROP ALIAS
The number of SQL DROP ALIAS statements. Derived from the DB2 field QXDRPAL.

CREATE T.TAB
The number of SQL CREATE GLOBAL TEMPORARY TABLE statements. Derived from the DB2 field QXCRGTT.

DROP PACKAGE
The number of SQL DROP PACKAGE statements. Derived from the DB2 field QXDRPPKG.

CREATE A.TAB
The number of SQL CREATE AUXILIARY TABLE statements. Derived from the DB2 field QXCRATB.

CREATE DIST TYPE
The number of SQL CREATE DISTINCT TYPE statements. Derived from the DB2 field QXCDIST.

DROP DIST TYPE
The number of SQL DROP DISTINCT TYPE statements. Derived from the DB2 field QXDDIST.

CREATE FUNCTION
The number of SQL CREATE FUNCTION statements. Derived from the DB2 field QXCRUDF.

ALTER FUNCTION
The number of SQL ALTER FUNCTION statements. Derived from the DB2 field QXALUDF.

IFCID 3

DROP FUNCTION
The number of SQL DROP FUNCTION statements. Derived from the DB2 field QXDRPFN.

CREATE PROCEDURE
The number of SQL CREATE PROCEDURE statements. Derived from the DB2 field QXCRPRO.

ALTER PROCEDURE
The number of SQL ALTER PROCEDURE statements. Derived from the DB2 field QXALPRO.

DROP PROCEDURE
The number of SQL DROP PROCEDURE statements. Derived from the DB2 field QXDRPPR.

CREATE TRIGGER
The number of SQL CREATE TRIGGER statements. Derived from the DB2 field QXCRTRIG.

DROP TRIGGER
The number of SQL DROP TRIGGER statements. Derived from the DB2 field QXDRPTR.

COMMENT ON
The number of SQL COMMENT ON statements. Derived from the DB2 field QXCMTON.

INCRMT BIND
The number of SQL INCREMENTAL BIND statements. This total does not include PREPAREs. Derived from the DB2 field QXINCRB.

LABEL ON
The number of SQL LABEL ON statements. Derived from the DB2 field QXLABON.

RENAME TABLE
The number of SQL RENAME TABLE statements executed. Derived from the DB2 field QXRNTAB.

RID List Processing

RID LIST SUCCESSFUL
The number of times that any combination of multiple index access path and RID pool processing was used or invoked. Derived from the DB2 field QXMIAP.

RID LIST NOT USED-LIMIT EXCEEDED
The number of times that any combination of multiple index access path and RID pool processing was not used or invoked because the number of RIDs retrieved exceeded the maximum limit. Derived from the DB2 field QXMRMIAP.

RID LIST NOT USED-NO STORAGE
The number of times that any combination of multiple index access path and RID pool processing was not used or invoked because no storage was available for RIDs. Derived from the DB2 field QXNSMIAP.

Query Parallelism

MAXIMUM DEGREE
The maximum degree of parallelism executed among all the parallel groups to indicate the extent to which parallelism applies. Derived from the DB2 field QXMAXDEG.

REDUCED DEG-NO BUF
The total number of parallel groups executed in reduced parallel degree due to the shortage of storage or contention on the buffer pool. Derived from the DB2 field QXREDGRP.

FALL TO SEQ-CURSOR
The total number of parallel groups that fell back to sequential mode because of a cursor that can be used for update or delete. Derived from the DB2 field QXDEGCUR.

FALL TO SEQ-NOESA
The total number of parallel groups that fell back to sequential mode because of a lack of ESA sort support. Derived from the DB2 field QXDEGESA.

GROUPS EXECUTED
The total number of parallel groups that have been executed. Derived from the DB2 field QXTOTGRP.

EXECUTED AS PLANNED
The total number of parallel groups executed in the planned parallel degree due to sufficient buffer pool availability. Derived from the DB2 field QXNORGRP.

FALL TO SEQ-NO BUF
The total number of parallel groups that fall back to sequential mode because of a shortage of storage or contention on the buffer pool. Derived from the DB2 field QXDEGBUF.

FALL TO SEQ-ENCLV
The total number of parallel groups executed in sequential mode due to unavailability of MVS/ESA enclave services. Derived from the DB2 field QXDEGENC.

PARALL.DISABLED
This field always shows N/A.

SINGLE DB2-C.PARM=N
The total number of parallel groups executed on a single DB2 due to the COORDINATOR subsystem parameter being set to NO. Derived from the DB2 field QXCOORNO.

SINGLE DB2 ISO LVL
The total number of parallel groups executed on a single DB2 because the plan or package was bound with an ISOLATION value of repeatable read or read stability. Derived from the DB2 field QXISORR.

PARALL.GROUPS
The total number of parallel groups that DB2 intended to run across the data sharing group. This number is only incremented at the parallelism coordinator at run time. Derived from the DB2 field QXXCBPNX.

MEMBER SKIPPED
The number of times the parallelism coordinator had to bypass a DB2 when distributing tasks because one or more DB2 members did not have enough

buffer pool storage. The number in this field is only incremented at the parallelism coordinator once per parallel group, even though more than one DB2 might have lacked buffer pool storage for that parallel group. It is also only incremented when the buffer pool is defined to allow for parallelism. For example, if VPXPSEQT=0 on an assistant, DB2 does not send parallel work there and the number in this field is not incremented. Derived from the DB2 field QXXCSKIP.

REFORM PARAL CONF
The total number of parallel groups in which DB2 reformulated the the parallel portion of the access path because of a change in the number of active DB2 members or because of a change in the processor models on which they run from bind time to run time. This counter is only updated on the parallelism coordinator at run time. Derived from QXREPOP1.

REFORM PARAL BUFF
The total number of parallel groups in which DB2 reformulated the the parallel portion of the access path because there were insufficient buffer pool resources. This counter is only updated on the parallelism coordinator at run time. Derived from QXREPOP2.

Nested SQL Activity

CALL STATEMENTS
The number of SQL CALL statements executed. Derived from the DB2 field QXCALL.

PROCEDURE ABENDS
The number of times a called SQL procedure terminated abnormally. Derived from the DB2 field QXCALLAB.

CALL TIMEOUTS
The number of times an SQL CALL statement timed out waiting to be scheduled. Derived from the DB2 field QXCALLTO.

CALL REJECTS
The number of times an SQL CALL statement was rejected. Derived from the DB2 field QXCALLRJ.

MAX CASCAD LVL
The maximum level of SQL cascading. This includes cascading due to triggers, UDFs or stored procedures. Derived from QXCASCDP.

STATEMENT TRIGGER
The number of times a statement trigger was activated. Derived from QXSTTRG.

ROW TRIGGER
The number of times a row trigger was activated. Derived from QXROWTRG.

SQL ERROR TRIG
The number SQL errors that occurred during the execution of triggered actions. This includes errors from UDFs and stored procedures, called by triggers, that passed back a negative return code. Derived from QXTRGERR.

ROWID

DIRECT ACCESS
The number of times that direct row access was successful. Derived from QXROIMAT.

INDEX USED
The number of times an index was used to find a record. Derived from QXROIINX.

TABLE SPACE SCAN USED
The number of times that a table or table space was used to find a record. Derived from QXROITS.

Miscellaneous

MAX STO LOB VALUES
The maximum storage used for LOB values.

Buffer Manager Accounting Data

BUFFER POOL ID
The buffer pool ID used by this thread. Derived from the DB2 field QBACPID.

SYNCHRON.WRITE
The number of synchronous write I/Os. Derived from the DB2 field QBACIMW.

DYNAMIC PREFETCH
The number of times that dynamic prefetch was requested. Derived from the DB2 field QBACDPF.

PAGES READ ASYN-HPOOL
The number of pages found and moved from a hiperpool to a virtual buffer pool due to prefetch under the control of the agent. Derived from the DB2 field QBACHPG.

GETPAGES
The number of get page requests issued. This number is incremented by successful page requests for queries processed in parallel and by successful and unsuccessful page requests for queries that are not processed in parallel. Derived from the DB2 field QBACGET.

SYNCHRON. READ
The number of synchronous read I/Os. Derived from the DB2 field QBACRIO.

PAGES READ ASYN-PAR
The number of asynchronous pages read by prefetch under the control of the agent. Derived from the DB2 field QBACSIO.

HPOOL READS
The number of successful requests to synchronously move a page from the hiperpool to the virtual buffer pool. Derived from the DB2 field QBACHRE.

GETPAGES FAIL-PAR
The number of unsuccessful get page operations due to conditional get page requests. Derived from the DB2 field QBACNGT.

SEQ. PREFETCH
The number of sequential prefetch requests for this pool. Derived from the DB2 field QBACSEQ.

HPOOL WRITES
The number of successful requests to synchronously move a page from the virtual buffer pool to the hiperpool. Derived from the DB2 field QBACHWR.

HPOOL READS-FAILED
The number of unsuccessful requests to synchronously move a page from the hiperpool to the virtual buffer pool. Derived from the DB2 field QBACHRF.

BUFFER UPDATES
The number of times a buffer was updated. Derived from the DB2 field QBACSWS.

LIST PREFETCH
The number of list prefetch requests. Derived from the DB2 field QBACLPF.

HPOOL WRITES-FAILED
The number of unsuccessful write requests due to a shortage of expanded storage. Derived from the DB2 field QBACHWF.

Group Buffer Pools Activity Data

The record contains one data section for each group buffer pool. The following data is printed for each section in the record:

GROUP BUFFER POOL ID
The group buffer pool identifier. Derived from the DB2 field QBGAGN.

READ(NF)-DATA RETURNED
The number of coupling facility read requests necessary because the requested page was not found in the buffer pool. Data is returned from the group buffer pool. Derived from the DB2 field QBGAMD.

CLEAN PAGES WRITTEN
The number of clean pages written to the group buffer pool. Derived from the DB2 field QBGAWC.

READ(XI)-DATA RETURNED
The number of coupling facility read requests caused by the buffer being marked *invalid*. Data is returned from the group buffer pool. Derived from the DB2 field QBGAXD.

READ(NF)-R/W INTEREST
This field is valid for DB2 version 4 only.

The number of coupling facility read requests necessary because the requested page was not found in the buffer pool. Data is not returned from the group buffer pool, and a directory entry is created if it does not already exist. This means another DB2 in the group has R/W interest in the page set or partition. Derived from the DB2 field QBGAMR.

READ(NF)-NO DATA RET
The number of group buffer pool reads due local buffer pool miss where no data was returned. Derived from the DB2 field QBGAMR.

CHANGED PAGES WRITTEN
The number of changed pages written to the group buffer pool. Derived from the DB2 field QBGASW.

READ(XI)-R/W INTEREST
This field is valid for DB2 version 4 only.

The number of coupling facility read requests caused by the buffer being marked *invalid*. Data is not returned from the group buffer pool, and a directory entry is created if it does not already exist. This means another DB2 in the group has R/W interest in the page set or partition. Derived from the DB2 field QBGAXR.

READ(XI)-NO DATA RET
The number of group buffer pool read requests due to buffer XI where no data was returned. Derived from the DB2 field QBGAXR.

READ(NF)-NO R/W INTER.
This field is valid for DB2 version 4 only.

The number of coupling facility read requests necessary because the requested page was not found in the buffer pool. Data is not returned from the group buffer pool, and no directory entry is created for this page. When no other DB2 in the group has R/W interest in the page set or partition, the process of creating the directory entry can be avoided. Derived from the DB2 field QBGAMN.

READ PREFETCH
The number of pages read from the group buffer pool due to prefetch under control of the agent. Derived from the DB2 field QBGAMN.

UNREGISTER PAGE
The number of coupling facility requests to unregister a page. Derived from the DB2 field QBGADG.

READ(XI)-NO R/W INTER.
This field is valid for DB2 version 4 only.

The number of coupling facility read requests caused by the buffer being marked *invalid*. Data is not returned from the group buffer pool, and no directory entry is created for this page. When no other DB2 in the group has R/W interest in the page set or partition, the process of creating the directory entry can be avoided. Derived from the DB2 field QBGAXN.

EXPLICIT CROSS-INVALIDATIONS
The number of explicit cross invalidations.Derived from the DB2 field QBGAEX.

WRITE TO SEC-GBP
The number of coupling facility requests to write changed pages to the secondary group buffer pool for duplexing.Derived from the DB2 field QBGA2W.

Locking Data

DEADLOCKS
The number of deadlocks. Derived from the DB2 field QTXADEA.

LOCK REQUEST
The total number of lock requests, that is logical and physical locks. Derived from the DB2 field QTXALOCK.

LOCK SUSPENSIONS
The number of times a lock could not be obtained and the unit of work was suspended. Derived from the DB2 field QTXASLOC.

IFCID 3

CLAIM REQUESTS
The number of claim requests. Derived from the DB2 field QTXACLNO.

TIMEOUTS
The number of times a unit of work was suspended for a time exceeding the timeout value. Derived from the DB2 field QTXATIM.

UNLOCK REQUEST
The number of unlock requests for logical and physical locks. Derived from the DB2 field QTXAUNLK.

LATCH SUSPENSIONS
The number of times a latch could not be obtained and the unit of work was suspended. Derived from the DB2 field QTXASLAT.

CLAIM REQ. FAILED
The number of unsuccessful claim requests. Derived from the DB2 field QTXACLUN.

ESCALATIONS(SHR)
The number of times a lock was escalated to shared. Derived from the DB2 field QTXALES.

QUERY REQUEST
The number of query requests. Derived from the DB2 field QTXAQRY.

OTHER SUSPENSIONS
The number of times a unit of work was suspended for reasons other than no lock or latch was available. Derived from the DB2 field QTXASOTH.

DRAIN REQUESTS
The number of drain requests. Derived from the DB2 field QTXADRNO.

ESCALATIONS(EXC)
The number of times a lock was escalated to exclusive. Derived from the DB2 field QTXALEX.

CHANGE REQUEST
The total number of change requests with regard to logical and physical locks. Derived from the DB2 field QTXACHG.

DRAIN REQ. FAILED
The number of unsuccessful drain requests. Derived from the DB2 field QTXADRUN.

MAX LOCK HELD
The maximum number of page locks or row locks held concurrently by a single application. Derived from the DB2 field QTXANPL.

OTHER REQUEST
The number of other IRLM requests. Derived from the DB2 field QTXAIRLM.

Data Sharing Locking Data

LOCK REQUESTS
The number of lock requests for P-locks. These lock requests are a subset of LOCK REQUEST, field ID QTXALOCK, described on page 851 . Derived from the DB2 field QTGALPLK.

LOCK - XES
The number of lock requests propagated to MVS XES. Derived from the DB2 field QTGALSLM.

SUSPENSIONS - IRLM
The number of suspensions due to IRLM global resource contention. The IRLM lock states were in conflict. Derived from the DB2 field QTGAIGLO.

INCOMPATIBLE LOCK
The number of global lock or change requests denied or suspended due to an incompatible retained lock. Derived from the DB2 field QTGADRTA.

UNLOCK REQUESTS
The number of unlock requests for P-locks. These unlock requests are a subset of UNLOCK REQUEST, field ID QTXAUNLK, described on page 852 . Derived from the DB2 field QTGAUPLK.

UNLOCK - XES
The number of unlock requests propagated to MVS XES. Derived from the DB2 field QTGAUSLM.

SUSPENSIONS - XES
The number of suspensions due to MVS XES global resource contention. The MVS XES lock states were in conflict but the IRLM lock states were not. Derived from the DB2 field QTGASGLO.

NOTIFY SENT
The number of notify messages sent. Derived from the DB2 field QTGANTFY.

CHANGE REQUESTS
The number of change requests for P-locks. These change requests are a subset of CHANGE REQUEST, field ID QTXACHG, described on page 852 . Derived from the DB2 field QTGACPLK.

CHANGE - XES
The number of change requests propagated to MVS XES. Derived from the DB2 field QTGACSLM.

SUSPENSIONS - FALSE
The number of suspensions due to false contention. Derived from the DB2 field QTGAFLSE.

Data Sharing Accounting Data

MEMBER NAMES
For an assisting task, the name of the parallelism coordinator. For a coordinating task, the name of each assisting member. Derived from the DB2 field QWDAXCQO.

Resource Limit Facility

RES LIMIT SCOPE
Indicates how the resource limit was established. A value of 0 shows that the resource limit facility was not started. Derived from the DB2 field QTXAPREC.

RLF TABLE ID
The identifier of the resource limit specification table. Derived from the DB2 field QTXARLID.

LIMIT IN CPU 16 MICROSEC
The CPU time limit, in microseconds, set by the resource limit facility. Derived from the DB2 field QTXACLMT.

IFCID 3

RES LIMIT TYPE
Indicates how the type of resource limit was established: infinite, zero, or limit. Derived from the DB2 field QTXAFLG1.

LIMIT IN SERVICE UNITS
The maximum number of CPU service units to be used. Normally, the value is not 0 if the RES LIMIT TYPE is LIMIT. A value of 0 indicates no limit. Derived from the DB2 field QTXASLMT.

HIGHEST CPU 16 MICROSEC USED
The highest CPU time used by a single DB2 call, in microseconds. Note that there can be many DB2 calls for one SQL statement. Derived from the DB2 field QTXACHUS.

DDF Data by Location

REMOTE LOCATION
The name of the remote location. Derived from the DB2 field QLACLOCN.

FLAGS
The flag byte:

X'20' This value is shown if application-directed access is used to communicate with the server.

X'40' This value is shown if system-directed access is used to communicate with the server.

All other values shown in this field are serviceability. Derived from the DB2 field QLACFLGS.

COMMIT S
The number of commit requests sent to the remote location. Derived from the DB2 field QLACCOMS.

SQL SENT
The number of SQL statements sent to the remote location. Derived from the DB2 field QLACSQLS.

BYTS SENT
The number of bytes of data sent to the remote location. Derived from the DB2 field QLACBYTS.

CON. SENT
The number of conversations with the remote location that were initiated by the local location. Derived from the DB2 field QLACCNVS.

LIM BLOCK
The number of times a switch was made from continuous block mode to limited block mode. Derived from the DB2 field QLACCBLB.

PREPARE S
The number of prepare requests sent to the remote location. Derived from the DB2 field QLACPRSE.

COM.PH2 S
The number of two-phase commit requests sent to the remote location. Derived from the DB2 field QLACCRSE.

COM.RSP S
The number of vote yes responses sent to the remote location. Derived from the DB2 field QLACVYSE.

FORGET S
The number of forget responses sent to the remote location. Derived from the DB2 field QLACRRSE.

THR.INDB
The number of threads that went indoubt with the remote location as the coordinator. Derived from the DB2 field QLACINDT.

PRODUCT ID
The product ID of the remote location. Derived from the DB2 field QLACPRID.

TRANS. S
The number of transactions migrated to the remote location. Derived from the DB2 field QLACTRNS.

COMMIT R
The number of commit requests received from the remote location. Derived from the DB2 field QLACCOMR.

SQL RCVD
The number of SQL statements received from the remote location. Derived from the DB2 field QLACSQLR.

BYTS RCVD
The number of bytes of data received from the remote location. Derived from the DB2 field QLACBYTR.

CON. RCVD
The number of conversations with the local location that were initiated by the remote location. Derived from the DB2 field QLACCNVR.

MSGS BUFF
The number of blocks in the message buffer if block fetch is being used. Derived from the DB2 field QLACBROW.

PREPARE R
The number of prepare requests received from the remote location. Derived from the DB2 field QLACPRRC.

COM.PH2 R
The number of two-phase commit requests received from the remote location. Derived from the DB2 field QLACCRRC.

COM.RSP R
The number of vote yes responses received from the remote location. Derived from the DB2 field QLACVYRC.

FORGET R
The number of forget responses received from the remote location. Derived from the DB2 field QLACRRRC.

RLOC.COM
The number of commit operations performed with the remote location as the coordinator. Derived from the DB2 field QLACCPTR.

REQ.ELAPSED TIME
The elapsed time at the requester location until the database access agent completed its work, including DB2 processing time and network time. This value is maintained at the requester location and is calculated by accumulating the difference between the store clock values obtained before and after each network request. Derived from the DB2 field QLACCPUL.

TRANS. R
The number of transactions migrated from the remote location. Derived from the DB2 field QLACTRNR.

ROLLBK S
The number of rollback requests sent to the remote location. Derived from the DB2 field QLACABRS.

ROWS SENT
The number of rows of data sent to the remote location. Derived from the DB2 field QLACROWS.

MSGS SENT
The number of messages sent to the remote location. Derived from the DB2 field QLACMSGS.

CON.QUED
The number of conversation requests queued by DDF waiting for allocation. Derived from the DB2 field QLACCNVQ.

BLKS SENT
The number of blocks sent to the remote location using block fetch. Derived from the DB2 field QLACBTBF.

LSTAGNT S
The number of last agent requests sent to the remote location. Derived from the DB2 field QLACLASE.

BCK.PH2 S
The number of backout requests sent to the remote location. Derived from the DB2 field QLACBKSE.

BCK.RSP S
The number of backout responses sent to the remote location. Derived from the DB2 field QLACVNSE.

RLOC. BCK
The number of rollback operations performed with the remote location as the coordinator. Derived from the DB2 field QLACRBTR.

SER.ELAPSED TIME
The elapsed database access agent time at the server location. This time is updated at the requester location and is reported only for system-directed access. If the agent uses both system-directed and application-directed access to communicate with the server location, then only the elapsed time associated with the system-directed access is reported, and this time can be misleading. If only application-directed access is used, this value is 0. Derived from the DB2 field QLACCPUR.

ROLLBK R
The number of rollback requests received from the remote location. Derived from the DB2 field QLACABRR.

ROWS RCVD
The number of rows of data received from the remote location. Derived from the DB2 field QLACROWR.

MSGS RCVD
The number of messages received from the remote location. Derived from the DB2 field QLACMSGR.

REM BIND
The number of SQL statements that were bound for remote access using system-directed access. Derived from the DB2 field QLACRBND.

BLKS RCVD
The number of blocks received from the remote location using block fetch. Derived from the DB2 field QLACBRBF.

LSTAGNT R
The number of last agent requests received from the remote location. Derived from the DB2 field QLACLARC.

BCK.PH2 R
The number of backout requests received from the remote location. Derived from the DB2 field QLACBKRC.

BCK.RSP R
The number of backout responses received from the remote location. Derived from the DB2 field QLACVNRC.

SERVER CPU TIME
The database access agent CPU time at the server location. This time does not include most of the time spent in VTAM and is only reported for system-directed access requests. If the agent uses both system-directed and application-directed access to communicate with the remote location, then only the CPU time associated with the system-directed access is reported, and this time can be misleading. If only application-directed access is used, this value is 0. Derived from the DB2 field QLACDBAT.

CONV.ALLC
The number of successful conversation allocations. Derived from the DB2 field QLACCNVA.

CON.TERM
The number of conversations terminated. This value might not be the same as CONV.ALLC because not all conversations are terminated when the accounting record is written. Derived from the DB2 field QLACCNVT.

CONV.OPEN
The largest number of conversations open at any time. This field is calculated by subtracting CON.TERM from CONV.ALLC. This field is updated only when the value of the calculation is greater than the current value of CONV.OPEN. Derived from the DB2 field QLACCIEL.

Initial Requester Correlation

The format of this block depends on the product.

Figure 368 shows the format of the initial DB2 requester and MVS correlation data accounting block when the product is DB2.

```
---------------------------------------------------------------------------------------------------------------------------
                                INITIAL DB2 REQUESTER AND MVS CORRELATION DATA
BYTES:    91                 PRODUCT ID: DB2               PRODUCT VERSION: V05R01M0
LOCATION: SYS1DSN2           NET ID  : DEIBMIPS            LU NAME : IPVAME11             CONNECT: TSO
CONNTYPE: BATCH              CORRNAME: WRL                 CORRNMBR: 'BLANK'              AUTHID : WRL
PLANNAME: DSNESPRR
MVS ACCOUNTING DATA: DE03704
---------------------------------------------------------------------------------------------------------------------------
```

Figure 368. Product Is DB2

Figure 369 shows the format of the initial client/server correlation data accounting block when the product is a DB2 client/server.

```
-----------------------------------------------------------------------------------------------------------------------
                                  INITIAL CLIENT/SERVER CORRELATION DATA
BYTES    ZZ9                 PRODUCT ID: XXXXXXXXXXXXXX    PRODUCT VERSION: VnnRnnMn
CLIENT PLATFORM: AAAAAAAAAAAAAAAAAA  CLIENT APPLICATION NAME: AAAAAAAAAAAAAAAAAAAA  CLIENT AUTHID: AAAAAAAA
DDCS ACCOUNT SUFFIX: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                     XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
-----------------------------------------------------------------------------------------------------------------------
```

Figure 369. Product Is a DB2 Client/Server

Figure 370 shows the format of the initial other requester correlation data accounting block when the product is undefined.

```
-----------------------------------------------------------------------------------------------------------------------
                                INITIAL OTHER REQUESTER CORRELATION DATA
BYTES    ZZ9                 PRODUCT ID: XXXXXXXXXXXXXX    PRODUCT VERSION: VnnRnnMn
ACCOUNTING STRING: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
-----------------------------------------------------------------------------------------------------------------------
```

Figure 370. Product Is Undefined

BYTES
The length of the product ID and accounting string. Derived from the DB2 field QMDAASLN.

PRODUCT ID
The ID of the product which generated the accounting information. Derived from the DB2 field QMDAPRID.

PRODUCT VERSION
The version, release, and modification level of the product. Derived from the DB2 fields QMDAPVER, QMDAPREL, and QMDAPMOD.

LOCATION
The location name of the DB2 system that created the MVS and DDF accounting values. Derived from the DB2 field QMDALOCN.

NET ID
The SNA NET ID name of the DB2 system that created the MVS and DDF accounting values. Derived from the DB2 field QMDANETN.

LU NAME
The SNA LU name of the DB2 system that created the MVS and DDF accounting values. Derived from the DB2 field QMDALUNM.

CONNECT
The connection name of the DB2 system that created the MVS and DDF accounting values. Derived from the DB2 field QMDACNAM.

CONNTYPE
The type of subsystem connection at the DB2 system where the SQL application is running. Possible values and their descriptions are:

BATCH TSO or call attach

SASS CICS

MASS IMS

DIST Distributed

Derived from the DB2 field QMDACTYP.

CORRNAME
The first 8 bytes of the correlation ID at the DB2 system running the SQL. Derived from the DB2 field QMDACORR.

CORRNMBR
The last 4 bytes of the correlation ID at the DB2 system running the SQL. Derived from the DB2 field QMDACORR.

AUTHID
The authorization ID used by the SQL application prior to translation. Derived from the DB2 field QMDAAUTH.

PLANNAME
The DB2 plan used at the DB2 system running the SQL. Derived from the DB2 field QMDAPLAN.

MVS ACCOUNTING DATA
The MVS accounting string associated with the DB2 SQL application's address space. N/P is printed if no data is present.

- For TSO applications, it is the value supplied on the TSO LOGON screen. In order to change accounting string values, you must log off and reissue the logon sequence.
- For batch or CAF applications, it is taken from the value specified on the ACCT keyword of the JCL EXEC statement. If the ACCT keyword is not specified, the accounting string is taken from the value specified on the MVS JOB card. Thus, the accounting string can be constant for an entire JOB, or it can change at each step of the JOB.
- For IMS applications, it is taken from the ACCT keyword or JOB card used to start the SQL application's IMS message processing region. In other words, the IMS accounting number for a given transaction is associated with the IMS message region that was used to run the transaction. If you want to associate specific accounting numbers with individual IMS transactions, you must use the facilities in IMS to cause those transactions to be scheduled in a message region that specifies the desired accounting string.
- For CICS applications, it is taken from the ACCT keyword or JOB card used to start the CICS region. Thus, all CICS transactions that run in a given CICS region have the same MVS accounting string value.
- For DBAT and DBAT-distributed threads, it is the MVS accounting string associated with the SQL application's MVS address space of the DB2 system which originated the distributed transaction.

Derived from the DB2 field QMDAACCT.

CLIENT PLATFORM
The client platform. For example, OS/2, AIX, DOS, DOS/Windows. Derived from the DB2 field QMDAPLAT.

CLIENT APPLICATION NAME
The client application name. Derived from the DB2 field QMDAAPPL.

CLIENT AUTHID
The client authorization ID. This is the authorization ID of an application process. Derived from the DB2 field QMDAATID.

DDCS ACCOUNT SUFFIX
The DDCS account suffix. This environment variable is the user-supplied portion (suffix) of the accounting string. If there is no DDCS account suffix, N/P is printed in this field. Derived from the DB2 field QMDASUFX.

ACCOUNTING STRING
The hexadecimal representation of the accounting string. The length is derived from the DB2 field QMDAASLN. Derived from the DB2 field QMDAASTR.

IFI Class 5 Times and Data Capture

IFI CALL ELAPSED TIME
The accumulated elapsed time for processing IFI calls. Derived from the DB2 field QIFAAIET.

IFI CALL TCB CPU TIME
The accumulated TCB CPU time for processing IFI calls. Derived from the DB2 field QIFAAITT.

DESCRIBES ELAPSED
The accumulated elapsed time for processing data capture describes. Derived from the DB2 field QIFAAMBT.

LOG EXTRACT ELAPSED
The accumulated elapsed time for performing log extractions. Derived from the DB2 field QIFAAMLT.

IFI CALLS
The number of IFI calls. Derived from the DB2 field QIFAANIF.

LOG READS PERFORMED
The number of data capture log reads performed. Derived from the DB2 field QIFAANLR.

LOG RECS CAPTURED
The number of log records captured for which data capture processing was invoked. Derived from the DB2 field QIFAANRC.

DATA DESCR. RETURNED
The number of data capture data descriptions returned. Derived from the DB2 field QIFAANDD.

DESCRIBES
The number of data capture describes. Derived from the DB2 field QIFAANMB.

DATA ROWS RETURNED
The number of data capture data rows returned. Derived from the DB2 field QIFAANDR.

LOG RECS RETURNED
The number of data capture log records returned. Derived from the DB2 field QIFAANRR.

TABLES RETURNED
The number of data capture tables returned. Derived from the DB2 field QIFAANTB.

Package/DBRM Accounting Data

LOCATION
The location name. This field shows 'BLANK' if the package or DBRM was executed locally. In all other cases, all times represent the time for locally executing the remote package for this application-directed requester. Derived from the DB2 field QPACLOCN.

COLLECTION
The package collection identifier. Derived from the DB2 field QPACCOLN.

PACKAGE ID
The program name. Derived from the DB2 field QPACPKID.

TOKEN
The consistency token. Derived from the DB2 field QPACCONT.

SECTION NMB
The number of this particular data section in the series. Derived from the DB2 field QPACRECN.

PROGRAM TYPE
The program type. Derived from the DB2 field QPACFLGS.

SCHEMA NAME
The schema name under which the stored procedure, user-defined function, or trigger is running. Derived from DB2 field QPACASCH

NON-ZERO CLASS 8
Indicates whether there is non-zero accounting class 8 data. Derived from the DB2 field QPACFLGS.

ACTIVITY NAME
Name of the stored procedure, user-define function, or trigger. Derived from the DB2 field QPACAANM.

SQL STMTS
The number of SQL statements issued in this package or DBRM. Derived from the DB2 field QPACSQLC.

USED BY STOR.PROC
Indicates whether this package was loaded by a stored procedure. Derived from the DB2 field QPACINSP.

LAST EXECUTED
Indicates whether this package or DBRM is either currently executing or is the most recently executed package or DBRM. Derived from the DB2 field QPACFLGS.

NON-ZERO CLASS 7
Indicates whether there is non-zero accounting class 7 data. Derived from the DB2 field QPACFLGS.

ACTIVITY TYPE
Indicates whether the activity is a stored procedure, user-defined function, or a trigger. Derived from DB2 field QPACAAFG.

SUCC AUTH CHECK
Indicates whether a successful package EXECUTE authorization check was made and DB2 catalog access was avoided. Derived from the DB2 field QPACPAC.

CLASS 7

IFCID 3

BEGINNING STORE CLOCK TIME
The store clock time at entry to DB2 for the most recent execution of this package or DBRM. Derived from the DB2 field QPACSCB.

ENDING STORE CLOCK TIME
The store clock time at exit from DB2 after the most recent execution of this package or DBRM. Derived from the DB2 field QPACSCE.

BEGINNING TCB CPU TIME
The TCB CPU time at entry to DB2 for the most recent execution of this package or DBRM. Derived from the DB2 field QPACBJST.

ENDING TCB CPU TIME
The TCB CPU time at exit from DB2 after the most recent execution of this package or DBRM. Derived from the DB2 field QPACEJST.

TOTAL ELAPSED TIME
The total elapsed time for executing this package or DBRM. Derived from the DB2 field QPACSCT.

TOTAL TCB TIME
The total TCB CPU time for executing this package or DBRM. Derived from the DB2 field QPACTJST.

DB2 ENTRY/EXIT
The number of DB2 entries or exits during the execution of this package or DBRM. Derived from the DB2 field QPACARNA.

CLASS 8

LOCK/LATCH SUSP TIME
The accumulated lock and latch time. Derived from the DB2 field QPACAWTL.

LOCK/LATCH SUSP EVENTS
The number of wait trace events processed for lock/latch. Derived from the DB2 field QPACARNL.

SYNCHRONOUS I/O SUSP TIME
The accumulated elapsed I/O wait time. Derived from the DB2 field QPACAWTI.

SYNCHRONOUS I/O SUSP EVENTS
The number of wait trace events processed for I/O. Derived from the DB2 field QPACARNE.

OTHER READ SUSP TIME
The accumulated read I/O wait time. Derived from the DB2 field QPACAWTR.

OTHER READ SUSP EVENTS
The number of suspensions due to read I/O. Derived from the DB2 field QPACARNR.

OTHER WRITE SUSP TIME
The accumulated write I/O wait time. Derived from the DB2 field QPACAWTW.

OTHER WRITE SUSP EVENTS
The number of suspensions due to write I/O. Derived from the DB2 field QPACARNW.

SERV.TASK SWITCH SUSP TIME
The accumulated service task wait time. Derived from the DB2 field QPACAWTE.

SERV.TASK SWITCH SUSP EVENTS
The number of wait trace events processed for DB2 service tasks. Derived from the DB2 field QPACARNS.

ARCH.LOG(QUIES) SUSP TIME
The accumulated wait time due to the processing of ARCHIVE LOG MODE (QUIESCE) commands. Note that this is the amount of time for which the thread was suspended, not the amount of time that the commands took to complete. Derived from the DB2 field QPACALOG.

ARCH.LOG(QUIES) SUSP EVENTS
The number of ARCHIVE LOG MODE (QUIESCE) commands issued. Derived from the DB2 field QPACALCT.

ARCH.LOG READ SUSP TIME
The time spent waiting for archive reads (TAPE). Derived from the DB2 field QPACAWAR.

ARCH.LOG READ SUSP EVENTS
The number of wait trace events processed for archive reads. Derived from the DB2 field QPACANAR.

DRAIN LOCK SUSP TIME
The accumulated wait time for a drain lock. Derived from the DB2 field QPACAWDR.

DRAIN LOCK SUSP EVENTS
The number of wait trace events processed for waits for drain locks. Derived from the DB2 field QPACARND.

CLAIM RELEASE SUSP TIME
The accumulated wait time for a drain when waiting for claims to be released. Derived from the DB2 field QPACAWCL.

CLAIM RELEASE SUSP EVENTS
The number of wait trace events processed for waits for claims to be released. Derived from the DB2 field QPACARNC.

PAGE LATCH SUSP TIME
The accumulated wait time for page latch contention. Derived from the DB2 field QPACAWTP.

PAGE LATCH SUSP EVENTS
The number of page latch wait trace events processed. Derived from the DB2 field QPACARNH.

NOTIFY MESSAGES SUSP TIME
The elapsed time spent in waiting for suspensions processed for sending notify messages to other members in the data sharing group. Derived from the DB2 field QPACAWTG.

NOTIFY MESSAGES EVENTS
The number of wait trace events processed for sending notify messages to other members in the data sharing group. Derived from the DB2 field QPACARNG.

GLOBAL CONTENT. SUSP TIME
The elapsed time spent in waiting for suspensions due to global lock contentions. Derived from the DB2 field QPACAWTJ.

IFCID 3

GLOBAL CONTENTION EVENTS
The number of wait trace events processed for group-level contentions in a data sharing environment. Derived from the DB2 field QPACARNJ.

SCHED.PROCEDURE SUSP TIME
The elapsed time spent in waiting for an available TCB before the stored procedure could be scheduled. Derived from the DB2 field QPACCAST.

STORED PROCEDURE EVENTS
The number of wait trace events processed for an unavailable TCB needed for a stored procedure. Derived from the DB2 field QPACCANM.

SCHED.UDF SUSP TIME
The elapsed time spent in waiting for an available TCB before the stored UDF be scheduled. Derived from the DB2 field QPACUDST.

UDF EVENTS
The number of wait trace events processed for an unavailable TCB needed for a UDF. Derived from the DB2 field QPACCUDNU.

STORED PROCEDURE EXECUTED
The number of stored procedures executed. This is only shown if DB2 accounting class 8 is active. Derived from DB2 field QPACSPNS.

Instrumentation Accounting Data Overflow

ARCH.LOG(QUIES) SUSP TIME
The accumulated wait time due to processing of ARCHIVE LOG MODE (QUIESCE) commands. Note that this is the amount of time for which the thread was suspended, not the amount of time that the commands took to complete. Derived from the DB2 field QWAXALOG.

ARCH.LOG(QUIES) SUSP EVENTS
The number of ARCHIVE LOG MODE (QUIESCE) commands issued. Derived from the DB2 field QWAXALCT.

ARCH.LOG READ SUSP TIME
The time spent waiting for archive reads (TAPE). Derived from the DB2 field QWAXAWAR.

ARCH.LOG READ SUSP EVENTS
The number of wait trace events processed for archive reads. Derived from the DB2 field QWAXANAR.

DRAIN LOCK SUSP TIME
The accumulated wait time for a drain lock. Derived from the DB2 field QWAXAWDR.

DRAIN LOCK SUSP EVENTS
The number of wait trace events processed for waits for drain locks. Derived from the DB2 field QWAXARND.

CLAIM RELEASE SUSP TIME
The accumulated wait time for a drain when waiting for claims to be released. Derived from the DB2 field QWAXAWCL.

CLAIM RELEASE SUSP EVENTS
The number of wait trace events processed for waits for claims to be released. Derived from the DB2 field QWAXARNC.

OPEN/CLOSE SUSP TIME
Accumulated waiting time for a synchronous execution unit switch to the DB2 OPEN/CLOSE dataset service for the HSM recall service. Derived from DB2 field QWAXOCSE.

OPEN/CLOSE SUSP EVENTS
Number of wait trace events processed of waits for sysnchronous execution unit switching to the Open/Close service. Derived from DB2 field QWAXOCNS.

SYSLGRNG SUSP TIME
Accumulated wait time for a sysnchronous execution unit switch to the DB2 SYSLGRNG recording service. Derived from DB2 field QWAXSLSE.

SYSLGRNG SUSP EVENTS
Number of wait trace events for a sysnchronous execution unit switch to the DB2 SYSLGRNG recording service. Derived from DB2 field QWAXSLNS.

EXC/DEL/DEF SUSP TIME
Accumulated wait time for a synchronous execution unit switch to the DB2 data space manager services. Derived from DB2 field QWAXDSSE.

EXC/DEL/DEF SUSP EVENTS
Number of wait trace events for waits for sysnchronous execution unit switching to the DB2 data space manager services. Derived from DB2 field QWAXDSNS.

OTHER SERVICE SUSP TIME
Accumulated wait time for a synchronous execution unit switch to other DB2 service tasks. Derived from DB2 field QWAXOTSE.

OTHER SERVICE SUSP EVENTS
Number of wait trace events for a synchronous execution unit switch to other DB2 service tasks. Derived from DB2 field QWAXOTNS.

4 - Trace Start

Trace start shows the data from IFCID 4.

```
MESSAGE:  -START TRACE(S) CLASS(*) RMID(*) PLAN(*)
AUTHID(*) IFCID(*) BUFSIZE(*)
QW0004CM  0000000100010101
```

MESSAGE
The start trace message. Derived from the DB2 field QW0004MS.

5 - Trace Stop

Trace stop shows the data from IFCID 5.

```
MESSAGE:  -STOP TRACE(*) CLASS(*) RMID(*) PLAN(*)
AUTHID(*) TNO(*)
QW0005CM  00000000
```

MESSAGE
The stop trace message. Derived from the DB2 field QW0005MS.

6 - Read I/O Start

Read I/O start shows the data from IFCID 6.

```
DBID    DSNDB06   POOL ID           0  ACE            1
OBID    DSNDSX01  FIRST   01A21102  READTYPE       R
TABLE_SPACE_TYPE  L
```

DBID The database ID. Derived from the DB2 fields QW0006DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0006DB is shown. However, if QW0006DB contains 0, N/A is displayed.

POOL ID
The internal identifier of the buffer pool. The values 0 through 49 are the identifiers for BP0 through BP49. The values 80 through 89 are the identifiers for BP32K through BP32K9. Derived from the DB2 field QW0006BP.

ACE The relative number of the agent control element address in the ACE cross-reference table. This table is printed at the end of each location for every trace specified. Derived from the DB2 field QW0006AC.

OBID The object ID. Derived from the DB2 fields QW0006OB, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0006OB is shown. However, if QW0006OB contains 0, N/A is displayed.

FIRST The hexadecimal number of the first page to be read. Derived from the DB2 field QW0006PN.

READTYPE
The type of read performed:

S Sequential prefetch request

L List prefetch request

D Dynamic sequential prefetch request

R Synchronous read request

Derived from the DB2 field QW0006F.

TABLE_SPACE_TYPE
The type of the table space:

L Non-EA large table

N Non-large table

V EA-enabled large table

7 - Read I/O Stop

Read I/O stop shows the data from IFCID 7.

```
DBID    DSNDB06   RETCODE          0  ACE            1
OBID    DSNDSX01  READ             1
```

DBID The database ID. Derived from the DB2 fields QW0007DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0007DB is shown. However, if QW0007DB contains 0, N/A is displayed.

RETCODE
The return code from the media manager. Derived from the DB2 field QW0007MM.

ACE The relative number of the agent control element address in the ACE cross-reference table. This table is printed at the end of each location for every trace specified. Derived from the DB2 field QW0007AC.

OBID The object ID. Derived from the DB2 fields QW0007OB, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0007OB is shown. However, if QW0007OB contains 0, N/A is displayed.

READ The number of pages read. Derived from the DB2 field QW0007NP.

8 - Write I/O Synch

Write I/O synch shows the data from IFCID 8.

```
DBID:       DSNDB07      ACTIVE:              7
OBID:       DSN4K09      UPDATED:             5
POOL ID:          1      WRITTEN:             1
WRITE TYPE: CASTOUT      PAGE FAULTS:         0
```

DBID The database ID. Derived from the DB2 fields QW0008DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0008DB is shown. However, if QW0008DB contains 0, N/A is displayed.

ACTIVE
The number of active buffers in the pool. Derived from the DB2 field QW0008AB.

IFCID 8

OBID The object ID. Derived from the DB2 fields QW0008OB, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0008OB is shown. However, if QW0008OB contains 0, N/A is displayed.

UPDATED
The number of updated pages in the deferred write queue. Derived from the DB2 field QW0008DW.

POOL ID
The internal buffer pool identifier. The values 0 through 49 are the identifiers for BP0 through BP49. The values 80 through 89 are the identifiers for BP32K through BP32K9. Derived from the DB2 field QW0008BP.

WRITTEN
The number of pages to be written. Derived from the DB2 field QW0008WR.

WRITE TYPE
The type of write:

NORMAL Normal write to disk

CASTOUT
Write to disk initiated by a castout from the coupling facility

Derived from the DB2 field QW0008FC.

PAGE FAULTS
The number of anticipated page faults. Derived from the DB2 field QW0008PI.

9 - Write I/O

Write I/O shows the data from IFCID 9.

```
RETURN          0
```

RETURN
The return code from the media manager. Derived from the DB2 field QW0009MM.

10 - Write I/O Asynch

Write I/O asynch shows the data from IFCID 10.

```
DBID:       DSNDB07      ACTIVE:              7
OBID:       DSN4K09      UPDATED:             5
POOL ID:          1      WRITTEN:             1
WRITE TYPE: CASTOUT      PAGE FAULTS:         0
```

DBID The database ID. Derived from the DB2 fields QW0010DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0010DB is shown. However, if QW0010DB contains 0, N/A is displayed.

ACTIVE
The number of active buffers in the pool. Derived from the DB2 field QW0010AB.

OBID The object ID. Derived from the DB2 fields QW0010OB, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0010OB is shown. However, if QW0010OB contains 0, N/A is displayed.

UPDATED
The number of updated pages in the deferred write queue. Derived from the DB2 field QW0010DW.

POOL ID
The internal identifier of the buffer pool. The values 0 through 49 are the identifiers for BP0 through BP49. The values 80 through 89 are the identifiers for BP32K through BP32K9. Derived from the DB2 field QW0010BP.

WRITTEN
The number of pages to be written. Derived from the DB2 field QW0010WR.

WRITE TYPE
The type of write:

NORMAL Normal write to disk

CASTOUT
Write to disk initiated by a castout from the coupling facility

Derived from the DB2 field QW0010FC.

PAGE FAULTS
The number of anticipated page faults. Derived from the DB2 field QW0010PI.

11 - Validate Exit

Validate exit shows the data from IFCID 11.

```
DBID         1     REC ID      3
OBID         2     TIME     4/01/96 17:42:00.000000
RETURN  0004    REASON  00000005
```

DBID The database ID. Derived from the DB2 fields QW0011DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0011DB is shown. However, if QW0011DB contains 0, N/A is displayed.

REC ID
The decimal identifier of the DB2 table OBID. Derived from the DB2 field QW0011OB.

OBID The object ID. Derived from the DB2 fields QW0011PS, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0011PS is shown. However, if QW0011PS contains 0, N/A is displayed.

TIME The time at which the exit was called. Derived from the DB2 field QW0011TM.

RETURN
The return code (EXPLRC1) from the exit. Derived from the DB2 field QW0011RT.

REASON
The reason code (EXPLRC2) from the exit. Derived from the DB2 field QW0011RE.

12 - Edit Exit to Encode

Edit exit to encode shows the data from IFCID 12.

```
DBID         6     REC ID     19
OBID         9     TIME    06/03/96 05:32:00.000000
RETURN  000A    REASON  00000014
```

DBID The database ID. Derived from the DB2 fields QW0012DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0012DB is shown. However, if QW0012DB contains 0, N/A is displayed.

REC ID
The decimal identifier of the DB2 table OBID. Derived from the DB2 field QW0012OB.

OBID The object ID. Derived from the DB2 fields QW0012PS, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0012PS is shown. However, if QW0012PS contains 0, N/A is displayed.

TIME The time at which the exit was called. Derived from the DB2 field QW0012TM.

RETURN
The return code (EXPLRC1) from the exit. Derived from the DB2 field QW0012RT.

REASON
The reason code (EXPLRC2) from the exit. Derived from the DB2 field QW0012RE.

13 - Hash Scan Input Start

Hash scan input start shows the data from IFCID 13.

```
DBID    DSNDB06   REC ID          37
OBID    DSNDSX01
COLUMN1   OPER      COL/VAL          CONN   TRUE/FALSE
10    NE  4000000000000000      A    'NONE'
15    NE  4000000000000000 'NONE'    'NONE'
```

DBID The database ID. Derived from the DB2 fields QW0013DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0013DB is shown. However, if QW0013DB contains 0, N/A is displayed.

REC ID
The decimal identifier of the DB2 table OBID. Derived from the DB2 field QW0013OB.

OBID The object ID. Derived from the DB2 fields QW0013PS, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0013PS is shown. However, if QW0013PS contains 0, N/A is displayed.

COLUMN1
The first column number. Derived from the DB2 field QW0013C1.

OPER The logical operator:

NE Not equal to

GT Greater than

GE Greater than or equal to

LE Less than or equal to

E Equal

L Less than

LT Less than

LI Like

NL Not like

?? Unknown operator

Derived from the DB2 field QW0013OP.

COL/VAL
Column data is printed in decimal. Value data is printed in hexadecimal. Derived from the DB2 fields QW0013TP, QW0013C2, and QW0013VA.

CONN The connector value:

A And

O Or

NONE Not specified

Derived from the DB2 field QW0013CO.

TRUE/FALSE
Indicates whether the comparison is true:

T True

F False

NONE Not specified

Derived from the DB2 field QW0013TF.

14 - Hash Scan End

Hash scan end shows the data from IFCID 14.

```
RETURN           0
QW0014RE             0
```

RETURN
The return code. Derived from the DB2 field QW0014RT.

15 - Index Scan Begin

Index scan begin shows the data from IFCID 15.

```
DBID    DSNDB06   REC ID          37  CUB  00F348C5
OBID    DSNDSX01  INDX ID          5
COLUMN1   OPER      COL/VAL          CONN   TRUE/FALSE
10    NE  4000000000000000      A    'NONE'
15    NE  4000000000000000 'NONE'    'NONE'
```

DBID The database ID. Derived from the DB2 fields QW0015DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0015DB is shown. However, if QW0015DB contains 0, N/A is displayed.

REC ID
The decimal identifier of the DB2 table OBID. Derived from the DB2 field QW0015OB.

CUB The hexadecimal address of the CUB token. Derived from the DB2 field QW0015AC.

OBID The object ID. Derived from the DB2 fields QW0015PS, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0015PS is shown. However, if QW0015PS contains 0, N/A is displayed.

INDX ID
The index identifier. Derived from the DB2 field QW0015IB.

COLUMN1
The first column number. Derived from the DB2 field QW0015C1.

OPER The logical operator:

NE Not equal to

GT Greater than

GE Greater than or equal to

LE Less than or equal to

E Equal

L Less than

LT Less than

LI Like

NL Not like

?? Unknown operator

Derived from the DB2 field QW0015OP.

COL/VAL
Column data is printed in decimal. Value data is printed in hexadecimal. Derived from the DB2 fields QW0015TP, QW0015C2, and QW0015VA.

CONN The connector value:

A And

O Or

NONE Not specified

Derived from the DB2 field QW0015CO.

TRUE/FALSE
Indicates whether the comparison is true:

T True

F False

NONE Not specified

Derived from the DB2 field QW0015TF.

16 - Insert Scan Begin

Insert scan begin shows the data from IFCID 16.

```
DBID DSNDB06      REC ID           28  SQL TYPE  U
OBID SYSDBASE     TRIGGER LEVEL     0
```

DBID The database ID. Derived from the DB2 fields QW0016DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0016DB is shown. However, if QW0016DB contains 0, N/A is displayed.

REC ID
The decimal identifier of the DB2 table OBID. Derived from the DB2 field QW0016OB.

CUB The hexadecimal address of the CUB token. Derived from the DB2 field QW0016AC.

OBID The object ID. Derived from the DB2 fields QW0016PS, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0016PS is shown. However, if QW0016PS contains 0, N/A is displayed.

WORKFILE TYPE
Possible values are:

WF Workfile

TT Temporary Table

TR Transition table

NW Non-workfile

Derived from DB2 field QW0016WT.

SQL TYPE
Possible values are:

I INSERT

U UPDATE

Insert into a transition table for an UPDATE.

D DELETE

Insert into a transition table for a DELETE.

R RI

Insert into a transition table for a DELETE SET NULL for referential integrity.

Derived from DB2 field QW0016ST.

TRIGGER LEVEL
Depth of the trigger in the range 0 (no triggers) through 16. Derived from DB2 field QW0016TL.

17 - Sequential Scan Begin

Sequential scan begin shows the data from IFCID 17.

```
DBID 6            REC ID          289
OBID 288
CUB  X'7EC77AA0'  SCAN TYPE
COL1   OP      COL/VAL           CONN    T/F    ST
  13   LI  X'6CD1D76C00000000'   'NONE'  'NONE'
```

DBID The database ID. Derived from the DB2 fields QW0017DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0017DB is shown. However, if QW0017DB contains 0, N/A is displayed.

REC ID
The decimal identifier of the DB2 table OBID. Derived from the DB2 field QW0017OB.

CUB The hexadecimal address of the CUB token. Derived from the DB2 field QW0017AC.

OBID The object ID. Derived from the DB2 fields QW0017PS, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0017PS is shown. However, if QW0017PS contains 0, N/A is displayed.

SCAN TYPE
Possible values are:

SQ Sequential scan.

WF Work file scan.

TT Temporary table scan.

TR Transition table scan for a trigger.

COLUMN1
The first column number. Derived from the DB2 field QW0017C1.

OPER The logical operator:

NE Not equal to

GT Greater than

GE Greater than or equal to

LE Less than or equal to

E Equal

L Less than

LT Less than

LI Like

NL Not like

?? Unknown operator

Derived from the DB2 field QW0017OP.

COL/VAL
Column data is printed in decimal. Value data is printed in hexadecimal. Derived from the DB2 fields QW0017TP, QW0017C2, and QW0017VA.

CONN The connector type:

A And

O Or

NONE Not specified

Derived from the DB2 field QW0017CO.

TRUE/FALSE
Indicates whether the comparison is true:

T True

F False

NONE Not specified

Derived from the DB2 field QW0017TF.

18 - Scan End

Scan end shows the data from IFCID 18. This record has a variable format.

The record contains one data section for each relevant data type. The data types are INDX, SEQD, and SEQW.

The first line is always printed. The following two lines are printed for each table space section present in the record.

```
-------------------------------------------------------------------------------------------------------------------
CUB  X'7EBD2E60'
QW0018RT           4   QW0018RE         0 QW0018ST          4 QW0018SR          0
...................................................................................................................
DATA TYPE       INDX ROW PROC           5 ROW EXAM          5 STG1-QUAL         5 STG2-QUAL         0 ROW INSRT         0
ROW UPDTE          0 ROW DELET          0 PAGES             6 RI SCAN           0 RI DELET          0
LOB_SCAN           3 LOB_UPDATE         8
-------------------------------------------------------------------------------------------------------------------
```

CUB The hexadecimal address of the CUB of the caller. Derived from the DB2 field QW0018AC.

Data type sections
The record contains one data section for each relevant data type. These sections are only printed if they are present in the record.

DATA TYPE
The scan type identification:

INDX Index scan

SEQD Sequential data scan

SEQR Sequential data transitions table type.

SEQT Sequential data temporary table type.

SEQW Sequential data work file scan

Derived from the DB2 field QW0018ID.

ROW PROC
The number of rows processed. Derived from the DB2 field QW0018RP.

ROW EXAM
The number of rows examined. If DATA TYPE shows `INDX` , this number is the number of index entries (not rows) scanned. Derived from the DB2 field QW0018LA.

STG1-QUAL
The number of rows qualified at stage 1. Derived from the DB2 field QW0018DQ.

STG2-QUAL
The number of rows qualified at stage 2. Derived from the DB2 field QW0018RQ.

ROW INSRT
The number of rows inserted. Derived from the DB2 field QW0018IN.

ROW UPDTE
The number of rows updated. Derived from the DB2 field QW0018UP.

ROW DELET
The number of rows deleted. If the delete was a mass delete, the indicator `MASS` is printed. Derived from the DB2 field QW0018DE.

PAGES
The number of get page requests issued by the data manager to the buffer manager. Note that for an index scan the value includes the number of index pages scanned but not the number of index subpages scanned. Derived from the DB2 field QW0018PS.

RI SCAN
The number of additional pages scanned for referential integrity. Derived from the DB2 field QW0018PR.

RI DELET
The number of additional rows deleted for referential integrity. Derived from the DB2 field QW0018DR.

LOB_SCAN
Additional pages scanned in a LOB table space. Derived from DB2 field QW0018PL.

LOB_UPDATE
Count of LOB data pages updated by an SQL INSERT or SQL UPDATE. Derived from DB2 field QW0018UL.

19 - Edit Exit to Decode

Edit exit to decode shows the data from IFCID 19.

```
DBID    DSNDB06   REC ID           5
OBID    DSNDSX01  TIME     3/29/89 14:27:35.645897
RETURN   x'0000' REASON   x'00000000'
```

DBID The database ID. Derived from the DB2 fields QW0019DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0019DB is shown. However, if QW0019DB contains 0, N/A is displayed.

REC ID
The decimal identifier of the DB2 table OBID. Derived from the DB2 field QW0019OB.

OBID The object ID. Derived from the DB2 fields QW0019PS, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0019PS is shown. However, if QW0019PS contains 0, N/A is displayed.

TIME The time at which the exit was called. Derived from the DB2 field QW0019TM.

RETURN
The return code (EXPLRC1) from the user edit exit. Derived from the DB2 field QW0019RT.

REASON
The reason code (EXPLRC2) from the user edit exit. Derived from the DB2 field QW0019RE.

20 - Lock Summary

Lock summary shows the data from IFCID 20. This record has a variable format.

The record contains one data section for each table space.

The first line is always printed. The following lines are printed for each table space section present in the record.

```
MAXNO:        12  SHARED:        0     EXCL:         0
DBID :  FIJ1DB01  OBID  : FIJS0010 MAX LOCK:         0
TABLESPACE TYPE: PARTIT.-SPL      ESCALATED:         0
LOCK SIZE      : TABLESPACE OR TABLE
HISTATE: INTENT SHARE     PRESTATE: NO LOCK ESCALATION
```

MAXNO
The maximum number of page, row and LOB locks held concurrently for the thread. Derived from the DB2 field QW0020TP.

SHARED
The number of escalations to shared mode for the thread:

- For segmented table spaces, the number of tables that have escalated
- For partitioned table spaces using selective partition locking (SPL), the number of partitions that have escalated
- For simple and partitioned table spaces, the number of table spaces that have escalated

Derived from the DB2 field QW0020TS.

EXCL The number of escalations to exclusive mode for the thread:

- For segmented table spaces, the number of tables that have escalated
- For partitioned table spaces using selective partition locking (SPL), the number of partitions that have escalated
- For simple and partitioned table spaces, the number of table spaces that have escalated

Derived from the DB2 field QW0020TX.

Table space sections
The record contains one data section for each relevant table space. These sections are only printed if they are present in the record. Derived from the DB2 field QW0020N.

DBID The database ID. Derived from the DB2 fields QW0020PD, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0020PD is shown. However, if QW0020PD contains 0, N/A is displayed.

OBID The object ID. Derived from the DB2 fields QW0020PP, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0020PP is shown. However, if QW0020PP contains 0, N/A is displayed.

MAX LOCK
The maximum number of either page, row or LOB locks held by the thread. Derived from the DB2 field QW0020PL.

TABLESPACE TYPE
The table space type:

SIMPLE Simple table spaces (QW0020PF=x'01')

SEGMENTED
Segmented table spaces (QW0020PF=x'02')

PARTITIONED
Partitioned table spaces (QW0020PF=x'03')

PARTIT.-SPL
Partitioned table spaces using selective partition locking (SPL) (QW0020PF=x'04')

LOB TABLE SPACE
LOB table space. (QW0020PF=x'05')

ESCALATED
The number of escalations:

- For segmented table spaces, the number of tables that have escalated within the table space
- For partitioned table spaces using selective partition locking (SPL), the number of partitions that have escalated
- For table spaces using SPL, the number of partitions that have escalated

If the value in TABLESPACE TYPE is SIMPLE or PARTITIONED , this field is not printed. Derived from the DB2 field QW0020PC.

LOCK SIZE
The lock size used. Derived from the DB2 field QW0020PR.

HISTATE
The highest table space lock state. This field is printed for simple table spaces and partitioned table spaces not using SPL. Derived from the DB2 field QW0020PS.

PRESTATE
The table space lock state before escalation. This field is printed for simple table spaces and partitioned table spaces not using SPL. Derived from the DB2 field QW0020PE.

21 - Lock Detail

Lock detail shows the data from IFCID 21.

```
-------------------------------------------------------------------------------------------------------------------------
LOCK RES TYPE: N/P                                DBID: N/P               OBID: N/P       RESOURCE ID: X'hhhhhhhhhh'
IRLM FUNC CODE : UNLOCK (ANY)           RETURN TOKEN: X'00000000'          REQUEST TOKEN      : X'00000000'
LOCK STATE     : X'00'                  DB2 TOKEN   : X'00C6B00000C66048'   IRLM RETURN CODE   :          12
LOCK ATTRIBUTES: NMODIFY NOFORCE        PROP TO XES : NO                    ASYN TO XES        : NO
LOCK DURATION  : PLAN                   REQUEST TYPE: L-LOCK                IRLM RETURN SUBCODE: B'0100000000000000'
PARENT TOKEN   : X'00000000'            GLOBAL/LOCAL: LOCAL                 OWNER              : 'BLANK'
CACHED STATE   : X'00'                                                      LOCK HASH VALUE    : X'00000000'
QW0021CL  X'00'         QW0021U  X'001F00B000000000'   QW0021FL  B'00000000'   QW0021CT  X'00000000'
QW0021F3  B'00000000'   QW0021O  X'000000B000ACB038'   QW0021IR  X'0000'       QW0021F2  B'00000000'
-------------------------------------------------------------------------------------------------------------------------
```

LOCK RES TYPE
The locked resource type.

Note: For data sharing, SKELETON CURSOR TABLE LOCKING and SKELETON PACKAGE TABLE LOCK are LP-locks (an LP-lock has an L-lock component and a P-lock component). Derived from the DB2 field QW0021KT.

DBID The database ID. This field is not applicable if the value in LOCK RES TYPE is:

```
SKELETON CURSOR TABLE LOCKING
UTILITY SERIALIZATION LOCK
SKELETON PACKAGE TABLE LOCK
COLLECTION
BINDLOCK
ALTER BUFFER POOL
GROUP BUFFERPOOL START/STOP LOCK
GROUP BUFFER POOL LEV CASTOUT P-LOCK
CATMAINT MIGRATION LOCK
CATMAINT CONVERT CATALOG LOCK
CATMAINT CONVERT DIRECTORY LOCK
```

Derived from the DB2 field QW0021KD.

OBID The object ID. This field is not applicable if the value in LOCK RES TYPE is:

```
SKELETON CURSOR TABLE LOCKING
UTILITY SERIALIZATION LOCK
SKELETON PACKAGE TABLE LOCK
COLLECTION
BINDLOCK
ALTER BUFFER POOL
GROUP BUFFERPOOL START/STOP LOCK
DDF CDB P-LOCK
GROUP BUFFER POOL LEV CASTOUT P-LOCK
DBD P-LOCK
CATMAINT MIGRATION LOCK
CATMAINT CONVERT CATALOG LOCK
CATMAINT CONVERT DIRECTORY LOCK
```

Derived from the DB2 field QW0021KP.

RESOURCE ID
The hexadecimal identifier of the small resource. If LOCK RES TYPE is:

DATA PAGE LOCKING
First 3 bytes are the page number

PARTITION LOCKING
Last byte is the partition number

INDEX PAGE LOCKING
First 3 bytes are the page number and the last byte is the subpage number

HASH ANCHOR LOCK
First 3 bytes are the page number and the last byte is the anchor point ID

CS-READ DRAIN
Last byte is the partition number (optional)

RR-READ DRAIN
Last byte is the partition number (optional)

WRITE DRAIN
Last byte is the partition number (optional)

ROW LOCK
First 3 bytes are the page number and the last byte is the row ID of the record

INDEX END OF FILE LOCK
Last byte is the partition number (optional)

PAGESET/PARTITION P-LOCK
First byte is the 1-based partition number (optional)

PAGE P-LOCK
First byte is the 1-based partition number (optional) and the last 3 bytes are the relative page number

PAGESET/PARTIION LEV CASTOUT P-LOCK
First byte is the 1-based partition number (optional)

Note: In large partitioned table spaces, the page number covers 4 bytes instead of 3.

For all other lock resource types, the resource ID is not applicable. Derived from the DB2 field QW0021KR.

NAME The plan name or collection name. This field is only printed if the value in LOCK RES TYPE is `SKELETON CURSOR TABLE LOCKING` or `COLLECTION` .

The plan name is derived from the DB2 field QW0021KD, QW0021KP, and QW0021KR when the locked resource type is skeleton cursor table locking.

The collection name is derived from the DB2 field QW0021RN when the locked resource type is collection lock.

COLL The collection identifier. This field is only printed if the value in LOCK RES TYPE is `SKELETON PACKAGE TABLE LOCK` . Derived from the DB2 field QW0021RN.

PKID The package identifier. This field is only printed if the value in LOCK RES TYPE is `SKELETON PACKAGE TABLE LOCK` . Derived from the DB2 field QW0021RN.

CTKN The consistency token. This field is only printed if the value in LOCK RES TYPE is `SKELETON PACKAGE TABLE LOCK` . Derived from the DB2 field QW0021RN.

BPID The buffer pool ID. This field is only printed if the value in LOCK RES TYPE is:

```
ALTER BUFFER POOL
GROUP BUFFERPOOL START/STOP LOCK
PAGESET/PARTITION P-LOCK
PAGE P-LOCK
GROUP BUFFERPOOL LEV CASTOUT P-LOCK
PAGESET/PARTITION LEV CASTOUT P-LOCK
```

For alter bufferpool, derived from QW0021KD || QW0021KP.

For group buffer pool start/stop, derived from QW0021KD || QW0021KP.

For page set/partition P-lock, derived from QW0021P1.

For page p-lock, derived from QW0021P1.

For group bufferpool lev castout P-lock, derived from QW0021P1.

For page set/partition lev castout p-lock, derived from QW0021P1.

IRLM FUNC CODE
The IRLM function code. Derived from the DB2 field QW0021FC.

RETURN TOKEN
The IRLM returned token. Derived from the DB2 field QW0021FT.

REQUEST TOKEN
The lock request token. If the value in IRLM FUNC CODE is `LOCK` , this field shows 'BLANK'. If the value in IRLM FUNC CODE is `UNLOCK` or `CHANGE` , this field contains a 0 or a non-zero value. A 0 indicates that the lock name is used to identify the object that is to be unlocked or changed. A non-zero value is the same as the value in RETURN TOKEN. It associates the unlock or change request with the locked object. Derived from the DB2 field QW0021RT.

LOCK STATE
The lock state. Derived from the DB2 field QW0021ST.

DB2 TOKEN
The DB2 token which identifies the subsystem. Derived from the DB2 field QW0021TK.

IRLM RETURN CODE
The return code from IRLM:

0 The request completed successfully.

4 The request completed successfully, but the lock state remained unchanged.

8 The request completed unsuccessfully because of a system error or condition.

12 The request completed unsuccessfully because of a logic error in the request.

16 The request completed unsuccessfully because of an invalid request specification.

20 The request completed unsuccessfully because IRLM resources are not available.

Derived from the DB2 field QW0021RC.

LOCK ATTRIBUTES
This field shows various lock attributes. Derived from the DB2 field QW0021FL.

PROP TO XES
Indicates whether the request was propagated to XES by IRLM. Derived from the DB2 field QW0021Y1.

ASYN TO XES
Indicates whether IRLM sent the request to XES asynchronously. Derived from the DB2 field QW0021Y2.

LOCK DURATION
The lock duration:

MANUAL Varies depending on the ISOLATION parameter (QW0021DR=x'20')

MANUAL+1
Temporary change of consistency level from CS to RR during bind and DDL (QW0021DR=x'21')

COMMIT Until commit (QW0021DR=x'40')

COMMIT+1
Past commit; applies to locks needed to maintain the position for a cursor opened WITH HOLD (QW0021DR=x'41')

ALLOCATION
Until deallocation (QW0021DR=x'60')

PLAN For the duration of the plan (QW0021DR=x'80')

UTIL For the duration of the utility execution (QW0021DR=x'81')

INTEREST
Duration used for P-locks (QW0021DR=x'FE')

FREE ALL
Until all locks are freed (QW0021DR=x'FF')

N/A Not applicable for NOTIFY SUSPEND

REQUEST TYPE
Indicates whether it was a P-lock or L-lock request. Derived from the DB2 field QW0021Z1.

IRLM RETURN SUBCODE
The IRLM return subcode.

PARENT TOKEN
The parent lock token for explicit hierarchical locking. This token is only significant when DB2 is a member of a data sharing group. If the value in this field is not 0, then this request is for a child of a parent that has already been locked. This value must match the RETURN TOKEN field of the previously locked parent. This field is only applicable if the value in IRLM FUNC CODE is LOCK . Derived from the DB2 field QW0021PT.

GLOBAL/LOCAL
Indicates whether this is a global or local lock. Derived from the DB2 field QW0021GF.

OWNER
The DB2 member name of either of the following:

- The owner of an incompatible retained lock on this resource that caused this request to be denied
- The owner of an incompatible held lock on this resource that caused this request to timeout

If it is not either of these conditions, then this field shows N/A. Derived from the DB2 field QW0021SN.

CACHED STATE
The cached state of the P-lock. This field is only applicable if the value in REQUEST TYPE is P-LOCK, and the value in LOCK RES TYPE is PAGESET/PARTITION P-LOCK. Derived from the DB2 field QW0021CS.

LOCK HASH VALUE
The hash value of the locked resource. Derived from the DB2 field QW0021LH.

22 - Minibind

Minibind shows the data from IFCID 22. Minibinds are generated by the optimizer at bind and SQL prepare time. One minibind is generated per table per subselect block in the query. This means that if your query involves subqueries, then more than one IFCID 22 record is written. All fields except PLAN and COST are regarded as one group. Multiple groups can occur.

Notes:

1. There is no query block number or plan number.
2. Relate table and miniplans by table name.
3. The order of the miniplans must not be the same as the order of the table as written in the SQL statement.
4. When you are not sure about the accessing order of the tables, use EXPLAIN to get the query block number and plan number.
5. This IFCID indicates whether sequential prefetch is on.

```
--- MINIBIND ----------------------------------------------------------------------------------------------------------
QUERYNO  : 1383      PLANNAME      : DSNTEP61            COST          : 35        PARALLELISM_DISABLED : N/A
QBLOCKNO : 2         COLLID        : DSNTEP61            PROGNAME      : DSNTEP61  CONSISTENCY_TOKEN    : 15769AE806DB8B8E
APPLNAME : N/P       WHEN_OPTIMIZE : 'BLANK'             OPT_HINT_IDENT: N/P       OPTIMIZE_HINTS_USED  : YES
UNITS    : 12345     MILLI_SEC     : 12345               COST_CATEGORY : N/P
BIND_TIME: 04/08/98 03:28:55.211328  VERSION: N/P
.....................................................................................................................
PLANNO          : 1                  METHOD    : FIRST TABLE ACCESSED  SORTN_UNIQ      : NO     SORTC_UNIQ     : NO
DATABASE        : DSNDB04            NEXTSTEP  : NOT APPLICABLE        SORTN_JOIN      : NO     SORTC_JOIN     : NO
OBJECT          : 21                 ACCESSTYPE: TABLE SPACE SCAN (R)  SORTN_ORDERBY   : NO     SORTC_ORDERBY  : NO
CREATOR         : X                  PAGE_RANGE      : NO              SORTN_GROUPBY   : NO     SORTC_GROUPBY  : NO
TNAME           : TBUF0401           JOIN_TYPE       : NO              SORTN_PGROUP_ID : 0      SORTC_PGROUP_ID: 0
CORRELATION_NAME: N/P                MERGE_JOIN_COLS : 0               ACCESS_DEGREE   : 0      JOIN_DEGREE    : 0
TSLOCKMODE      : IS                 PARALLELISM_MODE: NO              ACCESS_PGROUP_ID: 0      JOIN_PGROUP_ID : 0
ACCESS_NAME     : N/A                ACCESS_CREATOR  : N/A             MATCHCOLS       : N/A    PREFETCH       : SEQ
OPERATION       : N/A                PREFETCH_INDEX  : N/A             MIXOPSEQ        : N/A    DIRECT_ROW_ACC : N/A
INDEXONLY       : N/A                COLUMN_FN_EVAL  : N/A             PAGES_FOR_TABLE : 12345  TAB_CARDINALITY: 123456789A
```

QUERYNO
The number identifying the statement to be prepared. Derived from the DB2 field QW0022QN.

PLANNAME
The plan name or package ID. Derived from the DB2 field QW0022PN.

COST The relative cost of the SQL statement. It might not relate to the actual CPU or elapsed time for the query. Derived from the DB2 field QW0022OS.

PARALLELISM_DISABLED
Indicates whether query parallelism is disabled by the resource limit facility (RLF) for dynamic queries:

NO The RLF does not affect this statement. (QW0022RP=x'00')

I/O ONLY
Query I/O parallelism is disabled. (QW0022RP=x'01')

CP ONLY
Query CP parallelism is disabled. (QW0022RP=x'02')

CP + I/O
Query I/O and CP parallelism is disabled. (QW0022RP=x'03')

X Sysplex query parallelism is disabled. (QW0022RP=x'04')

X + I/O
Sysplex query and query I/O parallelism is disabled. (QW0022RP=x'05')

X + CP Sysplex query and query CP parallelism is disabled. (QW0022RP=x'06')

YES The entire query parallelism (I/O, CP, and Sysplex) is disabled. (QW0022RP=x'07')

N/A Query parallelism does not apply to this statement. (QW0022RP=x'FF')

QBLOCKNO
The position of the query in the statement. Derived from the DB2 field QW0022QB.

COLLID
The collection ID of the package. Derived from the DB2 field QW0022CI.

CONSISTENCY_TOKEN
The consistency token. Derived from the DB2 field QW0022CT.

STATEMENT_TYPE
For each query block, the type of operation performed. For the outermost query, the statement type. Possible values:

SELECT SELECT

INSERT INSERT

UPDATE UPDATE

DELETE DELETE

SELUPD SELECT for UPDATE

DELCUR DELETE current of cursor

UPDCUR UPDATE current of cursor

CORSUB Correlated subquery

NCOSUB Noncorrelated subquery

Derived from the DB2 field QW0022QT.

BIND_TIME
The date and time at which the plan or package to which this statement belongs was bound. Derived from the DB2 field QW0022BT.

PROGNAME
The name of the package containing the statement to be prepared. Derived from the DB2 field QW0022PG.

APPLNAME
The name of the application plan. Derived from the DB2 field QW0022AL.

VERSION
The version ID of the package. Derived from the DB2 field QW0022VN.

MEMBER
The name of the DB2 member that prepared the statement. Derived from the DB2 field QW0022GM.

WHEN_OPTIMIZE
Indicates when the access path of the SQL statement is optimized:

'BLANK'
The statement is bound with NOREOPT or has no input variables.

The access path shown here is the one that will be used at runtime because it is only optimized at bind time.

B This is a static statement bound with REOPT with at least one input variable. The access path shown here is not necessarily the one that will be used at runtime because it has been determined at bind time and will be reoptimized at runtime time.

R This is a dynamic statement bound with REOPT with at least one input variable. The access path shown here is the one that the statement will use because it is only optimized at runtime.

Derived from the DB2 field QW0022RX.

OPT_HINT_IDENT
Access path hint value. Derived from DB2 field QW0022QO.

OPTIMIZE_HINTS_USED
Indicates whether the query used access path hints. Derived from the DB2 field QW0022HT.

UNITS Estimated processor cost in service units for the SQL statement.

MILLI_SEC
Estimated processor cost in milliseconds for the SQL statement.

COST_CONFIDENCE
An indication of the confidence of the estimated processor cost. Possible values are:

HIGH

MEDIUM

LOW

UNKNOWN

N/P Cost estimate is not provided.

OPTIMIZE_LEVEL
Query optimize level

TIMESTAMP
The timestamp at which the row is processed. Derived from the DB2 field QW0022TS.

PLANNO
The number of the step in which the query is processed. Derived from the DB2 field QW0022PL.

METHOD
The join method used for the step. Derived from the DB2 field QW0022OD.

SORTN_UNIQ
Indicates whether the new table is sorted to remove duplicate rows. Derived from the DB2 field QW0022UN.

SORTC_UNIQ
Indicates whether the composite table is sorted to remove duplicate rows. Derived from the DB2 field QW00222N.

DATABASE
The database ID. Derived from the DB2 field QW0022DD.

NEXTSTEP
The next step in a join.

NOT APPLICABLE is printed if this is the last step of a join, or if this is not a join at all. Derived from the DB2 field QW0022OD.

SORTN_JOIN
Indicates whether the new table is sorted for a merge scan join or hybrid join. For a hybrid join, this is a sort of the RID list. Derived from the DB2 field QW0022IN.

SORTC_JOIN
Indicates whether the composite table is sorted for a nested loop join, merge scan join, or hybrid join. Derived from the DB2 field QW00222J.

OBJECT
The internal ID of the table space. Derived from the DB2 field QW0022OB.

ACCESSTYPE
The method of accessing the new table. N/P is printed if there is no access type. Derived from the DB2 field QW0022YP.

SORTN_ORDERBY
Indicates whether the new table is sorted for ORDER BY. Derived from the DB2 field QW0022DB.

SORTC_ORDERBY
Indicates whether the composite table is sorted for ORDER BY. Derived from the DB2 field QW00222O.

CREATOR
The creator of the new table accessed in this step. Derived from the DB2 field QW0022CR.

PAGE_RANGE
Indicates whether the table qualifies for page range screening so that plans scan only the partitions that are needed. Derived from the DB2 field QW0022PR.

SORTN_GROUPBY
Indicates whether the new table is sorted for GROUP BY. Derived from the DB2 field QW0022PB.

SORTC_GROUPBY
Indicates whether the composite table is sorted for GROUP BY. Derived from the DB2 field QW00222G.

TNAME
The name of the table accessed in this step, without qualifier. This field is blank if a view is used instead of a real table. Derived from the DB2 field QW0022TN.

JOIN_TYPE
The type of join:

LEFT Left outer join

FULL Full outer join

INNER Inner join

NO Not applicable

N/A For releases prior to Version 4.

Derived from the DB2 field QW0022JT.

SORTN_PGROUP_ID
The parallel group ID for the parallel sort of the new table.

A parallel group is the collective term for consecutive operations (in this case a sort) executed in parallel that have the same number of parallel tasks. Derived from the DB2 field QW0022P6.

SORTC_PGROUP_ID
The parallel group ID for the parallel sort of the composite table. Derived from the DB2 field QW0022P7.

CORRELATION_NAME
The correlation name of a table or view that is specified in the statement. If no correlation name is specified, the field is blank. Derived from the DB2 field QW0022CN.

MERGE_JOIN_COLS
The number of columns that are joined during a merge scan join. Derived from the DB2 field QW0022JC.

ACCESS_DEGREE
The number of parallel tasks or operations activated by a query. Derived from the DB2 field QW0022P1.

JOIN_DEGREE
The number of parallel tasks or operations used in joining the composite table with the new table. Derived from the DB2 field QW0022P3.

TSLOCKMODE
Indicates the lock mode to be acquired on the new table or its table space.

If the isolation can be determined at bind time, possible values are:

IS Intent share lock

IX Intent exclusive lock

S Share lock

U Update lock

X Exclusive lock

SIX Share with intent exclusive lock

N UR isolation, no lock

If the isolation cannot be determined at bind time, the lock mode determined by the isolation at run time is shown by the following values:

NS For UR isolation: no lock. For CS or RR isolation: an S lock.

NIS For UR isolation: no lock. For CS or RR isolation: an IS lock.

NSS For UR isolation: no lock. For CS isolation: an IS lock. For RR isolation: an S lock.

SS For UR or CS isolation: no lock. For RR isolation: an S lock.

The data in this column is right-justified. Derived from the DB2 field QW0022LM.

PARALLELISM_MODE
The kind of parallelism used at bind time:

I/O Query I/O parallelism

CP Query CP parallelism

X Sysplex query parallelism

NO No parallelism was used.

Derived from the DB2 field QW0022PM.

ACCESS_PGROUP_ID
The ID of the parallel group for accessing the new table. Derived from the DB2 field QW0022P2.

JOIN_PGROUP_ID
The ID of the parallel group for joining the composite table with the new table. Derived from the DB2 field QW0022P4.

INDEX_NUMBER
The number of indexes used. Derived from the DB2 field QW0022MN.

PREFETCH
Indicates what kind of prefetch of the data is used:

SEQ Sequential prefetch

LIST List prefetch

NO No prefetch

Derived from the DB2 fields QW0022YP, QW0022EF, QW0022SP, QW0022XO.

ACCESS_NAME
The index name. This field applies only to index scans. N/A is printed for table space scans or when no index is used. Derived from the DB2 field QW0022XN.

ACCESS_CREATOR
The index creator. Derived from the DB2 field QW0022XC.

MATCHCOLS
The number of index keys used in an index scan. This field is 0 if either no index is used or an index is used that has no matching columns. Derived from the DB2 field QW0022XM.

PREFETCH_INDEX
Indicates whether data pages are to be read in advance by a prefetch. Derived from the DB2 field QW0022XF.

OPERATION
The type of index access operation. Derived from the DB2 field QW0022MO.

MIXOPSEQ
The sequence number of a step in a multiple index operation. Derived from the DB2 field QW0022MS.

INDEXONLY
Indicates whether the access to an index alone is sufficient to carry out the step. Derived from the DB2 field QW0022XO.

COLUMN_FN_EVAL
Indicates when an SQL column function is evaluated. Derived from the DB2 field QW0022Z.

PAGES_FOR_TABLE
Number of pages for table. Derived from the DB2 field QW0022NP.

TAB_CARDINALITY
Table cardinality in floating point. Derived from the Db2 field QW0022CY.

23 - Utility Start

Utility start shows the data from IFCID 23.

```
DBID    0         UTILITY NAME    REORG
OBID    0         UTILITY PHASE   UTILINIT
UTILITY ID      TEMP
```

DBID The database ID. Derived from the DB2 fields QW0023DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0023DB is shown. However, if QW0023DB contains 0, N/A is displayed.

UTILITY NAME
The utility name. Derived from the DB2 field QW0023NM.

OBID The object ID. Derived from the DB2 fields QW0023PD, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0023PD is shown. However, if QW0023PD contains 0, N/A is displayed.

UTILITY PHASE
The phase name of the utility. Derived from the DB2 field QW0023PH.

UTILITY ID
The identifier of the utility. Derived from the DB2 field QW0023ID.

24 - Utility Change

Utility change shows the data from IFCID 24.

```
DBID         269  UTILITY NAME    REORG
OBID           2  UTILITY PHASE   UTILTERM
ITEMS          0  UTILITY ID      TEMP
DBNAME  FIJ1DB32  OBJECT  NAME    FIJS0001
PART/DATASET#          0
```

DBID The database ID. Derived from the DB2 fields QW0024DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0024DB is shown. However, if QW0024DB contains 0, N/A is displayed.

UTILITY NAME
The utility name. Derived from the DB2 field QW0024NM.

OBID The object ID. Derived from the DB2 fields QW0024PD, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0024PD is shown. However, if QW0024PD contains 0, N/A is displayed.

UTILITY PHASE
The phase name of the utility. Derived from the DB2 field QW0024PH.

ITEMS
The number of items processed by the utility. Derived from the DB2 field QW0024DN.

UTILITY ID
The identifier of the utility. Derived from the DB2 field QW0024ID.

DBNAME
The database name. Derived from the DB2 field QW0024NA.

OBJECT NAME
The table space name or index name. Derived from the DB2 field QW0024PN.

PART/DATASET#
The number of the partition or data set if the utility is operating on one partition or data set. Otherwise, the value in this field is 0. Derived from the DB2 field QW0024PT.

25 - Utility End

Utility end shows the data from IFCID 25.

```
DBID    FIJ1DB32  UTILITY NAME    REORG
OBID    FIJS0001  UTILITY PHASE   SORTOUT
ITEMS       4882  UTILITY ID      TEMP
```

DBID The database ID. Derived from the DB2 fields QW0025DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0025DB is shown. However, if QW0025DB contains 0, N/A is displayed.

UTILITY NAME
The utility name. Derived from the DB2 field QW0025NM.

OBID The object ID. Derived from the DB2 fields QW0025PD, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0025PD is shown. However, if QW0025PD contains 0, N/A is displayed.

UTILITY PHASE
The phase name of the utility. Derived from the DB2 field QW0025PH.

UTILITY ID
The identifier of the utility. Derived from the DB2 field QW0025ID.

26 - Sort Workfile Create

If there is no data present for this IFCID, `NO DATA` is printed. If any data is found, it is printed in dump format.

27 - Sort Workfile Records

Sort detail shows the data from IFCID 27.

```
RECORDS           5
```

RECORDS
The number of records in this work file. Derived from the DB2 field QW0027NR.

28 - Sort Phase Detail

Sort phase detail shows the data from IFCID 28.

```
WORKFILES         1   WORKFILES REQ          0   TYPE I
PASS              0   WORKFILES ACQ          0
PARALL.           0   WORKFILES NUM          0
RECSORTED         0
```

WORKFILES
The number of work files created during the sort input phase. If the rows to be sorted are already in order, there is one work file. The number of work files needed depends on the distribution of the sort key. The maximum number of work files is limited by the buffer pool size. This field is valid if TYPE equals `I` . Derived from the DB2 field QW0028NP.

WORKFILES REQ
The number of work files requested from the buffer manager at the beginning of each merge pass (MVS/ESA 3.1.3). It is valid if TYPE equals `S` .

If this field is greater than WORKFILES ACQ, there is another merge pass. If both fields are equal, this is the last or only merge pass. Derived from the DB2 field QW0028WA.

TYPE The type of IFCID 28. It indicates the phase when the IFCID 28 record is issued. Valid values are:

I The end of the input phase

S The start of a merge pass

E The end of a merge pass

Z The start of output work file partitioning

W During the output work file partitioning

X The end of output work file partitioning

K The start of last merge pass partitioning

M During last merge pass partitioning

L The end of last merge pass partitioning

T The start of one record partitioning

O During one record partitioning

U The end of one record partitioning

V The start of presorted records partitioning

P During presorted records partitioning

Y The end of presorted records partitioning

Derived from the DB2 field QW0028TY.

PASS The current merge pass. It is issued at the end of the merge pass and, therefore, valid if TYPE equals `E` . Derived from the DB2 field QW0028MP.

WORKFILES ACQ
The number of work files actually acquired from the buffer manager at the beginning of each merge pass (MVS/ESA 3.1.3). It is valid if TYPE equals `S` . Derived from the DB2 field QW0028WG.

PARALL.
The partition work file number. The value in this field is 0 if partitioning is not requested. If partitioning is requested, the value can be from 1 to *n* , where *n* is the degree of parallelism. It is valid if TYPE equals `Z, W, X, K, M, L, T, O, U, V, P, or Y` . Derived from the DB2 field QW0028PW.

WORKFILES NUM
The number of records in the partition work file. It is valid if TYPE equals `Z, W, X, K, M, L, T, O, U, V, P, or Y` . Derived from the DB2 field QW0028PN.

RECSORTED
The number of records sorted into work files after the sort input phase. Derived from the DB2 field QW0028NR.

29 - EDM Request Start

EDM request start shows the data from IFCID 29.

```
EDMID         DB  DBID   DSNESPCS  DB LGTH      2048

----- or -----

EDMID         CT  PLAN   DSNESPCS
RDS  x'00000001'  SEQNO         0  CT LGTH       255

----- or -----

EDMID         PT           LOCATION XXXXXXXXXXXXXXXXX
COLLECTN XXXXXXXXXXXXXXXXX PCKG ID XXXXXXXXXXXXXXXXX
CONSISTENCY TOKEN  x'HHHHHHHHHHHHHHHH'
RDS  x'00000001'  SEQNO         0  PT LGTH       768
QW0029SV  x'HHHH'
```

EDMID
The type of request:

DB Database

CT Cursor

PT Package table

Derived from the DB2 field QW0029ID.

DBID The database ID. Derived from the DB2 fields QW0029DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0029DB is shown. However, if QW0029DB contains 0, N/A is displayed.

DB LGTH
The length of the section associated with this DBD. Derived from the DB2 field QW0029DL.

PLAN The plan name for the CT or XT request. Derived from the DB2 field QW0029PL.

RDS The RDS identifier number. Special cases are:

x'00000001'
SKCT header

x'FFFFFFFE'
SKCT directory

Derived from the DB2 field QW0029RN (for CT) or QW0029KN (for PT).

SEQNO
The sequence number within the RDS number. Derived from the DB2 field QW0029SN (for CT) or QW0029GN (for PT).

CT LGTH or **XT LGTH**
The length of the CT or XT sections in bytes. Derived from the DB2 field QW0029CL.

LOCATION
The name of the package location. This field shows 'BLANK' if the local location name is not defined. Derived from the DB2 field QW0029LN.

COLLECTN
The collection identifier of the package. Derived from the DB2 field QW0029CI.

PCKG ID
The package identifier. Derived from the DB2 field QW0029PI.

CONSISTENCY TOKEN
The consistency token of the package. Derived from the DB2 field QW0029CT.

PT LGTH
The length of the PT section in bytes. Derived from the DB2 field QW0029GL.

30 - EDM Request End

EDM request end shows the data from IFCID 30.

```
EDMID         DB  DBID   DSNESPCS  DB CALLS     2048

----- or -----

EDMID         CT  PLAN   DSNESPCS
RDS  x'00000001'  SEQNO         0  CT CALLS      255

----- or -----

EDMID         PT           LOCATION XXXXXXXXXXXXXXXXX
COLLECTN XXXXXXXXXXXXXXXXX  PCKG ID XXXXXXXXXXXXXXXXX
CONSISTENCY TOKEN  x'HHHHHHHHHHHHHHHH'
RDS  x'00000001'  SEQNO         0  PT CALLS      768
QW0030SV
```

EDMID
The type of request:

DB Database

CT Cursor

PT Package table Derived from the DB2 field QW0030ID.

DBID The database ID. Derived from the DB2 fields QW0030DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0030DB is shown. However, if QW0030DB contains 0, N/A is displayed.

DB CALLS
The number of calls to the data manager for the DBD. Derived from the DB2 field QW0030DC.

PLAN The plan name for the CT or XT request. Derived from the DB2 field QW0030PL.

RDS The RDS identifier number. Special cases are:

x'00000001'
SKCT header

x'FFFFFFFE'
SKCT directory

Derived from the DB2 field QW0030RN (for CT) or QW0030KN (for PT).

SEQNO
The sequence number within the RDS number. Derived from the DB2 field QW0030SN (for CT) or QW0030GN (for PT).

CT CALLS or **XT CALLS**
The number of calls to the data manager for CT. Derived from the DB2 field QW0030CC.

LOCATION
The name of the package location. This field shows 'BLANK' if the local location name is not defined. Derived from the DB2 field QW0030LN.

COLLCTN
The collection identifier of the package. Derived from the DB2 field QW0030CI.

PCKG ID
The package identifier. Derived from the DB2 field QW0030PI.

CONSISTENCY TOKEN
The consistency token of the package. Derived from the DB2 field QW0030CT.

PT CALLS
The number of calls to the data manager for PT. Derived from the DB2 field QW0030GC.

31 - EDM Full

EDM full shows the data from IFCID 31.

```
EDMID         DB  DBID   DSNESPCS  DB LGTH      2048

----- or -----

EDMID         CT  PLAN   DSNESPCS
RDS  x'00000001'  SEQNO         0  CT LGTH       255
----- or -----

EDMID         PT           LOCATION XXXXXXXXXXXXXXXXX
COLLECTN XXXXXXXXXXXXXXXXX  PCKG ID XXXXXXXXXXXXXXXXX
CONSISTENCY TOKEN  x'HHHHHHHHHHHHHHHH'
RDS  x'00000001'  SEQNO         0  PT LGTH       768
QW0031SV
```

EDMID
The type of request:

DB Database

CT Cursor

XT DBD extension

PT Package table

Derived from the DB2 field QW0031ID.

DBID The database ID. Derived from the DB2 fields QW0031DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0031DB is shown. However, if QW0031DB contains 0, N/A is displayed.

DB LGTH
The length of the section associated with this DBD. Derived from the DB2 field QW0031DL.

PLAN The plan name for the CT or XT request. Derived from the DB2 field QW0031PL.

RDS The RDS identifier number. Special cases are:

x'00000001'
SKCT header

x'FFFFFFFE'
SKCT directory

Derived from the DB2 field QW0031RN (for CT) or QW0031KN (for PT).

SEQNO
The sequence number within the RDS number. Derived from the DB2 field QW0031SN (for CT) or QW0031GN (for PT).

CT LGTH or **XT LGTH**
The length of the CT or XT sections in bytes. Derived from the DB2 field QW0031CL.

LOCATION
The name of the package location. This field shows 'BLANK' if the local location name is not defined. Derived from the DB2 field QW0031LN.

COLLCTN
The collection identifier of the package. Derived from the DB2 field QW0031CI.

PCKG ID
The package identifier. Derived from the DB2 field QW0031PI.

CONSISTENCY TOKEN
The consistency token of the package. Derived from the DB2 field QW0031CT.

PT LGTH
The length of the PT section in bytes. Derived from the DB2 field QW0031GL.

32 - Log Wait Start

Log wait start shows the data from IFCID 32.

```
FUNC TYPE:  WFRC
QW0032RB   155344864
```

FUNC TYPE
The function type or request type: Derived from the DB2 fields QW0032FT and QW0032RT.

WFRC Write force (request type)

ARC Archive log (function command)

33 - Log Wait End

Log wait end shows the data from IFCID 33.

```
RET               0
QW0033RS          0
```

RET The return code from the log I/O. Derived from the DB2 field QW0033RT.

34 - Log Read Start

Log read start shows the data from IFCID 34.

```
DSID  BSDS0001          ACE         1
QW0034HR  X'0000'       QW0034LR  X'0A000001'
```

DSID The data set identifier of the log manager. Derived from the DB2 field QW0034DI.

ACE The relative number of the agent control element address in the ACE cross-reference table. This table is printed at the end of each location for every trace specified. Derived from the DB2 field QW0034AC.

35 - Log Read End

Log read end shows the data from IFCID 35.

```
RET           0  ACE            1
```

RET The return code. Derived from the DB2 field QW0035RT.

ACE The relative number of the agent control element address in the ACE cross-reference table. This table is printed at the end of each location for every trace specified. Derived from the DB2 field QW0035AC.

36 - Log Non I/O Start

Log non I/O start shows the data from IFCID 36.

```
DSID        : DSIDNAME   EVENT ID:    ALLC
REQUEST TYPE:    ALLD    ACE     :   1
```

DSID The data set identifier of the log manager. Derived from the DB2 field QW0036DI.

EVENT ID
The event identifier:

ALLC Allocation

DTAU Data set unavailable

OPEN Open

CLOS Close

DEAL Deallocate

CLOC Wait for the catalog to be located

WTOR Wait for reply from write-to-operator

HSMR Wait for HSM recall

UUNI Wait for unavailable tape unit

URST Wait for unavailable reader service task

MDSV Wait for multi-dataset volume

POSI Wait for tape volume positioning

Derived from the DB2 field QW0036EI.

REQUEST TYPE
The request type:

ALLD Demand allocation

ALLL Look ahead (premount) allocation

Derived from the DB2 field QW0036RT.

ACE The relative number of the agent control element address in the ACE cross-reference table. This table is printed at the end of each location for every trace specified. Derived from the DB2 field QW0036AC.

37 - Log Non I/O End

Log non I/O end shows the data from IFCID 37.

```
RET            0  ACE            1
QW0037RC       0
```

RET The return code. Derived from the DB2 field QW0037RT.

ACE The relative number of the agent control element address in the ACE cross-reference table. This table is printed at the end of each location for every trace specified. Derived from the DB2 field QW0037AC.

38 - Active Write Start

Active write start shows the data from IFCID 38.

```
DSID        ACTLG101     COPY           1  ACE       2
CI                 1
QW0038VR     4345856     QW0038FR           0
QW0038LR   155340800     QW0038LC   155344772
QW0038LB  X'7F709470'
```

DSID The data set identifier of the log manager. Derived from the DB2 field QW0038DI.

COPY The copy number of the active log data set. Derived from the DB2 field QW0038CN.

ACE The relative number of the agent control element address in the ACE cross-reference table. This table is printed at the end of each location for every trace specified. Derived from the DB2 field QW0038AC.

CI The number of contiguous control intervals. Derived from the DB2 field QW0038CC.

39 - Active Write End

Active write end shows the data from IFCID 39.

```
DSID    ACTLG102  COPY            1   ACE           17
RET            0
QW0039RC       0
```

DSID The data set identifier. Derived from the DB2 field QW0039DI.

COPY The copy number of the active log data set. Derived from the DB2 field QW0039CN.

ACE The relative number of the agent control element address in the ACE cross-reference table. This table is printed at the end of each location for every trace specified. Derived from the DB2 field QW0039AC.

RET The return code. Derived from the DB2 field QW0039RT.

40 - Archive Write Start

Archive write start shows the data from IFCID 40.

```
DSID    DSIDNAME
```

DSID The data set identifier of the log manager. Derived from the DB2 field QW0040DI.

41 - Archive Write End

Archive write end shows the data from IFCID 41.

```
RET            0  BLOCKS          5
```

RET The return code. Derived from the DB2 field QW0041RT.

BLOCKS
The number of blocks written. Derived from the DB2 field QW0041BW.

42 - Checkpoint Start

If there is no data present for this IFCID, `NO DATA` is printed. If any data is found, it is printed in dump format.

43 - Checkpoint End

Checkpoint end shows the data from IFCID 43.

```
RBA   x'0000008F65341288'
```

RBA The beginning checkpoint RBA. Derived from the DB2 field QW0043BC.

44 - Lock Suspend

Lock suspend shows the data from IFCID 44.

```
------------------------------------------------------------------------------------------------------------------------
LOCK RES TYPE: SCA ACCESS FOR RESTART/REDO            NAME: N/P
IRLM FUNC CODE: LOCK (NAME)        STATE: EXCLUSIVE                      DURATION: MANUAL      REASON SUSP: IS
REQ TOKEN: X'00000000'   LOCK ATTRIBUTES: L-LOCK GLOBAL NOMODIFY NOFORCE   PROP TO XES: YES      ASYN TO XES: YES
PARENT TOKEN: X'01250000'     LOCK HASH VALUE: X'00000000'
QW0044CL  X'00'   QW0044FL  X'30'
------------------------------------------------------------------------------------------------------------------------
```

LOCK RES TYPE
The locked resource type or the type of locking operation. Derived from the DB2 field QW0044KT.

DBID The database ID. This field is not applicable if the value in LOCK RES TYPE is:

```
SKELETON CURSOR TABLE LOCKING
SKELETON PACKAGE TABLE LOCK
COLLECTION
ALTER BUFFER POOL
```

Derived from the DB2 fields QW0044KD, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0044KD is shown. However, if QW0044KD contains 0, N/A is displayed.

OBID The object ID. This field is not applicable if the value in LOCK RES TYPE is:

```
SKELETON CURSOR TABLE LOCKING
SKELETON PACKAGE TABLE LOCK
COLLECTION
ALTER BUFFER POOL
```

Derived from the DB2 fields QW0044KP and the DB2 fields QW0105TN or QW0107TN, or QW0105OB or QW0107OB.

If the resource involved in the lock is a table space, this field is derived from the DB2 fields QW0044KP, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the table space name is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0044KP is shown. However, if QW0044KP contains 0, N/A is displayed.

If the resource involved in the lock is a page set, this field is derived from the DB2 fields QW0044KP, and QW0105OB or QW0107OB.

If either QW0105OB or QW0107OB contains appropriate data, the name of the object is shown.

If neither QW0105OB nor QW0107OB contains appropriate data, the decimal identifier from QW0044KP is shown. However, if QW0044KP contains 0, N/A is displayed.

RESOURCE ID

The hexadecimal identifier of the small resource. If LOCK RES TYPE is:

DATA PAGE LOCKING
First 3 bytes are the page number

DATA SET LOCKING (PARTITION)
Last byte is the partition number

INDEX PAGE LOCKING
First 3 bytes are the page number and the last byte is the subpage number

HASH ANCHOR LOCK
First 3 bytes are the page number and the last byte is the anchor point ID

CS-READ DRAIN
Last byte is the partition number (optional)

RR-READ DRAIN
Last byte is the partition number (optional)

WRITE DRAIN
Last byte is the partition number (optional)

ROW LOCK
First 3 bytes are the page number and the last byte is the row ID of the record

INDEX END OF FILE LOCK
Last byte is the partition number (optional)

Note: In large partitioned table spaces, the page number covers 4 bytes instead of 3.

This field is not applicable if the value in LOCK RES TYPE is `SKELETON CURSOR TABLE LOCKING` , `SKELETON PACKAGE TABLE LOCK` , `COLLECTION` or `ALTER BUFFER POOL` . If the value is `UTILITY SERIALIZATION LOCK` or `BINDLOCK` , N/A is printed. Derived from the DB2 field QW0044KR.

NAME The plan name or collection name. This field is only printed if the value in LOCK RES TYPE is `SKELETON CURSOR TABLE LOCKING` or `COLLECTION` . It shows `N/P` if the value in LOCK RES TYPE is `N/P` .

The plan name is derived from the DB2 field QW0044KD when the locked resource type is skeleton cursor table locking.

The collection name is derived from the DB2 field QW0044RN when the locked resource type is collection lock.

COLL The collection identifier. This field is only printed if the value in LOCK RES TYPE is `SKELETON PACKAGE TABLE LOCKING` . Derived from the DB2 field QW0044RN.

PKID The package identifier. This field is only printed if the value in LOCK RES TYPE is `SKELETON PACKAGE TABLE LOCKING` . Derived from the DB2 field QW0044RN.

CTKN The consistency token. This field is only printed if the value in LOCK RES TYPE is `SKELETON PACKAGE TABLE LOCKING` . Derived from the DB2 field QW0044RN.

BPID The buffer pool ID. This field is only printed if the value in LOCK RES TYPE is `ALTER BUFFER POOL` . Derived from the DB2 field QW0044RN.

IRLM FUNC CODE
The IRLM function code. Derived from the DB2 field QW0044FC.

STATE
The lock state. Derived from the DB2 field QW0044ST.

DURATION
The lock duration:

MANUAL Varies depending on the ISOLATION parameter (QW0044DR=x'20')

MANUAL+1
Temporary change of consistency level from CS to RR during bind and DDL (QW0044DR=x'21')

COMMIT Until commit (QW0044DR=x'40')

COMMIT+1
Past commit; applies to locks needed to maintain the position for a cursor opened WITH HOLD (QW0044DR=x'41')

ALLOCATION
Until deallocation (QW0044DR=x'60')

PLAN For the duration of the plan (QW0044DR=x'80')

UTIL For the duration of the utility execution (QW0044DR=x'81')

INTEREST
Duration used for P-locks (QW0044DR=x'FE')

FREE ALL
Until all locks are freed (QW0044DR=x'FF')

N/A Not applicable for NOTIFY SUSPEND

REASON SUSP
The reason for the suspend:

LC IRLM latch contention

IQ IRLM queued request

LR Local resource contention

GR Global resource contention

IS Intersystem communication

N Notify message sent

LS No longer used

RL Contention with a retained lock

Derived from the DB2 field QW0044WS.

REQ TOKEN
The IRLM lock request token. Derived from the DB2 field QW0044RT.

LOCK ATTRIBUTES
The lock attributes. Derived from the DB2 fields QW0044Z1, QW0044G1, QW0044MD, QW0044FO.

PROP TO XES
Indicates whether the request was propagated to XES by IRLM. Derived from the DB2 field QW0044Y1.

ASYN TO XES
Indicates whether the request was sent to XES asynchronously by IRLM. Derived from the DB2 field QW0044Y2.

PARENT TOKEN
The parent token for explicit hierarchical locking. This field is valid if the DB2 subsystem is a member of a data sharing group. Derived from the DB2 field QW0044PT.

LOCK HASH VALUE
The hash value of the locked resource. Derived from the DB2 field QW0044LH.

45 - Lock Resume

Lock resume shows the data from IFCID 45.

```
REASON FOR RESUME               :  NORMAL RESUME
REASON FOR SUSPEND              :  x'20'
IRLM LATCH CONTENTION         :  NO
IRLM QUEUED REQUEST           :  NO
LOCAL RESOURCE CONTENTION     :  NO
GLOBAL RESOURCE CONTENTION    :  NO
RETAINED LOCK CONTENTION      :  NO
INTER-SYSTEM MESSAGE SENDING  :  NO
GLOBAL CONTENTION EXTENT        :  x'00'
XES GLOBAL CONTENTION         :  NO
IRLM GLOBAL CONTENTION        :  NO
FALSE CONTENTION              :  NO
QW0045W6   NO   QW0045W8   NO
QW0045X1   NO   QW0045X2   NO   QW0045X5   NO
QW0045X6   NO   QW0045X7   NO   QW0045X8   NO
```

REASON FOR RESUME
The reason for the lock resume. Derived from the DB2 field QW0045R.

REASON FOR SUSPEND
The reason for the suspension. Derived from the DB2 field QW0045SR. The nonserviceability values are:

IRLM LATCH CONTENTION
Indicates whether IRLM latch contention occurred. Derived from the DB2 field QW0045W1.

IRLM QUEUED REQUEST
Indicates whether there was an IRLM queued request. Derived from the DB2 field QW0045W2.

LOCAL RESOURCE CONTENTION
Indicates whether local resource contention occurred. Derived from the DB2 field QW0045W3.

GLOBAL RESOURCE CONTENTION
Indicates whether intersystem communication was required to resolve an IRLM request. Derived from the DB2 field QW0045W5.

RETAINED LOCK CONTENTION
Indicates whether there was contention with a retained lock. Derived from the DB2 field QW0045W4.

INTER-SYSTEM MESSAGE SENDING
Indicates whether any intersystem message was sent. Derived from the DB2 field QW0045W7.

GLOBAL CONTENTION EXTENT
The extent of global contention. This is applicable if the value in the GLOBAL RESOURCE CONTENTION field is YES. Derived from the DB2 field QW0045XR. The nonserviceability values are:

XES GLOBAL CONTENTION
Indicates whether XES global contention occurred. Derived from the DB2 field QW0045X3.

IRLM GLOBAL CONTENTION
Indicates whether IRLM global contention occurred. Derived from the DB2 field QW0045X4.

FALSE CONTENTION
Indicates whether XES global contention or IRLM global contention occurred. Derived from the DB2 field QW0045X4.

53 - SQL Describe/Commit/Rollback/Remote Statement

IFCID 53 describes one event. The event is indicated in the DESCRIPTION column by SQL Describe, SQL Commit, SQL Rollback, or Remote Statement. If this event is not recognized, UNRECOG CMD is printed.

The following data is printed in the DATA column:

```
-------------------------------------------------------------------------------------------------------------------------
LOCATION NAME: DSNAPC1                PKG COLLECTION ID: 'BLANK'                  CONSISTENCY TOKEN : X'14D7D8F51525F5F4'
PROGRAM NAME : DSNESM68               STATEMENT NUMBER   : 131

SQLCODE  : 1234567890  SQLSTATE :       STAT  SQLCAID  : SQLCA            SQLCABC  : 136  SQLERRP  : SQLERRP0  SQLEXT : 02000
SQLERRD1 : 1234567890  SQLERRD2 : 1234567890  SQLWARN0 : W  SQLWARN1 : W  SQLWARN2 : W    SQLWARN3 : W
SQLERRD3 : 1234567890  SQLERRD4 : 1234567890  SQLWARN4 : W  SQLWARN5 : W  SQLWARN6 : W    SQLWARN7 : W
SQLERRD5 : 1234567890  SQLERRD6 : 1234567890  SQLWARN8 : W  SQLWARN9 : W  SQLWARNA : W
SQLERRM  : ERROR MESSAGE FROM THE SQLCA
.........................................................................................................................
DATA TYPE:      INDX ROW PROC           7 ROW EXAM          7 STG1-QUAL          4 STG2-QUAL         0 ROW INSRT         0
ROW UPDTE:         0 ROW DELET          0 PAGES            13 RI SCAN            0 RI DELET          0
-------------------------------------------------------------------------------------------------------------------------
```

LOCATION NAME
The location name. Derived from the DB2 field QW0053LN.

PKG COLLECTION ID
The package collection identifier. Derived from the DB2 field QW0053PC.

PRECOMPILER TIMESTAMP
The hexadecimal value of the precompiler timestamp. Derived from the DB2 field QW0053TS.

PROGRAM NAME
The name of the program. Derived from the DB2 field QW0053PN.

STATEMENT NUMBER
The number of the statement executed. Derived from the DB2 field QW0053SN.

SQLCA
This section contains the SQLCA fields. For detailed information refer to the DB2 for OS/390 SQL Reference.

Data Type Sections
The record contains one data section for each relevant data type. These sections are only printed if they are present in the record.

DATA TYPE
The scan type identification:

INDX Index scan

SEQD Sequential data scan

SEQW Sequential data work file scan

Derived from the DB2 field QW0053ID.

ROW PROC
The number of rows processed. Derived from the DB2 field QW0053RP.

ROW EXAM
The number of rows examined. If DATA TYPE shows `INDX` , this number is the number of index entries (not rows) scanned. Derived from the DB2 field QW0053LA.

STG1-QUAL
The number of rows qualified at stage 1. Derived from the DB2 field QW0053DQ.

STG2-QUAL
The number of rows qualified at stage 2. Derived from the DB2 field QW0053RQ.

ROW INSRT
The number of rows inserted. Derived from the DB2 field QW0053IN.

ROW UPDTE
The number of rows updated. Derived from the DB2 field QW0053UP.

ROW DELET
The number of rows deleted. If the delete was a mass delete, the indicator MASS is printed. Derived from the DB2 field QW0053DE.

PAGES
The number of get page requests issued by the data manager to the buffer manager. Note that for an index scan the value includes the number of index pages scanned but not the number of index subpages scanned. Derived from the DB2 field QW0053PS.

RI SCAN
The number of additional pages scanned for referential integrity. Derived from the DB2 field QW0053PR.

RI DELET
The number of additional rows deleted for referential integrity. Derived from the DB2 field QW0053DR.

55 - Set SQLID

Set SQLID shows the data from IFCID 55.

```
PREV SQLID:  AUTHID01  NEW SQLID:  AUTHID02
STATUS:      SUCCESSFUL EXECUTION
```

PREV SQLID
The previous SQLID. Derived from the DB2 field QW0055OI.

NEW SQLID
The attempted SQLID. If the command completed successfully, this is the new SQLID. Derived from the DB2 field QW0055NI.

STATUS
The SQL status. Derived from the DB2 field QW0055ST.

58 - End SQL

End SQL shows the data from IFCID 58.

```
-------------------------------------------------------------------------------------------------------------------------
LOCATION NAME: STLEC1                PKG COLLECTION ID: DSNTEP3              PRECOMPILER TIMESTAMP: X'16149E8E18DC45A4'
PROGRAM NAME : DSNTEP3               STATEMENT NUMBER :      1358   SQLCODE :           0       SQLSTATE:    00000
SQLCAID: SQLCA         SQLCABC         136                         SQLERRP : DSN               SQLEXT  :    00000
SQLERRD1           0   SQLERRD2          0   SQLERRD3           0   SQLWARN0:     SQLWARN1:     SQLWARN2:     SQLWARN3:
SQLERRD4          -1   SQLERRD5          0   SQLERRD6           0   SQLWARN4:     SQLWARN5:     SQLWARN6:     SQLWARN7:
                                                                   SQLWARN8:     SQLWARN9:     SQLWARNA:
SQLERRM:
.........................................................................................................................
DATA TYPE       INDX ROW PROC          5 ROW EXAM          0 STG1-QUAL          5 STG2-QUAL         0 ROW INSRT         0
ROW UPDTE          0 ROW DELET         0 PAGES            10 RI SCAN            0 RI DELET          0
LOB SCAN  3804616900 LOB UPDTE         0
DATA TYPE       SEQD ROW PROC          0 ROW EXAM          0 STG1-QUAL          5 STG2-QUAL         5 ROW INSRT         0
ROW UPDTE          0 ROW DELET         0 PAGES             0 RI SCAN            0 RI DELET          5
LOB SCAN           0 LOB UPDTE         0
-------------------------------------------------------------------------------------------------------------------------
```

LOCATION NAME
The location name. Derived from the DB2 field QW0058LN.

PKG COLLECTION ID
The package collection identifier. Derived from the DB2 field QW0058PC.

PRECOMPILER TIMESTAMP
The hexadecimal value of the precompiler timestamp. Derived from the DB2 field QW0058TS.

PROGRAM NAME
The program name. Derived from the DB2 field QW0058PN.

STATEMENT NUMBER
The number of the statement executed. Derived from the DB2 field QW0058SN.

LOB_SCAN
Additional pages scanned in a LOB table space. Derived from the DB2 field QW0058PL.

LOB_UPDTE
Number of LOB data pages updated by SQL INSERT or SQL UPDATE. Derived from the DB2 field QW0058UL.

SQLCA
This section contains the SQLCA fields. For detailed information refer to the *DB2 for OS/390 SQL Reference.*

Data Type Sections
The record contains one data section for each relevant data type. These sections are only printed if they are present in the record.

DATA TYPE
The scan type identification.

INDX Index scan

SEQD Sequential data scan

SEQW Sequential data work file scan

Derived from the DB2 field QW0058ID.

ROW PROC
The number of rows processed. Derived from the DB2 field QW0058RP.

ROW EXAM
The number of rows examined. If DATA TYPE shows `INDX` , this number is the number of index entries (not rows) scanned. Derived from the DB2 field QW0058LA.

STG1-QUAL
The number of rows qualified at stage 1. Derived from the DB2 field QW0058DQ.

STG2-QUAL
The number of rows qualified at stage 2. Derived from the DB2 field QW0058RQ.

ROW INSRT
The number of rows inserted. Derived from the DB2 field QW0058IN.

ROW UPDTE
The number of rows updated. Derived from the DB2 field QW0058UP.

ROW DELET
The number of rows deleted. If the delete was a mass delete, the indicator MASS is printed. Derived from the DB2 field QW0058DE.

PAGES
The number of get page requests issued by the data manager to the buffer manager. Note that for an index scan, the value includes the number of index pages scanned but not the number of index subpages scanned. Derived from the DB2 field QW0058PS.

RI SCAN
The number of additional pages scanned for referential integrity. Derived from the DB2 field QW0058PR.

RI DELET
The number of additional rows deleted for referential integrity. Derived from the DB2 field QW0058DR.

59 - Fetch Start

Fetch start shows the data from IFCID 59.

```
LOCATION NAME    : DSNAPC3
PKG COLLECTION ID: 'BLANK'
PROGRAM NAME     : DSNESM68
TIME STAMP       : x'144102861B610F0C'
STMT NUMBER      :   131             STMT TYPE : x'01'
CURSOR NAME      : C1
```

LOCATION NAME
The location name. Derived from the DB2 field QW0059LN.

PKG COLLECTION ID
The package collection identifier. Derived from the DB2 field QW0059PC.

PROGRAM NAME
The program name. Derived from the DB2 field QW0059PN.

TIME STAMP
The hexadecimal value of the precompiler timestamp. Derived from the DB2 field QW0059TS.

STMT NUMBER
The statement number. Derived from the DB2 field QW0059SN.

STMT TYPE
The statement type. x'01' indicates FETCH. Derived from the DB2 field QW0059ST.

CURSOR NAME
The name of the cursor used by the FETCH statement. Derived from the DB2 field QW0059CN.

60 - Select Start

Select start shows the data from IFCID 60.

```
LOCATION NAME        : DSNAPC3
PKG COLLECTION ID    : 'BLANK'
PROGRAM NAME         : DSNESM68
PRECOMPILER TIMESTAMP: x'144102861B610F0C'
STMT NUMBER          :   131
STMT TYPE            : x'00'
ISOLATION            : UR
REOPTIMIZATION       : YES
```

LOCATION NAME
The location name. Derived from the DB2 field QW0060LN.

PKG COLLECTION ID
The package collection identifier. Derived from the DB2 field QW0060PC.

PROGRAM NAME
The program name. Derived from the DB2 field QW0060PN.

PRECOMPILER TIMESTAMP
The hexadecimal value of the precompiler timestamp. Derived from the DB2 field QW0060TS.

STMT NUMBER
The statement number of the statement executed. Derived from the DB2 field QW0060SN.

STMT TYPE
The statement type. x'00' indicates SELECT. Derived from the DB2 field QW0060ST.

ISOLATION
The isolation level:

RR Repeatable read

CS Cursor stability

RS Read stability

UR Uncommitted read

Derived from the DB2 field QW0060I.

REOPTIMIZATION
Indicates whether the access path of the SQL statement was reoptimized at run time. Derived from the DB2 field QW0060RO.

61 - Insert/Update/Delete Start

Insert/Update/Delete start shows the data from IFCID 61.

```
LOCATION NAME        : DSNAPC3
PKG COLLECTION ID    : 'BLANK'
PROGRAM NAME         : DSNESM68
PRECOMPILER TIMESTAMP: x'144102861B610F0C'
STMT NUMBER          :   143
STMT TYPE            : INSERT TYPE
CURSOR NAME          : 'BLANK'
ISOLATION            : CS
REOPTIMIZATION       : YES
```

LOCATION NAME
The location name. Derived from the DB2 field QW0061LN.

PKG COLLECTION ID
The package collection ID. Derived from the DB2 field QW0061PC.

PROGRAM NAME
The program name. Derived from the DB2 field QW0061PN.

PRECOMPILER TIMESTAMP
The hexadecimal value of the precompiler timestamp. Derived from the DB2 field QW0061TS.

STMT NUMBER
The statement number of the statement executed. Derived from the DB2 field QW0061SN.

STMT TYPE
The statement types. Derived from the DB2 field QW0061ST.

CURSOR NAME
The name of the cursor. Derived from the DB2 field QW0061CN.

ISOLATION
The isolation level:

RR Repeatable read

CS Cursor stability

RS Read stability

Derived from the DB2 field QW0061I.

REOPTIMIZATION
Indicates whether the access path of the SQL statement was reoptimized at run time. Derived from the DB2 field QW0061RO.

62 - DDL Start

DDL start shows the data from IFCID 62.

```
STATEMENT TYPE: CREATE DATABASE
OBJECT TYPE   : DATABASE
OBJECT NAME   : DATABAS1
```

STATEMENT TYPE
The type of statement being processed. Derived from the DB2 field QW0062ST.

OBJECT TYPE
The type of object processed. Derived from the DB2 field QW0062OT.

OBJECT NAME
The object name. The name does not include high-level qualifiers. Derived from the DB2 field QW0062ON.

63 - SQL Statement

SQL statement shows the data from IFCID 63.

```
OPTIONS:  X'A7' HOST LANG: COBOL2       SQL STATEMENT:
CREATE GLOBAL TEMPORARY TABLE ADMF001 . TBLSPR01 (
TBAC1 CHAR ( 45 ) NOT NULL , TBAC2FRN CHAR ( 10 ) ,
TBAC3 DATE NOT NULL , TBAC4 INTEGER , TBAC5 DATE NOT
NULL , TBAC6 VARCHAR ( 100 ) NOT NULL , TBAC7
TIMESTAMP NOT NULL , TBAC8 SMALLINT )
```

OPTIONS
This field consists of 8 bits. The bits indicate the parser options and the host language. The four most significant bits describe the parser options:

Bit 7 String delimiter (0 = apostrophe; 1 = quotation mark)

Bit 6 Decimal separator (0 = period; 1 = comma)

Bit 5 SQL delimiter (0 = apostrophe; 1 = quotation mark)

Bit 4 Mixed data (0 = no; 1 = yes)

Bit 3 Reserved

Bits 0 to 2
Host language

The three least significant bits (0 to 2) are the host language bit mask. The hexadecimal value indicates the host language:

001 Host language is Assembler

010 Host language is COBOL

011 Host language is PL/I

100 Host language is Dynamic SQL

101 Host language is FORTRAN

110 Host language is COBOL2

111 Look at HOST LANG field

Derived from the DB2 field QW0063OT.

HOST LANG
Additional host language option. This field is optional. When the OPTIONS host language bit mask is `x'7'` , it indicates the host language, otherwise the constant N/A is printed. Derived from the DB2 field QW0063HL.

SQL STATEMENT
The SQL statement being processed.

Notes:

1. SQL text longer than 5000 characters is truncated.
2. Host variables are represented as :H

Derived from the DB2 field QW0063ST.

64 - Prepare Start

Prepare start shows the data from IFCID 64.

```
LOCATION NAME    : DSNAPC3
PKG COLLECTION ID: 'BLANK'
PROGRAM NAME     : DSNESM68
TIME STAMP       : x'144102861B610F0C'
STMT NUMBER      :    71             STMT TYPE : x'81'
CURSOR NAME      : C1
```

LOCATION NAME
The location name. Derived from the DB2 field QW0064LN.

PKG COLLECTION ID
The package collection identifier. Derived from the DB2 field QW0064CI.

PROGRAM NAME
The program name. Derived from the DB2 field QW0064PN.

TIME STAMP
The hexadecimal value of the precompiler timestamp. Derived from the DB2 field QW0064TS.

STMT NUMBER
The statement number. Derived from the DB2 field QW0064SN.

STMT TYPE
The statement types:

x'81' Prepare a cursor section.

x'80' Prepare a noncursor section.

x'C1' Implicit prepare of a cursor section.

x'C0' Implicit prepare of a noncursor section.

Derived from the DB2 field QW0064ST.

CURSOR NAME
The name of the cursor used by the PREPARE statement. Derived from the DB2 field QW0064CN.

65 - Open Cursor

Open Cursor shows the data from IFCID 65.

```
LOCATION NAME        : DSNAPC3
PKG COLLECTION ID    : 'BLANK'
PROGRAM NAME         : DSNESM68
PRECOMPILER TIMESTAMP: x'144102861B610F0C
STMT NUMBER          :   131
STMT TYPE            : x'91'
CURSOR NAME          : C1
ISOLATION            : UR
REOPTIMIZATION       : YES

'
```

LOCATION NAME
The location name. Derived from the DB2 field QW0065LN.

PKG COLLECTION ID
The package collection identifier. Derived from the DB2 field QW0065PC.

PROGRAM NAME
The program name. Derived from the DB2 field QW0065PN.

PRECOMPILER TIMESTAMP
The hexadecimal value of the precompiler timestamp. Derived from the DB2 field QW0065TS.

STMT NUMBER
The statement number. Derived from the DB2 field QW0065SN.

STMT TYPE
The statement type. x'91' indicates OPEN. Derived from the DB2 field QW0065ST.

CURSOR NAME
The name of the cursor used by the OPEN cursor statement. Derived from the DB2 field QW0065CN.

ISOLATION
The isolation level:

RR Repeatable read

CS Cursor stability

RS Read stability

UR Uncommitted read

XR Repeatable read with X lock

XS Read stability with X lock

Derived from the DB2 field QW0065I.

REOPTIMIZATION
Indicates whether the access path of the SQL statement was reoptimized at run time. Derived from the DB2 field QW0065RO.

66 - Close Cursor

Close cursor shows the data from IFCID 66.

```
LOCATION NAME    : DSNAPC3
PKG COLLECTION ID: 'BLANK'
PROGRAM NAME     : DSNESM68
TIME STAMP       : x'144102861B610F0C'
STMT NUMBER      :   137             STMT TYPE : x'A1'
CURSOR NAME      : C1
```

LOCATION NAME
The location name. Derived from the DB2 field QW0066LN.

PKG COLLECTION ID
The package collection identifier. Derived from the DB2 field QW0066PC.

PROGRAM NAME
The program name. Derived from the DB2 field QW0066PN.

TIME STAMP
The hexadecimal value of the precompiler timestamp. Derived from the DB2 field QW0066TS.

STMT NUMBER
The statement number. Derived from the DB2 field QW0066SN.

STMT TYPE
The statement type. x'A1' indicates CLOSE. Derived from the DB2 field QW0066ST.

CURSOR NAME
The name of the cursor used by the CLOSE cursor statement. Derived from the DB2 field QW0066CN.

67 - Accounting

If there is no data present for this IFCID, `NO DATA` is printed. If any data is found, it is printed in dump format.

68 - Rollback Start

Rollback start shows the data from IFCID 68.

```
PSWKEY    x'80'
QW0068FR  x'007C6428'
```

PSWKEY
The PSW key of the holder. Derived from the DB2 field QW0068CK.

69 - Rollback End

Rollback end shows the data from IFCID 69.

```
QW0069FR  x'007C6428'    QW0069RT           0
QW0069RS           0
QW0069NI  x'40404040404040400000000000000000'
```

70 - Commit Phase 2 Start

Commit phase 2 start shows the data from IFCID 70.

```
PSWKEY       x'0E'
QW0070FR     x'00000000'
```

PSWKEY
The PSW key of the caller. Derived from the DB2 field QW0070CK.

71 - Commit Phase 2 End

Commit phase 2 end shows the data from IFCID 71.

```
QW0071FR  x'007C6428'    QW0071RT           0
QW0071RS           0
QW0071NI  x'40404040404040400000000000000000'
```

72 - Create Thread Start

Create thread start shows the data from IFCID 72.

```
RESOURCE NAME:   ABE5B03
```

RESOURCE NAME
The plan name used in thread creation. If the thread is created to process a DB2 command, the field shows 'BLANK'. Derived from the DB2 field QW0072RN.

73 - Create Thread End

Create thread end shows the data from IFCID 73.

```
QLGTH              0
QW0073RT           0     QW0073RS           0
QW0073IN  x'E8C5E2'      QW0073CT  MASS
QW0073WT           1
```

QLGTH
The queue length of the create thread request. Derived from the DB2 field QW0073QL.

74 - Terminate Thread Start

If there is no data present for this IFCID, `NO DATA` is printed. If any data is found, it is printed in dump format.

75 - Terminate Thread End

Terminate thread end shows the data from IFCID 75.

```
QW0075RT              0  QW0075RS              0
QW0075CO  x'E2E8D5C3'
```

76 - End of Memory Start

End of memory start shows the data from IFCID 76.

```
PSWKEY    X'01'       FLGS  X'07'          ASID    256
QW0076SS  X'01234567'    QW0076AM  X'89ABCDEF'
QW0076FC           2     QW0076AS  X'12345678'
```

PSWKEY
The PSW key of the SSI caller. Derived from the DB2 field QW0076CK.

FLGS The flags of the SSI caller:

x'80' P-bit of the SSI caller (problem state)

x'40' A-bit of the SSI caller (AMODE 31)

x'20' Abnormal end of memory

Derived from the DB2 field QW0076F1.

ASID The identifier of the end of memory address space. Derived from the DB2 field QW0076ID.

77 - End of Memory End

End of memory end shows the data from IFCID 77.

```
RETURN           0  PROCESSED END OF MEMORY?: YES
```

RETURN
The return code. This field is always 0. Derived from the DB2 field QW0077R0.

PROCESSED END OF MEMORY?
Indicates whether end of memory was processed. Derived from the DB2 field QW0077PR.

78 - End of Task Start

End of task start shows the data from IFCID 78.

```
ACE         2
QW0078AS  X'00B9F328'  QW0078AG  X'00B226C8'
```

ACE The relative number of the agent control element address in the ACE cross-reference table. This table is printed at the end of each location for every trace specified. Derived from the DB2 field QW0078AC.

79 - End of Task End

If there is no data present for this IFCID, `NO DATA` is printed. If any data is found, it is printed in dump format.

82 - Identify Start

Identify start shows the data from IFCID 82.

```
PSWKEY    x'70'          FLAGS     x'40'
QW0082SS  x'007C9FBC'    QW0082AM  x'02E9C5A8'
QW0082FC          41
```

PSWKEY
The PSW key of the SSI caller. Derived from the DB2 field QW0082CK.

FLAGS
The flags of the SSI caller:

x'80' P-bit of the SSI caller (problem state)

x'40' A-bit of the SSI caller (AMODE 31)

Derived from the DB2 field QW0082F1.

83 - Identify End

Identify end shows the data from IFCID 83.

```
RECOPT  YES  ACCESS: SUCCESSFUL
CURR SQLID  AUTHID01  ORIG AUTHID  AUTHID00
SECONDARY AUTHORIZATION IDS:
AUTHID02  AUTHID03  AUTHID04
QW0083RT           0     QW0083RS           0
QW0083CT  x'D4C1E2E240404040'
```

RECOPT
The record coordination option specification. Derived from the DB2 field QW0083RO.

ACCESS
Indicates whether the access was successful. Derived from the DB2 field QW0083AD.

CURR SQLID
The current SQL authorization ID. Derived from the DB2 field QW0083QD.

ORIG AUTHID
The original primary authorization ID. Derived from the DB2 field QW0083OP.

SECONDARY AUTHORIZATION IDS
A list of the secondary authorization IDs. This list is only produced if there are secondary authorization IDs. Derived from the DB2 field QW0083SA.

84 - Prepare Start

Prepare start shows the data from IFCID 84.

```
PSWKEY    x'00'
QW0084FR  x'00000000'
```

PSWKEY
The PSW key of the caller. Derived from the DB2 field QW0084CK.

85 - Prepare End

Prepare end shows the data from IFCID 85.

```
QW0085FR  X'007C8428'    QW0085RT           0
QW0085RS           0
QW0085NI  X'C9F3F2D7404040400000000200000000'
```

86 - Signon Start

Signon start shows the data from IFCID 86.

```
PSWKEY    x'00'
QW0086FR  x'00000000'
```

PSWKEY
The PSW key of the SSI caller. Derived from the DB2 field QW0086CK.

87 - Signon End

Signon end shows the data from IFCID 87.

```
ACCESS: SUCCESSFUL
CURRSQLID AUTHID01 ORIGAUTHID AUTHID00
SECONDARY AUTHORIZATION IDS:
AUTHID02  AUTHID03  AUTHID04
QW0087RT         0  QW0087RS         0
```

ACCESS
Indicates whether the access was successful. Derived from the DB2 field QW0087AD.

CURRSQLID
The current SQL authorization ID. Derived from the DB2 field QW0087QD.

ORIGAUTHID
The original authorization ID passed by the attachment facility. Derived from the DB2 field QW0087OP.

SECONDARY AUTHORIZATION IDS
A list of all secondary authorization IDs. This list is only produced if there are secondary authorization IDs. Derived from the DB2 field QW0087SA.

88 - Sync Start

Sync start shows the data from IFCID 88.

```
PSWKEY    x'00'
QW0088FR  x'00000000'
```

PSWKEY
The PSW key of the caller. Derived from the DB2 field QW0088CK.

89 - Sync End

Sync end shows the data from IFCID 89.

```
QW0089FR  X'007BC428'    QW0089RT           0
QW0089RS           0
```

90 - DB2 Command Start

DB2 command start shows the data from IFCID 90.

```
COMMAND:  -ARCHIVE LOG MODE(QUIESCE) TIME(2)
PHB      X'02BC1040'
```

COMMAND
The command text. Derived from the DB2 field QW0090CT.

PHB The input PHB token is extracted from the first 4 bytes of the COMMAND field. Derived from the DB2 field QW0090CT.

91 - DB2 Command End

DB2 command end shows the data from IFCID 91.

```
QW0091RC           0     QW0091RS           0
QW0091BA  x'7F4B9F10'
```

92 - AMS Command Start

AMS command start shows the data from IFCID 92.

```
COMMAND: DEFINE CLUSTER
(NAME(DSN220C.DSNDBC.CDDB.EMPLOYEE.I0001.A001
) NOERASE LINEAR OWNER(DB2ADM ) REUSE ) DATA
(NAME(DSN220C.DSNDBD.CDDB.EMPLOYEE.I0001.A001
) RECORDS( 00000003 00000003) OWNER(DB2ADM )
SHAREOPTIONS(3,3) REUSE VOLUMES('ELURU2' ));
```

COMMAND
The command text. Derived from the DB2 field QW0092P1.

95 - Sort Start

If there is no data present for this IFCID, `NO DATA` is printed. If any data is found, it is printed in dump format.

96 - Sort End

Sort end shows the data from IFCID 96.

```
RECNO          1 AREA            1 KEYSZ
SIZE           2 WORK            1 RET
IWORK          1 ROW DEL         0 PASSES
TYPE        ESA  STMTNO        534 WORKFILES
COLLECTION ID PU62302              SORT COLUMNS
PROGRAM NAME  'BLANK'              SORT KEYS
PARTITIONING BY SORT:  NO     SORT IN ADDITION:     NO
PARTITIONING OCCURRED:   N/P
QW0096IN           0   QW0096RD           0
QW0096RU           0
```

RECNO
The number of records sorted. Derived from the DB2 field QW0096NR.

AREA The sort data area size in bytes. Derived from the DB2 field QW0096DL.

KEYSZ
The sort key size in bytes. Derived from the DB2 field QW0096KL.

SIZE The sort record size in bytes (the sort key size and the data area size). Derived from the DB2 field QW0096WR.

WORK
The number of work files used for both input and merge phases. Derived from the DB2 field QW0096WF.

RET The sort return code:

0 Successful

4 Empty - sort successful

8 Resource unavailable

12 Sort key too long

16 Error detected by fetch routine during input phase

20 Serious processing error

Derived from the DB2 field QW0096RC.

IWORK
The number of initial work files. The sorting of records can take more than one work file. The number of work files needed depends on the distribution of sort key values. The maximum number of work files is limited by the buffer pool size. Derived from the DB2 field QW0096IR.

ROW DEL
The number of rows deleted because records were merged for the evaluation of column functions with GROUP BY. Derived from the DB2 field QW0096RL.

PASSES
The number of merge passes during sort processing. Derived from the DB2 field QW0096MP.

TYPE The type of sort that occurred. The possible values are:

ESA ORDER BY sort using the ESA sort hardware instructions

ESAG GROUP BY sort using the ESA sort hardware instructions

ESAT ESA tag sort using the ESA sort hardware instructions

REG Regular sort

NONE No sort occurred.

TAG Tag sort (valid for DB2 V3 only).

GRP GROUP BY sort (valid for DB2 V3 only).

Derived from the DB2 field QW0096TS.

STMTNO
The statement number for the query that invokes sort. Derived from the DB2 field QW0096SN.

WORKFILES
The number of work files, equal to the degree of parallelism, that sort has partitioned. Derived from the DB2 field QW0096PW.

COLLECTION ID
The package collection ID for the query that invokes sort. Derived from the DB2 field QW0096PC.

SORT COLUMNS
The number of sort columns. Derived from the DB2 field QW0096SC.

PROGRAM NAME
The program name for the query that invokes sort. Derived from the DB2 field QW0096PN.

SORT KEYS
The number of sort keys. Derived from the DB2 field QW0096SK.

PARTITIONING BY SORT
Indicates whether the sorted records were partitioned. Derived from the DB2 field QW0096PP.

SORT IN ADDITION
Indicates whether the input records were only partitioned or partitioned and sorted:

YES The records were only partitioned.

NO The records were partitioned and sorted.

Derived from the DB2 field QW0096PO.

PARTITIONING OCCURRED
Indicates when partitioning took place:

W The work file was partitioned at the end of the input phase. No merge occurred.

M The output was partitioned during the last merge pass.

O One record was put into one partition.

P The records were presorted before being partitioned.

N The work file was not partitioned.

Derived from the DB2 field QW0096PT.

97 - AMS Command End

AMS command end shows the data from IFCID 97.

```
RETURN           0
COMMAND: DEFINE DSNC210.DSNDBC.DB2PMDB1.DB2PMIX1.I0001.A001
CLUSTER CATALOG(DSNC210);
```

RETURN
The AMS return code. Derived from the DB2 field QW0097RC.

COMMAND
The AMS command text. Derived from the DB2 field QW0097P1.

102 - SOS Detect

If there is no data present for this IFCID, NO DATA is printed. If any data is found, it is printed in dump format.

103 - SOS Off

Short on storage off shows the data from IFCID 103.

```
TIME:      3/18/92 14:25:37.400234
```

TIME Store clock time. Derived from the DB2 field QW0103SC.

104 - Log Dataset

Log data set shows the data from IFCID 104.

```
DSID      ACTLG103
DSNAME    DSNC310.LOGCOPY1.DS03
```

DSID The data set identifier of the active log manager. Derived from the DB2 field QW0104DI.

DSNAME
The data set name of the active log. Derived from the DB2 field QW0104DN.

105 - DBID/OBID Translation

DBID/OBID translation shows the data from IFCID 105.

This record contains up to 100 data sections. The following data is printed for each section in the record:

```
DBID:        5  DATABASE NAME: DSNDB07
OBID:       24    OBJECT NAME: DSNDSX02
```

DBID The decimal identifier of the database. Derived from the DB2 field QW0105DB.

DATABASE NAME
The database name. Derived from the DB2 field QW0105DN.

OBID The decimal identifier of the object. Examples of objects are table space and index space. Derived from the DB2 field QW0105OB.

OBJECT NAME
The name of the object. Examples of objects are table space and index space. Derived from the DB2 field QW0105TN.

106 - Sys Parameters

System parameters shows the data from IFCID 106.

```
---------------------------------------------------------------------------------------------------------------------------
                                            SYSTEM INITIALIZATION PARAMETERS
LOG RECORDS               50000  TRACE TABLE SIZE (4K)      16  GLOBAL CLASSES      X'00000000'  WTO ROUTE CODES  X'8000'
MONITOR BUFFER SIZE        8192  BACKGROUND IDS            100  STATISTICS CLASSES  X'B0000000'  RLIMIT TABLE ID      01
SERVICE UNIT LIMIT            0  FOREGROUND IDS            600  ACCOUNTING CLASSES  X'EB000000'  RLIMIT FLAGS       X'40'
STATS INTERVAL               30  CONCURRENT THREADS        500  AUDIT CLASSES       X'00000000'  EXT.SECURITY        N/A
PSEUDOCLOSE CHECKPOINTS       5  REMOTE THREADS(ACTIVE)    500  MONITOR CLASSES     X'00000000'  LIMIT BACKOUT      AUTO
PSEUDOCLOSE MINUTES          10  REMOTE THREADS(CONNECT)   500  RLIMIT TABLE AUTHID SYSI         BACKOUT DURATION     122
LEVEL ID CHECKPOINTS         20  UR CHECK FREQUENCY         10  WLM ENVIRONMENT                    WLM
ROLL UP PARALLEL THREAD      NO  LOCAL TRACE TAB SIZE       16
USER LOB VALUE STOR          22  SYSTEM LOB VALUE STOR      18
BP USER DATA            DEFAULT  BP USER INDEX         DEFAULT
EXTRA BLOCKS REQ              0  EXTRA BLOCKS SRV            0
                     QWP1DB1M       40960   QWP1CRIT     4100096  QWP1SOS      4100096   QWP1LVL     61   QWP1FLAG  X'00'
...........................................................................................................................
                                          STORED PROCEDURES PARAMETERS
MVS PROCEDURE NAME    TESTRUN1  ALLOWABLE ABENDS           0  TIMEOUT VALUE          180
...........................................................................................................................
                                       LOG INITIALIZATION PARAMETERS (PART 1)
LOG OUTPUT BUFFER           400  MAX ARCHIVE INPUT UNITS     2  INITIAL OPTIONS     X'E0'  DEALLOC TIME(MIN)       0
ARCHIVE BUFFER               28  OUTPUT BUFFER THRESHOLD    20  ARCHIVE OPTIONS     X'00'  DEALLOC TIME(SEC)       0
MAX ARCHIVE IN BSDS         500
QWP2LVL   X'D3C9F1F6F0404040'
...........................................................................................................................
                                       LOG INITIALIZATION PARAMETERS (PART 2)
DATASET BLOCKSIZE         28672  COPY1 DEVICE TYPE  SYSDA     COPY 1 PREFIX   APC6.ARCHLOG1
PRIMARY ALLOCATION         1234  COPY2 DEVICE TYPE  SYSDA     COPY 2 PREFIX   APC6.ARCHLOG2
SECONDARY ALLOCATION        154  MSS GROUP NAME 1   'BLANK'   FLAGS          X'08'   RETENTION PERIOD          0
QUIESCE PERIOD                5  MSS GROUP NAME 2   'BLANK'
QWP3LVL   X'D2E8C6F1F2F6F840'
...........................................................................................................................
                                       MISCELLANEOUS INSTALLATION PARAMETERS
EDM POOL SIZE            646144  MVS ENVIRONMENT          XA   IRLM START TIME        300  DDL REGISTRATION FLAG   X'30'
IRLM PROCEDURE         IRLMAPC6  TAB.OWNER          DSNRGCOL  IRLM MODULE NAME      ORLM  APPL.TABLE  DSN_REGISTER_APPL
MAXIMUM DATASETS           1000  INSTALL SYSADM     SYSADM    IRLM INIT TIME          10  OBJ.TABLE   DSN_REGISTER_OBJT
ASYNC DRAIN START             1  DEFAULT USERID     IBMUSER   IRLM AUTOSTART         YES  DATABASE NAME        DSNRGFDB
ASYNC DRAIN STOP              3  SYSADM ID 2        SCFA      IRLM TIMEOUT            60  CONTRACT THREAD STORAGE   YES
ENABLE DATA CAPTURE          NO  SYSOPER ID         SYSADM    UTILITY FACTOR           6  DDCS ESCAPE CHARACTER 'BLANK'
ENFORCE DPROP                NO  SYSOPER ID 2       SYSTEM    MAX TSPACE LOCK       1000  WAIT FOR RETAINED LOCKS  YES
AUTO BIND                   YES  ENABLE DB2 AUTHORIZATION YES  MAX APPL.LOCKS       10000  CACHE DYNAMIC SQL         YES
EXPLAIN AT AUTOBIND         YES  AUTH. CACHE SIZE      1024    REPEAT. READ U LOCK    YES  MAX KEPT DYN STMTS          5
HOP SITE AUTHORIZ.      PACKAGE  BIND NEW PACKAGE   NEWPACK1  DEFAULT INDEX TYPE       1  REL. CURSOR HOLD LOCKS    NO
3990 CACHE            NO/BYPASS  CURRENT DEGREE            1  IMS/BMP TIMEOUT          0  OPTIMIZE HINTS ALLOWED    NO
SORT POOL SIZE          1024000  STATIC DESCRIBE         YES  IMS/DLI TIMEOUT          1  VARCHAR FROM INDEX       N/A
RID POOL SIZE           4489216  UTILITY CACHE OPT        NO  PACK AUTH CACHE       5000
MAX EDM POOL DATA      32097152  LOCAL SITE              YES  TRACKER SITE            NO  USE X LOCK                 NO
QWP4MMRB                    408  QWP4WREN                100  QWP4BPOF       X'00000000'  QWP4CNTL  B'0000000000000000'
QWP4BMCK                    OFF  QWP4WIOL                 ON  QWP4LRNG               OFF  QWP4SLDB                  OFF
QWP4BYCK                    OFF  QWP4SLIX                OFF  QWP4NAPF               OFF  QWP4CTUP                  OFF
QWP4DIV3                    OFF  QWP4EXPL                OFF  QWP4NHJM               OFF  QWP4STOO                  OFF
QWP4MISZ                  X'80'  QWP4VCOF                444  QWP4DBOF               432  QWP4SWFN                  140
QWP4SMXN                  32000  QWP4BMC1                 10  QWP4BMC2                20  QWP4SWT1                    5
QWP4SWT2                     40  QWP4DWF1                 14  QWP4DWF2                 2  QWP4DWU1                    8
QWP4DWU2                      8  QWP4VDWT                 64  QWP4KDSA              1300  QWP4KDSB                 1000
QWP4RDEU                    300  QWP4LRUT                  0  QWP4PF32                 0  QWP4PFT1                   14
QWP4PFT2                     10  QWP4BBTR                500  QWP4PSID       X'00000000'  QWP4DSPM                   50
QWP4CHKL                     10  QWP4PDQ                 128  QWP4PCBS                20  QWP4PS4                     0
QWP4PS32                      0  QWP4HRCL                 ON  QWP4PCWH                 5  QWP4PCRB                   10
QWP4MXRB                   5000  QWP4HRCD                  0  QWP4RCST                 8  QWP4TRWT                   10
QWP4WPFQ                      4  QWP4WPFS                  4  QWP4SQTM                 4  QWP4SQTD                    5
QWP4VDTM                      1  QWP4VDTD                 10  QWP4MPFQ                 2  QWP4SWFU                    5
QWP4TISP                  24576  QWP4DRBS              30720  QWP4RMIN                 1  QWP4NCPU                    0
QWP4RNLP                      4  QWP4RHTI                  9  QWP4INTV               120  QWP4QCTM                  120
QWP4TXS                  102400  QWP4SRBT                 10  QWP4AND                 32  QWP4OR                     25
QWP4CPUM                      0  QWP4FDP                   5  QWP4KNFC                10  QWP4EST                    10
QWP4CUT                     100  QWP4SPC                 100  QWP4SPS                  4  QWP4KSIZ                 2557
QWP4IFS                    4192  QWP4ZTN                   2  QWP4MDE               4096  QWP4AST                    99
QWP4MDEG                      0  QWP4SCTM                  0  QWP4ZUT                  0  QWP4ULBZ                 9999
QWP4DSFL                  X'00'  QWP4COC1                  0  QWP4COC2                 0  QWP4ULFR                 9999
QWP4IOP                      ON  QWP4DATE  X'F1F161F2F661F9F3'  QWP4DBCK               OFF  QWP4GOP                  9999
QWP4FFB                      NO  QWP4XCTH                  0  QWP4UBS                  0  QWP4MIS2                 X'04'
QWP4UMD                      25
...........................................................................................................................
                                            VSAM CATALOG NAME QUALIFIER
APC6
...........................................................................................................................
                                      DATABASES/SPACES AUTOMATICALLY STARTED
  ALL
...........................................................................................................................
                                     DISTRIBUTED DATA FACILITY PARAMETERS
FACILITY NAME   DDF        RLF ERROR ACTION     NOLIMIT      RESYNCH.INTERVAL       2     TCP/IP VERIFIED  YES
FACILITY START  AUTO       IDLE THREAD TIMEOUT  99999        DBAT STATUS         ACTIVE
...........................................................................................................................
```

IFCID 106

System Initialization Parameters

LOG RECORDS
The number of log records written that result in a checkpoint. Derived from the DB2 field QWP1LOGL.

TRACE TABLE SIZE (4K)
The size of the resident trace table as a multiple of 4096 bytes. Derived from the DB2 field QWP1TRSZ.

GLOBAL CLASSES
The global trace class mask in hexadecimal. Any bit that is on indicates that a trace class has been started. The classes are numbered from left to right: 1, 2, 3, and so on. Derived from the DB2 field QWP1TRST.

WTO ROUTE CODES
The WTO route codes mask in hexadecimal. Any bit that is on indicates that a route code is on. The route codes are numbered from left to right: 1, 2, 3, and so on. Derived from the DB2 field QWP1SMRC.

MONITOR BUFFER SIZE
The monitor buffer size in bytes. Derived from the DB2 field QWP1MONS.

BACKGROUND IDS
The maximum number of concurrent connections from batch jobs and utilities. Derived from the DB2 field QWP1IDB.

STATISTICS CLASSES
The statistics trace classes in hexadecimal. Any bit that is on indicates that a trace class is on. The trace classes are numbered from left to right: 1, 2, 3, and so on. Derived from the DB2 field QWP1SMFS.

RLIMIT TABLE ID
The last two characters of the resource limit specification table identifier. Derived from the DB2 field QWP1RLFT.

SERVICE UNIT LIMIT
The resource limit facility number of CPU service units. Derived from the DB2 field QWP1RLFN.

FOREGROUND IDS
The maximum number of concurrent connections from TSO foreground. Derived from the DB2 field QWP1IDF.

ACCOUNTING CLASSES
The accounting trace classes in hexadecimal. Any bit that is on indicates that a trace class is on. The trace classes are numbered from left to right: 1, 2, 3, and so on. Derived from the DB2 field QWP1SMFA.

RLIMIT FLAGS
The resource limit facility flags. Derived from the DB2 field QWP1RLFR.

STATS INTERVAL
The time interval in minutes between statistics collections. Derived from the DB2 field QWP1STIM.

CONCURRENT THREADS
The maximum number of concurrent allied threads. This includes threads for IMS/VS, CICS, TSO, and utilities. Derived from the DB2 field QWP1CT.

AUDIT CLASSES
The audit trace classes in hexadecimal. Any bit that is on indicates that a

trace class is on. The trace classes are numbered from left to right: 1, 2, and so on. Derived from the DB2 field QWP1AUDT.

EXT.SECURITY
Indicates whether DDF enables you to change the RACF password using the DRDA change password function. If so, DDF returns descriptive error reason codes when RACF detects security errors. Derived from the DB2 field QWP1SCER.

PSEUDOCLOSE CHECKPOINTS
DB2 can perform a pseudo close on a page set or partition once this number of checkpoints has been performed and no updates have been made to the page set or partition. Derived from the DB2 field QWP1FREQ.

REMOTE THREADS(ACTIVE)
The maximum number of active DBATs running concurrently. Derived from the DB2 field QWP1RMT.

MONITOR CLASSES
The monitor trace classes in hexadecimal. Any bit that is on indicates that a trace class is on. The trace classes are numbered from left to right: 1, 2, and so on. Derived from the DB2 field QWP1MON.

PSEUDOCLOSE MINUTES
DB2 can perform a pseudo close on a page set or partition once this number of minutes has passed and no updates have been made to the page set or partition. Derived from the DB2 field QWP1TMR.

REMOTE THREADS(CONNECT)
The maximum number of connected remote threads. Derived from the DB2 field QWP1CDB.

RLIMIT TABLE AUTHID
The authorization ID of the resource limit specification table. Derived from the DB2 field QWP1RLFA.

LEVEL ID CHECKPOINTS
The number of checkpoints between the updates of the level ID of a page set or partition. Derived from the DB2 field QWP1DFRQ.

UR CHECK FREQUENCY
The number of complete checkpoint cycles before DB2 issues a warning message to the console about an uncommitted unit of recovery (UR). It can be a number between 0 and 255. 0, which is the default, indicates that no message is issued. Derived from the DB2 field QWP1URCK.

LOCAL TRACE TAB SIZE
The size of the local trace tables in multiples of 4 KB. Derived from the DB2 field QWP1TLSZ.

SYSTEM LOB VALUE_STOR
Bytes for LOB values, per system. Derived from the DB2 field QWP1LVS.

USER LOB VALUE_STOR
Bytes for LOB values, per agent. Derived from the DB2 field QWP1LVA.

WLM ENVIRONMENT
Default WLM environment for external routines, such as UDFs and stored procedures. Derived from the DB2 field QWP1LME.

EXTRA BLOCKS REQ
The maximum number of extra DRDA query blocks required when DB2 acts as a DRDA requester. Derivation: QWP1EXBR.

EXTRA BLOCKS SRV
The maximum number of extra DRDA query blocks required when DB2 acts as a DRDA server. Derivation: QWP1EXBS.

BP USER DATA
Default buffer pool for user data. Derivation: QWP1TPL.

BP USER INDEX
Default buffer pool for user index. Derivation: QWP1XPL

LIMIT BACKOUT
Indicates whether restart backout activity is to be limited. Possible values are:

YES

NO

AUTO

Derivation: QWP1LMBO.

BACKOUT DURATION
Checkpoints worth of log records to limit backout. Derivation: QWP1BDUR.

ROLL UP PARALLEL THREAD
This whether the accumulate query parallel task's accounting trace is rolled up into originating task's accounting trace. Possible values are:

YES Originating task cut an additional accounting trace record with all roll up values from parallel tasks.

NO Each parallel task will produce its own accounting trace record.

Derivation: QWP1PROL.

Stored Procedures Parameters

MVS PROCEDURE NAME
The MVS procedure name assigned to the JCL procedure used to start the DB2 stored-procedures address space. Derived from the DB2 field QWP1SPPN.

ALLOWABLE ABENDS
The number of times a stored procedure is allowed to terminate abnormally until the SQL CALL statements for the stored procedure are rejected. Derived from the DB2 field QWP1SPAB.

TIMEOUT VALUE
The number of seconds before DB2 stops waiting for an SQL CALL statement to be assigned to one of the TCBs in the DB2 stored-procedures address space. Derived from the DB2 field QWP1SPTO.

Log Initialization Parameters (Part 1)

LOG OUTPUT BUFFER
The log output buffer pool size in increments of 1024 bytes. Derived from the DB2 field QWP2OBPS.

MAX ARCHIVE INPUT UNITS
The maximum number of archive log volumes that can be allocated at the same time. Derived from the DB2 field QWP2INLM.

INITIAL OPTIONS
The active log and BSDS initialization options in hexadecimal:

x'80' Dual active logs

x'40' Offload facility is on

x'20' Dual BSDS's are being used

Derived from the DB2 field QWP2OPT1.

DEALLOC TIME(MIN)
The deallocation time in minutes. Derived from the DB2 field QWP2DMIN.

ARCHIVE BUFFER
The log input buffer pool size in increments of 1024 bytes. Derived from the DB2 field QWP2IBPS.

OUTPUT BUFFER THRESHOLD
The number of log output buffers to be filled before an asynchronous log output buffer write is started. Derived from the DB2 field QWP2WRTH.

ARCHIVE OPTIONS
The archive log initialization option in hexadecimal. x'80' indicates that dual archive logs are running. Derived from the DB2 field QWP2OPT2.

DEALLOC TIME(SEC)
The deallocation time in seconds. Derived from the DB2 field QWP2DSEC.

MAX ARCHIVE IN BSDS
The maximum number of archive log data sets allowed in the BSDS. Derived from the DB2 field QWP2ARCL.

Log Initialization Parameters (Part 2)

DATASET BLOCKSIZE
The archive data set block size. Derived from the DB2 field QWP3BKSZ.

COPY1 DEVICE TYPE
The type of device or unit name to be allocated for storing the first copy (COPY 1) of the archive log data sets. Derived from the DB2 field QWP3UNT1.

COPY 1 PREFIX
The data set name prefix for the first archive log. Derived from the DB2 field QWP3RE1N.

PRIMARY ALLOCATION
The primary space allocation for archive data sets. Derived from the DB2 field QWP3RISP.

COPY2 DEVICE TYPE
The type of device or unit name to be allocated for storing the second copy (COPY 2) of the archive log data sets. Derived from the DB2 field QWP3UNT2.

COPY 2 PREFIX
The data set name prefix for the second archive log. Derived from the DB2 field QWP3RE2N.

SECONDARY ALLOCATION
The secondary allocation size for the archive data sets. Derived from the DB2 field QWP3SECS.

MSS GROUP NAME 1
The name of the first mass storage system volume group. Derived from the DB2 field QWP3MSV1.

FLAGS
The archive flag byte in hexadecimal. It can have one of the following values:

x'80' The archive data set is to be cataloged.

x'40' The archive data set space is allocated by cylinders.

x'20' The archive data set space is allocated by tracks.

x'10' RACF protection is active for the archive data sets.

x'08' A WTOR is to be issued before an archive volume mount.

x'04' The data is compacted before it is written to archive data set. This is applicable only if the device is 3480.

x'02' The archive data sets have a timestamp.

Derived from the DB2 field QWP3FLG1.

RETENTION PERIOD
The retention period of the archive data set in days. Derived from the DB2 field QWP3RETN.

QUIESCE PERIOD
The maximum quiesce period. Derived from the DB2 field QWP3MQP.

MSS GROUP NAME 2
The name of the second mass storage system volume group. Derived from the DB2 field QWP3MSV2.

Miscellaneous Installation Parameters

EDM POOL SIZE
The maximum size of the EDM buffer pool in bytes. Derived from the DB2 field QWP4EDPL.

MVS ENVIRONMENT
The type of MVS environment in which DB2 is running. Derived from the DB2 field QWP4MVS.

IRLM START TIME
The time in seconds that DB2 waits for IRLM to start working. Derived from the DB2 field QWP4ISWT.

DDL REGISTRATION FLAG
The DDL registration facility flag. It can have one of the following values:

x'80' Data definition control support has been installed.

x'40' The DB2 system is completely controlled by a set of closed applications.

x'20' Registered objects require fully qualified names.

x'00' Reject the DDL that names an unregistered object.

x'1*' Accept the DDL that names an unregistered object.

x'*1' Reject the DDL that names an unregistered object if the current application is not registered.

Derived from the DB2 field QWP4REGF.

IRLM PROCEDURE
The name of the procedure that DB2 uses to start up IRLM. Derived from the DB2 field QWP4IPRC.

TAB.OWNER
The owner of the application registration table and the object registration table. Derived from the DB2 field QWP4REGC.

IRLM MODULE NAME
The name of the IRLM subsystem by which IRLM is known to MVS. Derived from the DB2 field QWP4ISID.

APPL.TABLE
The name of the application registration table. Derived from the DB2 field QWP4REGA.

MAXIMUM DATASETS
The maximum number of concurrently open data sets permitted. Derived from the DB2 field QWP4DSMX.

INSTALL SYSADM
The user ID of the first system administrator. Derived from the DB2 field QWP4SADM.

IRLM INIT TIME
The time in seconds that DB2 inquires whether IRLM has completed its initialization. Derived from the DB2 field QWP4ISWI.

OBJ.TABLE
The name of the table in which the object is registered. Derived from the DB2 field QWP4REGO.

ASYNC DRAIN START
The percentage of maximum open data sets until the asynchronous drain operations are started. Derived from the DB2 field QWP4TDDN.

DEFAULT USERID
The default user ID of the system. Derived from the DB2 field QWP4DFID.

IRLM AUTOSTART
Indicates whether DB2 is to automatically start IRLM. Derived from the DB2 field QWP4IAUT.

DATABASE NAME
The name of the database that contains the registration tables. Derived from the DB2 field QWP4REGN.

ASYNC DRAIN STOP
The percentage of maximum open data sets until the asynchronous drain operations are stopped. Derived from the DB2 field QWP4MDDN.

SYSADM ID 2
The user ID of the second system administrator. Derived from the DB2 field QWP4ADM2.

IRLM TIMEOUT
The maximum amount of time DB2 waits for the release of a locked resource. Derived from the DB2 field QWP4TOUT.

CONTRACT THREAD STORAGE
This field specifies whether DB2 will periodically contract each thread's working storage area.Possible values are:

YES DB2 will examine threads at commit points and periodically return storage to the operating system that is no longer in use.

NO DB2 will not examine threads at commit points but will return acquired storage at deallocation.

Derivation: QWP4CONT

ENABLE DATA CAPTURE
Indicates whether data capture is enabled. Derived from the DB2 field QWP4CDC.

SYSOPER ID
The user ID of the first system operator. Derived from the DB2 field QWP4OPR1.

UTILITY FACTOR
The utility timeout factor. Derived from the DB2 field QWP4UTO.

DDCS ESCAPE CHARACTER
The DDCS escape character. Derived from the DB2 field QWP4ESC.

ENFORCE DPROP
Indicates whether DPROP is enforced. Derived from the DB2 field QWP4ENF.

SYSOPER ID 2
The user ID of the second system operator. Derived from the DB2 field QWP4OPR2.

MAX TSPACE LOCK
The maximum number of page locks or row locks that a thread can hold concurrently against a single table space until DB2 escalates the locking level to table space lock. Derived from the DB2 field QWP4LKTS.

WAIT FOR RETAINED LOCKS
Indicates whether your request is suspended until the incompatible retained lock becomes available. For releases prior to DB2 Version 4, N/A is printed. Derived from the DB2 field QWP4WAIT.

AUTO BIND
Indicates whether autobind is enabled. Values are:

YES Allows atomatic rebind operations to be performed when a plan/package:

- has marked ″invalid″ (See the *DB2 Application Programming and SQL Guide* for information about invalidation.
- was bound on DB2 Vn, but is now running on DB2 Vn-1.
- after use on DB2 Vn-1 (as previously described), is later used again on DB2 Vn.

NO Prevent DB2 from performing any automatic rebind operations under any circumstances.

COEXIST
Allows automatic rebind operation to be performed in a DB2 Data Sharing coexistence environment when the plan/package

- is marked ″invalid″ or
- was last bound in DB2 Vn and is running on DB2 Vn-1.

Derived from the DB2 field QWP4ABN.

ENABLE DB2 AUTHORIZATION
Indicates whether DB2 authorization is enabled. Derived from the DB2 field QWP4AUTH.

MAX APPL.LOCKS
The maximum number of page locks or row locks that a thread can hold concurrently against all table spaces. Derived from the DB2 field QWP4LKUS.

CACHE DYNAMIC SQL
Indicates whether DB2 can cache prepared SQL statements in the EDM pool by making a copy from the prepared statement cache.

Derivation: QWP4CDYN

EXPLAIN AT AUTOBIND
Indicates whether plans and packages which were originally bound with EXPLAIN(YES) are explained at autobind time. Derived from the DB2 field QWP4ABX.

AUTH. CACHE SIZE
The size of the authorization cache. Derived from the DB2 field QWP4AUCA.

REPEAT. READ U LOCK
The lock mode used for an updated cursor with repeatable read isolation or read stability:

YES The U lock is used.

NO The S lock is used.

Derived from the DB2 field QWP4RRU.

MAX KEPT DYN STMTS
Indicates the maximum number of prepared dynamic statements saved past commit.

Derivation: QWP4MXKD

HOP SITE AUTHORIZ.
The authorization applied to static statements in a distributed “hop” environment:

PACKAGE
The package owner’s authorization is used.

RUNNER The runner’s authorization is used.

Derived from the DB2 field QWP4HOP.

BIND NEW PACKAGE
The authorities required to add a new package or a new version of an existing package. Derived from the DB2 field QWP4BNVA.

DEFAULT INDEX TYPE
The default index type. Derived from the DB2 field QWP4DXTP.

REL. CURSOR HOLD LOCKS
Release cursor with hold locks. When this parameter is YES, DB2 bypasses lock promotion of data locks for CURSOR_WITH_HOLD. When NO, DB2 promotes the locks.

Lock promotion causes a lock to be held across a commit until the next commit. Bypassing lock promotion causes a lock to be released until the next commit.

Derivation: QWP4RCHL (flag in QWP4MIS2)

3990 CACHE
Indicates whether DB2 will specify sequential 3990 cache for sequential prefetch and dynamic prefetch. DFSMS controls can specify which data sets are not to be cached. The possible values of this field are different for each of the supported DB2 releases.

Possible values for DB2 Version 4 and later releases are:

```
SEQ
BYPASS
```

Derived from the DB2 field QWP4SCAC.

CURRENT DEGREE
The default for the current degree special register. Derived from the DB2 field QWP4CDEG.

IMS/BMP TIMEOUT
A factor used to determine the resource timeout value for an IMS/BMP region that is waiting for a lock or for a particular claim class to be released. 0 is the DB2 default value. Derived from the DB2 field QWP4WBMP.

OPTIMIZE HINTS ALLOWED

SORT POOL SIZE
The maximum size of the sort buffer pool in bytes. Derived from the DB2 field QWP4SPOL.

STATIC DESCRIBE
Indicates whether the describe information is built during the bind, that is, DESCRIBE is allowed for bound, static SQL statements. Derived from the DB2 field QWP4DSST.

IMS/DLI TIMEOUT
A factor used to determine the resource timeout value for an IMS/DLI region that is waiting for a lock or for a particular claim class to be released. 0 is the DB2 default value. Derived from the DB2 field QWP4WDLI.

VARCHAR FROM INDEX

RID POOL SIZE
The maximum number of RID blocks in the DB2 subsystem. Derived from the DB2 field QWP4RMAX.

UTILITY CACHE OPT
Specifies whether certain DB2 utilities allow data to remain longer in the 3990 cache when reading data:

YES Utilities with the options LOAD PART integer RESUME and REPORG TABLESPACE PART for a table that has large nonpartitioned indexes, allow data to remain longer in the 3990 cache and thus might improve the performance of subsequent writes.

NO The DB2 utilities use the 3990 cache in the same way as any other application, that is, according to the sequential cache option.

Derived from the DB2 field QWP4PST.

PACK AUTH CACHE
Indicates how much storage is allocated to the caching of package authorization information for all packages on this DB2 member. Derived from the DB2 field QWP4PAC.

MAX EDM POOL DATA
Maximum EDM pool data space size, calculated during installation. Derivation QWP4EDDS.

LOCAL SITE
Indicates whether local site is used. Derivation: QWP4MSTY.

TRACKER SITE
Indicates whether tracker site is used. Derivation: QWP4TRKR.

USE X LOCK
Indicates whether use X lock on SEARCHED UPDATE/DELETE. Derivation: QWP4XLUD.

VSAM Catalog Name Qualifier

Databases/Spaces Automatically Started

The names of the databases and database/table spaces started automatically by DB2. If all databases and database/table spaces are started, ALL is printed. Derived from the DB2 fields QWP8DBNM and QWP8SPNM.

Databases/Spaces Automatically Restarted

The names of the databases and database/table spaces restarted by DB2. If all databases and database/table spaces are restarted, ALL is printed. Derived from the DB2 fields QWP8DBNM and QWP8SPNM.

Databases/Spaces Automatically Deferred

The names of the databases and database/table spaces whose startup is deferred until after DB2 startup. If the startup of all databases and database/table spaces is deferred, ALL is printed. Derived from the DB2 fields QWP8DBNM and QWP8SPNM.

Distributed Data Facility Parameters

FACILITY NAME
The name of the DDF facility. Derived from the DB2 field QWP9NAME.

RLF ERROR ACTION
The RLF error parameter. Derived from the DB2 field QWP9RLER.

RESYNCH.INTERVAL
The resynchronization interval. Derived from the DB2 field QWP9RYC.

TCP/IP VERIFIED
Indicates whether already verified connections are accepted from TCP/IP clients. Derived from the DB2 field QWP9TCPA.

FACILITY START
The DDF start parameter. Derived from the DB2 field QWP9STRT.

RLF ERROR LIMIT
The number of service units to be used. This field is printed in place of RLF ERROR ACTION if service units are specified in the installation parameter. Derived from the DB2 field QWP9RLFN.

IDLE THREAD TIMEOUT
The time in minutes that an active server thread remains in the system before being canceled by DB2. Derived from the DB2 field QWP9TTO.

DBAT STATUS
The status of the DBAT. Derived from the DB2 field QWP9CMST.

Data Sharing Parameters

GROUP NAME
The name of the data sharing group. Derived from the DB2 field QWPAGRPN.

MEMBER NAME
The name of the member in the data sharing group. Derived from the DB2 field QWPAMBRN.

DATA SHARING ENABLED
Indicates whether data sharing is enabled. Derived from the DB2 field QWPADSHR.

MAXIMUM NUMBER OF MEMBERS
The maximum number of members. This field is a constant set to 248. Derived from the DB2 field QWPAMAXM.

PAR.COORD
Indicates whether DB2 can be a parallelism coordinator:

NO The DB2 member does not send parallel tasks to other DB2 members.

YES The DB2 member can send parallel tasks to eligible DB2 members.

The default value is YES. Derived from the DB2 field QWPACOOR.

PAR.ASSIST
Specifies whether this DB2 is allowed to assist a parallelism coordinator with parallel processing:

YES This DB2 is considered an assistant at both bind and run time. To be a viable assistant at run time, this DB2's VPPSEQT and VPXPSEQT buffer pool thresholds must be greater than 0.

NO This DB2 is not considered an assistant at either bind or run time.

The default value is NO. Derived from the DB2 field QWPAASST.

CONVERSION FACTOR
The CPU service unit conversion factor. This factor allows for converting CPU time to a common unit, called *service unit (SU)*. The conversion factor used depends on the machine being used. With the SU, you can add up CPU execution times across multiple DB2s running on different machines. Derived from the DB2 field QWPASUCV.

Application Programming Defaults

VERSION
The version, release, and modification level. Derived from the DB2 field QWPBREL.

DEFAULT SUBSYSTEM
The MVS subsystem name for DB2. Derived from the DB2 field QWPBSSID.

EBCDIC SBCS CCSID
The EBCDIC single-byte coded character set ID. Derived from the DB2 field QWPBSID.

DEFAULT HOST LANGUAGE
The default programming language for your location. Derived from the DB2 field QWPBLANG.

DECIMAL POINT OPTION
Specifies whether the decimal contains a comma or a period. This field is used for dynamic SQL and COBOL programs. It is not supported by other languages. Derived from the DB2 field QWPBDE.

EBCDIC MBCS CCSID
The EBCDIC mixed coded character set ID. Derived from the DB2 field QWPBMID.

DEFAULT CHARACTER SET
The default character set. Derived from the DB2 field QWPBCHAR.

DEFAULT ENCODING SCHEME
Specifies whether ASCII or EBCDIC is used as the default encoding scheme. Derived from the DB2 field QWPBENS.

EBCDIC GBCS CCSID
The EBCDIC graphic coded character set ID. Derived from the DB2 field QWPBGID.

DEFAULT DELIMITER
The string delimiter for COBOL. Derived from the DB2 field QWPBDL.

DIST. SQL STRING DELIMITER
The SQL delimiter for bind operations at this DB2 if the requester does not provide DB2 with this information. Derived from the DB2 field QWPBDSD.

ASCII SBCS CCSID
The ASCII single-byte coded character set ID. Derived from the DB2 field QWPBASID.

DEFAULT SQL DELIMITER
The string delimiter for SQL. Derived from the DB2 field QWPBSDL.

DEFAULT DECIMAL ARITHMETIC
Specifies the rules of precision for a decimal field. Derived from the DB2 field QWPBAR.

ASCII MBCS CCSID
The ASCII mixed coded character set ID. Derived from the DB2 field QWPBAMID.

LOCAL DATE LENGTH
The length of the longest field required to hold a date when a locally defined date exit routine is used. Derived from the DB2 field QWPBDLEN.

DEFAULT MIXED GRAPHIC
Specifies whether the code points x'0E' and x'0F' are the shift-out and shift-in controls for character strings that include double-byte characters. Derived from the DB2 field QWPBGRA.

ASCII GBCS CCSID
The ASCII graphic coded character set ID. Derived from the DB2 field QWPBAGID.

LOCAL TIME LENGTH
The length of the longest field required to hold a time when a locally defined time exit routine is used. Derived from the DB2 field QWPBTLEN.

SQL LANGUAGE SUPPORT LEVEL
Specifies whether the SQL language used conforms to the 1986 ANSI SQL standard implemented by DB2 or to the SQL language defined by DB2:

YES Conforms to the 1986 ANSI SQL standard

NO Conforms to the SQL language defined by DB2

86 Conforms to the 1986 ANSI SQL standard

Derived from the DB2 field QWPBSQL.

DATE FORMAT
The default output format for dates. Derived from the DB2 field QWPBDATE.

TIME FORMAT
The default output format for times. Derived from the DB2 field QWPBTIME.

107 - Open/Close

Open/Close shows the data from IFCID 107.

The DESCRIPTION column indicates whether an open or close occurred. That is, 107 - Open or 107 - Close is shown. An open or close is reported using the same format.

```
DBID:         1  DATABASE NAME: DSNDB01
OBID:       175    OBJECT NAME: SYSUTILX
```

DBID The decimal identifier of the database. Derived from the DB2 field QW0107DB.

DATABASE NAME
The name of the database. Derived from the DB2 field QW0107DN.

OBID The decimal identifier of the object. Examples of objects are table space and index space. Derived from the DB2 field QW0107OB.

OBJECT NAME
The name of the object. Examples of objects are table space and index space. Derived from the DB2 field QW0107TN.

108 - Bind Start

Bind start shows the data from IFCID 108.

```
-------------------------------------------------------------------------------------------------------------------------
PLAN NAME : N/A                 SQLERROR    : NOPACK  REBIND PLAN(*): NO        ISOLATION : DF       RELEASE    : DEFAULT
LOCATION  : STLEC1              DEGREE      : 1       EXPLAIN       : NO        TYPE      : BIND     QUALIFIER  : USRT010
COLLECT ID: COJPP1              SQLRULES    : X'00'   OWNER         : USRT010   ACTION    : ADD      CACHE SIZE : N/A
PACKAGE ID: SPJP46P1            DISCONNECT  : X'00'   OBJECT TYPE   : PACKAGE   VALIDATION: RUN      REOPT      : NO
TOKEN     : X'1615D55108645DE0' DYNAMICRULES: N/P     CURRENTDATA   : YES       ACQUIRE   : USE      KEEPDYNAMIC: NO
DBPROTOCOL: DRDA                DEFERPREPARE: N/P     OPT_HINT_IDENT: ABCDEFGH
VERSION   : N/P
-------------------------------------------------------------------------------------------------------------------------
```

LOCATION
The package location. Derived from the DB2 field QW0108NL.

SQLERROR
Indicates whether a package is created if SQL errors are encountered:

CONTIN A package is created even if SQL errors are encountered.

NOPACK A package is not created if SQL errors are encountered.

Derived from the DB2 field QW0108E.

REBIND PLAN(*)
Indicates whether a plan is rebound. Derived from the DB2 field QW0108S.

ISOLATION
The isolation level for plans and packages:

RR Repeatable read

CS Cursor stability

RS Read stability

UR Uncommitted read

For packages only:

DF Default (at run time, assumes the isolation level of the current plan)

Derived from the DB2 field QW0108I.

RELEASE
Indicates when to release the locks:

COMMIT Release locks at commit time.

DEALLOC
Release locks at deallocation time.

For packages only:

DEFAULT
Release locks at run time, which is the default.

Derived from the DB2 field QW0108R.

COLLECT ID
The collection identifier of the package. Derived from the DB2 field QW0108NC.

DEGREE
The degree bind option:

ANY Degree(any)

1 Degree(1)

Derived from the DB2 field QW0108PL.

EXPLAIN
Indicates whether EXPLAIN was specified. Derived from the DB2 field QW0108X.

TYPE The type of bind. Derived from the DB2 field QW0108T.

QUALIFIER
The qualifier used for unqualified object names. Derived from the DB2 field QW0108QL.

PACKAGE ID
The package identifier. Derived from the DB2 field QW0108NI.

SQLRULES
The SQL rules option. Derived from the DB2 field QW0108SR.

OWNER
The plan or package owner. Derived from the DB2 field QW0108OW.

ACTION
Indicates whether the plan or package replaces an existing plan or package with the same name or is new. This field only applies to BIND activities. Derived from the DB2 field QW0108A.

CACHE SIZE
The authorization cache size. A value of 0 indicates that DB2 determines the size. Derived from the DB2 field QW0108CA.

TOKEN
The consistency token of the package. Derived from the DB2 field QW0108NT.

DISCONNECT
The disconnect option:

EXPL Explicit

AUTO Automatic

COND Conditional

Derived from the DB2 field QW0108DC.

OBJECT TYPE
The type of object bound or rebound. Derived from the DB2 field QW0108TY.

VALIDATION
The time of validation:

RUN Validate at run time.

BIND Validate at bind time.

Derived from the DB2 field QW0108V.

REOPT
Indicates whether reoptimization was requested:

YES REOPT(VARS) was specified to reoptimize the access path of the SQL statement at run time.

NO NOREOPT(VARS) was specified to optimize the access path of the SQL statement only at bind time.

Derived from the DB2 field QW0108RO.

PLAN NAME
The plan name. 'BLANK' indicates that a test bind was performed. Derived from the DB2 field QW0108PN.

DYNAMICRULES
The value of the DYNAMICRULES option on the BIND/REBIND command:

RUN Runtime rules apply to a dynamic SQL statement for authorization checking and object qualification at run time.

BIND Bind-time rules apply to a dynamic SQL statement for authorization checking and object qualification at run time.

N/P DYNAMICRULES was not specified.

Derived from the DB2 field QW0108DY.

CURRENTDATA
Controls the data currency for ambiguous cursors:

NO Data currency is not required for ambiguous cursors. Blocking for ambiguous cursors is allowed.

YES Data currency is required for ambiguous cursors. Blocking for ambiguous cursors is inhibited.

ALL Data currency is required for all cursors. Applicable to packages only.

Derived from the DB2 field QW0108F.

ACQUIRE
Indicates when to acquire the locks:

ALLOC Acquire the locks when the plan is allocated.

USE Acquire the locks when the application first accesses them.

Derived from the DB2 field QW0108Q.

KEEPDYNAMIC
Indicates whether DB2 keeps (KEEPDYNAMIC(YES)) or discards (KEEPDYNAMIC(NO)) prepared SQL statements at commit points.

Derivation: QW0108KD

DBPROTOCOL
Database protocol option. Possible values are:

DRDA

PRIVATE

OPT_HINT_IDENT
Query opimization hint identifier, the default is blanks. derived from DB2 field QW0108OH.

VERSION
The version. Derived from the DB2 field QW0108VN.

109 - Bind End

Bind end shows the data from IFCID 109.

```
RETURN            0
```

RETURN
The bind return code:

0 Successful bind/rebind

4 Warning

8 Error

Derived from the DB2 field QW0109RC.

110 - Bind Free Start

Bind free start shows the data from IFCID 110.

```
PLAN    : DSNSECRR    FREE PLAN(*): N
OBJTYPE : PACKAGE
LOCATION: 'BLANK'           COLL-ID: APC4COL2
PKG-ID  : THEHOP              TOKEN x'1460CC6A0A8A97E4'
VERSION : N/P
```

PLAN The name of the plan used in a bind. Derived from the DB2 field QW0110PN.

FREE PLAN(*)
Indicates whether the command `FREE PLAN(*)` or `FREE PACKAGE(*)` was entered:

Y FREE PLAN(*) was entered.

N FREE PACKAGE(*) was entered.

Derived from the DB2 field QW0110S.

OBJTYPE
The type of object bound or rebound. Derived from the DB2 field QW0110TY.

LOCATION
The package location. Derived from the DB2 field QW0110PL.

COLL-ID
The collection identifier of the package. Derived from the DB2 field QW0110PC.

PKG-ID
The package identifier. Derived from the DB2 field QW0110PI.

TOKEN
The consistency token of the package. Derived from the DB2 field QW0110PT.

VERSION
The version. Derived from the DB2 field QW0110VN.

111 - Bind Free End

Bind free end shows the data from IFCID 111.

```
RETURN           0
```

RETURN
The bind return code:

0 Successful free plan

4 Warning

8 Error

Derived from the DB2 field QW0111RC.

112 - Thread Allocate

Thread allocate shows the data from IFCID 112.

```
PLAN NAME   : DSNTEP3      ACQUIRE: USE
ISOLATION   : CS           RELEASE: COMMIT
DYNAMICRULES: RUN          REOPT  : NO
KEEPDYNAMIC :  NO          PREPARE: NO
DBPROTOCOL  : DRDA         HINTID : ABCDEFGH
```

PLAN NAME
The plan name for the thread. Derived from the DB2 field QW0112PN.

ACQUIRE
Indicates when to acquire locks:

ALLOCATION
Acquire the locks when the plan is allocated.

USE Acquire the locks when the application first accesses them.

Derived from the DB2 field QW0112Q.

ISOLATION
The isolation level:

RR Repeatable read

CS Cursor stability

RS Read stability

UR Uncommitted read

Derived from the DB2 field QW0112I.

RELEASE
Indicates when to release locks:

COMMIT Release locks at commit time.

DEALLOCATION
Release locks at deallocation time.

Derived from the DB2 field QW0112R.

DYNAMICRULES
The value of the DYNAMICRULES option on the BIND/REBIND command:

RUN Runtime rules apply to a dynamic SQL statement for authorization checking and object qualification at run time.

BIND Bind-time rules apply to a dynamic SQL statement for authorization checking and object qualification at run time.

N/P DYNAMICRULES was not specified.

Derived from the DB2 field QW0112DY.

REOPT
Indicates whether reoptimization was requested:

YES REOPT(VARS) was specified to reoptimize the access path of the SQL statement at run time.

NO NOREOPT(VARS) was specified to optimize the access path of the SQL statement only at bind time.

Derived from the DB2 field QW0112RO.

KEEPDYNAMIC
Indicates whether DB2 keeps (KEEPDYNAMIC(YES)) or discards (KEEPDYNAMIC(NO)) prepared SQL statements at commit points.

Derivation: QW0112KD

DBPROTOCOL
Database protocol option. Possible values are:

DRDA

PRIVATE

HINTID
Query opimization hint identifier, the default is blanks. Derived from DB2 field QW0112OH.

113 - Agent Allocate

Agent allocate shows the data from IFCID 113.

```
PLAN NAME   : DSNTEP3      ACQUIRE: USE
ISOLATION   : CS           RELEASE: COMMIT
DYNAMICRULES: RUN          REOPT  : NO
KEEPDYNAMIC :  NO          PREPARE: NO
DBPROTOCOL  : DRDA         HINTID : ABCDEFGH
```

PLAN NAME
The plan name for the thread. Derived from the DB2 field QW0113PN.

ACQUIRE
Indicates when to acquire locks:

ALLOCATION
Acquire the locks when the plan is allocated.

USE Acquire the locks when the application first accesses them.

Derived from the DB2 field QW0113Q.

ISOLATION
The isolation level:

RR Repeatable read

CS Cursor stability

RS Read stability

UR Uncommitted read

Derived from the DB2 field QW0113I.

RELEASE
Indicates when to release locks:

COMMIT Release locks at commit time.

DEALLOCATION
Release locks at deallocation time.

Derived from the DB2 field QW0113R.

DYNAMICRULES
The value of the DYNAMICRULES option on the BIND/REBIND command:

RUN Runtime rules apply to a dynamic SQL statement for authorization checking and object qualification at run time.

BIND Bind-time rules apply to a dynamic SQL statement for authorization checking and object qualification at run time.

N/P DYNAMICRULES was not specified.

Derived from the DB2 field QW0113DY.

REOPT
Indicates whether reoptimization was requested:

YES REOPT(VARS) was specified to reoptimize the access path of the SQL statement at run time.

NO NOREOPT(VARS) was specified to optimize the access path of the SQL statement only at bind time.

Derived from the DB2 field QW0113RO.

KEEPDYNAMIC
Indicates whether DB2 keeps (KEEPDYNAMIC(YES)) or discards (KEEPDYNAMIC(NO)) prepared SQL statements at commit points.

Derivation: QW0113KD

DBPROTOCOL
Database protocol option. Possible values are:

DRDA

PRIVATE

HINTID
Query opimization hint identifier, the default is blanks. Derived from DB2 field QW0113OH.

114 - Archive Wait Start

Archive wait start shows the data from IFCID 114.

```
DSID     00000002   ACE          2
QW0114HR  x'0000'   QW0114LR  x'00000000'
```

DSID The data set identifier of the log manager. Derived from the DB2 field QW0114DI.

ACE The relative number of the agent control element address in the ACE cross-reference table. This table is printed at the end of each location for every trace specified. Derived from the DB2 field QW0114AC.

115 - Archive Wait End DASD

Archive wait end DASD shows the data from IFCID 115.

```
RET            0  ACE            1
QW0115BR           0   QW0115BS           0
QW0115FR           0
```

RET The return code. Derived from the DB2 field QW0115RT.

ACE The relative number of the agent control element address in the ACE cross-reference table. This table is printed at the end of each location for every trace specified. Derived from the DB2 field QW0115AC.

116 - Archive Wait End Tape

Archive wait end tape shows the data from IFCID 116.

```
RET            4  ACE            2
QW0116FR           1   QW0116LR           2
QW0116BU  x'00000003'
```

RET The return code. Derived from the DB2 field QW0116RT.

ACE The relative number of the agent control element address in the ACE cross-reference table. This table is printed at the end of each location for every trace specified. Derived from the DB2 field QW0116AC.

117 - Archive Read Start

Archive read start shows the data from IFCID 117.

```
REQ      RARC
QW0117BR           1   QW0117ER           2
QW0117RR           3   QW0117ST           4
QW0117SH           5
```

REQ The request type:

RARC Read archive request

SARC Schedule archive read

Derived from the DB2 field QW0117RT.

118 - Archive Read End

Archive read end shows the data from IFCID 118.

```
RETURN            1
QW0118RC          2   QW0118ST          3
QW0118SH          4
```

RETURN
The return code. Derived from the DB2 field QW0118RT.

119 - BSDS Write Start

BSDS write start shows the data from IFCID 119.

```
DSID     BSDS0001   ACE          1
QW0114HR  x'0000'   QW0114LR  x'0A000001'
```

DSID The data set identifier. Derived from the DB2 field QW0119DI.

ACE The relative number of the agent control element address in the ACE cross-reference table. This table is printed at the end of each location for every trace specified. Derived from the DB2 field QW0119AC.

120 - BSDS Write End

BSDS write end shows the data from IFCID 120.

```
RETURN          0       ACE       17
```

RETURN
The return code. Derived from the DB2 field QW0120RT.

ACE The relative number of the agent control element address in the ACE cross-reference table. This table is printed at the end of each location for every trace specified. Derived from the DB2 field QW0120AC.

121 - Thread Entry

Thread entry shows the data from IFCID 121.

```
QW0121FR   C6D9C240 00030003 0000C888 00010000
00000000 00000000 00001305 00020000
02B95960 02AA2518 00000000 02AB1B38
```

122 - Thread Exit

Thread exit shows the data from IFCID 122.

```
QW0122FR   C6D9C240 00030003 0000C888 00010000
00000000 0000C790 00001305 00020000
02B95960 02AA2518 00000000 02AB1B38
```

123 - SRV Record

SRV record shows the data from IFCID 123.

```
LENGTH         7         IFCID         2
QW0123FR   E3C5E2E3 F1000000 00000000 00000000
00000000 00000000 00000000 00000000
00000000 00000000 00000000 00000000
```

LENGTH
The length of the area. Derived from the DB2 field QW0123LN.

IFCID The IFCID of the original entry. Derived from the DB2 field QW0123ID.

124 - SQL Statement Record

SQL statement record shows the data from IFCID 124.

```
-------------------------------------------------------------------------------------------------------------------
VPARAMETER FORMAT:            N/P  CALL TYPE:               CLOSECAL  PGM NAME:     DSNESM68  ERROR CODE PTR  7F57BEF0
AUXPARM FORMAT:               N/P  STATEMENT TYPE:             CLOSE  PLAN SECT NO         1  VPARM POINTER   X'00000000'
PRECOMPILER STATEMENT NO      186  USING OPTION:                  N/P                           AUXPA POINTER   7F57A278
PRECOMPILER TIMESTAMP              149EEA901A79FE48
...................................................................................................................
HOLD RD LOCKS UNTIL COMMIT:   YES  DYNAMIC BIND IN PROCESS:       NO  DYNAMIC SQL:       YES ISOLATION LEVEL:  RR
ACQ(USE) ON STATIC BIND REQ:  YES  REL(COM) ON STATIC BIND REQ:  YES
...................................................................................................................
CONNECTION TYPE:         'BLANK'   ACE TOKEN            X'05900548'  THREAD ASID    X'004D'  ASCB TOKEN     X'00F75B00'
APPLICATION REQ COUNT          30  THREAD STATUS:          IN DB2                             TCB TOKEN      X'009E39D8'
THREAD TYPE:     DATABASE ACCESS
STORED PROCEDURE NAME: 'BLANK'
LOCATION: PMO2D521            COLLECTION: DSNESPRR            PACKAGE: DSNESM68            TOKEN:  X'149EEA901A79FE48'
NETWORKID:  DEIBMIPS  LUNAME:  IPSAR421  UNIQUENESS VALUE: X'B01C77863B75'  LUWSEQ:     1
QW01246L    X'00'
-------------------------------------------------------------------------------------------------------------------
```

VPARAMETER FORMAT
The type of Vparameter format. Derived from the DB2 field RDIVFORM.

CALL TYPE
The type of call. Derived from the DB2 field RDICTYPE.

PGM NAME
The name of the program that is executing. Derived from the DB2 field RDIPROGN.

ERROR CODE PTR
The pointer to the error code structure. Derived from the DB2 field RDICODEP.

AUXPARM FORMAT
The type of auxiliary parameter format. Derived from the DB2 field RDIAFORM.

STMT TYPE
The current statement type. Derived from the DB2 field RDISTYPE.

PLAN SECT NO
The section number used in the call. Derived from the DB2 field RDISECTN.

VPARM POINTER
The pointer to the input variables from the application program. Derived from the DB2 field RDIVPARM.

PRECOMPILER STATEMENT NO
The precompiler statement number in decimal. Derived from the DB2 field RDISTNUM.

USING OPTION
The USING option of Prep/Describe. Derived from the DB2 field RDIUSING.

AUXPA POINTER
The pointer to the application output variables. Derived from the DB2 field RDIAUXPA.

PRECOMPILER TIMESTAMP
The hexadecimal value of the precompiler timestamp. Derived from the DB2 field RDITIMES.

SQL STMT
The SQL statement text. This field is printed only if the statement is present.

Notes:

1. SQL text longer than 2096 characters is truncated
2. Host variables are represented as :H

Derived from the DB2 field QW01242T.

HOLD RD LOCKS UNTIL COMMIT
Indicates whether read locks are to be held until commit time. Derived from the DB2 field QW0124GR.

DYNAMIC BIND IN PROCESS
Indicates whether an internal bind is in process. Derived from the DB2 field QW01243G.

DYNAMIC SQL
Indicates whether it is a dynamic SQL indicator. Derived from the DB2 field QW01243R.

ISOLATION
The isolation level:

RR Repeatable read

CS Cursor stability

RS Read stability

UR Uncommitted read

XR Repeatable read with X lock

XS Read stability with X lock

Derived from the DB2 fields QW0124RR, QW0124CS, QW0124UR, QW0124XR, QW0124XS.

ACQ(USE) ON STATIC BIND REQ
Indicates whether ACQUIRE(USE) was specified for a static bind request. Derived from the DB2 field QW01243F.

REL(COM) ON STATIC BIND REQ
Indicates whether RELEASE(COMMIT) was specified for a static bind request. Derived from the DB2 field QW01243F.

CONNECTION TYPE
The connection type. If there is no connection type, this field shows 'BLANK'. Derived from the DB2 field QW01246Y.

ACE TOKEN
The ACE token in hexadecimal. Derived from the DB2 field QW01246A.

THREAD ASID
The ASID of the thread in hexadecimal. Derived from the DB2 field QW01246S.

ASCB TOKEN
The ASCB token in hexadecimal. Derived from the DB2 field QW01246C.

APPLICATION REQ COUNT
The number of calls to DB2 in decimal. Derived from the DB2 field QW01246Q.

THREAD STATUS
The status of the thread. Derived from the DB2 field QW01246I.

TCB TOKEN
The TCB token in hexadecimal. Derived from the DB2 field QW01246T.

THREAD TYPE
The type of thread. Derived from the DB2 field QW01246D.

STORED PROCEDURE NAME
The unqualified name of the stored procedure if the agent is processing an SQL call statement on the local DB2 system. Otherwise, this field shows 'BLANK'. Derived from the DB2 field QW0124SP.

TRIGGER NAME
Trigger name.

LOCATION
The name of the location where the thread executes the package. Derived from the DB2 field QW0124LN.

COLLECTION
The collection name. Derived from the DB2 field QW0124CI.

PACKAGE
The package identifier. Derived from the DB2 field QW0124PN.

TOKEN
The consistency token. Derived from the DB2 field QW0124CN.

NETWORKID
The network identifier. Derived from the DB2 field QW0124NI.

LUNAME
The logical unit name. Derived from the DB2 field QW0124LM.

UNIQUENESS VALUE
The instance number. Derived from the DB2 field QW0124UV.

LUWSEQ
The LUW sequence number. Derived from the DB2 field QW0124CC.

125 - RID Pool Processing

RID pool processing shows the data from IFCID 125.

This record is written when performance class 8 is ON. Monitor privilage is required for reading via IFI.

The record contains standard information and one section for each index used to obtain candidate record identifiers (RIDs).

```
USED:        YES     NOT USED:           N/A
RIDS IN FINAL LIST:              19
DBID:   DSNDB06      INDEX RIDS:                        19
OBID:   63           THRESHOLD:               3260
```

USED Indicates whether multiple index access paths are used, or whether RID pool processing is invoked. Derived from the DB2 field QW0125AT.

NOT USED
Indicates why multiple index access paths are not used, or whether RID pool processing is not invoked. Derived from the DB2 fields QW0125NS and QW0125MR.

RIDS IN FINAL LIST
The number of record identifiers in the final index list. It indicates how many RID sections are printed in the follwoing. Each RID section contains one set of DBID, INDEX RID, OBID, and THRESHOLD data.

This field can also contain `NO STORAGE`. or `MAX EXCEEDED`. Derived from the DB2 field QW0125NR.

DBID The database ID. Derived from the DB2 fields QW0125DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0125DB is shown. However, if QW0125DB contains 0, N/A is displayed.

INDEX RIDS
The number of record identifiers in the index. This field can also contain one of the following values:

```
NO RETRIEVAL
NO STORAGE
LIMIT EXCEEDED
N/P
```

Derived from the DB2 field QW0125RI.

OBID The object ID. Derived from the DB2 fields QW0125OB, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0125OB is shown. However, if QW0125OB contains 0, N/A is displayed.

THRESHOLD
The highest value of RIDs allowed for this index. Derived from the DB2 field QW0125TH.

126 - Log Buffer Write

Log buffer write shows the data from IFCID 126.

```
|-------------------------------------------------------------------------------------------------------------------------
|QW0126NS    2     QW0126S1  x'0003'      QW0126S2  x'0004'            QW0126OF  x'0005'   QW0126XX  x'08'
|QW0126R1      6   QW0126R2            7   QW0126TS  x'00000000000009'
|QW0126DT
|0000  E3C5E2E3  40F14040  40404040  40404040   40404040  40404040  40404040  40404040  | TEST 1
|0020  40404040  40404040  40404040  40404040   40404040  40404040  40404040  40404040  |
|0040  40404040  40404040  40404040  40404040   40404040  40404040  40404040  40404040  |
|-------------------------------------------------------------------------------------------------------------------------
```

127 - Page Wait I/O In Prog (Start)

Page wait I/O in progress start shows the data from IFCID 127.

```
DBID:           DSNDB06            OBID:      SYSDBASE
PAGE NUMBER:  x'001A5ED0'   TYPE OF I/O:      READ
POOL ID:                 0          ACE:        1
TABLE_SPACE_TYPE: L
```

DBID The database ID. Derived from the DB2 fields QW0127DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0127DB is shown. However, if QW0127DB contains 0, N/A is displayed.

OBID The object ID. Derived from the DB2 fields QW0127OB, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0127OB is shown. However, if QW0127OB contains 0, N/A is displayed.

PAGE NUMBER
The number of the page being read or written. Derived from the DB2 field QW0127PN.

TYPE OF I/O
The type of I/O process. Derived from the DB2 field QW0127F.

POOL ID
The buffer pool internal identifier. The values 0 through 49 are the identifiers for BP0 through BP49. The values 80 through 89 are the identifiers for BP32K through BP32K9. Derived from the DB2 field QW0127BP.

ACE The relative number of the agent control element address in the ACE

cross-reference table. This table is printed at the end of each location for every trace specified. Derived from the DB2 field QW0127AC.

TABLE_SPACE_TYPE
The type of the table space:

L Non-EA large table

N Non-large table

V EA-enabled large table

Derived from the DB2 field QW0127FG.

128 - Page Wait I/O In Prog (End)

Page wait I/O in progress end shows the data from IFCID 128.

```
DBID:           CDDB              OBID:      EMPLOYEE
PAGE NUMBER:  X'001323F0'   TYPE OF I/O:      READ
ACE:              3           STATUS FL: NOT CANCELLED
TABLE_SPACE_TYPE:       L
```

DBID The database ID. Derived from the DB2 fields QW0128DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0128DB is shown. However, if QW0128DB contains 0, N/A is displayed.

OBID The object ID. Derived from the DB2 fields QW0128OB, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0128OB is shown. However, if QW0128OB contains 0, N/A is displayed.

PAGE NUMBER
The number of the page being read or written. Derived from the DB2 field QW0128PN.

TYPE OF I/O
The type of I/O process. Derived from the DB2 field QW0128F.

ACE The relative number of the agent control element address in the ACE cross-reference table. This table is printed at the end of each location for every trace specified. Derived from the DB2 field QW0128AC.

STATUS FL
The status flag indicating whether the I/O process was canceled. Derived from the DB2 field QW0128S.

TABLE_SPACE_TYPE
The type of the table space:

L Non-EA large table

N Non-large table

V EA-enabled large table

Derived from the DB2 field QW0128FG.

129 - CI-S Obtained via IFI Reads

CI-S obtained via IFI reads shows the data from IFCID 129.

```
|-------------------------------------------------------------------------------------------------------------------
|QW0129NS    0     QW0129S1  X'0000'      QW0129S2  X'0000'   QW0129TM  X'0203040506'   QW0129FL  X'0102'
|QW0129R1    0     QW0129R2           0   QW0129OF  X'0000'
|QW0129DT
|0000  80000010  00000010  0000C350  00140028   00460020  00630005  0000A000  00203000  | ..........C&.....................
|0020  00203000  001EC480  00000000  A0000000   80000000  00000000  E2E8E2C9  C2D44040  | ......D.................SYSIBM
```

140 - Audit Auth Failures

Audit authorization failures shows the data from IFCID 140.

```
AUTH CHECKED: USER032                REASON:        8
PRIV CHECKED: SELECT                 RETCOD:        4
OBJECT: TABLE/VIEW       OPTIONS: X'0400000000000000'
SRC OBJECT:     NHDEPT             SRC OWNER: USER009
TGT OBJECT:     N/P                TGT OWNER: N/P
SQL STMT: SELECT * FROM USER009.NHDEPT
```

AUTH CHECKED
The authorization ID being checked. Derived from the DB2 field QW0140UR.

REASON
The user-defined reason code from the access control authorization exit routine. Derived from the DB2 field QW0140RS.

PRIV CHECKED
The privilege being checked. Derived from the DB2 field QW0140PR.

RETCOD
The return code from the access control authorization exit routine. Derived from the DB2 field QW0140RC.

OBJECT
The object type. N/P is printed if there is no object type. Derived from the DB2 field QW0140OB.

OPTIONS
The options used in the host to check the SQL statement. The bits of this field are used as indicators. If all bits are 0, the statement is not an SQL statement. The values are:

Bit 1 Host language character string delimiter

- **0** Apostrophe
- **1** Quote

Bit 2 Decimal point symbol

- **0** Period
- **1** Comma

Bit 3 SQL character string delimiter

0 Apostrophe

1 Quote

Bit 4 Mixed character string indicator

0 No

1 Yes

Bit 5 Host language options indicator

0 Do not use host language options

1 Use host language options

Bits 6 to 8
Host language indicator

001 Assembler

010 Cobol

011 PL/I

100 None - Dynamic SQL

101 Fortran

110 Cobol2

111 Null - See bits 17 to 24 for the language

Bits 9 to 16
Character set being used

00000000
Alphanumeric

00000001
Katakana

Bits 17 to 24
Alternate host language field

B Assembler

C Cobol

P PL/I

F Fortran

2 Cobol2

D C

Bits 25 to 28
Time option

0000 None

1000 Local

0100 JIS

0010 ISO/EUR

0001 USA

Bits 29 to 32
Date option

0000 None

1000 Local

0100 EUR

0010 ISO/JIS

0001 USA

Bit 33 Decimal

0 No

1 Yes

Bits 34 to 40
Unused

Bits 41 to 48
Remote option

00000001
SQL(ALL)

00000010
SQL(DB2)

Bits 49 to 56
SQL flag option

00000000
No SQLFLAG option

00000001
SQLFLAG(SAA)

Derived from the DB2 field QW0140HO.

SRC OBJECT
The source object name. Derived from the DB2 field QW0140SN.

SCR OWNER
The source object owner. Derived from the DB2 field QW0140SC.

TGT OBJECT
The target object name. Derived from the DB2 field QW0140TN.

TGT OWNER
The target object owner. Derived from the DB2 field QW0140TC.

SQL STMT
The SQL statement text. Long SQL text can be truncated. Derived from the DB2 field QW0140TX.

141 - Audit DDL Grant/Revoke

The format of the data from IFCID 141 depends on whether the action was a GRANT or a REVOKE.

AUDIT GRANT

If the IFCID 141 was produced for a GRANT, then the identifier AUDIT DDL GRANT is printed in the DESCRIPTION column, and the following is printed in the DATA column:

```
GRANTOR: USER009   REASON:  SYSADM  RETURN:          0
OBJECT:  APPLICATION PLAN OPTIONS: X'0400000000000000'
SQL STMT: GRANT EXECUTE ON PLAN DSNESPCS TO USER032
```

GRANTOR
The authorization ID of the user who received access. Derived from the DB2 field QW0141OR.

REASON
The reason why access was granted. Derived from the DB2 field QW0141RE.

RETURN
The SQL return code. Derived from the DB2 field QW0141CO.

OBJECT
The object type. Derived from the DB2 field QW0141OB.

OPTIONS
The options used in the host to check the SQL statement. The bits of this field are used as indicators. If all bits are 0, the statement is not an SQL statement. The values are:

Bit 1 Host language character string delimiter

- **0** Apostrophe
- **1** Quote

Bit 2 Decimal point symbol

- **0** Period
- **1** Comma

Bit 3 SQL character string delimiter

- **0** Apostrophe
- **1** Quote

Bit 4 Mixed character string indicator

- **0** No
- **1** Yes

Bit 5 Host language options indicator

- **0** Do not use host language options
- **1** Use host language options

Bits 6 to 8
Host language indicator

- **001** Assembler
- **010** Cobol
- **011** PL/I

100 None - Dynamic SQL

101 Fortran

110 Cobol2

111 Null - See bits 17 to 24 for the language

Bits 9 to 16
Character set being used

00000000
Alphanumeric

00000001
Katakana

Bits 17 to 24
Alternate host language field

B Assembler

C Cobol

P PL/I

F Fortran

2 Cobol2

D C

Bits 25 to 28
Time Option

0000 None

1000 Local

0100 JIS

0010 ISO/EUR

0001 USA

Bits 29 to 32
Date Option

0000 None

1000 Local

0100 EUR

0010 ISO/JIS

0001 USA

Bit 33 Decimal

0 No

1 Yes

Bits 34 to 40
Unused

Bits 41 to 48
Remote option

00000001
SQL(ALL)

00000010
SQL(DB2)

Bits 49 to 56
SQL flag option

00000000
No SQLFLAG option

00000001
SQLFLAG(SAA)

Derived from the DB2 field QW0141HO.

SQL STMT
The SQL statement text. Long SQL text can be truncated. Derived from the DB2 field QW0141TX.

AUDIT REVOKE

If the IFCID 141 was produced for a REVOKE, then the identifier AUDIT DDL REVOKE is printed in the DESCRIPTION column, and the following is printed in the DATA column:

```
REVOKER:  AUTHID01  REASON:  N/A      RETURN:       0
OBJECT:  'BLANK'           OPTIONS: X'0400000000000000'
SQL STMT:  REVOKE SYSADM FROM USRT003
```

REVOKER
The authorization ID of the user who was revoked. Derived from the DB2 field QW0141OR.

REASON
N/A is printed because it does not apply to revoke. Derived from the DB2 field QW0141RE.

RETURN
The SQL return code. Derived from the DB2 field QW0141CO.

OBJECT
The object type. Derived from the DB2 field QW0141OB.

OPTIONS
The options used in the host to check the SQL statement. The bits of this field are used as indicators. If all bits are 0, the statement is not an SQL statement. The values are:

Bit 1 Host language character string delimiter

0 Apostrophe

1 Quote

Bit 2 Decimal point symbol

0 Period

1 Comma

Bit 3 SQL character string delimiter

0 Apostrophe

1 Quote

Bit 4 Mixed character string indicator

0 No

1 Yes

Bit 5 Host language options indicator

0 Do not use host language options

1 Use host language options

Bits 6 to 8
Host language indicator

001 Assembler

010 Cobol

011 PL/I

100 None - Dynamic SQL

101 Fortran

110 Cobol2

111 Null - See bits 17 to 24 for the language

Bits 9 to 16
Character set being used

00000000
Alphanumeric

00000001
Katakana

Bits 17 to 24
Alternate host language field

B Assembler

C Cobol

P PL/I

F Fortran

2 Cobol2

D C

Bits 25 to 28
Time Option

0000 None

1000 Local

0100 JIS

0010 ISO/EUR

0001 USA

Bits 29 to 32
Date Option

0000 None

1000 Local

0100 EUR

0010 ISO/JIS

0001 USA

Bit 33 Decimal

0 No

1 Yes

Bits 34 to 40
Unused

Bits 41 to 48
Remote option

00000001
SQL(ALL)

00000010
SQL(DB2)

Bits 49 to 56
SQL flag option

00000000
No SQLFLAG option

00000001
SQLFLAG(SAA)

Derived from the DB2 field QW0141HO.

SQL STMT
The SQL statement text. Long SQL text can be truncated. Derived from the DB2 field QW0141TX.

142 - Audit DDL Create/Alter/Drop

Audit DDL shows the data from IFCID 142.

Audit DDL reports on SQL CREATE, ALTER, and DROP statements executed against an auditable object.

The type of SQL statement is indicated in the DESCRIPTION column. The SQL statement types are AUDIT DDL CREATE, AUDIT DDL ALTER, or AUDIT DDL DROP. These statements are all reported in the same format.

The following is an example of an AUDIT DDL CREATE entry:

```
TABLE NAME:  EDEPT               TABLE OWNER:  TBLOWNER
TABLE CREATOR:  TBLCREAT   OPTIONS: X'0400000000000000'
DATABASE:  DB2PMDB1              TABLE OBID:        5
SQL STMT:  CREATE TABLE EDEPT LIKE DB2PMRID AUDIT ALL
IN DB2PMDB1.DB2PMTS1
```

TABLE NAME
The table name being created, altered, or dropped. Derived from the DB2 field QW0142TN.

TABLE OWNER
The table owner (same as table qualifier). Derived from the DB2 field QW0142OW.

TABLE CREATOR
The table creator. Derived from the DB2 field QW0142CR.

OPTIONS
The options used in the host to check the SQL statement. The bits of this field are used as indicators. If all bits are 0, the statement is not an SQL statement. The values are:

Bit 1 Host language character string delimiter

- **0** Apostrophe
- **1** Quote

Bit 2 Decimal point symbol

- **0** Period
- **1** Comma

Bit 3 SQL character string delimiter

- **0** Apostrophe
- **1** Quote

Bit 4 Mixed character string indicator

- **0** No
- **1** Yes

Bit 5 Host language options indicator

- **0** Do not use host language options
- **1** Use host language options

Bits 6 to 8
Host language indicator

- **001** Assembler
- **010** Cobol
- **011** PL/I
- **100** None - Dynamic SQL
- **101** Fortran
- **110** Cobol2
- **111** Null - See bits 17 to 24 for the language

Bits 9 to 16
Character set being used

00000000
Alphanumeric

00000001
Katakana

Bits 17 to 24
Alternate host language field

B Assembler

C Cobol

P PL/I

F Fortran

2 Cobol2

D C

Bits 25 to 28
Time Option

0000 None

1000 Local

0100 JIS

0010 ISO/EUR

0001 USA

Bits 29 to 32
Date Option

0000 None

1000 Local

0100 EUR

0010 ISO/JIS

0001 USA

Bit 33 Decimal

0 No

1 Yes

Bits 34 to 40
Unused

Bits 41 to 48
Remote option

00000001
SQL(ALL)

00000010
SQL(DB2)

Bits 49 to 56
SQL flag option

00000000
No SQLFLAG option

00000001
SQLFLAG(SAA)

Derived from the DB2 field QW0142HO.

DATABASE
The database ID. Derived from the DB2 fields QW0142DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0142DB is shown. However, if QW0142DB contains 0, N/A is displayed.

TABLE OBID
The object ID. Derived from the DB2 fields QW0142OB, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0142OB is shown. However, if QW0142OB contains 0, N/A is displayed.

SQL STMT
The SQL statement text. Long SQL text can be truncated. Derived from the DB2 field QW0142TX.

143 - Audit First Write

Audit first write shows the data from IFCID 143.

```
DATABASE: DSN8D23A        LOGRBA: X'000000000000'
PAGE SET:      4                  TABLE OBID:       14
```

DATABASE
The database ID. Derived from the DB2 fields QW0143DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0143DB is shown. However, if QW0143DB contains 0, N/A is displayed.

LOGRBA
The identifier of the unit of recovery. Derived from the DB2 field QW0143UR.

PAGESET
The page set name or decimal identifier. Derived from the DB2 field QW0143PS.

TABLE OBID
The object ID. Derived from the DB2 fields QW0143OB, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0143OB is shown. However, if QW0143OB contains 0, N/A is displayed.

144 - Audit First Read

Audit first read shows the data from IFCID 144.

```
DATABASE: DSNDB06         LOGRBA: X'000000000000'
PAGE SET: DSNDSX01                TABLE OBID:        5
```

DATABASE
The database ID. Derived from the DB2 fields QW0144DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0144DB is shown. However, if QW0144DB contains 0, N/A is displayed.

LOGRBA
The identifier of the unit of recovery. Derived from the DB2 field QW0144UR.

PAGESET
The page set name or decimal identifier. Derived from the DB2 field QW0144PS.

TABLE OBID
The object ID. Derived from the DB2 fields QW0144OB, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0144OB is shown. However, if QW0144OB contains 0, N/A is displayed.

145 - Audit DML Statement

Audit DML statement shows the data from IFCID 145.

```
LOCATION NAME        : DSNAPC3
COLLECTION ID        : DSNESPCS
PROGRAM              : DSNESM68
PRECOMPILER TIMESTAMP: X'148C2637049FB9B0'
ISOLATION: CS
TYPE: UPDATE                           STMT#:          0
HOST OPTIONS   X'0400000000000000'
SQL TEXT: UPDATE USER1.NHDEPT SET ADMRDEPT='A00'
WHERE DEPTNO='A00'
DATABASE:    276               TABLE OBID:          7
```

LOCATION NAME
The location name. Derived from the DB2 field QW0145LN.

COLLECTION ID
The package collection identifier. Derived from the DB2 field QW0145PC.

PROGRAM
The program name. Derived from the DB2 field QW0145PN.

PRECOMPILER TIMESTAMP
The hexadecimal value of the precompiler timestamp. Derived from the DB2 field QW0145TS.

ISOLATION
The isolation level of the DML statement:

RR Repeatable read

CS Cursor stability

RS Read stability

UR Uncommitted read

XR Repeatable read with X lock

XS Read stability with X lock

Derived from the DB2 field QW0145IS.

TYPE The SQL statement type. Derived from the DB2 field QW0145ST.

STMT#
The precompiler statement number. Derived from the DB2 field QW0145SN.

HOST OPTIONS
The options used in the host to check the SQL statement. The bits of this field are used as indicators. If all bits are 0, the statement is not an SQL statement. The values are:

Bit 1 Host language character string delimiter

- **0** Apostrophe
- **1** Quote

Bit 2 Decimal point symbol

- **0** Period
- **1** Comma

Bit 3 SQL character string delimiter

- **0** Apostrophe
- **1** Quote

Bit 4 Mixed character string indicator

- **0** No
- **1** Yes

Bit 5 Host language options indicator

- **0** Do not use host language options
- **1** Use host language options

Bits 6 to 8
Host language indicator

001 Assembler

010 Cobol

011 PL/I

100 None - Dynamic SQL

101 Fortran

110 Cobol2

111 Null - See bits 17 to 24 for the language

Bits 9 to 16
Character set being used

00000000
Alphanumeric

00000001
Katakana

Bits 17 to 24
Alternate host language field

B Assembler

C Cobol

P PL/I

F Fortran

2 Cobol2

D C

Bits 25 to 28
Time Option

0000 None

1000 Local

0100 JIS

0010 ISO/EUR

0001 USA

Bits 29 to 32
Date Option

0000 None

1000 Local

0100 EUR

0010 ISO/JIS

0001 USA

Bit 33 Decimal

0 No

1 Yes

Bits 34 to 40
Unused

Bits 41 to 48
Remote option

00000001
SQL(ALL)

00000010
SQL(DB2)

Bits 49 to 56
SQL flag option

00000000
No SQLFLAG option

00000001
SQLFLAG(SAA)

Derived from the DB2 field QW0145HO.

SQL TEXT
The SQL statement text. Long SQL text can be truncated. Derived from the DB2 field QW0145TX.

DATABASE
The database ID. Derived from the DB2 fields QW0145DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0145DB is shown. However, if QW0145DB contains 0, N/A is displayed.

TABLE OBID
The object ID. Derived from the DB2 fields QW0145OB, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0145OB is shown. However, if QW0145OB contains 0, N/A is displayed.

146 - User Record

The IFCID 146 record is printed in the standard hexadecimal dump format. The character format is on the right.

```
|-------------------------------------------------------------------------------------------------------------------------
|0000  XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX   XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX  | CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
|0020  XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX   XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX  | CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
...
|-------------------------------------------------------------------------------------------------------------------------
```

147 - Thread Summary

Thread summary monitor record shows the data from IFCID 147.

This record only contains data from an Online Monitor trace data set.

```
--------------------------------------------------------------------------------------------------------------------------
                                            INSTRUMENTATION ACCOUNTING DATA
CLASS 1 BEGINNING STORE CLOCK TIME 03/06/98 13:49:33.923152   ENDING STORE CLOCK TIME  03/06/98 13:52:07.316261
        ELAPSED TIME                             2:33.393109
        BEGINNING MVS TCB TIME                      0.002943   ENDING MVS TCB TIME                          0.000000
        MVS TCB TIME                                     N/C
        BEGINNING SRB ASCB TIME                     0.378720   ENDING SRB ASCB TIME                         0.393315
        SRB ASCB TIME                               0.014595   CONVERSION FACTOR                                9813
        STORED PROCEDURES TCB TIME                  0.000000   PAR.TASKS         0        PAR.TOKEN X'00000000'
        NETWORK ID VALUE                    'BLANK'            COMMITS           0        ROLLBACKS                0
        REASON ACCT INVOKED        READS REQUEST FOR IFCID 0147 OR 0148                   PROGRAMS                 1
CLASS 2 DB2 ELAPSED TIME                            0.481871   TRIGGER ELAPSED TIME          34136 18:17:06.6
        TCB TIME                                    0.032850   TRIGGER TCB TIME              34136 18:17:06.6
        STORED PROC. TCB TIME                       0.000000   STORED PROC. ENTRY/EXITS                        0
        SRB ASCB TIME                               0.002973   NON-ZERO CLASS 2                        YES
        DB2 ENTRY/EXIT EVENTS                             57
CLASS 3 LOCK/LATCH SUSP TIME                        0.000000   LOCK/LATCH SUSP EVENTS                          0
        SYNCHRONOUS I/O SUSP TIME                   0.087517   SYNCHRONOUS I/O SUSP EVENTS                    14
        OTHER READ SUSP TIME                        0.000000   OTHER READ SUSP EVENTS                          0
        OTHER WRITE SUSP TIME                       0.000000   OTHER WRITE SUSP EVENTS                         0
        SERV.TASK SWITCH SUSP TIME                  0.276410   SERV.TASK SWITCH SUSP EVENTS                    8
        PAGE LATCH SUSP TIME                        0.000000   PAGE LATCH SUSP EVENTS                          0
        STORED PROCEDURE SUSP TIME                  0.000000   STORED PROCEDURE EVENTS                         0
        NOTIFY MESSAGES SUSP TIME                   0.000000   NOTIFY MESSAGES EVENTS                          0
        GLOBAL CONTENT. SUSP TIME                   0.000000   GLOBAL CONTENTION EVENTS                        0
                                                               NON-ZERO CLASS 3                        YES
WLM SERVICE CLASS                                  'BLANK'
..........................................................................................................................
                                                    LOGGING
        NUMBER OF LOG RECORDS WRITTEN                      0   TOTAL BYTES WRITTEN             X'000000000000'
..........................................................................................................................
                                                 THREAD CORRELATION DATA
ORIGINAL AUTHID         NKA1       PRIMARY AUTHID    NKA1       CORRELATION ID    NKA1
PLAN NAME               DSNESPRR   CONNECTION NAME   TSO        CONNECTION TYPE   REMOTE UNIT OF WORK
                                                                CORRELATION TOKEN N/A
..........................................................................................................................
                                                   MONITOR DETAIL DATA
API BEGIN ELASPED TIME             11/12/98 09:59:48.781346     API ENDING ELASPED TIME                                N/P
API BEGIN CPU TIME                                 0.000748     API ENDING CPU TIME                               0.000000
API BEGIN SRB TIME                                      N/A     API ENDING SRB TIME                                    N/A
IFI BEGIN ELASPED TIME                                  N/P     IFI ENDING ELASPED TIME                                N/P
IFI BEGIN CPU TIME                                 0.000000     IFI ENDING CPU TIME                               0.000000
BEGIN/RESUME CPU TIME                              0.000000     TCB TIME BEFORE ENCLAVE                           0.000000
BEGIN/RESUME TOD TIME                              0.000000
LOCK - I/O - LATCH BEGIN TIME      11/12/98 09:59:56.884312     LOCK - I/O - LATCH ENDING TIME 11/12/98 09:59:56.873454
END-OF-TASK CPU TIME                               0.000000     ACCOUNTING ENTRY CPU TIME                         0.615569
EU SWITCH BEGIN ELAPSED TIME                            N/P     EU SWITCH ENDING ELAPSED TIME                          N/P
ARCH LOG(QUIESCE) BEGIN TIME                            N/P     ARCH LOG(QUIESCE) ENDING TIME                          N/P
ACE TOKEN        X'0891E3B8'   APPL REQUEST COUNT         0     ASCB TOKEN   X'00F7DB00'  LATCH TOKEN     X'7EB35000'
TCB TOKEN        X'007DE9B0'   AGENT ASID               130     STATUS INDICATOR 1:       SIGNON/IDENTIFY LEVEL THREAD
CONNECTION TYPE  'BLANK'       LATEST IFCID             127     STATUS INDICATOR 2:       AGENT IS NOT IN EOT TERM
DBID             261           PREVIOUS IFCID           128     STATUS INDICATOR 3:       CREATE_THREAD IS NOT QUEUED
OBID             2             LATCH CLASS               02     TSO CONNECTION TYPE:      BACKGROUND
THREAD TYPE: N/P               THREAD STATUS: IN DB2            STATUS INDICATOR 5:       AGENT NOT QUEUED FOR EOT TERM
STORED PROCEDURE NAME: 'BLANK'                                  STATUS INDICATOR 6:       NOT RUNNING STORED PROCEDURE
THREAD TOKEN     X'00000038'                                    STATUS INDICATOR 7:       NOT WAITING FOR STORED PROC.
LOCATION   : SYSDSN5           COLLECTION: DSNESPRR         PACKAGE: DSNESM68             CONS.TOKEN: X'149EEA901A79FE48'
NETWORKID  : DEIBMIPS          LUNAME: IPVAMG51     UNIQUENESS VALUE: X'B157D84E68BA'     LUWSEQ    : 1
NESTING LVL:         3                              NESTING ACTIVITY: STOR.PROC IN APPL   ENCL.TOKEN: X'xxxxxxxxxxxxxxxx'
SCHEMA NAME: N/P
..........................................................................................................................
                                             DISTRIBUTED HEADER DATA
REQUESTING LOCATION:  PMO2D421
REQUESTING TIMESTAMP: 03/06/98 13:49:34.489099    AR NAME:     PMO2D421            PRDID  DB2 V4 R1 M0
..........................................................................................................................
--------------------------------------------------------------------------------------------------------------------------
```

```
-----------------------------------------------------------------------------------------------------------------------
                                              PACKAGE/DBRM ACCOUNTING DATA
LOCATION: PMO6D661            COLLECTION      : PMDEV                                  PACKAGE ID   : PARALC01
TOKEN:  X'15C7A6331A688408'   SECTION NMB     :    1       PROGRAM TYPE : PACKAGE   SCHEMA NAME  : xxxxxxxx
SQL STMTS:               1    USED BY STOR.PROC:    NO      NON-ZERO CLASS 8:  YES   ACTIVITY NAME: xxxxxxxx
SUCC AUTH CHECK :       NO    LAST EXECUTED    :   YES      NON-ZERO CLASS 7:  YES   ACTIVITY TYPE: TRIGGER EXECUTING
CLASS 7 BEGINNING STORE CLOCK TIME 10/30/98 09:36:20.052939   ENDING STORE CLOCK TIME  10/30/98 09:36:20.619607
        BEGINNING TCB CPU TIME                    0.092405   ENDING TCB CPU TIME                       0.093365
        TOTAL ELAPSED TIME                       17.219923   DB2 ENTRY/EXIT                                   4
        TOTAL TCB TIME                            0.006152
CLASS 8 LOCK/LATCH SUSP TIME                      0.000000   LOCK/LATCH SUSP EVENTS                           0
        SYNCHRONOUS I/O SUSP TIME                 0.000000   SYNCHRONOUS I/O SUSP EVENTS                      0
        OTHER READ SUSP TIME                      0.000000   OTHER READ SUSP EVENTS                           0
        OTHER WRITE SUSP TIME                     0.000000   OTHER WRITE SUSP EVENTS                          0
        SERV.TASK SWITCH SUSP TIME               16.589673   SERV.TASK SWITCH SUSP EVENTS                     4
        ARCH.LOG(QUIES) SUSP TIME                 0.000000   ARCH.LOG(QUIES) SUSP EVENTS                      0
        ARCH.LOG READ SUSP TIME                   0.000000   ARCH.LOG READ SUSP EVENTS                        0
        DRAIN LOCK SUSP TIME                      0.000000   DRAIN LOCK SUSP EVENTS                           0
        CLAIM RELEASE SUSP TIME                   0.000000   CLAIM RELEASE SUSP EVENTS                        0
        PAGE LATCH SUSP TIME                      0.000000   PAGE LATCH SUSP EVENTS                           0
        NOTIFY MESSAGES SUSP TIME                 0.000000   NOTIFY MESSAGE EVENTS                            0
        GLOBAL CONTENT. SUSP TIME                 0.000000   GLOBAL CONTENTION EVENTS                         0
        SCHED.STOR PROC SUSP TIME                 0.000000   STORED PROCEDURE EVENTS                          0
        SCHED.UDF SUSP TIME                       0.000000   UDF EXECUTED                                     0
                                                  0.000000   STORED PROCEDURE EXECUTED                        0
.......................................................................................................................
                                            DATA SHARING ACCOUNTING DATA
MEMBER NAMES: N/P
.......................................................................................................................
                                            INSTRUMENTATION ACCOUNTING DATA OVERFLOW
-----------------------------------------------------------------------------------------------------------------------
```

Instrumentation Accounting Data

CLASS 1

BEGINNING STORE CLOCK TIME
The beginning store clock time for the period covered by this accounting record. Derived from the DB2 field QWACBSC.

ENDING STORE CLOCK TIME
The ending store clock time for the period covered by this accounting record. Derived from the DB2 field QWACESC.

ELAPSED TIME
The time period covered by this accounting record. If the time cannot be calculated or the value is negative, N/C is printed in this field. Calculated from the DB2 field QWACESC − QWACBSC.

BEGINNING MVS TCB TIME
The beginning MVS CPU time. Derived from the DB2 field QWACBJST.

ENDING MVS TCB TIME
The ending MVS CPU time. Derived from the DB2 field QWACEJST.

MVS TCB TIME
The amount of MVS CPU time used. If the time cannot be calculated or the value is negative, N/C is printed in this field. Calculated from the DB2 field QWACEJST − QWACBJST.

BEGINNING SRB ASCB TIME
The beginning SRB ASCB time for the agent’s address space. This does not include DB2 SRB time.

This value can be misleading for DBATs and CICS threads. Derived from the DB2 field QWACBSRB.

ENDING SRB ASCB TIME
The ending SRB ASCB time for the agent’s address space. This does not include DB2 SRB time.

This value can be misleading for DBATs and CICS threads. Derived from the DB2 field QWACESRB.

SRB ASCB TIME
The amount of SRB ASCB time used for the agent's address space. If the time cannot be calculated or the value is negative, N/C is printed in this field. Calculated from the DB2 field QWACESRB − QWACBSRB.

CONVERSION FACTOR
The CPU service unit conversion factor. This factor allows for converting CPU time to a common unit, called *service unit (SU)* . The conversion factor used depends on the machine being used. With the SU, you can add up CPU execution times across multiple DB2s running on different machines. Derived from the DB2 field QWACSUCV.

STORED PROCEDURES TCB TIME
The accumulated TCB time spent in an application to satisfy a stored procedure request. Derived from the DB2 field QWACSPCP.

PAR.TASKS
The number of parallel tasks created. For parallel tasks or if parallelism is not utilized, this value is 0. Derived from the DB2 field QWACPCNT.

PAR.TOKEN
The correlating token for parallel tasks. For parallel tasks this value is equal to the ACE of the originating task. Derived from the DB2 field QWACPACE.

NETWORK ID VALUE
The network ID. It is used with IMS and CICS. Derived from the DB2 field QWACNID.

COMMITS
The number of commit phase-2 requests. This field indicates the number of units of recovery that completed successfully. Derived from the DB2 field QWACCOMM.

ROLLBACKS
The number of rollback requests. This field reflects the number of backed out units of recovery, including rollbacks from attaches. Derived from the DB2 field QWACABRT.

REASON ACCT INVOKED
The reason accounting was invoked. Derived from the DB2 field QWACRINV.

PROGRAMS
The number of packages or DBRMs for which package and DBRM level accounting was performed. Derived from the DB2 field QWACPKGN.

CLASS 2

DB2 ELAPSED TIME
The accumulated elapsed time in DB2. Derived from the DB2 field QWACASC.

TRIGGER ELAPSED TIME
The accumulated elapsed time while executing under the control of a trigger. This does not include the time expended while in UDFs or stored procedures called by the trigger.

TCB TIME
The accumulated MVS CPU time spent in DB2. Derived from the DB2 field QWACAJST.

TRIGGER TCB TIME
The accumulated TCB time while executing under the control of a trigger. This does not include the time expended while in UDFs or stored procedures called by the trigger.

STORED PROC. TCB TIME
The accumulated TCB time spent in DB2 to satisfy a stored procedure request. Derived from the DB2 field QWACSPTT.

STORED PROC. ENTRY/EXITS
The number of SQL entry/exit events performed by stored procedures. Derived from the DB2 field QWACSPNE.

SRB ASCB TIME
The accumulated SRB ASCB time spent in DB2. This field is not valid for DBATs and CICS threads. Derived from the DB2 field QWACASRB.

NON-ZERO CLASS 2
Indicates whether there is non-zero accounting class 2 data. Derived from the DB2 field QWACFLGS.

DB2 ENTRY/EXIT EVENTS
The number of DB2 entry/exit events processed. Derived from the DB2 field QWACARNA.

CLASS 3

LOCK/LATCH SUSP TIME
The accumulated lock and latch time. Derived from the DB2 field QWACAWTL.

LOCK/LATCH SUSP EVENTS
The number of wait trace events processed for lock/latch. Derived from the DB2 field QWACARNL.

SYNCHRONOUS I/O SUSP TIME
The accumulated elapsed I/O wait time. Derived from the DB2 field QWACAWTI.

SYNCHRONOUS I/O SUSP EVENTS
The number of wait trace events processed for I/O. Derived from the DB2 field QWACARNE.

OTHER READ SUSP TIME
The accumulated read I/O wait time. Derived from the DB2 field QWACAWTR.

OTHER READ SUSP EVENTS
The number of suspensions due to read I/O. Derived from the DB2 field QWACARNR.

OTHER WRITE SUSP TIME
The accumulated write I/O wait time. Derived from the DB2 field QWACAWTW.

OTHER WRITE SUSP EVENTS
The number of suspensions due to write I/O. Derived from the DB2 field QWACARNW.

SERV.TASK SWITCH SUSP TIME
The accumulated service task wait time. Derived from the DB2 field QWACAWTE.

SERV.TASK SWITCH SUSP EVENTS
The number of wait trace events processed for DB2 service tasks. Derived from the DB2 field QWACARNW.

PAGE LATCH SUSP TIME
The accumulated wait time for page latch contention. Derived from the DB2 field QWACAWTP.

PAGE LATCH SUSP EVENTS
The number of page latch wait trace events processed. Derived from the DB2 field QWACARNH.

STORED PROCEDURE SUSP TIME
The elapsed time spent in waiting for an available TCB before the stored procedure could be scheduled. Derived from the DB2 field QWACCAST.

STORED PROCEDURE EVENTS
The number of wait trace events processed for an unavailable TCB needed for a stored procedure. Derived from the DB2 field QWACCANM.

NOTIFY MESSAGES SUSP TIME
The elapsed time spent in waiting for suspensions for sending notify messages to other members in the data sharing group. Derived from the DB2 field QWACAWTG.

NOTIFY MESSAGES EVENTS
The number of wait trace events processed for sending notify messages to other members in the data sharing group. Derived from the DB2 field QWACARNG.

GLOBAL CONTENT. SUSP TIME
The elapsed time spent in waiting for suspensions due to global lock contentions. Derived from the DB2 field QWACAWTJ.

GLOBAL CONTENTION EVENTS
The number of wait trace events processed for group-level contentions in a data sharing environment. Derived from the DB2 field QWACARNJ.

NON-ZERO CLASS 3
Indicates whether there is non-zero accounting class 3 data. Derived from the DB2 field QWACFLGS.

WLM SERVICE CLASS
The workload manager service class. Derived from the DB2 field QWACWLME.

Logging

NUMBER OF LOG RECORDS WRITTEN
The number of log records written. Derived from the DB2 field QWACLRN.

TOTAL BYTES WRITTEN
The number of log record bytes written. This field is calculated from DB2 fields QWACLRAB x QWACLRN.

Thread Correlation Data

ORIGINAL AUTHID
The original authorization ID that started the transaction. Derived from the DB2 field QWHCOPID.

PRIMARY AUTHID
The authorization ID of the current transaction. Derived from the DB2 field QWHCAID.

CORRELATION ID
The correlation ID. Derived from the DB2 field QWHCCV.

PLAN NAME
The name of the plan used in the transaction. Derived from the DB2 field QWHCPLAN.

CONNECTION NAME
The connection ID. Derived from the DB2 field QWHCCN.

CONNECTION TYPE
The connection type. Derived from the DB2 field QWHCATYP.

CORRELATION TOKEN
Accounting correlation token.

This field applies only if CONNECTION TYPE equals CICS ATTACH or RRSAF ATTACH, otherwise N/A is shown.

If connection type is CICS ATTACH, the first eight bytes indentify the network name (right padded with blanks), the second eight bytes identify the LU name (right padded with blanks), the final six bytes are the uniqueness value.

If the connection type is RRSAF ATTACH, the field is the value of the parameter accounting token in the RRSAF signon function.

Derivation: QWHCTOKN

Monitor Detail Data

API BEGIN ELAPSED TIME
The API begin elapsed time in the format day, hour, minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW0148AB.

API ENDING ELAPSED TIME
The API ending elapsed time in the format day, hour, minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW0148AE.

API BEGIN CPU TIME
The API beginning CPU time in the format minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW0148UB.

API ENDING CPU TIME
The API ending CPU time in the format minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW0148UE.

API BEGIN SRB TIME
The API beginning SRB time in the format minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW0148SB.

API ENDING SRB TIME
The API ending SRB time in the format minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW0148SE.

IFI BEGIN ELAPSED TIME
The IFI begin elapsed time in the format day, hour, minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW0148IAB.

IFI ENDING ELAPSED TIME
The IFI ending elapsed time in the format day, hour, minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW0148IAE.

IFI BEGIN CPU TIME
The IFI beginning CPU time in the format minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW0148IUB.

IFI ENDING CPU TIME
The IFI ending CPU time in the format minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW0148IUE.

LOCK - I/O - LATCH BEGIN TIME
The beginning time of the I/O including lock and latch use in the format day, hour, minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW0148LB.

LOCK - I/O - LATCH ENDING TIME
The ending time of the I/O including lock and latch use in the format day, hour, minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW0148LE.

END-OF-TASK CPU TIME
The CPU time from DSN3EOT0 in the format minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW0148EO.

ACCOUNTING ENTRY CPU TIME
The CPU time at entry to a monitoring or accounting class 2 or class 3 wait, in the format minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW0148LW.

EU SWITCH BEGIN ELAPSED TIME
The beginning of the elapsed time of the wait for the execution unit switch. If the value is 0, N/P is printed. Derived from the DB2 field QW0148EB.

EU SWITCH ENDING ELAPSED TIME
The end of the elapsed time of the wait for the execution unit switch. If the value is 0, N/P is printed. Derived from the DB2 field QW0148EE.

ARCH LOG(QUIESCE) BEGIN TIME
The beginning of the elapsed time of the wait for the ARCHIVE LOG MODE (QUIESCE) command. If the value is 0, N/P is printed. Derived from the DB2 field QW0148RB.

ARCH LOG(QUIESCE) ENDING TIME
The end of the elapsed time of the wait for the ARCHIVE LOG MODE (QUIESCE) command. The end time minus begin time should be the total

time the agent is suspended due to the ARCHIVE LOG MODE (QUIESCE) command. If the value is 0, N/P is printed. Derived from the DB2 field QW0148RE.

ACE TOKEN
The hexadecimal address of the agent control element. Indicates the thread reported here. If the value is 0, N/P is printed. Derived from the DB2 field QW0148AC.

APPL REQUEST COUNT
The number of attachment facility calls to DB2. Derived from the DB2 field QW0148RQ.

ASCB TOKEN
The ASCB token in hexadecimal. If the value is 0, N/P is printed. Derived from the DB2 field QW0148MA.

LATCH TOKEN
The latch token. If the value is 0, N/P is printed. Derived from the DB2 field QW0148LA.

TCB TOKEN
The TCB token. If the value is 0, N/P is printed. Derived from the DB2 field QW0148MT.

AGENT ASID
The ASID of the thread. Derived from the DB2 field QW0148AS.

STATUS INDICATOR 1
Indicates whether the thread is at plan or signon/identify level. Derived from the DB2 field QW0148CD.

CONNECTION TYPE
The connection type. Derived from the DB2 field QW0148TY.

LATEST IFCID
The latest IFCID processed. Derived from the DB2 field QW0148IL.

STATUS INDICATOR 2
Indicates whether the agent is in end-of-task processing. Derived from the DB2 field QW0148ES.

DBID The database ID. Derived from the DB2 fields QW0148DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0148DB is shown. However, if QW0148DB contains 0, N/A is displayed.

PREVIOUS IFCID
The previous IFCID processed. Derived from the DB2 field QW0148IL.

STATUS INDICATOR 3
Indicates whether the create thread request is queued. Derived from the DB2 field QW0148CQ.

OBID The object ID. Derived from the DB2 fields QW0148OB, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0148OB is shown. However, if QW0148OB contains 0, N/A is displayed.

LATCH CLASS
The latch class in hexadecimal. Derived from the DB2 field QW0148LC.

TSO CONNECTION TYPE
The TSO connection type. Derived from the DB2 field QW0148TS.

THREAD TYPE
The type of thread being processed. Derived from the DB2 fields QW0148DA and QW0148DD.

THREAD STATUS
The status of the thread being processed. Derived from the DB2 field QW0148AI.

STATUS INDICATOR 5
Indicates whether the agent is queued for end-of-task processing. Derived from the DB2 field QW0148EQ.

STORED PROCEDURE NAME
The stored procedure name. Derived from the DB2 field QW0148SP.

STATUS INDICATOR 6
Indicates whether the thread is running a stored procedure in DB2. Derived from the DB2 field QW0148SN.

THREAD TOKEN
The thread token. This token uniquely identifies a specific thread and also appears in the display thread command response. Derived from the DB2 field QW148TTK.

STATUS INDICATOR 7
Indicates whether the thread is queued waiting for a stored procedure to be scheduled. Derived from the DB2 field QW0148SQ.

LOCATION
The name of the location where the thread executes the package. Derived from the DB2 field QW0148LN.

COLLECTION
The collection name. Derived from the DB2 field QW0148CI.

PACKAGE
The package identifier. Derived from the DB2 field QW0148PN.

TOKEN
The consistency token. Derived from the DB2 field QW0148CN.

NETWORKID
The network identifier. Derived from the DB2 field QW0148NI.

LUNAME
The logical unit name. Derived from the DB2 field QW0148LM.

UNIQUENESS VALUE
The instance number. Derived from the DB2 field QW0148UV.

LUWSEQ
The LUW sequence number. Derived from the DB2 field QW0148CC.

SCHEMA NAME
Schema name.

TRIGGER NAME
Trigger name.

Distributed Header Data

REQUESTING LOCATION
The name of the requester location or blanks if the header is written at the application requester. Derived from the DB2 field QWHDRQNM.

REQUESTING TIMESTAMP
The timestamp for database access thread (DBAT) records. Derived from the DB2 field QWHDTSTP.

AR NAME
The application requester name. Derived from the DB2 field QWHDSVNM.

PRDID
The product identifier of the requester. Derived from the DB2 field QWHDPRID.

Package/DBRM Accounting Data

LOCATION
The location name. This field shows 'BLANK' if the package or DBRM was executed locally. In all other cases, all times represent the time for locally executing the remote package for this application-directed requester. Derived from the DB2 field QPACLOCN.

COLLECTION
The package collection identifier. Derived from the DB2 field QPACCOLN.

PACKAGE ID
The program name. Derived from the DB2 field QPACPKID.

TOKEN
The consistency token. Derived from the DB2 field QPACCONT.

SECTION NMB
The number of this particular data section in the series. Derived from the DB2 field QPACRECN.

PROGRAM TYPE
The program type. Derived from the DB2 field QPACFLGS.

SCHEMA NAME
The schema name under which the stored procedure, user-defined function, or trigger is running. Derived from DB2 field QPACASCH.

NON-ZERO CLASS 8
Indicates whether there is non-zero accounting class 8 data. Derived from the DB2 field QPACFLGS.

ACTIVITY NAME
Name of the stored procedure, user-define function, or trigger. Derived from the DB2 field QPACAANM.

SQL STMTS
The number of SQL statements issued in this package or DBRM. Derived from the DB2 field QPACSQLC.

USED BY STOR.PROC
Indicates whether this package was loaded by a stored procedure. Derived from the DB2 field QPACINSP.

LAST EXECUTED
Indicates whether this package or DBRM is either currently executing or is the most recently executed package or DBRM. Derived from the DB2 field QPACFLGS.

NON-ZERO CLASS 7
Indicates whether there is non-zero accounting class 7 data. Derived from the DB2 field QPACFLGS.

ACTIVITY TYPE
Indicates whether the activity is a stored procedure, user-defined function, or a trigger. Derived from DB2 field QPACAAFG.

SUCC AUTH CHECK
Indicates whether a successful package EXECUTE authorization check was made and DB2 catalog access was avoided. Derived from the DB2 field QPACPAC.

CLASS 7

BEGINNING STORE CLOCK TIME
The store clock time at entry to DB2 for the most recent execution of this package or DBRM. Derived from the DB2 field QPACSCB.

ENDING STORE CLOCK TIME
The store clock time at exit from DB2 after the most recent execution of this package or DBRM. Derived from the DB2 field QPACSCE.

BEGINNING TCB CPU TIME
The TCB CPU time at entry to DB2 for the most recent execution of this package or DBRM. Derived from the DB2 field QPACBJST.

ENDING TCB CPU TIME
The TCB CPU time at exit from DB2 after the most recent execution of this package or DBRM. Derived from the DB2 field QPACEJST.

TOTAL ELAPSED TIME
The total elapsed time for executing this package or DBRM. Derived from the DB2 field QPACSCT.

TOTAL TCB TIME
The total TCB CPU time for executing this package or DBRM. Derived from the DB2 field QPACTJST.

DB2 ENTRY/EXIT
The number of DB2 entries or exits during the execution of this package or DBRM. Derived from the DB2 field QPACARNA.

CLASS 8

LOCK/LATCH SUSP TIME
The accumulated lock and latch time. Derived from the DB2 field QPACAWTL.

LOCK/LATCH SUSP EVENTS
The number of wait trace events processed for lock/latch. Derived from the DB2 field QPACARNL.

SYNCHRONOUS I/O SUSP TIME
The accumulated elapsed I/O wait time. Derived from the DB2 field QPACAWTI.

SYNCHRONOUS I/O SUSP EVENTS
The number of wait trace events processed for I/O. Derived from the DB2 field QPACARNE.

OTHER READ SUSP TIME
The accumulated read I/O wait time. Derived from the DB2 field QPACAWTR.

OTHER READ SUSP EVENTS
The number of suspensions due to read I/O. Derived from the DB2 field QPACARNR.

OTHER WRITE SUSP TIME
The accumulated write I/O wait time. Derived from the DB2 field QPACAWTW.

OTHER WRITE SUSP EVENTS
The number of suspensions due to write I/O. Derived from the DB2 field QPACARNW.

SERV.TASK SWITCH SUSP TIME
The accumulated service task wait time. Derived from the DB2 field QPACAWTE.

SERV.TASK SWITCH SUSP EVENTS
The number of wait trace events processed for DB2 service tasks. Derived from the DB2 field QPACARNS.

ARCH.LOG(QUIES) SUSP TIME
The accumulated wait time due to the processing of ARCHIVE LOG MODE (QUIESCE) commands. Note that this is the amount of time for which the thread was suspended, not the amount of time that the commands took to complete. Derived from the DB2 field QPACALOG.

ARCH.LOG(QUIES) SUSP EVENTS
The number of ARCHIVE LOG MODE (QUIESCE) commands issued. Derived from the DB2 field QPACALCT.

ARCH.LOG READ SUSP TIME
The time spent waiting for archive reads (TAPE). Derived from the DB2 field QPACAWAR.

ARCH.LOG READ SUSP EVENTS
The number of wait trace events processed for archive reads. Derived from the DB2 field QPACANAR.

DRAIN LOCK SUSP TIME
The accumulated wait time for a drain lock. Derived from the DB2 field QPACAWDR.

DRAIN LOCK SUSP EVENTS
The number of wait trace events processed for waits for drain locks. Derived from the DB2 field QPACARND.

CLAIM RELEASE SUSP TIME
The accumulated wait time for a drain when waiting for claims to be released. Derived from the DB2 field QPACAWCL.

CLAIM RELEASE SUSP EVENTS
The number of wait trace events processed for waits for claims to be released. Derived from the DB2 field QPACARNC.

PAGE LATCH SUSP TIME
The accumulated wait time for page latch contention. Derived from the DB2 field QPACAWTP.

PAGE LATCH SUSP EVENTS
The number of page latch wait trace events processed. Derived from the DB2 field QPACARNH.

NOTIFY MESSAGES SUSP TIME
The elapsed time spent in waiting for suspensions processed for sending notify messages to other members in the data sharing group. Derived from the DB2 field QPACAWTG.

NOTIFY MESSAGES EVENTS
The number of wait trace events processed for sending notify messages to other members in the data sharing group. Derived from the DB2 field QPACARNG.

GLOBAL CONTENT. SUSP TIME
The elapsed time spent in waiting for suspensions due to global lock contentions. Derived from the DB2 field QPACAWTJ.

GLOBAL CONTENTION EVENTS
The number of wait trace events processed for group-level contentions in a data sharing environment. Derived from the DB2 field QPACARNJ.

SCHED.PROCEDURE SUSP TIME
The elapsed time spent in waiting for an available TCB before the stored procedure could be scheduled. Derived from the DB2 field QPACCAST.

STORED PROCEDURE EVENTS
The number of wait trace events processed for an unavailable TCB needed for a stored procedure. Derived from the DB2 field QPACCANM.

SCHED.UDF SUSP TIME
The elapsed time spent in waiting for an available TCB before the stored UDF be scheduled. Derived from the DB2 field QPACUDST.

UDF EVENTS
The number of wait trace events processed for an unavailable TCB needed for a UDF. Derived from the DB2 field QPACCUDNU.

STORED PROCEDURE EXECUTED
The number of stored procedures executed. This is only shown if DB2 accounting class 8 is active. Derived from DB2 field QPACSPNS

Data Sharing Accounting Data

MEMBER NAMES
For an assisting task, the name of the parallelism coordinator. For a coordinating task, the name of each assisting member. Derived from the DB2 field QWDAXCQO.

Instrumentation Accounting Data Overflow

ARCH.LOG(QUIES) SUSP TIME
The accumulated wait time due to processing of ARCHIVE LOG MODE (QUIESCE) commands. Note that this is the amount of time for which the thread was suspended, not the amount of time that the commands took to complete. Derived from the DB2 field QWAXALOG.

ARCH.LOG(QUIES) SUSP EVENTS
The number of ARCHIVE LOG MODE (QUIESCE) commands issued. Derived from the DB2 field QWAXALCT.

ARCH.LOG READ SUSP TIME
The time spent waiting for archive reads (TAPE). Derived from the DB2 field QWAXAWAR.

ARCH.LOG READ SUSP EVENTS
The number of wait trace events processed for archive reads. Derived from the DB2 field QWAXANAR.

DRAIN LOCK SUSP TIME
The accumulated wait time for a drain lock. Derived from the DB2 field QWAXAWDR.

DRAIN LOCK SUSP EVENTS
The number of wait trace events processed for waits for drain locks. Derived from the DB2 field QWAXARND.

CLAIM RELEASE SUSP TIME
The accumulated wait time for a drain when waiting for claims to be released. Derived from the DB2 field QWAXAWCL.

CLAIM RELEASE SUSP EVENTS
The number of wait trace events processed for waits for claims to be released. Derived from the DB2 field QWAXARNC.

OPEN/CLOSE SUSP TIME
Accumulated waiting time for a synchronous execution unit switch to the DB2 OPEN/CLOSE dataset service for the HSM recall service. Derived from DB2 field QWAXOCSE.

OPEN/CLOSE SUSP EVENTS
Number of wait trace events processed of waits for sysnchronous execution unit switching to the Open/Close service. Derived from DB2 field QWAXOCNS.

SYSLGRNG SUSP TIME
Accumulated wait time for a sysnchronous execution unit switch to the DB2 SYSLGRNG recording service. Derived from DB2 field QWAXSLSE.

SYSLGRNG SUSP EVENTS
Number of wait trace events for a sysnchronous execution unit switch to the DB2 SYSLGRNG recording service. Derived from DB2 field QWAXSLNS.

EXC/DEL/DEF SUSP TIME
Accumulated wait time for a synchronous execution unit switch to the DB2 data space manager services. Derived from DB2 field QWAXDSSE.

EXC/DEL/DEF SUSP EVENTS
Number of wait trace events for waits for sysnchronous execution unit switching to the DB2 data space manager services. Derived from DB2 field QWAXDSNS.

OTHER SERVICE SUSP TIME
Accumulated wait time for a synchronous execution unit switch to other DB2 service tasks. Derived from DB2 field QWAXOTSE.

OTHER SERVICE SUSP EVENTS
Number of wait trace events for a synchronous execution unit switch to other DB2 service tasks. Derived from DB2 field QWAXOTNS.

148 - Thread Detail

Thread detail monitor record shows the data from IFCID 148.

This record only contains data from an Online Monitor trace data set.

```
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                                                INSTRUMENTATION ACCOUNTING DATA
CLASS 1 BEGINNING STORE CLOCK TIME 03/06/98 13:49:33.923152   ENDING STORE CLOCK TIME  03/06/98 13:52:15.308312
        ELAPSED TIME                            2:41.385160
        BEGINNING MVS TCB TIME                     0.002943   ENDING MVS TCB TIME                        0.000000
        MVS TCB TIME                                    N/C
        BEGINNING SRB ASCB TIME                    0.378720   ENDING SRB ASCB TIME                       0.393315
        SRB ASCB TIME                              0.014595   CONVERSION FACTOR                              9813
        STORED PROCEDURES TCB TIME                 0.000000   PAR.TASKS          0        PAR.TOKEN X'00000000'
        NETWORK ID VALUE                     'BLANK'          COMMITS            0        ROLLBACKS             0
        REASON ACCT INVOKED        READS REQUEST FOR IFCID 0147 OR 0148                   PROGRAMS              1
CLASS 2 DB2 ELAPSED TIME                           0.481871   TRIGGER ELAPSED TIME            34136 18:17:06.6
        TCB TIME                                   0.032850   TRIGGER TCB TIME                34136 18:17:06.6
        STORED PROC. TCB TIME                      0.000000   STORED PROC. ENTRY/EXITS                      0
        SRB ASCB TIME                              0.002973   NON-ZERO CLASS 2                        YES
        DB2 ENTRY/EXIT EVENTS                            57
CLASS 3 LOCK/LATCH SUSP TIME                       0.000000   LOCK/LATCH SUSP EVENTS                        0
        SYNCHRONOUS I/O SUSP TIME                  0.087517   SYNCHRONOUS I/O SUSP EVENTS                  14
        OTHER READ SUSP TIME                       0.000000   OTHER READ SUSP EVENTS                        0
        OTHER WRITE SUSP TIME                      0.000000   OTHER WRITE SUSP EVENTS                       0
        SERV.TASK SWITCH SUSP TIME                 0.276410   SERV.TASK SWITCH SUSP EVENTS                  8
        PAGE LATCH SUSP TIME                       0.000000   PAGE LATCH SUSP EVENTS                        0
        STORED PROCEDURE SUSP TIME                 0.000000   STORED PROCEDURE EVENTS                       0
        NOTIFY MESSAGES SUSP TIME                  0.000000   NOTIFY MESSAGES EVENTS                        0
        GLOBAL CONTENT. SUSP TIME                  0.000000   GLOBAL CONTENTION EVENTS                      0
                                                              NON-ZERO CLASS 3                        YES
WLM SERVICE CLASS                                  'BLANK'
.............................................................................................................................
                                                         LOGGING
        NUMBER OF LOG RECORDS WRITTEN                     0   TOTAL BYTES WRITTEN             X'000000000000'
.............................................................................................................................
                                                           SQL CALL DATA
SELECT               0  LOCK TABLE          0  CREATE TABLE         0  ALTER TABLE         0  DROP TABLE            0
INSERT               0  GRANT               0  CREATE INDEX         0  ALTER INDEX         0  DROP INDEX            0
UPDATE               0  REVOKE              0  CREATE TSPAC         0  ALTER TSPAC         0  DROP TSPAC            0
DELETE               0  SET HOST VAR        0  CREATE DBASE         0  ALTER DBASE         0  DROP DBASE            0
PREPARE              1  SET CURR.SQL        0  CREATE STGRP         0  ALTER STGRP         0  DROP STGRP            0
DESCRIBE             1  SET CURR.DEG        0  CREATE SYNON         0                         DROP SYNON            0
DESCR.TABLE          0  SET RULES           0  CREATE VIEW          0                         DROP VIEW             0
OPEN                 1  SET PATH            0  CREATE ALIAS         0                         DROP ALIAS            0
CLOSE                1  CONNECT TYP1        0  CREATE T.TAB         0                         DROP PACKAGE          0
FETCH               26  CONNECT TYP2        0  CREATE A.TAB         0
                        SET CONNECT         0  CREATE DIST          0                         DROP DIST             0
                        RELEASE             0  CREATE FUNC          0  ALTER FUNC          0  DROP FUNC             0
                        ASSOC LOCATOR       0  CREATE PROC          0  ALTER PROC          0  DROP PROC             0
                        ALLOC CURSOR        0  CREATE TRIG          0                         DROP TRIG             0
                        HOLD LOCATOR        0  COMMENT ON           0  INCRMT BIND         0
                        FREE LOCATOR        0  LABEL ON             0
                                               RENAME TABLE         0
.............................................................................................................................
                                                       RID LIST PROCESSING
RID LIST SUCCESSFUL          0   RID LIST NOT USED-LIMIT EXCEEDED         0    RID LIST NOT USED-NO STORAGE          0
.............................................................................................................................
                                                        QUERY PARALLELISM
MAXIMUM DEGREE           0  REDUCED DEG-NO BUF         0  FALL TO SEQ-CURSOR         0  FALL TO SEQ-NOESA            0
GROUPS EXECUTED          0  EXECUTED AS PLANNED        0  FALL TO SEQ-NO BUF         0  FALL TO SEQ-ENCLV            0
PARALL.DISABLED         NO  SINGLE DB2-C.PARM=N        0  SINGLE DB2 ISO LVL         0  REFORM PARAL CONF            0
PARALL.GROUPS            0  MEMBERS SKIPPED            0                                REFORM PARAL BUFF            0
.............................................................................................................................
                                                          OPTIMIZATION
REOPTIMIZATION           0  PREP_STMT_MATCH            0  IMPLICIT_PREPARES          0  CACHE_LIMIT_EXCEED           0
                            PREP_STMT_NO_MATCH         0  PREP_FROM_CACHE            0  PREP_STMT_PURGED             0
.............................................................................................................................
                                                      NESTED SQL ACTIVITY
MAX CASCAD LVL           0
CALL STATEMENTS          0  PROCEDURE ABENDS           0  CALL TIMEOUTS              0  CALL REJECTS                 0
STMT TRIGGER             0  ROW TRIGGER                0  SQL ERROR TRIGGER          0
.............................................................................................................................
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IFCID 148

```
------------------------------------------------------------------------------------------------------------------------
                                                ROWID
DIRECT ACCESS                0   INDEX USED                              0    TABLE SPACE SCAN USED                  0
........................................................................................................................
                                             MISCELLANEOUS
MAX STO LOB VALUE            0
........................................................................................................................
                                       BUFFER MANAGER ACCOUNTING DATA
BUFFER POOL ID             0  SYNCHRON.WRITE          0  DYNAMIC PREFETCH            0  PAGES READ ASYN-HPOOL          0
GETPAGES                  60  SYNCHRON. READ          7  PAGES READ ASYN-PAR         0  HPOOL READS                    0
GETPAGES FAIL-PAR          0  SEQ. PREFETCH           0  HPOOL WRITES                0  HPOOL READS-FAILED             0
BUFFER UPDATES             0  LIST PREFETCH           0  HPOOL WRITES-FAILED         0
........................................................................................................................
                                             LOCKING DATA
DEADLOCKS                  0  LOCK REQUEST           28  LOCK SUSPENSIONS            0  CLAIM REQUESTS                10
TIMEOUTS                   0  UNLOCK REQUEST          7  LATCH SUSPENSIONS           0  CLAIM REQ. FAILED              0
ESCALATIONS(SHR)           0  QUERY REQUEST           0  OTHER SUSPENSIONS           0  DRAIN REQUESTS                 0
ESCALATIONS(EXC)           0  CHANGE REQUEST          2                                 DRAIN REQ. FAILED              0
MAX LOCK HELD              9  OTHER REQUEST           0
........................................................................................................................
                                       RESOURCE LIMIT FACILITY
RES LIMIT SCOPE          0             RLF TABLE ID              'BLANK'  LIMIT IN CPU 16 MICROSEC             0
RES LIMIT TYPE   LIMIT                 LIMIT IN SERVICE UNITS          0  HIGHEST CPU 16 MICROSEC USED         0
........................................................................................................................
                                       THREAD CORRELATION DATA
ORIGINAL AUTHID         NKA1       PRIMARY AUTHID    NKA1       CORRELATION ID    NKA1
PLAN NAME               DSNESPRR   CONNECTION NAME   TSO        CONNECTION TYPE   REMOTE UNIT OF WORK
                                                                 CORRELATION TOKEN N/A
........................................................................................................................
                                       MONITOR DETAIL DATA
API BEGIN ELASPED TIME              03/06/98 13:49:34.489851    API ENDING ELASPED TIME        03/06/98 13:49:34.490380
API BEGIN CPU TIME                                0.000000    API ENDING CPU TIME                              0.044662
API BEGIN SRB TIME                                     N/A    API ENDING SRB TIME                                   N/A
IFI BEGIN ELASPED TIME                                 N/P    IFI ENDING ELASPED TIME                               N/P
IFI BEGIN CPU TIME                                0.000000    IFI ENDING CPU TIME                              0.000000
LOCK - I/O - LATCH BEGIN TIME                          N/P    LOCK - I/O - LATCH ENDING TIME 03/06/98 13:49:34.358655
END-OF-TASK CPU TIME                              0.000000    ACCOUNTING ENTRY CPU TIME                        0.010942
EU SWITCH BEGIN ELAPSED TIME                           N/P    EU SWITCH ENDING ELAPSED TIME  03/06/98 13:49:34.319455
ARCH LOG(QUIESCE) BEGIN TIME                           N/P    ARCH LOG(QUIESCE) ENDING TIME                         N/P
ACE TOKEN        X'05900548'   APPL REQUEST COUNT         30    ASCB TOKEN   X'00F75B00'   LATCH TOKEN     N/P
TCB TOKEN        X'009E39D8'   AGENT ASID                 77    STATUS INDICATOR 1:       SIGNON/IDENTIFY LEVEL THREAD
CONNECTION TYPE  'BLANK'       LATEST IFCID              232    STATUS INDICATOR 2:       AGENT IS NOT IN EOT TERM
DBID             0             PREVIOUS IFCID            232    STATUS INDICATOR 3:       CREATE_THREAD IS NOT QUEUED
OBID             0             LATCH CLASS                00    TSO CONNECTION TYPE:      BACKGROUND
THREAD TYPE: DB ACCESS         THREAD STATUS: IN DB2             STATUS INDICATOR 5:       AGENT NOT QUEUED FOR EOT TERM
STORED PROCEDURE NAME: 'BLANK'                                   STATUS INDICATOR 6:       NOT RUNNING STORED PROCEDURE
THREAD TOKEN     X'00000010'                                     STATUS INDICATOR 7:       NOT WAITING FOR STORED PROC.
LOCATION   : PMO2D521          COLLECTION: DSNESPRR          PACKAGE: DSNESM68            TOKEN : X'149EEA901A79FE48'
NETWORKID  : DEIBMIPS          LUNAME: IPSAR421     UNIQUENESS VALUE: X'B01C77863B75'     LUWSEQ:     1
........................................................................................................................
                                       DISTRIBUTED HEADER DATA
REQUESTING LOCATION:  PMO2D421
REQUESTING TIMESTAMP: 03/06/98 13:49:34.489099    AR NAME:     PMO2D421             PRDID  DB2 V4 R1 M0
........................................................................................................................
                                     DISTRIBUTED CONVERSATION DATA
LOCATION NAME         : PMO2D421                  CONVERS ID:   X'7F5AA3C8'   CONNECT ID: X'E4CF19C00C616813'
CONV ACTIVE INDICATOR : SUSPENDED IN DB2          CONV STATUS INDICATOR:      RECEIVE STATE
CONV MESSAGE TIMESTAMP: 03/06/98 13:49:34.490392   CONVERSATION TYPE: APPLICATION-DIRECTED METHOD (TWO PHASE COMMIT)
NETWORK CONNECT TYPE  : SNA
........................................................................................................................
                                       DISTRIBUTED LOCATION DATA
LOCATION NAME:          PMO2D421             ELAPSED TIME:                          0.000000
MESSAGES SENT TO SITE               30       DATABASE THREAD ELAPSED TIME:          0.000000
MESSAGES RECEIVED FROM SITE         30       DATABASE THREAD CPU TIME:              0.000000
REMOTE PRODUCT ID        $DS VN0 R40 M1
........................................................................................................................
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```

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                          INITIAL DB2 REQUESTER AND MVS CORRELATION DATA
BYTES:    91              PRODUCT ID: DB2                                  PRODUCT VERSION: V06R01M0
LOCATION: PMO2D421        NET ID    : DEIBMIPS         LU NAME : IPSAR421          CONNECT: TSO
CONNTYPE: BATCH           CORRNAME  : NKA1             CORRNMBR: 'BLANK'           AUTHID : NKA1
PLANNAME: DSNESPRR
MVS ACCOUNTING DATA: DE03704
........................................................................................................................
                                        IFI CLASS 5 TIMES AND DATA CAPTURE
IFI CALL ELAPSED TIME          0.000000          IFI CALL TCB CPU TIME          0.000000
DESCRIBES ELAPSED              0.000000          LOG EXTRACT ELAPSED            0.000000
IFI CALLS           0   LOG READS PERFORMED          0  LOG RECS CAPTURED           0  DATA DESCR. RETURNED          0
DESCRIBES           0   DATA ROWS RETURNED           0  LOG RECS RETURNED           0  TABLES RETURNED               1
........................................................................................................................
                                        PACKAGE/DBRM ACCOUNTING DATA
LOCATION: PMO6D661           COLLECTION      : PMDEV                          PACKAGE ID   : PARALC01
TOKEN:  X'15C7A6331A688408'  SECTION NMB     :     1       PROGRAM TYPE : PACKAGE   SCHEMA NAME  : xxxxxxxx
SQL STMTS:               1   USED BY STOR.PROC:    NO      NON-ZERO CLASS 8:  YES   ACTIVITY NAME: xxxxxxxx
SUCC AUTH CHECK :       NO   LAST EXECUTED    :   YES      NON-ZERO CLASS 7:  YES   ACTIVITY TYPE: TRIGGER EXECUTING
CLASS 7 BEGINNING STORE CLOCK TIME 10/30/98 09:36:20.052939   ENDING STORE CLOCK TIME  10/30/98 09:36:20.619607
        BEGINNING TCB CPU TIME                    0.092405   ENDING TCB CPU TIME                      0.093365
        TOTAL ELAPSED TIME                       17.219923   DB2 ENTRY/EXIT                                  4
        TOTAL TCB TIME                            0.006152
CLASS 8 LOCK/LATCH SUSP TIME                      0.000000   LOCK/LATCH SUSP EVENTS                          0
        SYNCHRONOUS I/O SUSP TIME                 0.000000   SYNCHRONOUS I/O SUSP EVENTS                     0
        OTHER READ SUSP TIME                      0.000000   OTHER READ SUSP EVENTS                          0
        OTHER WRITE SUSP TIME                     0.000000   OTHER WRITE SUSP EVENTS                         0
        SERV.TASK SWITCH SUSP TIME               16.589673   SERV.TASK SWITCH SUSP EVENTS                    4
        ARCH.LOG(QUIES) SUSP TIME                 0.000000   ARCH.LOG(QUIES) SUSP EVENTS                     0
        ARCH.LOG READ SUSP TIME                   0.000000   ARCH.LOG READ SUSP EVENTS                       0
        DRAIN LOCK SUSP TIME                      0.000000   DRAIN LOCK SUSP EVENTS                          0
        CLAIM RELEASE SUSP TIME                   0.000000   CLAIM RELEASE SUSP EVENTS                       0
        PAGE LATCH SUSP TIME                      0.000000   PAGE LATCH SUSP EVENTS                          0
        NOTIFY MESSAGES SUSP TIME                 0.000000   NOTIFY MESSAGE EVENTS                           0
        GLOBAL CONTENT. SUSP TIME                 0.000000   GLOBAL CONTENTION EVENTS                        0
        SCHED.STOR PROC SUSP TIME                 0.000000   STORED PROCEDURE EVENTS                         0
        SCHED.UDF SUSP TIME                       0.000000   UDF EXECUTED                                    0
                                                  0.000000   STORED PROCEDURE EXECUTED                       0
........................................................................................................................
                                        GROUP BUFFER POOLS ACTIVITY DATA
GROUP BUFFER POOL ID          0  READ(NF)-DATA RETURNED          0  CLEAN PAGES WRITTEN          0
READ(XI)-DATA RETURNED        0  READ(NF)-NO DATA RET.           0  CHANGED PAGES WRITTEN        0
READ(XI)-NO DATA RET.         0  READ PREFETCH                  0  UNREGISTER PAGE              0
EXPLICIT X-INVALID            0  WRITE TO SEC GBP                0
........................................................................................................................
                                        DATA SHARING LOCKING DATA
LOCK REQUESTS          0     LOCK - XES          0     SUSPENSIONS - IRLM         0     INCOMPATIBLE LOCK         1
UNLOCK REQUESTS        0     UNLOCK - XES        0     SUSPENSIONS - XES          0     NOTIFY SENT               0
CHANGE REQUESTS        0     CHANGE - XES        0     SUSPENSIONS - FALSE        0
........................................................................................................................
                                        DATA SHARING ACCOUNTING DATA
MEMBER NAMES: N/P
........................................................................................................................
                                        INSTRUMENTATION ACCOUNTING DATA OVERFLOW

        ARCH.LOG(QUIES) SUSP TIME                 0.000000   ARCH.LOG(QUIES) SUSP EVENTS                     0
        ARCH.LOG READ SUSP TIME                   0.000000   ARCH.LOG READ SUSP EVENTS                       0
        DRAIN LOCK SUSP TIME                      0.000000   DRAIN LOCK SUSP EVENTS                          0
        CLAIM RELEASE SUSP TIME                   0.000000   CLAIM RELEASE SUSP EVENTS                       0
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```

Instrumentation Accounting Data

CLASS 1

BEGINNING STORE CLOCK TIME

The beginning store clock value for the period covered by this accounting record. Derived from the DB2 field QWACBSC.

ENDING STORE CLOCK TIME

The ending store clock value for the period covered by this accounting record. Derived from the DB2 field QWACESC.

ELAPSED TIME

The time period covered by this accounting record. If the time cannot be calculated or the value is negative, N/C is printed in this field. Calculated from the DB2 field QWACESC − QWACBSC.

BEGINNING MVS TCB TIME

The beginning MVS CPU time. Derived from the DB2 field QWACBJST.

ENDING MVS TCB TIME
The ending MVS CPU time. Derived from the DB2 field QWACEJST.

MVS TCB TIME
The amount of MVS CPU time used. If the time cannot be calculated or the value is negative, N/C is printed in this field. Derived from the DB2 field QWACBJST.

BEGINNING SRB ASCB TIME
The beginning SRB ASCB time for the agent's address space. This does not include DB2 SRB time.

This value can be misleading for DBATs and CICS threads. Derived from the DB2 field QWACBSRB.

ENDING SRB ASCB TIME
The ending SRB ASCB time for the agent's address space. This does not include DB2 SRB time.

This value can be misleading for DBATs and CICS threads. Derived from the DB2 field QWACESRB.

SRB ASCB TIME
The amount of SRB ASCB time used for the agent's address space. If the time cannot be calculated or the value is negative, N/C is printed in this field. Calculated from the DB2 field QWACESRB − QWACBSRB.

CONVERSION FACTOR
The CPU service unit conversion factor. This factor is useful for accounting monitors that attempt to roll up CPU execution times across multiple DB2s running on different machines. Without this conversion factor, CPU times cannot be normalized and summed up. Derived from the DB2 field QWACSUCV.

STORED PROCEDURES TCB TIME
The accumulated TCB time spent in the application to satisfy a stored procedure request. Derived from the DB2 field QWACSPCP.

PAR.TASKS
The number of parallel tasks created. For parallel tasks or if parallelism is not used, this value is 0. Derived from the DB2 field QWACPCNT.

PAR.TOKEN
Correlating token for parallel tasks. For parallel tasks this value is equal to the ACE of the originating task. Derived from the DB2 field QWACPACE.

NETWORK ID VALUE
The network identifier. It is used with IMS and CICS. Derived from the DB2 field QWACNID.

COMMITS
The number of commit phase-2 requests. This field indicates the number of units of recovery that completed successfully. Derived from the DB2 field QWACCOMM.

ROLLBACKS
The number of rollback requests. This field reflects the number of backed out units of recovery, including rollbacks from attaches. Derived from the DB2 field QWACABRT.

REASON ACCT INVOKED
The reason accounting was invoked. Derived from the DB2 field QWACRINV.

PROGRAMS
The number of packages or DBRMs for which package and DBRM level accounting was performed. Derived from the DB2 field QWACPKGN.

CLASS 2

DB2 ELAPSED TIME
The accumulated elapsed time in DB2. Derived from the DB2 field QWACASC.

TRIGGER ELAPSED TIME
The accumulated elapsed time expended while executing under the control of a trigger. Derived from the DB2 field QWACTRET.

TCB TIME
The accumulated MVS CPU time while in DB2. Derived from the DB2 field QWACAJST.

TRIGGER TCB TIME
The TCB service units accumulated in DB2 expended while executing under control of a trigger. Derived from QWACTRTT.

STORED PROC. TCB TIME
The accumulated TCB time spent in DB2 to satisfy a stored procedure request. Derived from the DB2 field QWACSPTT.

STORED PROC. ENTRY/EXITS
The number of SQL entry or exit events performed by stored procedures. Derived from the DB2 field QWACSPNE.

SRB ASCB TIME
The accumulated home SRB ASCB time while in DB2. This field is not valid for DBATs and CICS threads. Derived from the DB2 field QWACASRB.

NON-ZERO CLASS 2
Indicates whether there is non-zero accounting class 2 data. Derived from the DB2 field QWACFLGS.

DB2 ENTRY/EXIT EVENTS
The number of DB2 entry or exit events processed. Derived from the DB2 field QWACARNA.

CLASS 3

LOCK/LATCH SUSP TIME
The accumulated lock and latch time. Derived from the DB2 field QWACAWTL.

LOCK/LATCH SUSP EVENTS
The number of wait trace events processed for lock/latch. Derived from the DB2 field QWACARNL.

SYNCHRONOUS I/O SUSP TIME
The accumulated elapsed I/O wait time. Derived from the DB2 field QWACAWTI.

SYNCHRONOUS I/O SUSP EVENTS
The number of wait trace events processed for I/O. Derived from the DB2 field QWACARNE.

OTHER READ SUSP TIME
The accumulated read I/O wait time. Derived from the DB2 field QWACAWTR.

OTHER READ SUSP EVENTS
The number of suspensions due to read I/O. Derived from the DB2 field QWACARNR.

OTHER WRITE SUSP TIME
The accumulated write I/O wait time. Derived from the DB2 field QWACAWTW.

OTHER WRITE SUSP EVENTS
The number of suspensions due to write I/O. Derived from the DB2 field QWACARNW.

SERV.TASK SWITCH SUSP TIME
The accumulated service task wait time. Derived from the DB2 field QWACAWTE.

SERV.TASK SWITCH SUSP EVENTS
The number of wait trace events processed for DB2 service tasks. Derived from the DB2 field QWACARNW.

PAGE LATCH SUSP TIME
The accumulated wait time for page latch contention. Derived from the DB2 field QWACAWTP.

PAGE LATCH SUSP EVENTS
The number of page latch wait trace events processed. Derived from the DB2 field QWACARNH.

STORED PROCEDURE SUSP TIME
The elapsed time spent in waiting for an available TCB before the stored procedure could be scheduled. Derived from the DB2 field QWACCAST.

STORED PROCEDURE EVENTS
The number of wait trace events processed for an unavailable TCB needed for a stored procedure. Derived from the DB2 field QWACCANM.

NOTIFY MESSAGES SUSP TIME
The elapsed time spent in waiting for suspensions for sending notify messages to other members in the data sharing group. Derived from the DB2 field QWACAWTG.

NOTIFY MESSAGES EVENTS
The number of wait trace events processed for sending notify messages to other members in the data sharing group. Derived from the DB2 field QWACARNG.

GLOBAL CONTENT. SUSP TIME
The elapsed time spent in waiting for suspensions due to global lock contentions. Derived from the DB2 field QWACAWTJ.

GLOBAL CONTENTION EVENTS
The number of wait trace events processed for group-level contentions in a data sharing environment. Derived from the DB2 field QWACARNJ.

NON-ZERO CLASS 3
Indicates whether there is non-zero accounting class 3 data. Derived from the DB2 field QWACFLGS.

WLM SERVICE CLASS
The workload manager service class. Derived from the DB2 field QWACWLME.

Logging

NUMBER OF LOG RECORDS WRITTEN
The number of log records written. Derived from the DB2 field QWACLRN.

TOTAL BYTES WRITTEN
The number of log record bytes written. Derived from the DB2 field QWACLRAB.

SQL Call Data

SELECT
The number of SQL SELECT statements. Derived from the DB2 field QXSELECT.

INSERT
The number of SQL INSERT statements. Derived from the DB2 field QXINSRT.

UPDATE
The number of SQL UPDATE statements. Derived from the DB2 field QXUPDTE.

DELETE
The number of SQL DELETE statements. Derived from the DB2 field QXDELET.

PREPARE
The number of SQL PREPARE statements. Derived from the DB2 field QXPREP.

DESCRIBE
The number of SQL DESCRIBE statements, including the number of DESCRIBE CURSOR and DESCRIBE PROCEDURES statements issued by the SQL application. Derived from the DB2 field QXDESC.

DESCR.TABLE
The number of SQL DESCRIBE TABLE statements. Derived from the DB2 field QXDSCRTB.

OPEN The number of SQL OPEN CURSOR statements. Derived from the DB2 field QXOPEN.

CLOSE
The number of SQL CLOSE CURSOR statements. Derived from the DB2 field QXCLOSE.

FETCH
The number of SQL FETCH CURSOR statements. Derived from the DB2 field QXFETCH.

LOCK TABLE
The number of SQL LOCK TABLE statements. Derived from the DB2 field QXLOCK.

GRANT
The number of SQL GRANT statements. Derived from the DB2 field QXGRANT.

REVOKE
The number of SQL REVOKE statements. Derived from the DB2 field QXREVOK.

SET HOST VAR
The number of SQL SET HOST VARIABLE statements. Derived from the DB2 field QXSETHV.

SET CURR.SQL
The number of SQL SET CURRENT SQLID statements. Derived from the DB2 field QXSETSQL.

SET CURR.DEG
The number of SQL SET CURRENT DEGREE statements. Derived from the DB2 field QXSETCDG.

SET RULES
The number of SQL SET CURRENT RULES statements. Derived from the DB2 field QXSETCRL.

SET PATH
The number of SQL SET CURRENT PATH statements. Derived from the DB2 field QXSETPTH.

CONNECT TYP1
The number of SQL CONNECT TYPE 1 statements. Derived from the DB2 field QXCON1.

CONNECT TYP2
The number of SQL CONNECT TYPE 2 statements. Derived from the DB2 field QXCON2.

SET CONNECT
The number of SQL SET CONNECT statements. Derived from the DB2 field QXSETCON.

RELEASE
The number of SQL RELEASE statements. Derived from the DB2 field QXREL.

ASSOC LOCATOR
The number of SQL ASSOCIATE LOCATORS statements executed. Derived from the DB2 field QXALOCL.

ALLOC CURSOR
The number of SQL ALLOCATE CURSOR statements executed. Derived from the DB2 field QXALOCC.

HOLD LOCATOR
The number of SQL HOLD LOCATOR statements executed. Derived from the DB2 field QXHOLDL.

FREE LOCATOR
The number of SQL FREE LOCATOR statements executed. Derived from the DB2 field QXFREEL.

CREATE TABLE
The number of SQL CREATE TABLE statements. Derived from the DB2 field QXCRTAB.

ALTER TABLE
The number of SQL ALTER TABLE statements. Derived from the DB2 field QXALTTA.

DROP TABLE
The number of SQL DROP TABLE statements. Derived from the DB2 field QXDRPTA.

CREATE INDEX
The number of SQL CREATE INDEX statements. Derived from the DB2 field QXCRINX.

ALTER INDEX
The number of SQL ALTER INDEX statements. Derived from the DB2 field QXALTIX.

DROP INDEX
The number of SQL DROP INDEX statements. Derived from the DB2 field QXDRPIX.

CREATE TSPAC
The number of SQL CREATE TABLESPACE statements. Derived from the DB2 field QXCTABS.

ALTER TSPAC
The number of SQL ALTER TABLESPACE statements. Derived from the DB2 field QXALTTS.

DROP TSPAC
The number of SQL DROP TABLESPACE statements. Derived from the DB2 field QXDRPTS.

CREATE DBASE
The number of SQL CREATE DATABASE statements. Derived from the DB2 field QXCRDAB.

ALTER DBASE
The number of SQL ALTER DATABASE statements. Derived from the DB2 field QXALDAB.

DROP DBASE
The number of SQL DROP DATABASE statements. Derived from the DB2 field QXDRPDB.

CREATE STGRP
The number of SQL CREATE STORAGE GROUP statements. Derived from the DB2 field QXCRSTG.

ALTER STGRP
The number of SQL ALTER STORAGE GROUP statements. Derived from the DB2 field QXALTST.

DROP STGRP
The number of SQL DROP STORAGE GROUP statements. Derived from the DB2 field QXDRPST.

CREATE SYNON
The number of SQL CREATE SYNONYM statements. Derived from the DB2 field QXCRSYN.

DROP SYNON
The number of SQL DROP SYNONYM statements. Derived from the DB2 field QXDRPSY.

CREATE VIEW
The number of SQL CREATE VIEW statements. Derived from the DB2 field QXDEFVU.

DROP VIEW
The number of SQL DROP VIEW statements. Derived from the DB2 field QXDRPVU.

CREATE ALIAS
The number of SQL CREATE ALIAS statements. Derived from the DB2 field QXCRALS.

DROP ALIAS
The number of SQL DROP ALIAS statements. Derived from the DB2 field QXDRPAL.

CREATE T.TAB
The number of SQL CREATE GLOBAL TEMPORARY TABLE statements. Derived from the DB2 field QXCRGTT.

DROP PACKAGE
The number of SQL DROP PACKAGE statements. Derived from the DB2 field QXDRPPKG.

CREATE A.TAB
The number of SQL CREATE AUXILIARY TABLE statements. Derived from the DB2 field QXCRATB.

CREATE DIST
The number of SQL CREATE DISTINCT TYPE statements. Derived from the DB2 field QXCRDIST

DROP DIST
The number of SQL DROP DISTINCT TYPE statements. Derived from the DB2 field QXDRDIST

CREATE FUNC
The number of SQL CREATE FUNCTION statements. Derived from the DB2 field QXCRUDF

ALTER FUNC
The number of SQL ALTER FUNCTION statements. Derived from the DB2 field QXALUDF

DROP FUNC
The number of SQL DROP FUNCTION statements. Derived from the DB2 field QXDRPFN

CREATE PROC
The number of SQL CREATE PROCEDURE statements. Derived from the DB2 field QXCRPRO

ALTER PROC
The number of SQL ALTER PROCEDURE statements. Derived from the DB2 field QXALPRO

DROP PROC
The number of SQL DROP PROCEDURE statements. Derived from the DB2 field QXDRPPR

CREATE TRIG
The number of SQL CREATE TRIGGER statements. Derived from the DB2 field QXCRTRIG.

DROP TRIG
The number of SQL DROP TRIGGER statements. Derived from the DB2 field QXDRPTR.

COMMENT ON
The number of SQL COMMENT ON statements. Derived from the DB2 field QXCMTON.

INCRMT BIND
The number of SQL INCREMENTAL BIND statements. This total does not include PREPAREs. Derived from the DB2 field QXINCRB.

LABEL ON
The number of SQL LABEL ON statements. Derived from the DB2 field QXLABON.

RENAME TABLE
The number of SQL RENAME TABLE statements executed. Derived from the DB2 field QXRNTAB.

RID List Processing

RID LIST SUCCESSFUL
The number of times that any combination of multiple index access path and RID pool processing was used or invoked. Derived from the DB2 field QXMIAP.

RID LIST NOT USED-LIMIT EXCEEDED
The number of times that any combination of multiple index access path and RID pool processing was not used or invoked because the number of RIDs retrieved exceeded the maximum limit. Derived from the DB2 field QXMRMIAP.

RID LIST NOT USED-NO STORAGE
The number of times that any combination of multiple index access path and RID pool processing was not used or invoked because no storage was available for RIDs. Derived from the DB2 field QXNSMIAP.

Query Parallelism

MAXIMUM DEGREE
The maximum degree of parallelism executed among all the parallel groups to indicate the extent to which parallelism applies. Derived from the DB2 field QXMAXDEG.

REDUCED DEG-NO BUF
The total number of parallel groups executed in reduced parallel degree due to the shortage of storage or contention on the buffer pool. Derived from the DB2 field QXREDGRP.

FALL TO SEQ-CURSOR
The total number of parallel groups that fell back to sequential mode because of a cursor that can be used for update or delete. Derived from the DB2 field QXDEGCUR.

FALL TO SEQ-NOESA
The total number of parallel groups that fell back to sequential mode because of a lack of ESA sort support. Derived from the DB2 field QXDEGESA.

GROUPS EXECUTED
The total number of parallel groups that have been executed. Derived from the DB2 field QXTOTGRP.

EXECUTED AS PLANNED
The total number of parallel groups executed in the planned parallel degree due to sufficient buffer pool availability. Derived from the DB2 field QXNORGRP.

FALL TO SEQ-NO BUF
The total number of parallel groups that fall back to sequential mode because of a shortage of storage or contention on the buffer pool. Derived from the DB2 field QXDEGBUF.

FALL TO SEQ-ENCLV
The total number of parallel groups executed in sequential mode due to unavailability of MVS/ESA enclave services. Derived from the DB2 field QXDEGENC.

PARALL.DISABLED
This field always shows N/A.

SINGLE DB2-C.PARM=N
The total number of parallel groups executed on a single DB2 due to the COORDINATOR subsystem parameter being set to NO. Derived from the DB2 field QXCOORNO.

SINGLE DB2 ISO LVL
The total number of parallel groups executed on a single DB2 because the plan or package was bound with an ISOLATION value of repeatable read or read stability. Derived from the DB2 field QXISORR.

REFORM PARAL CONF
The total number of parallel groups in which DB2 reformulated the the parallel portion of the access path because of a change in the number of active DB2 members or because of a change in the processor models on which they run from bind time to run time. This counter is only updated on the parallelism coordinator at run time. Derived from QXREPOP1.

PARALL.GROUPS
The total number of parallel groups that DB2 intended to run across the data sharing group. This number is only incremented at the parallelism coordinator at run time. Derived from the DB2 field QXXCBPNX.

MEMBERS SKIPPED
The number of times the parallelism coordinator had to bypass a DB2 when distributing tasks because one or more DB2 members did not have enough buffer pool storage. The number in this field is only incremented at the parallelism coordinator once per parallel group, even though more than one DB2 might have lacked buffer pool storage for that parallel group. It is also only incremented when the buffer pool is defined to allow for parallelism. For example, if VPXPSEQT=0 on an assistant, DB2 does not send parallel work there and the number in this field is not incremented. Derived from the DB2 field QXXCSKIP.

REFORM PARAL BUFF
The total number of parallel groups in which DB2 reformulated the the parallel portion of the access path because there were insufficient buffer pool resources. This counter is only updated on the parallelism coordinator at run time. Derived from QXREPOP2.

Optimization

REOPTIMIZATION
The number of times reoptimization has occurred. Derived from the DB2 field QXSTREOP.

PREP_STMT_MATCH
The number of times DB2 made a copy of a prepared statement from the cache. Derived from the DB2 field QXSTFND.

IMPLICIT PREPARES
The number of times an implicit statement prepare was performed. Derived from the DB2 field QXSTIPRP.

CACHE_LIMIT_EXCEED
The number of times a dynamic cached statement was discarded because the number of prepared statements in the cache exceeded the MAXKEEPD value. Derived from the DB2 field QXSTDEXP.

PREP_STMT_NO_MATCH
The number of times a prepared statement was not found in the cache. Derived from QXSTNFND.

PREP_FROM_CACHE
The number of times a statement prepare was avoided. Derived from QXSTNPRP.

PREP_STMT_PURGED
The number of times a dynamic cached statement was purged from the cache because a program executed a drop, alter, or revoke statement. Derived from QXSTDINV.

Nested SQL Activity

MAX CASCAD LVL
The maximum level of SQL cascading. This includes cascading due to triggers, UDFs or stored procedures. Derived from QXCASCDP.

CALL STATEMENTS
The number of SQL CALL statements executed. Derived from the DB2 field QXCALL.

PROCEDURE ABENDS
The number of times a called SQL procedure terminated abnormally. Derived from the DB2 field QXCALLAB.

CALL TIMEOUTS
The number of times an SQL CALL statement timed out waiting to be scheduled. Derived from the DB2 field QXCALLTO.

CALL REJECTS
The number of times an SQL CALL statement was rejected. Derived from the DB2 field QXCALLRJ.

STMT TRIGGER
The number of times a statement trigger was activated. Derived from QXSTTRG.

ROW TRIGGER
The number of times a row trigger was activated. Derived from QXROWTRG.

SQL ERROR TRIGGER
The number SQL errors that occurred during the execution of triggered actions. This includes errors from UDFs and stored procedures, called by triggers, that passed back a negative return code.

ROWID

DIRECT ACCESS
The number of times that direct row access was successful. Derived from QXROIMAT.

INDEX USED
The number of times an index was used to find a record. Derived from QXROIINX.

TABLE SPACE SCAN USED
The number of times that a table or table space was used to find a record. Derived from QXROITS.

Miscellaneous

MAX STO LOB VALUE
The maximum storage used for LOB values.

Buffer Manager Accounting Data

BUFFER POOL ID
The buffer pool ID used by this thread. Derived from the DB2 field QBACPID.

SYNCHRON.WRITE
The number of synchronous write I/Os. Derived from the DB2 field QBACIMW.

DYNAMIC PREFETCH
The number of times that dynamic prefetch was requested. Derived from the DB2 field QBACDPF.

PAGES READ ASYN-HPOOL
The number of pages found and moved from a hiperpool to a virtual buffer pool due to prefetch under the control of the agent. Derived from the DB2 field QBACHPG.

GETPAGES
The number of get page requests issued. This number is incremented by successful page requests for queries processed in parallel and by successful and unsuccessful page requests for queries that are not processed in parallel. Derived from the DB2 field QBACGET.

SYNCHRON. READ
The number of synchronous read I/Os. Derived from the DB2 field QBACRIO.

PAGES READ ASYN-PAR
The number of asynchronous pages read by prefetch under the control of the agent. Derived from the DB2 field QBACSIO.

HPOOL READS
The number of successful requests to synchronously move a page from the hiperpool to the virtual buffer pool. Derived from the DB2 field QBACHRE.

GETPAGES FAIL-PAR
The number of unsuccessful get page operations due to conditional get page requests. Derived from the DB2 field QBACNGT.

SEQ. PREFETCH
The number of sequential prefetch requests for this pool. Derived from the DB2 field QBACSEQ.

HPOOL WRITES
The number of successful requests to synchronously move a page from the virtual buffer pool to the hiperpool. Derived from the DB2 field QBACHWR.

HPOOL READS-FAILED
The number of unsuccessful requests to synchronously move a page from the hiperpool to the virtual buffer pool. Derived from the DB2 field QBACHRF.

BUFFER UPDATES
The number of times a buffer was updated. Derived from the DB2 field QBACSWS.

LIST PREFETCH
The number of list prefetch requests. Derived from the DB2 field QBACLPF.

HPOOL WRITES-FAILED
The number of unsuccessful write requests due to a shortage of expanded storage. Derived from the DB2 field QBACHWF.

Locking Data

DEADLOCKS
The number of deadlocks. Derived from the DB2 field QTXADEA.

LOCK REQUEST
The number of lock requests. Derived from the DB2 field QTXALOCK.

LOCK SUSPENSIONS
The number of times a lock could not be obtained and the unit of work was suspended. Derived from the DB2 field QTXASLOC.

CLAIM REQUESTS
The number of claim requests. Derived from the DB2 field QTXACLNO.

TIMEOUTS
The number of times a unit of work was suspended for a time exceeding the timeout value. Derived from the DB2 field QTXATIM.

UNLOCK REQUEST
The number of unlock requests. Derived from the DB2 field QTXAUNLK.

LATCH SUSPENSIONS
The number of times a latch could not be obtained and the unit of work was suspended. Derived from the DB2 field QTXASLAT.

CLAIM REQ. FAILED
The number of unsuccessful claim requests. Derived from the DB2 field QTXACLUN.

ESCALATIONS(SHR)
The number of times a lock was escalated to shared. Derived from the DB2 field QTXALES.

QUERY REQUEST
The number of query requests. Derived from the DB2 field QTXAQRY.

OTHER SUSPENSIONS
The number of times a unit of work was suspended for reasons other than no lock or latch was available. Derived from the DB2 field QTXASOTH.

DRAIN REQUESTS
The number of drain requests. Derived from the DB2 field QTXADRNO.

ESCALATIONS(EXC)
The number of times a lock was escalated to exclusive. Derived from the DB2 field QTXALEX.

CHANGE REQUEST
The number of change requests. Derived from the DB2 field QTXACHG.

DRAIN REQ. FAILED
The number of unsuccessful drain requests. Derived from the DB2 field QTXADRUN.

MAX LOCK HELD
The maximum number of page locks held concurrently by a single application. Derived from the DB2 field QTXANPL.

OTHER REQUEST
The number of other IRLM requests. Derived from the DB2 field QTXAIRLM.

Resource Limit Facility

RES LIMIT SCOPE
Indicates how the resource limit was established. A value of 0 shows that the resource limit facility was not started. Derived from the DB2 field QTXAPREC.

RLF TABLE ID
The identifier of the resource limit specification table. Derived from the DB2 field QTXARLID.

LIMIT IN CPU 16 MICROSEC
The CPU time limit, in microseconds, set by the resource limit facility. Derived from the DB2 field QTXACLMT.

RES LIMIT TYPE
Indicates how the type of resource limit was established: infinite, 0, or limit. Derived from the DB2 field QTXAFLG1.

LIMIT IN SERVICE UNITS
The maximum number of CPU service units to be used. Normally, the value is not 0 if the RES LIMIT TYPE is LIMIT. A value of 0 indicates no limit. Derived from the DB2 field QTXASLMT.

HIGHEST CPU 16 MICROSEC USED
The highest CPU time used by a single DB2 call, in microseconds. Note that there can be many DB2 calls for one SQL statement. Derived from the DB2 field QTXACHUS.

Thread Correlation Data

ORIGINAL AUTHID
The original authorization ID that started the transaction. Derived from the DB2 field QWHCOPID.

PRIMARY AUTHID
The authorization ID of the current transaction. Derived from the DB2 field QWHCAID.

CORRELATION ID
The correlation ID. Derived from the DB2 field QWHCCV.

PLAN NAME
The name of the plan used in the transaction. Derived from the DB2 field QWHCPLAN.

CONNECTION NAME
The connection ID. Derived from the DB2 field QWHCCN.

CONNECTION TYPE
The connection type. Derived from the DB2 field QWHCATYP.

CORRELATION TOKEN
Accounting correlation token.

This field applies only if CONNECTION TYPE equals CICS ATTACH or RRSAF ATTACH, otherwise N/A is shown.

If connection type is CICS ATTACH, the first eight bytes indentify the network name (right padded with blanks), the second eight bytes identify the LU name (right padded with blanks), the final six bytes are the uniqueness value.

If the connection type is RRSAF ATTACH, the field is the value of the parameter accounting token in the RRSAF signon function.

Derivation : QWHCTOKN

Monitor Detail Data

API BEGIN ELAPSED TIME
The API begin elapsed time in the format day, hour, minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW0148AB.

API ENDING ELAPSED TIME
The API ending elapsed time in the format day, hour, minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW0148AE.

API BEGIN CPU TIME
The API beginning CPU time in the format minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW0148UB.

API ENDING CPU TIME
The API ending CPU time in the format minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW0148UE.

API BEGIN SRB TIME
The API beginning SRB time in the format minute, second, and millionth of a second. If the value is 0, N/P is printed. This field is valid for DB2 Versions 4 and 5 only. Derived from the DB2 field QW0148SB.

API ENDING SRB TIME
The API ending SRB time in the format minute, second, and millionth of a second. If the value is 0, N/P is printed. This field is valid for DB2 Versions 4 and 5 only. Derived from the DB2 field QW0148SE.

IFI BEGIN ELAPSED TIME
The IFI begin elapsed time in the format day, hour, minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW148IAB.

IFI ENDING ELAPSED TIME
The IFI ending elapsed time in the format day, hour, minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW148IAE.

IFI BEGIN CPU TIME
The IFI beginning CPU time in the format minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW148IUB.

IFI ENDING CPU TIME
The IFI ending CPU time in the format minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW148IUE.

BEGIN/RESUME CPU TIME
The start or resume time for a stored procedure, user-defined function or trigger. Derivrd from thr DB2 field QW148AOD.

TCB TIME BEFORE ENCLAVE
TCB time before enclave was created. Derived from DB2 field QW148BTC

BEGIN/RESUME TOD TIME
The start or resume time for a stored procedure, user-defined function or trigger. Derivrd from thr DB2 field QW148ATC.

LOCK - I/O - LATCH BEGIN TIME
The beginning time of the I/O including lock and latch use in the format day, hour, minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW0148LB.

LOCK - I/O - LATCH ENDING TIME
The ending time of the I/O including lock and latch use in the format day, hour, minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW0148LE.

END-OF-TASK CPU TIME
The CPU time from DSN3EOT0 in the format minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW0148EO.

ACCOUNTING ENTRY CPU TIME
The CPU time at entry to a monitoring or accounting class 2 or class 3 wait, in the format minute, second, and millionth of a second. If the value is 0, N/P is printed. Derived from the DB2 field QW0148LW.

EU SWITCH BEGIN ELAPSED TIME
The beginning of the elapsed time of the wait for the execution unit switch. If the value is 0, N/P is printed. Derived from the DB2 field QW0148EB.

EU SWITCH ENDING ELAPSED TIME
The end of the elapsed time of the wait for execution unit switch. If the value is 0, N/P is printed. Derived from the DB2 field QW0148EE.

ARCH LOG(QUIESCE) BEGIN TIME
The wait for the archive log mode(quiesce) command begin elapsed time. If the value is 0, N/P is printed. Derived from the DB2 field QW0148RB.

ARCH LOG(QUIESCE) ENDING TIME
The wait for the archive log mode(quiesce) command end elapsed time. Ending time minus begin time should be the total time the agent is suspended due to the archive log mode(quiesce) command. If the value is 0, N/P is printed. Derived from the DB2 field QW0148RE.

ACE TOKEN
The hexadecimal address of the agent control element. Indicates the thread reported here. If the value is 0, N/P is printed. Derived from the DB2 field QW0148AC.

APPL REQUEST COUNT
The number of attachment facility calls to DB2. Derived from the DB2 field QW0148RQ.

ASCB TOKEN
Contains the ASCB token in hexadecimal. If the value is 0, N/P is printed. Derived from the DB2 field QW0148MA.

LATCH TOKEN
The latch token. If the value is 0, N/P is printed. Derived from the DB2 field QW0148LA.

TCB TOKEN
The TCB token. If the value is 0, N/P is printed. Derived from the DB2 field QW0148MT.

AGENT ASID
The ASID of the thread. Derived from the DB2 field QW0148AS.

STATUS INDICATOR 1
Indicates whether the thread is at plan or signon/identify level. Derived from the DB2 field QW0148CD.

CONNECTION TYPE
The connection type. Derived from the DB2 field QW0148TY.

LATEST IFCID
The latest IFCID processed. Derived from the DB2 field QW0148IL.

STATUS INDICATOR 2
Indicates whether the agent is in end-of-task processing. Derived from the DB2 field QW0148ES.

DBID The database ID. Derived from the DB2 fields QW0148DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0148DB is shown. However, if QW0148DB contains 0, N/A is displayed.

PREVIOUS IFCID
The previous IFCID processed. Derived from the DB2 field QW0148IP.

STATUS INDICATOR 3
Indicates whether the create thread request is queued. Derived from the DB2 field QW0148CQ.

OBID The object ID. Derived from the DB2 fields QW0148OB, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0148OB is shown. However, if QW0148OB contains 0, N/A is displayed.

LATCH CLASS
The latch class in hexadecimal. Derived from the DB2 field QW0148LC.

TSO CONNECTION TYPE
The TSO connection type. Derived from the DB2 field QW0148TS.

THREAD TYPE
The type of thread being processed. Derived from the DB2 fields QW0148DA and QW0148DD.

THREAD STATUS
The status of the thread being processed. Derived from the DB2 field QW0148AI.

STATUS INDICATOR 5
Indicates whether the agent is queued for end-of-task processing. Derived from the DB2 field QW0148EQ.

STORED PROCEDURE NAME
The stored procedure name. Derived from the DB2 field QW0148SP.

STATUS INDICATOR 6
Indicates whether the thread is running a stored procedure in DB2. Derived from the DB2 field QW0148SN.

THREAD TOKEN
The thread token. This token uniquely identifies a specific thread and appears in the display thread command response. Derived from the DB2 field QW148TTK.

STATUS INDICATOR 7
Indicates whether the thread is queued waiting for a stored procedure to be scheduled. Derived from the DB2 field QW0148SQ.

LOCATION
The name of the location where the thread executes the package. Derived from the DB2 field QW0148LN.

COLLECTION
The collection name. Derived from the DB2 field QW0148CI.

PACKAGE
The package identifier. Derived from the DB2 field QW0148PN.

CONS.TOKEN
The consistency token. Derived from the DB2 field QW0148CN.

NETWORKID
The network identifier. Derived from the DB2 field QW0148NI.

LUNAME
The logical unit name. Derived from the DB2 field QW0148LM.

UNIQUENESS VALUE
The instance number. Derived from the DB2 field QW0148UV.

LUWSEQ
The LUW sequence number. Derived from the DB2 field QW0148CC.

NESTING LVL
Nesting level of the stored procedure, user-defined function or trigger, in the range 1 through 16. Derived from the DB2 field QW148ALV.

NESTING ACTIVITY
Nesting activity of the stored procedure, user-define function or trigger, if any. Derived from the DB2 field QW148AFG.

ENCL.TOKEN
The enclave token, if under enclave, otherwise zero. Derived from the DB2 field QW148ETK.

SCHEMA NAME
Schema name, under which a stored procedure, user-define function or trigger is executing. Derived from the DB2 field QW0148SCH.

Distributed Header Data

REQUESTING LOCATION
The name of the requester location or blanks if the header is written at the application requester. Derived from the DB2 field QWHDRQNM.

REQUESTING TIMESTAMP
The timestamp for database access thread (DBAT) records. Derived from the DB2 field QWHDTSTP.

AR NAME
The application requester name. Derived from the DB2 field QWHDSVNM.

PRDID
The product identifier of the requester. Derived from the DB2 field QWHDPRID.

Distributed Conversation Data

LOCATION NAME
The name of the remote requester location with which this data is associated. Derived from the DB2 field QW01488L.

CONVERS ID
The 32-bit conversation identifier (CID) used to identify a particular DB2 conversation. Derived from the DB2 field QW01488C.

CONNECT ID
The 64-bit string that uniquely identifies the connection on which the conversation is executing. For VTAM connections, this is the VTAM-defined session on which the conversation is executing. For TCP/IP connections, this is the 32-bit IP address of the remote location, followed by the 16-bit TCP/IP port number of DB2 and the remote location. Derived from the DB2 field QW01488S.

CONV ACTIVE INDICATOR
The state of the conversation activity:

ACTIVE IN VTAM OR TCP/IP
The control of the conversation is in VTAM or TCP/IP. DB2 transferred control of the thread to the network on this conversation.

SUSPENDED IN DB2
The agent is suspended in DB2 and waiting for notification from the network that the event is completed (asynchronous requests).

NOT ACTIVE OR SUSPENDED
None of the above.

Derived from the DB2 field QW01488A.

CONV STATUS INDICATOR
The conversation status. Derived from the DB2 field QW01488U.

CONV MESSAGE TIMESTAMP
The timestamp of the last message sent or received on the conversation. Derived from the DB2 field QW01488T.

CONVERSATION TYPE
The conversation type indicator. Derived from the DB2 field QW0148CT.

NETWORK CONNECT TYPE
The type of network connection used. Derived from the DB2 field QW01488N.

Distributed Location Data

LOCATION NAME
The name of the remote requester location with which this data is associated. Derived from the DB2 field QW01489L.

ELAPSED TIME
The elapsed time at the local location until the database access agent completed its work. It includes the elapsed time for DB2 server processing and the network time. It is updated at the requester location and calculated by accumulating the difference between the store clock values obtained before and after each network request. Derived from the DB2 field QW0148EL.

MESSAGES SENT TO SITE
The number of messages sent to the remote location. Derived from the DB2 field QW0148MS.

DATABASE THREAD ELAPSED TIME
The accumulated elapsed database access thread time at the remote location. This time is sent from the server to the requester location and does not include VTAM or network elapsed time. This field is not applicable to application-directed access. Derived from the DB2 field QW0148ER.

MESSAGES RECEIVED FROM SITE
The number of messages received from the remote location. Derived from the DB2 field QW0148MR.

DATABASE THREAD CPU TIME
The accumulated elapsed database access thread CPU time at the remote location. This time is sent from the server to the requester location and does not include VTAM or network elapsed time. This field is not applicable to application-directed access. Derived from the DB2 field QW0148CR.

REMOTE PRODUCT ID
The product identifier of the remote location. Derived from the DB2 field QW0148PR.

Initial DB2 Requester and MVS Correlation Data

BYTES
The length of the product ID and accounting string. Derived from the DB2 field QMDAASLN.

PRODUCT ID
The ID of the product which generated the accounting string. Derived from the DB2 field QMDAPRID.

PRODUCT VERSION
The version, release, and modification level of the product. Derived from the DB2 fields QMDAPVER, QMDAPREL, and QMDAPMOD.

LOCATION
The location name of the DB2 system that created the MVS and DDF accounting values. Derived from the DB2 field QMDALOCN.

NET ID
The SNA NET ID name of the DB2 system that created the MVS and DDF accounting values. Derived from the DB2 field QMDANETN.

LU NAME
The SNA LU name of the DB2 system that created the MVS and DDF accounting values. Derived from the DB2 field QMDALUNM.

CONNECT
The connection name of the DB2 system that created the MVS and DDF accounting values. Derived from the DB2 field QMDACNUM.

CONNTYPE
The type of subsystem connection at the DB2 system where the SQL application is running:

BATCH TSO or call attach

CORRNAME
The first 8 bytes of the correlation ID at the DB2 system running the SQL. Derived from the DB2 field QMDACORR.

CORRNMBR
The last 4 bytes of the correlation ID at the DB2 system running the SQL. Derived from the DB2 field QMDACORR.

AUTHID
The authorization ID used by the SQL application prior to translation. Derived from the DB2 field QMDAAUTH.

PLANNAME
The DB2 plan used at the DB2 system running the SQL. Derived from the DB2 field QMDAPLAN.

MVS ACCOUNTING DATA
The MVS accounting string associated with the DB2 SQL application's address space. N/P is printed if no data is present.

- For TSO applications, it is the value supplied on the TSO LOGON screen. In order to change accounting string values, you must log off and reissue the logon sequence.
- For batch or CAF applications, it is taken from the value specified on the ACCT keyword of the JCL EXEC statement. If the ACCT keyword is not specified, the accounting string is taken from the value specified on the MVS JOB card. Thus, the accounting string can be constant for an entire JOB, or it can change at each step of the JOB.
- For IMS applications, it is taken from the ACCT keyword or JOB card used to start the SQL application's IMS message processing region. In other words, the IMS accounting number for a given transaction is associated with the IMS message region that was used to run the transaction. If you want to associate specific accounting numbers with individual IMS transactions, you must

use the facilities in IMS to cause those transactions to be scheduled in a message region that specifies the desired accounting string.

- For CICS applications, it is taken from the ACCT keyword or JOB card used to start the CICS region. Thus, all CICS transactions that run in a given CICS region have the same MVS accounting string value.
- For DBAT and DBAT-distributed threads, it is the MVS accounting string associated with the SQL application's MVS address space of the DB2 system which originated the distributed transaction.

Derived from the DB2 field QMDAACCT.

IFI Class 5 Times and Data Capture

IFI CALL ELAPSED TIME
The accumulated elapsed time for processing IFI calls. Derived from the DB2 field QIFAAIET.

IFI CALL TCB CPU TIME
The accumulated TCB CPU time for processing IFI calls. Derived from the DB2 field QIFAAITT.

DESCRIBES ELAPSED
The accumulated elapsed time for processing data capture describes. Derived from the DB2 field QIFAAMBT.

LOG EXTRACT ELAPSED
The accumulated elapsed time for performing log extractions. Derived from the DB2 field QIFAAMLT.

IFI CALLS
The number of IFI calls. Derived from the DB2 field QIFAANIF.

LOG READS PERFORMED
The number of data capture log reads performed. Derived from the DB2 field QIFAANLR.

LOG RECS CAPTURED
The number of log records captured for which data capture processing was invoked. Derived from the DB2 field QIFAANRC.

DATA DESCR. RETURNED
The number of data capture data descriptions returned. Derived from the DB2 field QIFAANDD.

DESCRIBES
The number of data capture describes. Derived from the DB2 field QIFAANMB.

DATA ROWS RETURNED
The number of data capture data rows returned. Derived from the DB2 field QIFAANDR.

LOG RECS RETURNED
The number of data capture log records returned. Derived from the DB2 field QIFAANRR.

TABLES RETURNED
The number of data capture tables returned. Derived from the DB2 field QIFAANTB.

Package/DBRM Accounting Data

LOCATION
The location name. This field shows 'BLANK' if the package or DBRM was executed locally. In all other cases, all times represent the time for locally executing the remote package for this application-directed requester. Derived from the DB2 field QPACLOCN.

COLLECTION
The package collection identifier. Derived from the DB2 field QPACCOLN.

PACKAGE ID
The program name. Derived from the DB2 field QPACPKID.

TOKEN
The consistency token. Derived from the DB2 field QPACCONT.

SECTION NMB
The number of this particular data section in the series. Derived from the DB2 field QPACRECN.

PROGRAM TYPE
The program type. Derived from the DB2 field QPACFLGS.

SCHEMA NAME
The schema name under which the stored procedure, user-defined function, or trigger is running. Derived from DB2 field QPACASCH.

NON-ZERO CLASS 8
Indicates whether there is non-zero accounting class 8 data. Derived from the DB2 field QPACFLGS.

ACTIVITY NAME
Name of the stored procedure, user-define function, or trigger. Derived from the DB2 field QPACAANM.

SQL STMTS
The number of SQL statements issued in this package or DBRM. Derived from the DB2 field QPACSQLC.

USED BY STOR.PROC
Indicates whether this package was loaded by a stored procedure. Derived from the DB2 field QPACINSP.

LAST EXECUTED
Indicates whether this package or DBRM is either currently executing or is the most recently executed package or DBRM. Derived from the DB2 field QPACFLGS.

NON-ZERO CLASS 7
Indicates whether there is non-zero accounting class 7 data. Derived from the DB2 field QPACFLGS.

ACTIVITY TYPE
Indicates whether the activity is a stored procedure, user-defined function, or a trigger. Derived from DB2 field QPACAAFG.

SUCC AUTH CHECK
Indicates whether a successful package EXECUTE authorization check was made and DB2 catalog access was avoided. Derived from the DB2 field QPACPAC.

CLASS 7

BEGINNING STORE CLOCK TIME
The store clock time at entry to DB2 for the most recent execution of this package or DBRM. Derived from the DB2 field QPACSCB.

ENDING STORE CLOCK TIME
The store clock time at exit from DB2 after the most recent execution of this package or DBRM. Derived from the DB2 field QPACSCE.

BEGINNING TCB CPU TIME
The TCB CPU time at entry to DB2 for the most recent execution of this package or DBRM. Derived from the DB2 field QPACBJST.

ENDING TCB CPU TIME
The TCB CPU time at exit from DB2 after the most recent execution of this package or DBRM. Derived from the DB2 field QPACEJST.

TOTAL ELAPSED TIME
The total elapsed time for executing this package or DBRM. Derived from the DB2 field QPACSCT.

TOTAL TCB TIME
The total TCB CPU time for executing this package or DBRM. Derived from the DB2 field QPACTJST.

DB2 ENTRY/EXIT
The number of DB2 entries or exits during the execution of this package or DBRM. Derived from the DB2 field QPACARNA.

CLASS 8

LOCK/LATCH SUSP TIME
The accumulated lock and latch time. Derived from the DB2 field QPACAWTL.

LOCK/LATCH SUSP EVENTS
The number of wait trace events processed for lock/latch. Derived from the DB2 field QPACARNL.

SYNCHRONOUS I/O SUSP TIME
The accumulated elapsed I/O wait time. Derived from the DB2 field QPACAWTI.

SYNCHRONOUS I/O SUSP EVENTS
The number of wait trace events processed for I/O. Derived from the DB2 field QPACARNE.

OTHER READ SUSP TIME
The accumulated read I/O wait time. Derived from the DB2 field QPACAWTR.

OTHER READ SUSP EVENTS
The number of suspensions due to read I/O. Derived from the DB2 field QPACARNR.

OTHER WRITE SUSP TIME
The accumulated write I/O wait time. Derived from the DB2 field QPACAWTW.

OTHER WRITE SUSP EVENTS
The number of suspensions due to write I/O. Derived from the DB2 field QPACARNW.

SERV.TASK SWITCH SUSP TIME
The accumulated service task wait time. Derived from the DB2 field QPACAWTE.

SERV.TASK SWITCH SUSP EVENTS
The number of wait trace events processed for DB2 service tasks. Derived from the DB2 field QPACARNS.

ARCH.LOG(QUIES) SUSP TIME
The accumulated wait time due to the processing of ARCHIVE LOG MODE (QUIESCE) commands. Note that this is the amount of time for which the thread was suspended, not the amount of time that the commands took to complete. Derived from the DB2 field QPACALOG.

ARCH.LOG(QUIES) SUSP EVENTS
The number of ARCHIVE LOG MODE (QUIESCE) commands issued. Derived from the DB2 field QPACALCT.

ARCH.LOG READ SUSP TIME
The time spent waiting for archive reads (TAPE). Derived from the DB2 field QPACAWAR.

ARCH.LOG READ SUSP EVENTS
The number of wait trace events processed for archive reads. Derived from the DB2 field QPACANAR.

DRAIN LOCK SUSP TIME
The accumulated wait time for a drain lock. Derived from the DB2 field QPACAWDR.

DRAIN LOCK SUSP EVENTS
The number of wait trace events processed for waits for drain locks. Derived from the DB2 field QPACARND.

CLAIM RELEASE SUSP TIME
The accumulated wait time for a drain when waiting for claims to be released. Derived from the DB2 field QPACAWCL.

CLAIM RELEASE SUSP EVENTS
The number of wait trace events processed for waits for claims to be released. Derived from the DB2 field QPACARNC.

PAGE LATCH SUSP TIME
The accumulated wait time for page latch contention. Derived from the DB2 field QPACAWTP.

PAGE LATCH SUSP EVENTS
The number of page latch wait trace events processed. Derived from the DB2 field QPACARNH.

NOTIFY MESSAGES SUSP TIME
The elapsed time spent in waiting for suspensions processed for sending notify messages to other members in the data sharing group. Derived from the DB2 field QPACAWTG.

NOTIFY MESSAGES EVENTS
The number of wait trace events processed for sending notify messages to other members in the data sharing group. Derived from the DB2 field QPACARNG.

GLOBAL CONTENT. SUSP TIME
The elapsed time spent in waiting for suspensions due to global lock contentions. Derived from the DB2 field QPACAWTJ.

GLOBAL CONTENTION EVENTS
The number of wait trace events processed for group-level contentions in a data sharing environment. Derived from the DB2 field QPACARNJ.

SCHED.PROCEDURE SUSP TIME
The elapsed time spent in waiting for an available TCB before the stored procedure could be scheduled. Derived from the DB2 field QPACCAST.

STORED PROCEDURE EVENTS
The number of wait trace events processed for an unavailable TCB needed for a stored procedure. Derived from the DB2 field QPACCANM.

SCHED.UDF SUSP TIME
The elapsed time spent in waiting for an available TCB before the stored UDF be scheduled. Derived from the DB2 field QPACUDST.

UDF EVENTS
The number of wait trace events processed for an unavailable TCB needed for a UDF. Derived from the DB2 field QPACCUDNU.

STORED PROCEDURE EXECUTED
The number of stored procedures executed. This is only shown if DB2 accounting class 8 is active. Derived from DB2 field QPACSPNS

Group Buffer Pools Activity Data

The record contains one data section for each group buffer pool. The following data is printed for each section in the record:

GROUP BUFFER POOL ID
The group buffer pool identifier. Derived from the DB2 field QBGAGN.

READ(NF)-DATA RETURNED
The number of coupling facility read requests necessary because the requested page was not found in the buffer pool. Data is returned from the group buffer pool. Derived from the DB2 field QBGAMD.

CLEAN PAGES WRITTEN
The number of clean pages written to the group buffer pool. Derived from the DB2 field QBGAWC.

READ(XI)-DATA RETURNED
The number of coupling facility read requests caused by the buffer being marked *invalid* . Data is returned from the group buffer pool. Derived from the DB2 field QBGAXD.

READ(NF)-NO DATA RET.
The number of synchronous coupling facility read requests necessary because the requested page was not found in the buffer pool. Data is not returned from the coupling facility. Derived from the DB2 field ABGAMR.

CHANGED PAGES WRITTEN
The number of changed pages written to the group buffer pool. Derived from the DB2 field QBGASW.

READ(XI)-NO DATA RET.
The number of synchronous coupling facility read requests for a buffer marked *invalid* . Data is not returned from the group buffer pool. Derived from the DB2 field ABGAXR.

READ PREFETCH
The number of pages read from the group buffer pool due to prefetch under the control of the agent. Derived from the DB2 field QBGAMN.

UNREGISTER PAGE
The number of coupling facility requests to unregister a page. Derived from the DB2 field QBGADG.

EXPLICIT X-INVALID
The number of explicit cross-invalidations. Derived from the DB2 field QBGAEX.

WRITE TO SEC GBP
The number of changed pages written to the secondary GBP for duplexing. Derived from the DB2 field QBGA2W.

Data Sharing Locking Data

LOCK REQUESTS
The number of lock requests for P-locks. These lock requests are a subset of LOCK REQUEST, field ID QTXALOCK, described on page 851 . Derived from the DB2 field QTGALPLK.

LOCK - XES
The number of lock requests propagated to MVS XES. Derived from the DB2 field QTGALSLM.

SUSPENSIONS - IRLM
The number of suspensions due to IRLM global resource contention. The IRLM lock states were in conflict. Derived from the DB2 field QTGAIGLO.

INCOMPATIBLE LOCK
The number of global lock or change requests denied or suspended due to an incompatible retained lock. Derived from the DB2 field QTGADRTA.

UNLOCK REQUESTS
The number of unlock requests for P-locks. These unlock requests are a subset of UNLOCK REQUEST, field ID QTXAUNLK, described on page 852 . Derived from the DB2 field QTGAUPLK.

UNLOCK - XES
The number of unlock requests propagated to MVS XES. Derived from the DB2 field QTGAUSLM.

SUSPENSIONS - XES
The number of suspensions due to MVS XES global resource contention. The MVS XES lock states were in conflict but the IRLM lock states were not. Derived from the DB2 field QTGASGLO.

NOTIFY SENT
The number of notify messages sent. Derived from the DB2 field QTGANTFY.

CHANGE REQUESTS
The number of change requests for P-locks. These change requests are a subset of CHANGE REQUEST, field ID QTXACHG, described on page 852 . Derived from the DB2 field QTGACPLK.

CHANGE - XES
The number of change requests propagated to MVS XES. Derived from the DB2 field QTGACSLM.

SUSPENSIONS - FALSE
The number of suspensions due to false contention. Derived from the DB2 field QTGAFLSE.

Data Sharing Accounting Data

MEMBER NAMES
For an assisting task, the name of the parallelism coordinator. For a coordinating task, the name of each assisting member. Derived from the DB2 field QWDAXCQO.

Instrumentation Accounting Data Overflow

ARCH.LOG(QUIES) SUSP TIME
The accumulated wait time due to processing of ARCHIVE LOG MODE (QUIESCE) commands. Note that this is the amount of time for which the thread was suspended, not the amount of time that the commands took to complete. Derived from the DB2 field QWAXALOG.

ARCH.LOG(QUIES) SUSP EVENTS
The number of ARCHIVE LOG MODE (QUIESCE) commands issued. Derived from the DB2 field QWAXALCT.

ARCH.LOG READ SUSP TIME
The time spent waiting for archive reads (TAPE). Derived from the DB2 field QWAXAWAR.

ARCH.LOG READ SUSP EVENTS
The number of wait trace events processed for archive reads. Derived from the DB2 field QWAXANAR.

DRAIN LOCK SUSP TIME
The accumulated wait time for a drain lock. Derived from the DB2 field QWAXAWDR.

DRAIN LOCK SUSP EVENTS
The number of wait trace events processed for waits for drain locks. Derived from the DB2 field QWAXARND.

CLAIM RELEASE SUSP TIME
The accumulated wait time for a drain when waiting for claims to be released. Derived from the DB2 field QWAXAWCL.

CLAIM RELEASE SUSP EVENTS
The number of wait trace events processed for waits for claims to be released. Derived from the DB2 field QWAXARNC.

OPEN/CLOSE SUSP TIME
Accumulated waiting time for a synchronous execution unit switch to the DB2 OPEN/CLOSE dataset service for the HSM recall service. Derived from DB2 field QWAXOCSE.

OPEN/CLOSE SUSP EVENTS
Number of wait trace events processed of waits for sysnchronous execution unit switching to the Open/Close service. Derived from DB2 field QWAXOCNS.

SYSLGRNG SUSP TIME
Accumulated wait time for a sysnchronous execution unit switch to the DB2 SYSLGRNG recording service. Derived from DB2 field QWAXSLSE.

SYSLGRNG SUSP EVENTS
Number of wait trace events for a sysnchronous execution unit switch to the DB2 SYSLGRNG recording service. Derived from DB2 field QWAXSLNS.

EXC/DEL/DEF SUSP TIME
Accumulated wait time for a synchronous execution unit switch to the DB2 data space manager services. Derived from DB2 field QWAXDSSE.

EXC/DEL/DEF SUSP EVENTS
Number of wait trace events for waits for sysnchronous execution unit switching to the DB2 data space manager services. Derived from DB2 field QWAXDSNS.

OTHER SERVICE SUSP TIME
Accumulated wait time for a synchronous execution unit switch to other DB2 service tasks. Derived from DB2 field QWAXOTSE.

OTHER SERVICE SUSP EVENTS
Number of wait trace events for a synchronous execution unit switch to other DB2 service tasks. Derived from DB2 field QWAXOTNS.

149 - Resource Locking

Resource locking shows the data from IFCID 149.

This record only contains data from an Online Monitor trace data set.

```
|-------------------------------------------------------------------------------------------------------------------------
|                                                LOCK RESOURCE DATA
|LOCK RES TYPE : TABLE LOCKING                DBID:     257             OBID:     14            RESOURCE ID: X'00000000'
|HASH TOKEN    : X'000021A0'
|.........................................................................................................................
|                                                HELD LOCK DATA
|LOCK REQUEST TOKEN       X'02B6D298'   LOCK DURATION:   COMMIT                ACE TOKEN                X'0295BB78'
|LOCK STATE:     INTENT SHARE
|QW0150RW  N/A           QW0150UC  N/A QW0150TL  N/A
|QW0150SC  (1) N/A    (2) N/A    (3) N/A    (4) N/A    (5) N/A    (6) N/A    (7) N/A    (8) N/A
|-------------------------------------------------------------------------------------------------------------------------
```

Lock Resource Data

LOCK RES TYPE
The locked resource type. Derived from the DB2 field QW0150KT.

DBID The database ID. This field is not applicable if the value in LOCK RES TYPE is `SKELETON CURSOR TABLE LOCKING` , `SKELETON PACKAGE TABLE LOCK` , or `COLLECTION` . Derived from the DB2 fields QW0150KD, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0150KD is shown. However, if QW0150KD contains 0, N/A is displayed.

OBID The object ID. This field is not applicable if the value in LOCK RES TYPE is `SKELETON CURSOR TABLE LOCKING` , `SKELETON PACKAGE TABLE LOCK` , or `COLLECTION` . Derived from the DB2 fields QW0150KP and the DB2 fields QW0105TN or QW0107TN, or QW0105OB or QW0107OB.

If the resource involved in the lock is a table space, this field is derived from the DB2 fields QW0150KP, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the table space name is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0150KP is shown. However, if QW0150KP contains 0, N/A is displayed.

If the resource involved in the lock is a page set, this field is derived from the DB2 fields QW0150KP, and QW0105OB or QW0107OB.

If either QW0105OB or QW0107OB contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0150KP is shown. However, if QW0150KP contains 0, N/A is displayed.

RESOURCE ID
The hexadecimal identifier of the small resource. If LOCK RES TYPE is:

DATA SET LOCKING (PARTITION)
Last byte is the partition number

DATA PAGE LOCKING
First 3 bytes are the page number

INDEX PAGE LOCKING
First 3 bytes are the page number and the last byte is the subpage number

This field is not applicable if the value in LOCK RES TYPE is `SKELETON CURSOR TABLE LOCKING` , `SKELETON PACKAGE TABLE LOCK`, or `COLLECTION` . Derived from the DB2 field QW0150KR.

NAME The plan name or collection name. This field is only printed if the value in LOCK RES TYPE is `SKELETON CURSOR TABLE LOCKING` or `COLLECTION` .

The plan name is derived from the DB2 field QW0150KD, QW0150KP, and QW0150KR when the locked resource type is skeleton cursor table locking.

The collection name is derived from the DB2 field QW0150RN. when the locked resource type is collection.

COLL The collection identifier. This field is only printed if the value in LOCK RES TYPE is `SKELETON PACKAGE TABLE LOCK` . Derived from the DB2 field QW0150RN.

PKID The package identifier. This field is only printed if the value in LOCK RES TYPE is `SKELETON PACKAGE TABLE LOCK` . Derived from the DB2 field QW0150RN.

CTKN The consistency token. This field is only printed if the value in LOCK RES TYPE is `SKELETON PACKAGE TABLE LOCK` . Derived from the DB2 field QW0150RN.

HASH TOKEN
The hash token of the resource name. Derived from the DB2 field QW0150LH.

Held Lock Data

For each unit of work that holds a lock on the resource described in the lock resource data section of this record, the record contains one held lock data section. Each held lock data section contains the information about one unit of work:

LOCK REQUEST TOKEN
The lock request token in hexadecimal. Derived from the DB2 fields QW0150R3.

LOCK DURATION
The duration for which the lock is held. Derived from the DB2 fields QW0150D3.

ACE TOKEN
The hexadecimal address of the agent control element indicating the holder of this lock. Derived from the DB2 field QW0150A3.

LOCK STATE
The lock state. Derived from the DB2 field QW0150ST.

Suspended Request Data

LOCK REQUEST TOKEN
The lock request token in hexadecimal. Derived from the DB2 fields QW0150R4.

ACE TOKEN
The hexadecimal address of the agent control element indicating the ACE that is suspended for this lock. Derived from the DB2 fields QW0150A4.

LOCK DURATION
The duration for which the lock is held:

MANUAL Varies depending on the ISOLATION parameter

MANUAL+1
Temporary change of consistency level from CS to RR during bind and DDL

COMMIT Until commit

COMMIT+1
Past commit; applies to locks needed to maintain the position for a cursor opened WITH HOLD

ALLOCATION
Until deallocation

PLAN For the duration of the plan

FREE ALL LOCKS
Until all locks are freed

Derived from the DB2 fields QW0150D4.

LOCK FUNCTION
The lock function. Derived from the DB2 field QW0150F4.

150 - Thread Locking

Thread locking shows the data from IFCID 150.

This record only contains data from an Online Monitor trace data set.

```
------------------------------------------------------------------------------------------------------------------------
                                                     LOCK RESOURCE DATA
LOCK RES TYPE : x'0C'                         DBID:       6              OBID:    158          RESOURCE ID: x'0000000000'
HASH TOKEN    : x'000000A0'
........................................................................................................................
                                                     HELD LOCK DATA
LOCK REQUEST TOKEN       x'02B5D6C4'   LOCK DURATION: COMMIT                  ACE TOKEN x'02C43278'
LOCK STATE: INTENT SHARE
QW0150RW  N/A          QW0150UC  N/A                TYPE OF LOCK    P-LOCK
QW0150SC  (1) N/A    (2) N/A    (3) N/A    (4) N/A    (5) N/A    (6) N/A    (7) N/A    (8) N/A
------------------------------------------------------------------------------------------------------------------------
```

Lock Resource Data

LOCK RES TYPE
The locked resource type. Derived from the DB2 field QW0150KT.

DBID The database ID. This field is not applicable if the value in LOCK RES TYPE is SKELETON CURSOR TABLE LOCKING , SKELETON PACKAGE TABLE LOCK , COLLECTION , or ALTER BUFFER POOL . Derived from the DB2 fields QW0150KD, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0150KD is shown. However, if QW0150KD contains 0, N/A is displayed.

OBID The object ID. This field is not applicable if the value in LOCK RES TYPE is SKELETON CURSOR TABLE LOCKING , SKELETON PACKAGE TABLE LOCK , COLLECTION , or ALTER BUFFER POOL . Derived from the DB2 fields QW0150KP and the DB2 fields QW0105TN or QW0107TN, or QW0105OB or QW0107OB.

If the resource involved in the lock is a table space, this field is derived from the DB2 fields QW0150KP, and QW0105TN or QW0107TN.

- If either QW0105TN or QW0107TN contains appropriate data, the table space name is shown.
- If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0150KP is shown. However, if QW0150KP contains 0, N/A is displayed.

If the resource involved in the lock is a page set, this field is derived from the DB2 fields QW0150KP, and QW0105OB or QW0107OB.

- If either QW0105OB or QW0107OB contains appropriate data, the name of the object is shown.
- If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0150KP is shown. However, if QW0150KP contains 0, N/A is displayed.

RESOURCE ID
The hexadecimal identifier of the small resource. If LOCK RES TYPE is:

DATA PAGE LOCKING
First 3 bytes are the page number

DATA SET LOCKING (PARTITION)
Last byte is the partition number

INDEX PAGE LOCKING
First 3 bytes are the page number and the last byte is the subpage number

HASH ANCHOR LOCK
First 3 bytes are the page number and the last byte is the anchor point ID

CS-READ DRAIN
Last byte is the partition number (optional)

RR-READ DRAIN
Last byte is the partition number (optional)

WRITE DRAIN
Last byte is the partition number (optional)

ROW LOCK
First 3 bytes are the page number and the last byte is the row ID of the record

INDEX END OF FILE LOCK
Last byte is the partition number (optional)

Note: In large partitioned table spaces, the page number covers 4 bytes instead of 3.

This field is not applicable if the value in LOCK RES TYPE is `SKELETON CURSOR TABLE LOCKING`, `SKELETON PACKAGE TABLE LOCK`, `COLLECTION`, `ALTER BUFFER POOL`, or `PAGESET LOCK`. If the value is `UTILITY SERIALIZATION LOCK` or `BINDLOCK`, N/A is printed. Derived from the DB2 field QW0150KR.

HASH TOKEN
The hash token of the resource name. Derived from the DB2 field QW0150LH.

Held Lock Data

LOCK REQUEST TOKEN
The lock request token in hexadecimal. Derived from the DB2 field QW0150R3.

LOCK DURATION
The duration for which the lock is held:

MANUAL Varies depending on the ISOLATION parameter (QW0150D3=x'20')

MANUAL+1
Temporary change of consistency level from CS to RR during bind and DDL (QW0150D3=x'21')

COMMIT Until commit (QW0150D3=x'40')

COMMIT+1
Past commit; applies to locks needed to maintain the position for a cursor opened WITH HOLD (QW0150D3=x'41')

ALLOCATION
Until deallocation (QW0150D3=x'60')

PLAN For the duration of the plan (QW0150D3=x'80')

UTIL For the duration of the utility execution (QW0150D3=x'81')

INTEREST
Duration used for P-locks (QW0150D3=x'FE')

FREE ALL
Until all locks are freed (QW0150D3=x'FF')

N/A Not applicable for NOTIFY SUSPEND

ACE TOKEN
The hexadecimal address of the agent control element indicating the holder of this lock. Derived from the DB2 field QW0150A3.

LOCK STATE
The lock state. Derived from the DB2 field QW0150ST.

TYPE OF LOCK
The type of lock. Derived from the DB2 field QW0150TL.

151 - User Record

The IFCID 151 record is printed in the standard hexadecimal dump format. The character format is on the right.

```
|-------------------------------------------------------------------------------------------------------------------------------
|0000  XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX   XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX  | CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
|0020  XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX   XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX  | CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
...
|-------------------------------------------------------------------------------------------------------------------------------
```

152 - User Record

The IFCID 152 record is printed in the standard hexadecimal dump format. The character format is on the right.

```
|-------------------------------------------------------------------------------------------------------------------------------
|0000  XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX   XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX  | CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
|0020  XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX   XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX  | CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
...
|-------------------------------------------------------------------------------------------------------------------------------
```

153 - User Record

The IFCID 153 record is printed in the standard hexadecimal dump format. The character format is on the right.

```
|-------------------------------------------------------------------------------------------------------------------------------
|0000  XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX   XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX  | CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
|0020  XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX   XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX  | CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
...
|-------------------------------------------------------------------------------------------------------------------------------
```

154 - User Record

The IFCID 154 record is printed in the standard hexadecimal dump format. The character format is on the right.

```
|-------------------------------------------------------------------------------------------------------------------------------
|0000  XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX   XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX  | CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
|0020  XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX   XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX  | CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
...
|-------------------------------------------------------------------------------------------------------------------------------
```

155 - User Record

The IFCID 155 record is printed in the standard hexadecimal dump format. The character format is on the right.

```
|-------------------------------------------------------------------------------------------------------------------------------
|0000  XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX   XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX  | CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
|0020  XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX   XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX  | CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
...
|-------------------------------------------------------------------------------------------------------------------------------
```

156 - User Record

The IFCID 156 record is printed in the standard hexadecimal dump format. The character format is on the right.

```
|-------------------------------------------------------------------------------------------------------------------------------
|0000  XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX   XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX  | CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
|0020  XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX   XXXXXXXX  XXXXXXXX  XXXXXXXX  XXXXXXXX  | CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
...
|-------------------------------------------------------------------------------------------------------------------------------
```

157 - DRDS RDS Interface

DRDS RDS interface (requesting agent data) shows the data from IFCID 157.

```
EVENT: INVOCATION  REQUEST   : READ   PGM: DSNESM68
CALL : AUXCALL     PLAN SECTN:     1
SERVING LOCATION:  DSNAPC5
```

EVENT
The type of event. Derived from the DB2 field QW0157E.

REQUEST
The type of request. This field shows N/P if the value in EVENT is `RETURN` . Derived from the DB2 field QW0157O.

PGM The program name. This field shows N/P if the value in EVENT is `RETURN` . Derived from the DB2 field QW0157PN.

CALL The type of call. This field shows N/P if the value in EVENT is `RETURN` . Derived from the DB2 field QW0157CT.

PLAN SECTN
The section number in the plan. This field shows N/P if the value in EVENT is `RETURN` . Derived from the DB2 field QW0157SN.

SERVING LOCATION
The name of the server location. This field shows N/P if the value in EVENT is `RETURN` . Derived from the DB2 field QW0157LN.

158 - DRDS CNV Interface

DRDS conversation manager interface (server agent data) shows the data from IFCID 158.

```
EVENT: INVOCATION  CALL TYPE : AUXCALL
PGM  : DSNESM68    PLAN SECTN:     1
```

EVENT
The type of event. Derived from the DB2 field QW0158E.

CALL TYPE
The type of call. This field shows N/P if the value in EVENT is `RETURN` . Derived from the DB2 field QW0158CT.

PGM The name of the program. This field shows N/P if the value in EVENT is `RETURN` . Derived from the DB2 field QW0158PN.

PLAN SECTN
The section number within the plan. This field shows N/P if the value in EVENT is `RETURN` . Derived from the DB2 field QW0158SN.

159 - DRDS Req Site Data

DRDS requesting site data shows the data from IFCID 159.

```
EVENT : WAIT RESP      SERVLOC : N/P
CONVID: x'02742038'      GPR15 :          0
```

EVENT
The type of event. Derived from the DB2 field QW0159E.

SERVLOC or **RESPLOC**
The name of the server location. This field shows N/P if the value in EVENT is `WAIT RESP` . Derived from the DB2 field QW0159LN.

CONVID
The conversation identification number. Derived from the DB2 field QW0159CI.

GPR15
The return code in general purpose register 15. This field shows N/P if the value in EVENT is `CREATE CONV` . Derived from the DB2 field QW015915.

160 - DC Requester

DC requester (requesting agent data) shows the data from IFCID 160.

```
-------------------------------------------------------------------------------------------------------------------
EVENT:  ALLOCATE CONVERSATION       MSGTYPE:  N/P         MSG RESPONSE: N/P           MSG LGTH:  N/P
MSGCLASS:  N/P                 MSGNO N/P       MSGTIME 03/23/93 04:59:49.649239
QW0160ID  x'21'                 QW0160CI  x'00BF3128'           QW0160VI  x'01000003'        QW0160SI  x'0073F4923DC3D965'
QW0160LM  x'E2E8E2C1C4D4D3D4'   QW0160VT  x'4D000000060E2CED'   QW0160DA  x'0000000000000000'
-------------------------------------------------------------------------------------------------------------------
```

EVENT
The type of event. Derived from the DB2 field QW0160E.

MSGTYPE
The message type. This field is only applicable if the value in EVENT is RECEIVE RESPONSE MESSAGE or SEND REQUEST MESSAGE . Derived from the DB2 field QW0160T.

MSG RESPONSE
The message response. This field is only applicable if the value in EVENT is RECEIVE RESPONSE MESSAGE or SEND REQUEST MESSAGE . Derived from the DB2 field QW0160R.

MSG LGTH
The message length. This field is only applicable if the value in EVENT is RESET CONVERSATION , RECEIVE RESPONSE MESSAGE , or SEND REQUEST MESSAGE . Derived from the DB2 field QW0160ML.

MSGCLASS
The message class. This field is only applicable if the value in EVENT is RESET CONVERSATION , RECEIVE RESPONSE MESSAGE , SEND REQUEST MESSAGE , or WAIT FOR RESPONSE MESSAGE . Derived from the DB2 field QW0160MC.

MSGNO
The message number. This field is only applicable if the value in EVENT is RESET CONVERSATION , RECEIVE RESPONSE MESSAGE , SEND REQUEST MESSAGE , or WAIT FOR RESPONSE MESSAGE . Derived from the DB2 field QW0160MN.

MSGTIME
The timestamp at the start of the VTAM request. Derived from the DB2 field QW0160MS.

161 - DC Server

DC server (responding agent data) shows the data from IFCID 161.

```
|-------------------------------------------------------------------------------------------------------------------------
|EVENT:  RECEIVE REQUEST MESSAGE     MSGTYPE:  REQUEST     MSG RESPONSE: DATA           MSG LGTH:         756
|MSGCLASS:      4               MSGNO     0     MSGTIME 03/13/93 23:18:23.315984
|QW0161ID  x'11'                 QW0161CI  x'1032E128'          QW0161VI  x'01000008'        QW0161SI  x'00233E67363C9EA2'
|QW0161LM  x'C9C2D4D9C4C24040'   QW0161VT  x'0000000000000000'   QW0161DA  x'0000000000000000'
|-------------------------------------------------------------------------------------------------------------------------
```

EVENT
The type of event. Derived from the DB2 field QW0161E.

MSGTYPE
The message type. This field is only applicable if the value in EVENT is RECEIVE REQUEST MESSAGE or SEND RESPONSE MESSAGE . Derived from the DB2 field QW0161T.

MSG RESPONSE
The message response. This field is only applicable if the value in EVENT is RECEIVE REQUEST MESSAGE or SEND RESPONSE MESSAGE . Derived from the DB2 field QW0161R.

MSG LGTH
The message length. This field is only applicable if the value in EVENT is RECEIVE REQUEST MESSAGE or SEND RESPONSE MESSAGE . Derived from the DB2 field QW0161ML.

MSGCLASS
The message class. This field is only applicable if the value in EVENT is RECEIVE REQUEST MESSAGE or SEND RESPONSE MESSAGE . Derived from the DB2 field QW0161MC.

MSGNO
The message number. This field is only applicable if the value in EVENT is RECEIVE REQUEST MESSAGE or SEND RESPONSE MESSAGE . Derived from the DB2 field QW0161MN.

MSGTIME
Message timestamp. This field is only applicable if the value in EVENT is RECEIVE REQUEST MESSAGE or SEND RESPONSE MESSAGE . Derived from the DB2 field QW0161MS.

162 - DTM Request

DTM Request shows the data from IFCID 162.

```
EVENT:          MIGRATE TRANSACTION
LOCATION TYPE:  UNKNOWN TYPE (DRDA ONLY)
LOCATION NAME:  LOCATIONNAME12
```

EVENT
The type of event. Derived from the DB2 field QW0162E.

LOCATION TYPE
The type of location. Derived from the DB2 field QW0162LT.

LOCATION NAME
The name of the DB2 location where this event occurred. Derived from the DB2 field QW0162LN.

163 - DTM Respond

DTM respond shows the data from IFCID 163.

```
EVENT:  DBAT CREATED AT SERVER
```

EVENT
The event type. Derived from the DB2 field QW0163E.

167 - Conv Alloc Req Queued

Conversation allocation request queued shows the data from IFCID 167.

```
CONVID    x'00000000'  LU NAME:      LUNAME12
CONV ALLOC        24   MODE NAME:    MODENAME
CONV QUEUED       15   CONV LIMIT          25
```

CONVID
The conversation identifier. Derived from the DB2 field QW0167CI.

LU NAME
The logical unit name. Derived from the DB2 field QW0167LU.

CONV ALLOC
The conversation allocated. Derived from the DB2 field QW0167CA.

MODE NAME
The mode name. Derived from the DB2 field QW0167MO.

CONV QUEUED
The conversation queued. Derived from the DB2 field QW0167CQ.

CONV LIMIT
The conversation limit. Derived from the DB2 field QW0167CL.

169 - Dist Authid Translation

Distributed authorization ID translation shows the data from IFCID 169.

```
SERVLOC:       DSNAPC4           REQ AUTHID:  DB2ADM
TRANSLATION TYPE:      INBOUND   RESP LUNAM:  SYDAPC4
TRANSLATED AUTHID:     DB2ADM
```

SERVLOC
If the value of TRANSLATION TYPE is `INBOUND` , this is the service location name regardless of whether the server is another DB2. If the value of TRANSLATION TYPE is `OUTBOUND` , this field contains one of the following values:

- The name of the requesting DB2 location
- The requester's LUNAME in the form *<LUNAME>*
- The requester's IP address in the form *NNN.NNN.NNN.NNN*

Derived from the DB2 field QW0169LO.

REQ AUTHID
The requesting authorization ID.

If the value of TRANSLATION TYPE is `INBOUND` , this is the authorization ID sent from the requesting location.

If the value of TRANSLATION TYPE is `OUTBOUND` , this is the untranslated authorization ID from the requesting location. Derived from the DB2 field QW0169AU.

TRANSLATION TYPE
The type of translation:

`INBOUND`
The responding DB2 site translates the AUTHID after receiving the data.

`OUTBOUND`
The requesting DB2 site translates the AUTHID before sending the data.

Derived from the DB2 field QW0169TY.

RESP LUNAM
The logical unit name.

If the value of TRANSLATION TYPE is `INBOUND` , this is the VTAM LU name of the requester location or the link name from the requester location's row in SYSIBM.SYSIPNAMES.

If the value of TRANSLATION TYPE is `OUTBOUND` , this is the VTAM LU name of the remote server or the link name from the server's row in SYSIBM.SYSIPNAMES. Derived from the DB2 field QW0169LU.

TRANSLATED AUTHID
The translated (server) authorization ID.

If the value of TRANSLATION TYPE is `INBOUND` , this is the translated authorization ID used at the server location.

If the value of TRANSLATION TYPE is `OUTBOUND` , this is the translated authorization ID sent to the server location. Derived from the DB2 field QW0169NE.

170 - Suspend of Agent

Suspend of agent shows the data from IFCID 170.

```
ACE:         1
QW0170ID x'01'  QW0170FC x'05'
```

ACE Indicates the requester. The relative number of the agent control element address in the ACE cross-reference table. This table is printed at the end of each location for every trace specified. Derived from the DB2 field QW0170AC.

171 - Resume of Agent

Resume of agent shows the data from IFCID 171.

```
QW0171R0           1     QW0171R1           2
QW0171RF           3
```

172 - Deadlock Data

Deadlock data shows the data from IFCID 172.

```
-------------------------------------------------------------------------------------------------------------------------------
                                                DEADLOCK HEADER
INTERVAL COUNT:          2   WAITERS INVOLVED:          2   TIME DETECTED: 02/20/98 09:50:14.977569
...............................................................................................................................
                                                 UNIT OF WORK
                                                R E S O U R C E
LOCK RES TYPE: DATA PAGE LOCK                    DBID: 269               OBID: 2         RESOURCE ID: X'00000200'
LOCK HASH VALUE: X'00043402'
                                                 B L O C K E R
PRIMAUTH : 'BLANK'     PLAN NAME: DSNESPRR       CORR ID: BNK                          CONN: TSO
NETWORKID: DSN3           LUNAME: IPVAM511  UNIQUENESS VALUE: X'B00AA3F5AF77' OWNING WORK UNIT:    53
MEMBER   : S511         DURATION: MANUAL + 1        STATE: SHARED              0       ACE:   2
TRANSACT : BNKTRANSACTION567890123456789012       WS_NAME: BNKWORKSTATION5678      END_USER: BNKUSID890123456
STATUS   : HOLD
QW0172HF : X'10'
                                                  W A I T E R
PRIMAUTH : N/P         PLAN NAME: DSNESPRR        CORR ID: NKA1                         CONN: TSO
NETWORKID: DSN3           LUNAME: IPVAM511  UNIQUENESS VALUE: X'B00AA725AE77' OWNING WORK UNIT:    69
MEMBER   : S511         DURATION: COMMIT            STATE: EXCLUSIVE           0       ACE:   1
TRANSACT : NKA1RANSACTION567890123456789012       WS_NAME: NKA1ORKSTATION5678      END_USER: NKA1SID890123456
DB2S ASIC:   121   REQ WORK UNIT:    69          EB PTR: X'06E545D8' REQ FUNCTION: CHANGE            WORTH: X'12'
QW0172WG : X'32'

                                                R E S O U R C E
LOCK RES TYPE: DATA PAGE LOCK                    DBID: 269               OBID: 2         RESOURCE ID: X'00000600'
LOCK HASH VALUE: X'00053406'
                                                 B L O C K E R
PRIMAUTH : NKA1        PLAN NAME: DSNESPRR       CORR ID: NKA1                         CONN: TSO
NETWORKID: DSN3           LUNAME: IPVAM511  UNIQUENESS VALUE: X'B00AA725AE77' OWNING WORK UNIT:    69
MEMBER   : S511         DURATION: MANUAL + 1        STATE: SHARED              0       ACE:   1
TRANSACT : 'BLANK'                                WS_NAME: 'BLANK'               END_USER: JUST UID
STATUS   : HOLD
QW0172HF : X'10'
                                                  W A I T E R
PRIMAUTH : BNK         PLAN NAME: DSNESPRR        CORR ID: BNK                          CONN: TSO
NETWORKID: DSN3           LUNAME: IPVAM511  UNIQUENESS VALUE: X'B00AA3F5AF77' OWNING WORK UNIT:    53
MEMBER   : S511         DURATION: COMMIT            STATE: EXCLUSIVE           0       ACE:   2
TRANSACT :         TRANSACT                       WS_NAME: 'BLANK'               END_USER: 'BLANK'
DB2S ASIC:   121   REQ WORK UNIT:    53          EB PTR: X'06E535D8' REQ FUNCTION: CHANGE            WORTH: X'11'
QW0172WG : X'32'
-------------------------------------------------------------------------------------------------------------------------------
```

Deadlock Header

INTERVAL COUNT
The deadlock interval counter. Derived from the DB2 field QW0172IT.

WAITERS INVOLVED
The number of waiters involved in the deadlock. Derived from the DB2 field QW0172NR.

TIME DETECTED
The date and time when the deadlock was detected. Derived from the DB2 field QW0172TD.

Unit of Work - Resource

The content of the LOCK RES TYPE field determines which other fields are printed in this section of the report.

LOCK RES TYPE
The locked resource type. Derived from the DB2 field QW0172FR.

DBID The database ID. This field is not applicable if the value in LOCK RES TYPE is `SKELETON CURSOR TABLE LOCKING` , `SKELETON PACKAGE TABLE LOCK` , `COLLECTION` , or `ALTER BUFFER POOL` . Derived from the DB2 fields QW0172KD, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0172KD is shown. However, if QW0172KD contains 0, N/A is displayed.

OBID The object ID. This field is not applicable if the value in LOCK RES TYPE is SKELETON CURSOR TABLE LOCKING , SKELETON PACKAGE TABLE LOCK , COLLECTION , or ALTER BUFFER POOL . Derived from the DB2 fields QW0172KP and the DB2 fields QW0105TN or QW0107TN, or QW0105OB or QW0107OB.

If the resource involved in the lock is a table space, this field is derived from the DB2 fields QW0172KP, and QW0105TN or QW0107TN.

- If either QW0105TN or QW0107TN contains appropriate data, the table space name is shown.
- If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0172KP is shown. However, if QW0172KP contains 0, N/A is displayed.

If the resource involved in the lock is a page set, this field is derived from the DB2 fields QW0172KP, and QW0105OB or QW0107OB.

- If either QW0105OB or QW0107OB contains appropriate data, the name of the object is shown.
- If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0172KP is shown. However, if QW0172KP contains 0, N/A is displayed.

RESOURCE ID
The hexadecimal identifier of the small resource. If LOCK RES TYPE is:

DATA PAGE LOCKING
First 3 bytes are the page number

DATA SET LOCKING (PARTITION)
Last byte is the partition number

INDEX PAGE LOCKING
First 3 bytes are the page number and the last byte is the subpage number

HASH ANCHOR LOCK
First 3 bytes are the page number and the last byte is the anchor point ID

CS-READ DRAIN
Last byte is the partition number (optional)

RR-READ DRAIN
Last byte is the partition number (optional)

WRITE DRAIN
Last byte is the partition number (optional)

ROW LOCK
First 3 bytes are the page number and the last byte is the row ID of the record

INDEX END OF FILE LOCK
Last byte is the partition number (optional)

Note: In large partitioned table spaces, the page number covers 4 bytes instead of 3.

This field is not applicable if the value in LOCK RES TYPE is SKELETON CURSOR TABLE LOCKING, SKELETON PACKAGE TABLE LOCK, COLLECTION, or ALTER

BUFFER POOL. If the value is UTILITY SERIALIZATION LOCK or BINDLOCK, N/A is printed. Derived from the DB2 field QW0172KR.

LOCK HASH VALUE
The hash value of the locked resource. Derived from the DB2 field QW0172LH.

Unit of Work - Blocker

A blocker is a thread that prevents its victim from aquiring its lock. The blocker might be a holder of the lock, or it might be another waiter (that came in before the victim) that is incompatible with the holder's lock.

Note: If the fields PLAN NAME, CORR ID, CONN, and NETWORKID show an asterisk (*), the blocking request was released by the requester or was timed out between the detection and reporting of the deadlock.

PRIMAUTH
The primary authorization ID from connection or signon.

PLAN NAME
The plan name of the blocker. Derived from the DB2 field QW0172HP.

CORR ID
The correlation name of the blocker. Derived from the DB2 field QW0172HR.

CONN The connection ID of the blocker. Derived from the DB2 field QW0172HN.

NETWORKID
The logical unit of work identifier of the blocker. The data shown is only valid for distributed threads. Derived from the DB2 field QW0172HL.

LUNAME
The logical unit name of the blocker. The data shown is only valid for distributed threads. Derived from the DB2 field QW0172HL.

UNIQUENESS VALUE
The uniqueness value of the blocker. The data shown is only valid for distributed threads. Derived from the DB2 field QW0172HL.

OWNING WORK UNIT
The owning unit of work of the blocker. Derived from the DB2 field QW0172HO.

MEMBER
The DB2 member name. Derived from the DB2 field QW0172HI.

DURATION
The lock duration of the thread blocking the resource. Derived from QW0172HD.

STATE
The lock state of the thread holding the resource. Derived from the DB2 field QW0172HS.

ACE Indicates the blocker. The relative number of the agent control element address in the ACE cross-reference table. This table is printed at the end of each location for every trace specified. Derived from the DB2 field QW0172HO.

TRANSACT
The transaction or application name that the end user is running. This

identifies the application that is currently running, not the product used to run the application. Derived from the DB2 field QWHCEUTX.

WS_NAME
The end user's workstation name. This field contains blanks if the client did not supply this information. Derived from the DB2 field QWHCEUWN.

END_USER
The end user's work station user ID. This can be different from the authorization ID used to connect to DB2. Derived from the DB2 field QWHCEUID.

STATUS
The status of the blocker.

WAIT The blocker is waiting for the resource.

HOLD The blocker is holding the resource.

Derived from the DB2 field QW0172H2.

Unit of Work - Waiter

PRIMAUTH
The primary authorization ID from connection or signon.

PLAN NAME
The plan name of the waiter. Derived from the DB2 field QW0172WP.

CORR ID
The correlation ID of the waiter. Derived from the DB2 field QW0172WR.

CONN The connection ID of the waiter. Derived from the DB2 field QW0172WN.

NETWORKID
The logical unit of work identifier of the waiter. The data shown is only valid for distributed threads. Derived from the DB2 field QW0172WL.

LUNAME
The logical unit name of the waiter. The data shown is only valid for distributed threads. Derived from the DB2 field QW0172WL.

UNIQUENESS VALUE
The uniqueness value of the waiter. The data shown is only valid for distributed threads. Derived from the DB2 field QW0172WL.

OWNING WORK UNIT
The owning unit of work of the waiter. Derived from the DB2 field QW0172WO.

MEMBER
The DB2 member name. Derived from the DB2 field QW0172HI.

DURATION
The lock duration of the thread waiting for the resource.

MANUAL Varies depending on the ISOLATION parameter (QW0172DR=x'20')

MANUAL+1
Temporary change of consistency level from CS to RR during bind and DDL (QW0172DR=x'21')

COMMIT Until commit (QW0172DR=x'40')

COMMIT+1
Past commit; applies to locks needed to maintain the position for a cursor opened WITH HOLD (QW0172DR=x'41')

ALLOCATION
Until deallocation (QW0172DR=x'60')

PLAN For the duration of the plan (QW0172DR=x'80')

UTIL For the duration of the utility execution (QW0172DR=x'81')

INTEREST
Duration used for P-locks (QW0172DR=x'FE')

FREE ALL
Until all locks are freed (QW0172DR=x'FF')

N/A Not applicable for NOTIFY SUSPEND

STATE
The lock state of the thread waiting for the resource. Derived from the DB2 field QW0172WS.

ACE Indicates the waiter. The relative number of the agent control element address in the ACE cross-reference table. This table is printed at the end of each location for every trace specified. Derived from the DB2 field QW0172WO.

TRANSACT
The transaction or application name that the end user is running. This identifies the application that is currently running, not the product used to run the application. Derived from the DB2 field QWHCEUTX.

WS_NAME
The end user's workstation name. This field contains blanks if the client did not supply this information. Derived from the DB2 field QWHCEUWN.

END_USER
The end user's work station user ID. This can be different from the authorization ID used to connect to DB2. Derived from the DB2 field QWHCEUID.

DB2S ASIC
The DB2S ASIC of the waiter. Derived from the DB2 field QW0172WW.

REQ WORK UNIT
A unique number allocated to the requesting work unit of the waiter. Derived from the DB2 field QW0172WW.

EB PTR
The EB pointer of the waiter. Derived from the DB2 field QW0172WW.

REQ FUNCTION
The function requested by the waiter. Derived from the DB2 field QW0172WF.

WORTH
The worth value DB2 assigns to the waiter. Derived from the DB2 field QW0172WA.

173 - Class 2 Time (Start)

If there is no data present for this IFCID, NO DATA is printed. If any data is found, it is printed in dump format.

174 - Arch Log CMD Sus Start

Archive log command suspension start shows the data from IFCID 174.

```
ACE:   1
QW0174EB  x'024391B8'    QW0174UR  x'0242C168'
```

ACE The relative number of the agent control element address in the ACE cross-reference table. This table is printed at the end of each location for every trace specified. Derived from the DB2 field QW0174AC.

175 - Arch Log CMD Sus End

Archive log command suspension end shows the data from IFCID 175.

```
ACE:   1
QW0175EB  x'024391B8'    QW0175UR  x'0242C168'
```

ACE The relative number of the agent control element address in the ACE cross-reference table. This table is printed at the end of each location for every trace specified. Derived from the DB2 field QW0175AC.

177 - Package Allocation

Package allocation shows the data from IFCID 177.

```
LOCATION         : DSNAPC4
COLLECTION ID    : APC4COL2
PACKAGE ID       : TESTPAK
CONSISTENCY TOKEN: x'1460CC6A0A8A97E4'
VERSION NAME     : N/P
DYNAMICRULES     : BIND
PLAN             : DISTSERV
ISOLATION        : CS
ACQUIRE          : USE
RELEASE          : COMMIT
REOPTIMIZATION   : YES
DEFERPREPARE     : YES
KEEPDYNAMIC      : NO
DBPROTOCOL       : PRIVATE
HINTID           : ABCDEFGH
```

LOCATION
The location of the package. This field shows 'BLANK' if the local location is not defined. Derived from the DB2 field QW0177LO.

COLLECTION ID
The collection name. Derived from the DB2 field QW0177CO.

PACKAGE ID
The package identifier. Derived from the DB2 field QW0177PI.

CONSISTENCY TOKEN
The consistency token (timestamp) of the program. Derived from the DB2 field QW0177CT.

VERSION NAME
The version. This field shows N/P if the record does not contain a valid version. Derived from the DB2 field QW0177VN.

DYNAMICRULES
The value of the DYNAMICRULES option on the BIND/REBIND command:

RUN Runtime rules apply to a dynamic SQL statement for authorization checking and object qualification at run time.

BIND Bind-time rules apply to a dynamic SQL statement for authorization checking and object qualification at run time.

N/P in this field indicates that DYNAMICRULES was not specified. Derived from the DB2 field QW0177DY.

PLAN The name of the plan under which the package is running. Derived from the DB2 field QW0177PL.

ISOLATION
The isolation level of the package:

RR Repeatable read

CS Cursor stability

RS Read stability

UR Uncommitted read

Derived from the DB2 field QW0177IS.

ACQUIRE
The acquire level of the package. Derived from the DB2 field QW0177AQ.

RELEASE
The release level of the package. Derived from the DB2 field QW0177RL.

REOPTIMIZATION
Indicates whether reoptimization was requested:

YES REOPT(VARS) was specified to reoptimize the access path of the SQL statement at run time.

NO NOREOPT(VARS) was specified to optimize the access path of the SQL statement only at bind time.

Derived from the DB2 field QW0177RO.

DEFERPREPARE
Indicates whether the preparation of dynamic SQL statements was deferred:

YES DEFER(PREPARE) was specified to defer the preparation of the dynamic SQL statements that refer to remote objects until run time.

NO NODEFER(PREPARE) was specified to prepare the dynamic SQL statements at bind time.

Derived from the DB2 field QW0177DP.

KEEPDYNAMIC
Indicates whether DB2 keeps (KEEPDYNAMIC(YES)) or discards (KEEPDYNAMIC(NO)) prepared SQL statements at commit points.

Derivation : QW0177KD

DBPROTOCOL
Protocol. Possible values are:

DRDA

PRIVATE

HINTID
Query optimization hint identifier, the default is blanks. Derived from DB2 field QW0177OH.

183 - DRDS RDS/SCC Interface

DRDS RDS/SCC interface shows the data from IFCID 183.

This record provides information about the type of request being processed at the requester.

This record is produced only for application-directed requests.

```
EVENT TYPE:      INVOCATION FROM RDS/SCC
FUNCTION  : EXPLICIT CONNECT
LOCATION  : DSNAPC6
COLLECTION: N/P
PACKAGE ID:    DSNESM68
SQL STATEMENT TYPE:   747  SQL STATEMENT NUMBER:   146
RETURN CODE:          0
```

EVENT TYPE
The type of event. Derived from the DB2 field QW0183E.

FUNCTION
The type of function. Derived from the DB2 field QW0183FN.

LOCATION
The location name of the application server. Derived from the DB2 field QW0183LN.

COLLECTION
The collection name. Derived from the DB2 field QW0183CO.

PACKAGE ID
The package ID. Derived from the DB2 field QW0183PN.

SQL STATEMENT TYPE
The SQL statement type:

003 OPEN

004 FETCH

005 CLOSE

014 PREPARE

015 EXECUTE

016	EXECUTE IMMEDIATE
017	DESCRIBE
018	EXPLAIN
231	SELECT
232	INSERT
233	DELETE
234	UPDATE
239	SELECT
259	SET CURRENT SQLID
268	GRANT
271	REVOKE
276	REMOTE SQL
277	ROLLBACK
278	LOCK
308	CREATE VIEW
310	COMMIT
666	INTOPEN
710	CREATE DATABASE
716	CREATE TABLESPACE
719	CREATE STOGROUP
721	CREATE TABLE
726	CREATE INDEX
728	CREATE SYNONYM
729	DROP VIEW
730	DROP SYNONYM
731	DROP INDEX
732	DROP TABLE
733	DROP TABLESPACE
734	DROP DATABASE
735	DROP STOGROUP
736	ALTER STOGROUP
738	ALTER TABLESPACE
739	ALTER INDEX
740	ALTER TABLE
741	COMMENT ON
742	LABEL ON
745	SET CURRENT PACKAGESET

746 SET HOST VAR

747 CONNECT TO

748 CONNECT RESET

749 CONNECT

750 IMPLICIT CONNECT

755 CREATE ALIAS

759 DROP ALIAS

761 DROP PACKAGE/PROGRAM

763 ALTER DATABASE

768 SET CURRNT DEGREE

769 CONNECT TO TYPE 2

770 CONN RESET TYPE 2

771 CONNECT TYPE 2

772 SET CONNECTION

773 RELEASE LOCATION

774 RELEASE CURRENT

775 RELEASE ALL

776 RELEASE ALL SQL

777 RELEASE ALL PRIV.

781 SET CURRENT RULES

782 CALL

Derived from the DB2 field QW0183ST.

SQL STATEMENT NUMBER
The SQL statement number. Derived from the DB2 field QW0183SN.

RETURN CODE
The return code. Derived from the DB2 field QW0183RC.

185 - READs Data Capture Start

If there is no data present for this IFCID, `NO DATA` is printed. If any data is found, it is printed in dump format.

188 - READs Data Capture End

READs data capture end shows the data from IFCID 188.

```
-------------------------------------------------------------------------------------------------------------------
REQUEST TYPE       : ALWAYS            READS REQUEST FLAG:  x'40'                 DESCRIBES         :               1
LONGEST LOG READ   : ACTIVE LOG        BEGIN REQUEST RBA  : x'0000000000000000'   DESCRIBE ELAPSED  :        1.000000
LOG READS RETURNED :               4   END REQUEST RBA    : x'0000000000000000'
LOG READS PERFORMED:               5                                             TABLES RETURNED   :               8
LOG READ ELAPSED   :        0.000000   LOG RECS RETURNED  :          3           DATA ROWS RETURNED:               6
LOG EXTRACT ELAPSED:        0.000000   LOG RECS CAPTURED  :          2           DATA DESCR.RET    :               7
QW0188RT           9   QW0188RS          10
-------------------------------------------------------------------------------------------------------------------
```

REQUEST TYPE
The type of request from the WQALCDCD field of the IFI qualification area. Derived from the DB2 field QW0188TP.

READS REQUEST FLAG
The reads request flag. If the value is x'40', reads were required because more data was available than would fit in the user return area. If this occurs frequently, consider increasing the size of the user return area. Derived from the DB2 field QW0188FL.

DESCRIBES
The number of data capture describes. Derived from the DB2 field QW0188MB.

LONGEST LOG READ
The portion of the log read that took the longest amount of time. Derived from the DB2 field QW0188PL.

BEGIN REQUEST RBA
The beginning RBA of the requested log range. Derived from the DB2 field QW0188BR.

DESCRIBE ELAPSED
The elapsed time of the data capture describe. Derived from the DB2 field QW0188BT.

LOG READS RETURNED
The total number of log records from which data rows are returned for this single READs request. Derived from the DB2 field QW0188RD.

END REQUEST RBA
The end RBA of the requested log range. Derived from the DB2 field QW0188ER.

LOG READS PERFORMED
The number of log reads performed. Derived from the DB2 field QW0188LR.

TABLES RETURNED
The number of data capture tables returned. Derived from the DB2 field QW0188TB.

LOG READ ELAPSED
The elapsed time of the longest log read. Derived from the DB2 field QW0188LL.

LOG RECS RETURNED
The total number of log records retrieved by one or more reads requests for IFCID 185 for a single SQL change. If the value in this field is less than the value in LOG RECS CAPTURED, then additional log records must be retrieved to obtain all log records involved in the SQL change. Derived from the DB2 field QW0188RR.

DATA ROWS RETURNED
The number of data rows returned. Derived from the DB2 field QW0188DR.

LOG EXTRACT ELAPSED
The log extraction elapsed time for IFCID 185 requests. Derived from the DB2 field QW0188LT.

LOG RECS CAPTURED
The total number of log records captured on the log for this particular SQL change. Derived from the DB2 field QW0188LC.

DATA DESCR.RET
The number of data descriptions returned. Derived from the DB2 field QW0188DD.

191 - DDM Level 6B Objects

DDM level 6B objects shows the data from IFCID 191.

This record can contain six types of data section. One header section and one 6B DSS section are always present. The other sections are only printed if they are present.

```
-------------------------------------------------------------------------------------------------------------------------
                                             HEADER SECTION
LOCATION  M05EC10A            VERSION      1  OBJ LEN.          0  REASON  X'00D351FF'       RECORD      1 OF TOTAL      1
MODULE  DSNLZRPA   SOURCE      1   ERROR TOKEN  X'C4E2D5D3E9D9D7C1'   DDM COMMAND CODE POINT  X'2001'  DB2 PARSE STATE  P1
RN RECEIVED           1  OBJDSS RECEIVED           0  DSS TOTAL          1
ERROR TYPE  X'02F5F8F0F1F70000'  DIMENSION      5  PARSE TRACE ARRAY  (1) 02,09 (2) 05,02 (3) 06,06 (4) 02,00 (5) 07,01
.........................................................................................................................
                                     COMMAND AND/OR REPLY SECTION
EYECATCHER  DRDARPLY   PARSE STATUS DRDASUCC  CODE POINT   X'1252'   RELATIVE NUMBER     1
OFFSETS:      RPY/RQS/OBJ     PARSE FAIL     FD SECTION     RT SECTION     LT SECTION
                       172             0              0              0              0
.........................................................................................................................
                                            LATE DESCRIPTOR SECTION
LATE DESCRIPTORS PROCESSED  ZZZZZZZZZ9  SQLDTAGRP TRIPLETS  ZZZZZZZZZ9        L1  x'HH' L2  x'HH' L3  x'HH' L4  x'HH'
GEOMETRY STATUS  x'HHHH'
..........................................................................................................................
                                               RDTA DATA SECTION
RDTA DATA  HHHHHHHH HHHHHHHH HHHHHHHH HHHHHHHH HHHHHHHH HHHHHHHH HHHHHHHH HHHHHHHH | CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
     0020  HHHHHHHH HHHHHHHH HHHHHHHH HHHHHHHH HHHHHHHH HHHHHHHH HHHHHHHH HHHHHHHH | CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
..........................................................................................................................
                                               FD LIDLST SECTION
FD LIDLST  HHHHHHHH HHHHHHHH HHHHHHHH HHHHHHHH HHHHHHHH HHHHHHHH HHHHHHHH HHHHHHHH | CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
     0020  HHHHHHHH HHHHHHHH HHHHHHHH HHHHHHHH HHHHHHHH HHHHHHHH HHHHHHHH HHHHHHHH | CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
.........................................................................................................................
                                               6B DSS SECTION
EYECATCHER  DRDARPY    TYPE  ü |6B DSS DATA
0000  00721252  00061149  0008004C  115300D3   0021D4F0  F5C5C3F1  F0C14040  40404040  | ...........<...L..M05EC10A
0020  404000D3  00210000  1005D4F0  F5C5C3F1   F0C14040  40404040  40404040  40404040  |   .L......M05EC10A
0040  40404040  40404040  40404040  40404040   40404040  40400016  2110D4F0  F5C5C3F1  |                         ....M05EC1
0060  F0C14040  40404040  40404040  0006000C   119C                                     | 0A          ......
.........................................................................................................................
                                             RECORD IN DUMP FORMAT
0000  012EC4D9  C4C1F0F1  F9F1D4F0  F5C5C3F1   F0C14040  40404040  40404040  00010001  | ..DRDA0191M05EC10A         ....
0020  00010000  00000000  000000D3  51FFC4E2   D5D3E9D9  D7C10001  C4E2D5D3  E9D9D7C1  | ...........L..DSNLZRPA..DSNLZRPA
0040  00D351FF  2001D7F1  00000000  00010000   00000000  000102F5  F8F0F1F7  00000005  | .L....P1...............58017....
0060  02090502  06060200  07010000  00000000   00000000  00000000  0000C4D9  C4C1D9D7  | ..........................DRDARP
0080  D3E8C4D9  C4C1E2E4  C3C31252  00010000   00AC0000  00000000  00000000  00000000  | LYDRDASUCC......................
00A0  00000000  00000000  00000000  0000C4D9   C4C1D9D7  E8400000  00782000  00721252  | ..............DRDARPY ..........
00C0  00061149  0008004C  115300D3  0021D4F0   F5C5C3F1  F0C14040  40404040  404000D3  | .......<...L..M05EC10A        .L
00E0  00210000  1005D4F0  F5C5C3F1  F0C14040   40404040  40404040  40404040  40404040  | ......M05EC10A
0100  40404040  40404040  40404040  40404040   40400016  2110D4F0  F5C5C3F1  F0C14040  |                       ....M05EC10A
0120  40404040  40404040  0006000C  119C                                                |         ......
-------------------------------------------------------------------------------------------------------------------------
```

Header Section

LOCATION
The name of the remote location. Derived from the DB2 field QW0191LN.

VERSION
The version number for all sections. Derived from the DB2 field QW0191VS.

OBJ LEN.
The length of the failed object. Derived from the DB2 field QW0191FL.

REASON
The reason code. Derived from the DB2 field QW0191RS.

RECORD
The sequence number for this IFCID 191 record out of the total number of IFCID 191 records. Derived from the DB2 field QW0191NO.

OF TOTAL
The total number of IFCID 191 records. Derived from the DB2 field QW0191TO.

MODULE
The module name. Derived from the DB2 field QW0191MN.

SOURCE
The source ID in the module. Derived from the DB2 field QW0191MI.

ERROR TOKEN
The unique error token. Derived from the DB2 field QW0191TK.

DDM COMMAND CODE POINT
The DDM command code point. Derived from the DB2 field QW0191C1.

DB2 PARSE STATE
The DB2 parse state:

P1 Application requester parse

P2 Application server parse

Derived from the DB2 field QW0191PA.

RN RECEIVED
The number of relay messages received. Derived from the DB2 field QW0191RN.

OBJDSS RECEIVED
The number of object data stream structures received. Derived from the DB2 field QW0191ON.

DSS TOTAL
The total number of data stream structures. Derived from the DB2 field QW0191DN.

ERROR TYPE
The type of error:

0 SQLSTATE is SQLCA generated

1 Reply message sent

Derived from the DB2 field QW0191ER.

DIMENSION
The dimension of `PARSE TRACE ARRAY` . Derived from the DB2 field QW0191TN.

PARSE TRACE ARRAY
The last five top level parse traces. These are shown in the format STATE, EVENTS. Derived from the DB2 field QW0191PT.

Command and/or Reply Section

EYECATCHER
The type of data in this section:

DRDACMND
Command data

DRDARPLY
Reply data

Derived from the DB2 field QW0191RE.

PARSE STATUS
The parse status:

DRDASUCC
The parse is successful.

DRDAFAIL
The parse is unsuccessful.

Derived from the DB2 field QW0191PS.

CODE POINT
The code point. Derived from the DB2 field QW0191C3.

RELATIVE NUMBER
The relative number of the data stream structure carrier. Derived from the DB2 field QW0191NM.

RPY/RQS/OBJ
Offset to the start of RPY/RQS/OBJ DSS within the IFCID 191 record. Derived from the DB2 field QW0191OF.

PARSE FAIL
Offset relative to the IFCID 191 record point at which parse failed. Derived from the DB2 field QW0191FO.

FD SECTION
Offset relative to the IFCID 191 record to the LATE DESCRIPTOR section. Derived from the DB2 field QW0191D1.

RT SECTION
Offset relative to the IFCID 191 record to the RDTA DATA section. Derived from the DB2 field QW0191D2.

LT SECTION
Offset relative to the IFCID 191 record to the FD LIDLST section. Derived from the DB2 field QW0191D3.

Late Descriptor Section

LATE DESCRIPTORS PROCESSED
The number of late environmental descriptors processed. Derived from the DB2 field QW0191LD.

SQLDTAGRP TRIPLETS
The total number of data stream structures. Derived from the DB2 field QW0191GN.

L1 SQLDTAGRP local ID extracted. Derived from the DB2 field QW0191L1.

L2 SQLCADTA local ID extracted. Derived from the DB2 field QW0191L2.

L3 SQLDTA local ID extracted. Derived from the DB2 field QW0191L3.

L4 SQLDTARD local ID extracted. Derived from the DB2 field QW0191L4.

GEOMETRY STATUS
The FD:OCA geometry status. This field is a bit mask. The hexadecimal value of the field is printed.

- If bit 0 is on, the status of SQLDTAGRP is OK.
- If bit 1 is on, the status of SQLCADTA is OK.

- If bit 2 is on, the status of SQLDTA is OK.
- If bit 3 is on, the status of SQLDTARD is OK.

Derived from the DB2 field QW0191GO.

RDTA Data Section

This section shows the RDTA structure. The data is printed in the standard hexadecimal dump format. The character format is on the right. Derived from the DB2 field QW0191R1.

FD_LIDLIST Section

This section shows the FD_LIDLIST structure. The data is printed in the standard hexadecimal dump format. The character format is on the right. Derived from the DB2 field QW0191LS.

6B DSS Section

This section shows the level 6B DSS data. The data is printed in the standard hexadecimal dump format. The character format is on the right. Derived from the DB2 field QW01916B.

---

192 - DDM Level 6A Header Errors

DDM level 6A header errors shows the data from IFCID 192.

```
-------------------------------------------------------------------------------------------------------------------------
REMOTE LOCATION: SYD1                VERSION NUMBER:     1  CSECT: TDG
ERROR TYPE: PROTOCOL    SEVERITY: x'00000001' ERROR CODE: x'00000002'
                       OFFSET     GDS LENGTH   DDM CONST    FLAG      REQ CORR
CURRENT  6A HEADER   x'00000003'          6      x'D0'       x'00'          0
PREVIOUS 6A HEADER   x'00000000'          0      x'00'       x'00'          0
FIRST 250
0000  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
0020  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
0040  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
0060  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
0080  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
00A0  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
00C0  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
00E0  00000000  00000000  00000000  00000000   00000000  00000000  0000              | ........................
-------------------------------------------------------------------------------------------------------------------------
```

REMOTE LOCATION
The name of the remote location. Derived from the DB2 field QW0192LN.

VERSION NUMBER
The version number for the IFCID 192 records. Derived from the DB2 field QW0192VN.

CSECT
The CSECT that detected the error. Derived from the DB2 field QW0192CS.

ERROR TYPE
The DDM error type returned. Derived from the DB2 field QW0192ER.

SEVERITY
The DDM severity code returned. Derived from the DB2 field QW0192SV.

ERROR CODE
The DDM error code returned. For DDM protocol errors, this is the DDM

PRCCNVCD value. For DDM syntax errors, this is the DDM SYNERRCD value. Derived from the DB2 field QW0192CD.

CURRENT 6A HEADER

OFFSET
Offset into the data stream of the current DDM level 6A header (that is, the invalid DDM header). Derived from the DB2 field QW0192CO.

GDS LENGTH
Generalized data stream (GDS) length field. Derived from the DB2 field QW0192CL.

DDM CONST
The DDM constant. Derived from the DB2 field QW0192CI.

FLAG The DDM flag byte. Derived from the DB2 field QW0192CF.

REQ CORR
The DDM request correlator. Derived from the DB2 field QW0192CC.

PREVIOUS 6A HEADER

OFFSET
Offset into the data stream of the current DDM level 6A header (that is, the last valid DDM header). Derived from the DB2 field QW0192PO.

GDS LENGTH
Generalized data stream (GDS) length field. Derived from the DB2 field QW0192PL.

DDM CONST
The DDM constant. Derived from the DB2 field QW0192PI.

FLAG The DDM flag byte. Derived from the DB2 field QW0192PF.

REQ CORR
The DDM request correlator. Derived from the DB2 field QW0192PC.

---

193 - UOW/SQLCODE Mismatch

UOW/SQLCODE mismatch shows the data from IFCID 193.

```
REMOTE LOCATION: SYD1                VERSION:     1
CSECT: TDG                       SQLCODE:         0
COMMAND SENT: ROLLBACK  UOW DISPOSITION: ROLLBACK
```

REMOTE LOCATION
The location name of the server. Derived from the DB2 field QW0193LN.

VERSION
The version number of this trace record. Derived from the DB2 field QW0193VS.

CSECT
The CSECT that detected the error. Derived from the DB2 field QW0193CS.

SQLCODE
The SQL code returned by the server. Derived from the DB2 field QW0193SC.

COMMAND SENT
The command sent to the server. Derived from the DB2 field QW0193CO.

UOW DISPOSITION
The unit of work (UOW) disposition reported by the server. Derived from the DB2 field QW0193UW.

194 - Invalid SNA FMH-5 Received

Invalid SNA FMH-5 header received from requester shows the data from IFCID 194.

```
|-------------------------------------------------------------------------------------------------------------------
|REMOTE LOCATION: SYD2               VERSION NUMBER:     1  CSECT: TDG      SNA SENSE CODE: x'E3C4C740'
|FMH5 DATA:
|0000  E3C5E2E3  40F14040
| TEST 1
|-------------------------------------------------------------------------------------------------------------------
```

REMOTE LOCATION
The name of the remote location. Derived from the DB2 field QW0194LN.

VERSION NUMBER
The version number of this trace record. Derived from the DB2 field QW0194VN.

CSECT
The CSECT that detected the error. Derived from the DB2 field QW0194CS.

SNA SENSE CODE
The SNA sense code describing the error. Derived from the DB2 field QW0194SN.

FMH5 DATA
The invalid SNA FMH-5 record. Derived from the DB2 field QW0194DS.

195 - SQLDA Discrepancy

SQLDA discrepancy (first failure data capture for DRDS-detected errors) shows the data from IFCID 195.

```
REMOTE LOCATION: xxxxxxxxxxxxxxxxx  VERSION:    99999
MODULE: xxxxxxxx  ID: 99999   FIELD IN ERROR: xxxxxxxx
COLUMN: 9999999999          EXISTING SQLDA: 9999999999
NEW SQLDA: 9999999999
```

REMOTE LOCATION
The name of the remote location. Derived from the DB2 field QW0195LN.

VERSION
The version number of this trace record. Derived from the DB2 field QW0195VI.

MODULE
The name of the module. Derived from the DB2 field QW0195MN.

ID The source ID in the module. Derived from the DB2 field QW0195UI.

FIELD IN ERROR
The field in error:

SQLD The number of entries in SQLD

SQLTYPE
Data type

SQLLEN Data length

SQLDATA
CCSID

Derived from the DB2 field QW0195FD.

COLUMN
The column number for the field in error. Derived from the DB2 field QW0195NO.

EXISTING SQLDA
The contents in the existing SQLDA field. Derived from the DB2 field QW0195SE.

NEW SQLDA
The contents in the new SQLDA field. Derived from the DB2 field QW0195SN.

196 - Timeout Data

Timeout data shows the data from IFCID 196.

```
-------------------------------------------------------------------------------------------------------------------------
                                        TIMEOUT HEADER
NUMBER OF HOLDERS/WAITERS:          1     LOCK HASH VALUE: X'00043402'
LOCK RES TYPE: DATA PAGE LOCK                DBID: 269                OBID: 2         RESOURCE ID: X'00000200'
REQUESTED FUNCTION: CHANGE        REQUESTED STATE: EXCLUSIVE                 REQUESTED DURATION: COMMIT
REQUESTED FLAGS: B'00110010'      REQUESTED OWNING WORK UNIT: X'0079004506E54548'
ZPARM INTERVAL :    60         INTERVAL COUNTER:   1
.........................................................................................................................
                                       H O L D E R
PRIMAUTH  : 'BLANK'     PLAN NAME: DSNESPRR          CORR ID: BNK                           CONN: TSO
NETWORKID : DSN3           LUNAME: IPVAM511         INSTANCE: B00AA3F5AF77       OWNING WORK UNIT: X'0079003506E53548'
LOCK STATE: SHARED                               LOCK DURATION: MANUAL                      MEMBER: S511
TRANSACT  : BNKTRANSACTION567890123456789012         WS_NAME: BNKWORKSTATION5678         END_USER: BNKUSID890123456
QW0196HA  : X'01'        QW0196HF: X'80'
-------------------------------------------------------------------------------------------------------------------------
```

Timeout Header

NUMBER OF HOLDERS/WAITERS
The number of agents causing the timeout. Derived from the DB2 field QW0196NU.

LOCK HASH VALUE
The hash value of the locked resource. Derived from the DB2 field QW0196RH.

LOCK RES TYPE
The locked resource type. Derived from the DB2 field QW0196RN.

DBID The database ID. This field is not applicable if the value in LOCK RES TYPE is `SKELETON CURSOR TABLE LOCKING` , `SKELETON PACKAGE TABLE LOCK` , `COLLECTION` , or `ALTER BUFFER POOL` . Derived from the DB2 fields QW0196RN, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0196RN is shown. However, if QW0196RN contains 0, N/A is displayed.

OBID The object ID. This field is not applicable if the value in LOCK RES TYPE is SKELETON CURSOR TABLE LOCKING, SKELETON PACKAGE TABLE LOCK, COLLECTION, or ALTER BUFFER POOL. Derived from the DB2 fields QW0196RN and the DB2 fields QW0105TN or QW0107TN, or QW0105OB or QW0107OB.

If the resource involved in the lock is a table space, this field is derived from the DB2 fields QW0196RN, and QW0105TN or QW0107TN.

- If either QW0105TN or QW0107TN contains appropriate data, the table space name is shown.
- If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0196RN is shown. However, if QW0196RN contains 0, N/A is displayed.

If the resource involved in the lock is a page set, this field is derived from the DB2 fields QW0196RN, and QW0105OB or QW0107OB.

- If either QW0105OB or QW0107OB contains appropriate data, the name of the object is shown.
- If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0196RN is shown. However, if QW0196RN contains 0, N/A is displayed.

RESOURCE ID
The hexadecimal identifier of the small resource. If LOCK RES TYPE is:

DATA PAGE LOCKING
First 3 bytes are the page number

DATA SET LOCKING (PARTITION)
Last byte is the partition number

INDEX PAGE LOCKING
First 3 bytes are the page number and the last byte is the subpage number

HASH ANCHOR LOCKING
First 3 bytes are the page number and the last byte is the anchor point ID

CS-READ DRAIN
Last byte is the partition number (optional)

RR-READ DRAIN
Last byte is the partition number (optional)

WRITE DRAIN
Last byte is the partition number (optional)

ROW LOCKING
The first 3 bytes are the page number and the last byte is the row of the record

INDEX END-OF-FILE LOCKING
Last byte is the partition number (optional)

Note: In large partitioned table spaces, the page number covers 4 bytes instead of 3.

This field is not applicable if the value in LOCK RES TYPE is SKELETON CURSOR TABLE LOCKING, SKELETON PACKAGE TABLE LOCK, COLLECTION, or ALTER

BUFFER POOL. If the value is UTILITY SERIALIZATION LOCK or BINDLOCK, N/A is printed. Derived from the DB2 field QW0196RN.

REQUESTED FUNCTION
The victim's type of request. Derived from the DB2 field QW0196WU.

REQUESTED STATE
The victim's lock state. Derived from the DB2 field QW0196WS.

REQUESTED DURATION
The victim's lock duration. Derived from the DB2 field QW0196WD.

REQUESTED FLAGS
The victim's lock flag. Derived from the DB2 field QW0196WF.

REQUESTED OWNING WORK UNIT
The victim's owning work unit. Derived from the DB2 field QW0196WO.

ZPARM INTERVAL
The timeout interval of the ZPARM value. Derived from the DB2 field QW0196TI.

INTERVAL COUNTER
The timeout counter for this thread. Derived from the DB2 field QW0196TC.

Holder

A holder block is printed for every holder of the resource involved in the timeout.

PRIMAUTH
The primary authorization ID from connection or signon.

PLAN NAME
The holder's plan name or, if there is contention with a retained lock, the word SYSTEM. Derived from the DB2 field QW0196HP.

CORR ID
The holder's correlation ID or, if there is contention with a retained lock, the word SYSTEM. Derived from the DB2 field QW0196HR.

CONN The holder's connection ID or, if there is contention with a retained lock, the word SYSTEM. Derived from the DB2 field QW0196HN.

NETWORKID
The holder's network ID or, if there is contention with a retained lock, the word SYSTEM.

This field is only valid for distributed threads. For nondistributed threads, an asterisk (*) is printed. Derived from the DB2 field QW0196HL.

LUNAME
The holder's LU name or, if there is contention with a retained lock, the word SYSTEM.

This field is only valid for distributed threads. Derived from the DB2 field QW0196HL.

INSTANCE
The holder's LUW instance or, if there is contention with a retained lock, the word SYSTEM.

This field is only valid for distributed threads. Derived from the DB2 field QW0196HL.

OWNING WORK UNIT
The holder's owning work unit. This value is printed in hexadecimal.

If there is contention with a retained lock, this field is set to x'00 '. Derived from the DB2 field QW0196HO.

LOCK STATE
The holder's lock state. Derived from the DB2 field QW0196HS.

LOCK DURATION
The holder's lock duration:

MANUAL Varies depending on the ISOLATION parameter (QW0196HD=x'20')

MANUAL+1
Temporary change of consistency level from CS to RR during bind and DDL (QW0196HD=x'21')

COMMIT Until commit (QW0196HD=x'40')

COMMIT+1
Past commit; applies to locks needed to maintain the position for a cursor opened WITH HOLD (QW0196HD=x'41')

ALLOCATION
Until deallocation (QW0196HD=x'60')

PLAN For the duration of the plan (QW0196HD=x'80')

UTIL For the duration of the utility execution (QW0196HD=x'81')

INTEREST
Duration used for P-locks (QW0196HD=x'FE')

FREE ALL
Until all locks are freed (QW0196HD=x'FF')

x'00' Contention with a retained lock (QW0196HD=x'00')

MEMBER
The holder's DB2 member name. For non-data sharing environments, N/P is shown in this field. Derived from the DB2 field QW0196HI.

TRANSACT
The transaction or application name that the end user is running. This identifies the application that is currently running, not the product used to run the application. Derived from the DB2 field QWHCEUTX.

WS_NAME
The end user's workstation name. This field contains blanks if the client did not supply this information. Derived from the DB2 field QWHCEUWN.

END_USER
The end user's work station user ID. This can be different from the authorization ID used to connect to DB2. Derived from the DB2 field QWHCEUID.

198 - Buffer Manager Page Access

Buffer manager page access shows the data from IFCID 198.

```
DBID        :      1       PSID:     31      BPID: X'00'
FUNCTION    : GET PAGE
PAGE STATUS : PAGE HIT IN BUFFERPOOL
ACCESS      : RANDOM       PAGE:        22   ACE :    1
PAGE REFRESH: FROM GROUP BUFFER POOL
```

DBID The database ID. Derived from the DB2 fields QW0198DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0198DB is shown. However, if QW0198DB contains 0, N/A is displayed.

PSID The page set object identifier. Derived from the DB2 field QW0198OB. The identifier is translated to the page set object name if QW0105DN or QW0107DN contains appropriate data. If neither QW0105DN nor QW0107DN contain appropriate data, the decimal identifier from QW0198OB is shown.

BPID The buffer pool identifier. Derived from the DB2 field QW0198BP.

FUNCTION
The page request function code. Derived from the DB2 field QW0198FC.

PAGE STATUS
The page status in the buffer pool. Derived from the DB2 field QW0198PS.

ACCESS
The page access type. This is only applicable if the value in FUNCTION is `GET PAGE` or `RELEASE PAGE` . Derived from the DB2 field QW0198AT.

PAGE The page number. Derived from the DB2 field QW0198PN.

ACE The relative number of the agent control element address in the ACE cross-reference table. This table is printed at the end of each location for every trace specified. Derived from the DB2 field QW0198AC.

PAGE REFRESH
Page refresh status in case of a missed page in the virtual buffer pool. Possible values:

- FROM HIPERPOOL
- FROM GROUP BUFFER POOL
- FROM DASD

Derived from DB2 field QW0198PR.

201 - Alter Buffer Pool

Alter buffer pool shows the data from IFCID 201.

This record is divided into two sections showing the old and new status of the altered buffer pool.

```
|-------------------------------------------------------------------------------------------------------------------------------
|BUFFERPOOL ID:     1 ALTER COMMAND: VIRTUAL                RETURN CODE:      100002 REASON CODE:     100003
|OLD STATUS:                         NEW STATUS:
|VPOOL TYPE:           PRIMARY       VPOOL TYPE:          DSPACE
|VPOOL SIZE:            100005       VPOOL SIZE:          100005
|HPOOL SIZE:            100006       HPOOL SIZE:          100006
|VPOOL SEQ THRESH:           5       VPOOL SEQ THRESH:         5
|HPOOL SEQ THRESH:          10       HPOOL SEQ THRESH:        10
|VPOOL DWT THRESH:          14       VPOOL DWT THRESH:        14
|VPOOL VDWT THRESH                   VPOOL VDWT THRESH
|      PERCENTAGE:          20             PERCENTAGE:        20
|      BUFFERS:              0             BUFFERS:           0
|CASTOUT:                  YES       CASTOUT:                YES
|VPOOL PLL SEQ THRESH:      25       VPOOL PLL SEQ THRESH:    25
|ASSISTAN. SEQ THRESH:     N/A       ASSISTAN. SEQ THRESH:   N/A
|PAGE STEAL METHOD:        LRU       PAGE STEAL METHOD:     FIFO
|
|-------------------------------------------------------------------------------------------------------------------------------
```

BUFFERPOOL ID
The buffer pool internal identifier. The values 0 through 49 are the identifiers for BP0 through BP49. The values 80 through 89 are the identifiers for BP32K through BP32K9. Derived from the DB2 field QW0201BP.

ALTER COMMAND
The type of buffer pool being altered. Derived from the DB2 field QW0201CD.

RETURN CODE
The return code for the alter. Derived from the DB2 field QW0201RT.

REASON CODE
The reason code returned from an unsuccessful alter. Derived from the DB2 field QW0201RE.

OLD STATUS and NEW STATUS

VPOOL SIZE
The old and new virtual pool size.

Old status derived from the DB2 field QW0201OP.

New status derived from the DB2 field QW0201NP.

VPOOL TYPE

HPOOL SIZE
The old and new hiperpool size.

Old status derived from the DB2 field QW0201OH.

New status derived from the DB2 field QW0201NH.

VPOOL VDWT THRESH

PERCENTAGE
The vertical deferred write threshold for the virtual buffer pool expressed as percentage.

Old status derived from the DB2 field QW0201OV.

New status derived from the DB2 field QW0201NV.

BUFFERS
The vertical deferred write threshold for the virtual buffer pool expressed as an absolute number of buffers. It is only used if VERTICAL DEFERRED WRITE THRESHOLD (PERCENTAGE) is 0.

Old status derived from the DB2 field QW0201OJ.

New status derived from the DB2 field QW0201NJ.

VPOOL SEQ THRESH
The old and new virtual pool sequential steal threshold.

Old status derived from the DB2 field QW0201OT.

New status derived from the DB2 field QW0201NT.

HPOOL SEQ THRESH
The old and new hiperpool sequential steal threshold.

Old status derived from the DB2 field QW0201OS.

New status derived from the DB2 field QW0201NS.

VPOOL DWT THRESH
The old and new virtual pool deferred write threshold.

Old status derived from the DB2 field QW0201OD.

New status derived from the DB2 field QW0201ND.

CASTOUT
The old and new castout attribute.

Old status derived from the DB2 field QW0201OF.

New status derived from the DB2 field QW0201NF.

VPOOL PLL SEQ THRESH
The old and new virtual pool parallel sequential threshold.

Old status derived from the DB2 field QW0201OQ.

New status derived from the DB2 field QW0201NQ.

ASSISTAN. SEQ THRESH
The assisting parallel sequential threshold before and after the ALTER BUFFERPOOL command was issued.

Old status derived from the DB2 field QW0201OX.

New status derived from the DB2 field QW0201NX.

PAGE STEAL METHOD
Specifies the page stealing algorithm that is used for the virtual buffer pool. Possible values:

LRU Specifies the virtual buffer pool buffers should be managed using the least recently used (LRU) algorithm.

FIFO Specifies the virtual buffer pool buffers should be managed using the first in first out (FIFO) algorithm.

Old status derived from the DB2 field QW0201OK.

New status derived from the DB2 field QW0201NK.

202 - Buffer Pool Attributes

Buffer pool attributes shows the data from IFCID 202.

```
-------------------------------------------------------------------------------------------------------------------------
BUFFERPOOL ID: BP0                    VPOOL SIZE:          2000             HPOOL SIZE:              0
VPOOL TYPE   : PRIMARY                HPOOL    SEQ THRESH:   80             VPOOL VDWT THRESH (%):  10
CASTOUT      : YES                    VPOOL    SEQ THRESH:   80             VPOOL VDWT THRESH BUF:   0
PSTEAL METHOD: LRU                    PARALLEL SEQ THRESH:   50             VPOOL  DWT THRESH:      50
                                      ASS PAR  SEQ THRESH:    0
```

BUFFERPOOL ID
The buffer pool name. Derived from the DB2 field QDBPNM.

HPOOL SEQ THRESH
The hiperpool sequential steal threshold. Derived from the DB2 field QDBPHPSH.

VPOOL VDWT THRESH (%)
The virtual pool deferred write threshold expressed as a percentage. Derived from the DB2 field QDBPVDQT.

VPOOL VDWT THRESH BUF
The virtual pool deferred write threshold, expressed as an absolute number of buffers. Derived from the DB2 field QDBPVDQB.

VPOOL SIZE
The virtual pool size. Derived from the DB2 field QDBPVPSZ.

VPOOL SEQ THRESH
The virtual pool sequential steal threshold. Derived from the DB2 field QDBPVPSH.

VPOOL DWT THRESH
The virtual pool deferred write threshold. Derived from the DB2 field QDBPDWQT.

HPOOL SIZE
The hiperpool size. Derived from the DB2 field QDBPHPSZ.

PARALLEL SEQ THRESH
The virtual pool parallel sequential threshold. Derived from the DB2 field QDBPPSQT.

PSTEAL METHOD
Specifies the page stealing algorithm that is used for the virtual buffer pool. Possible values:

LRU Specifies the virtual buffer pool buffers should be managed using the least recently used (LRU) algorithm.

FIFO Specifies the virtual buffer pool buffers should be managed using the first in first out (FIFO) algorithm.

Derivation : QDBPPGST.

ASS PAR SEQ THRESH
The assisting parallel sequential threshold of the buffer pool. Derived from the DB2 field QDBPXSQT.

CASTOUT
The castout attribute. Derived from the DB2 field QDBPCAST.

203 - DDF Heuristic COMMIT/ROLLBK

DDF Heuristic COMMIT/ROLLBK shows the data from IFCID 203.

IFCID 203

This record reports a heuristic decision that has forced a COMMIT or ROLLBACK decision for a distributed indoubt thread. The record is produced when a RECOVER INDOUBT command is issued and a remote participant in a distributed thread reports a heuristic rollback or commit during the resynchronization process.

```
-------------------------------------------------------------------------------------------------------
  DECISION SOURCE: LOCAL   DECISION REPORTED: COMMIT    REMOTE DECISION LOCATION: 'BLANK'

  AFFECTED THREAD:
    NETID: USIBMSY   LUNAME: SY00CDB2  INSTANCE: X'A73916396F69'  LUW SEQ:     1  URID: X'0000154E0AA4'

  COORDINATOR LOCATION: M05EC00C
  PARTICIPANT LOCATIONS:
    N/P
-------------------------------------------------------------------------------------------------------
```

DECISION SOURCE
The source of the decision. Derived from the DB2 field QW0203LR.

DECISION REPORTED
The decision that was reported. Derived from the DB2 field QW0203CA.

REMOTE DECISION LOCATION
The location, LUNAME, or IP address (*NNN.NNN.NNN*) of the location that sent the decision. Derived from the DB2 field QW0203LO.

NETID The NETID portion of the LUWID. Derived from the DB2 field QW0203NT.

LUNAME
The LUNAME portion of the LUWID. Derived from the DB2 field QW0203LU.

INSTANCE
The instance number portion of the LUWID. Derived from the DB2 field QW0203IN.

LUW SEQ
The LUW sequence number (commit count) portion of the LUWID. Derived from the DB2 field QW0203CM.

URID The recovery log RBA (URID) for the thread. Derived from the DB2 field QW0203UR.

COORDINATOR LOCATION
The location name, LUNAME, or IP address (*NNN.NNN.NNN*) of the coordinator. Derived from the DB2 field QW0203CO.

PARTICIPANT LOCATIONS
The location name of the participants in this unit of work that were accessed directly by this DB2 subsystem. Derived from the DB2 field QW0203PA.

204 - DDF Partner Cold Start

DDF partner cold start shows the data from IFCID 204.

This record is written when DB2 tries to reconnect to a remote system that requests a cold start. A cold start means that the remote system has no memory of the work that was in progress when the previous connection failed. DB2 produces this record only when DB2 has memory of threads whose outcome must be resolved.

```
|-------------------------------------------------------------------------------------------------------------------
|LOCATION: <SY00DDB2>
OLD RECOVERY LOG: SY00DDB2
|                            NEW RECOVERY LOG: SY00DDB2
|AFFECTED THREADS:
|NETID: USIBMSY  LUNAME: SY10DDB2 INSTANCE: x'A729F42DE443
|   LUW SEQ:     4
|TOKEN:          1 URID: x'000000000000' ROLE: COORDINATOR   STATUS: COMMITTED
|-------------------------------------------------------------------------------------------------------------------
```

LOCATION
The location, LUNAME, or IP address (*NNN.NNN.NNN*) of the remote partner that had the cold start. Derived from the DB2 field QW0204LO.

OLD RECOVERY LOG
The partner's recovery log name before the cold start. Derived from the DB2 field QW0204OR.

NEW RECOVERY LOG
The partner's recovery log name after the cold start. Derived from the DB2 field QW0204NR.

NETID The NETID portion of the LUWID. Derived from the DB2 field QW0204NT.

LUNAME
The LUNAME portion of the LUWID. Derived from the DB2 field QW0204LU.

INSTANCE
The instance number portion of the LUWID. Derived from the DB2 field QW0204IN.

LUW SEQ
The LUW sequence number (commit count) portion of the LUWID. Derived from the DB2 field QW0204CM.

TOKEN
The local token representing the LUWID. Derived from the DB2 field QW0204TK.

URID The recovery log RBA (URID) for the thread. Derived from the DB2 field QW0204UR.

ROLE The role of DB2 in the LUW. Derived from the DB2 field QW0204RL.

STATUS
The status of the local DB2 thread. Derived from the DB2 field QW0204TS.

205 - DDF Warm Start Log Name Error

DDF warm start log name error shows the data from IFCID 205.

This record is written when a remote site uses a recovery log name that is different to the last log name used.

```
|-------------------------------------------------------------------------------------------------------------------
|LOCATION: USIBMSYSTDB2       OUR RECOVERY LOG      : LOG NUMBER 1
|                             OUR LOG AS REMEMBERED : LOG NUMBER 2
|                             PARTNER WARM START LOG: LOG NUMBER 3
|                             PARTNER PREVIOUS LOG  : LOG NUMBER 4
|AS REMEMBERED BY DB2      PROTOCOL: PRESUMED ROLLBACK PS HEADER USE: FLAGS  LUNAME EXCHANGE: YES
|AS REMEMBERED BY PARTNER  PROTOCOL: PRESUMED NOTHING  PS HEADER USE: NONE   LUNAME EXCHANGE: NO
|-------------------------------------------------------------------------------------------------------------------
```

LOCATION
The location or LUNAME of the remote partner that had the warm start. Derived from the DB2 field QW0205LO.

OUR RECOVERY LOG
The name of the local DB2 subsystem's recovery log. Derived from the DB2 field QW0205OR.

OUR LOG AS REMEMBERED
The name of the local DB2 subsystem's recovery log as remembered by the partner. This field shows 'BLANK' unless the exchange of log names was initiated by the partner. Derived from the DB2 field QW0205NR.

PARTNER WARM START LOG
The name of the partner's warm start recovery log. Derived from the DB2 field QW0205WR.

PARTNER PREVIOUS LOG
The name of the partner's previous recovery log. Derived from the DB2 field QW0205PR.

AS REMEMBERED BY DB2

PROTOCOL
The protocol used previously as remembered by DB2. Derived from the DB2 field QW0205DP.

PS HEADER USE
Indicates how the PS header was previously used as remembered by DB2. Derived from the DB2 field QW0205DF.

LUNAME EXCHANGE
Indicates whether the LUNAME of the conversation correlator was exchanged in the sync point protocol previously used as remembered by DB2. Derived from the DB2 field QW0205DC.

AS REMEMBERED BY PARTNER

PROTOCOL
The protocol used previously as remembered by the partner. Derived from the DB2 field QW0205PP.

PS HEADER USE
Indicates how the PS header was previously used as remembered by the partner. Derived from the DB2 field QW0205PF.

LUNAME EXCHANGE
Indicates whether the LUNAME of the conversation correlator was exchanged in the sync point protocol previously used as remembered by the partner. Derived from the DB2 field QW0205PC.

206 - DDF Protocol Error

DDF protocol error shows the data from IFCID 206.

```
-------------------------------------------------------------------------------------------------------------------------------
REMOTE LOCATION: USIBMSYSTDB2TEST  LAST OPERATION: SEND     DB2 ROLE: PARTICIPANT  DETECTING SITE: REMOTE
AFFECTED THREAD:
  NETID: THENETID  LUNAME:T_LUNAME  INSTANCE: x'C9D5E2E3D5D6
  COMMIT COUNT:     5   TOKEN: x'FFFFFFFF'
  URID : x'E4D9C9C4F0F6'
LAST MESSAGE:
  SENT  :
0000  E2E3C1D9  E340D6C6  40D3C1E2  E340D4C5   E2E2C1C7  C540E2C5  D5E36060  60606060  | START OF LAST MESSAGE SENT------
0020  60606060  60606060  60606060  60606060   60606060  60606060  60606060  60606060  | --------------------------------
0040  60606060  60606060  60606060  60606060   60606060  60606060  60606060  60606060  | --------------------------------
0060  60606060  60606060  60606060  60606060   60606060  60606060  60606060  6060      | ----------------------------
  RCVD  :
0000  E2E3C1D9  E36DD6C6  6DD3C1E2  E36D                                               | START_OF_LAST_
VTAM RPL:
0000  E2E3C1D9  E36DD6C6  6DE5E3C1  D46DD9D7   D3606060  60606060  60606060  60606060  | START_OF_VTAM_RPL---------------
0020  60606060  60606060  60606060  60606060   60606060  60606060  60606060  60606060  | --------------------------------
0040  60606060  60606060  60606060  60606060   60606060  60606060  60606060  60606060  | --------------------------------
0060  C5D4C46D  D6C66DE5  E3C1D4D3  6DD9D7D3                                           | EMD_OF_VTAML_RPL

  EXT   :
0000  E2E3C1D9  E36DD6C6  6DE5E3C1  D46DD9D7   D36DC5E7  E3C5D5E2  C9D6D560  60606060  | START_OF_VTAM_RPL_EXTENSION-----
0020  60606060  60606060  60606060  60606060   60606060  60606060  60606060  60606060  | --------------------------------
0040  60606060  60606060  60606060  60606060   60606060  60606060  606060C5  D5C46DD6  | ----------------------------END_O
0060  C66DE5E3  C1D460C5  E7E3C5D5  E2C9D6D5                                           | F_VTAM-EXTENSION

QW0206DI  --DIAGNOSE--                 QW0206PV    0
-------------------------------------------------------------------------------------------------------------------------------
```

REMOTE LOCATION
The location name or LUNAME of the remote partner involved in the protocol error. Derived from the DB2 field QW0206LO.

LAST OPERATION
Indicates whether the last network operation was a send or receive. Derived from the DB2 field QW0206SR.

DB2 ROLE
The role of DB2 in the LUW. Derived from the DB2 field QW0206RL.

DETECTING SITE
The site which detected the error. Derived from the DB2 field QW0206DT.

NETID The NETID portion of the LUWID. Derived from the DB2 field QW0206NT.

LUNAME
The LUNAME portion of the LUWID. Derived from the DB2 field QW0206LU.

INSTANCE
The instance number portion of the LUWID. Derived from the DB2 field QW0206IN.

COMMIT COUNT
The LUW sequence number (commit count) portion of the LUWID. Derived from the DB2 field QW0206CM.

TOKEN
The local token representing the LUWID. Derived from the DB2 field QW0206TK.

URID The recovery log RBA (URID) for the thread. Derived from the DB2 field QW0206UR.

SENT The last message sent by this DB2 site during the compare states exchange. Derived from the DB2 field QW0206MS.

RCVD The last message received by this DB2 site during the compare states exchange. Derived from the DB2 field QW0206MR.

VTAM RPL
The VTAM RPL associated with the last compare states message received during the compare states exchange. Derived from the DB2 field QW0206VR.

EXT The VTAM RPL extension which describes the LU 6.2 verb indicators for the last message received. Derived from the DB2 field QW0206VX.

207 - DDF Heuristic Damage

DDF heuristic damage shows the data from IFCID 207.

This record reports when heuristic damage is detected during the two-phase commit resynchronization. Heuristic damage occurs when a user forces an indoubt unit of work to commit or rollback and the user's choice conflicts with the outcome chosen by the coordinator of the unit of work.

```
-------------------------------------------------------------------------------------------------------------------------
WHERE OCCURRED: SYD1              LOCAL LOCATION: SYD2              UPSTREAM COORDINATOR: SYD3
CICS/IMS COORDINATOR: 'BLANK'

AFFECTED THREADS:
  NETID: NETID    LUNAME: LUNAME   INSTANCE: x'C9D5E2E3C1D5' LUW SEQ:     1 TOKEN: x'00000002' URID: x'E4D9C9C44040'

ROLE:  BOTH        DAMAGE SITE ACTION: ROLLBACK LOCAL SITE ACTION: COMMIT   UPSTREAM SITE ACTION: NO UPSTREAM SITE
DAMAGE SITE RECOVERY LOG   : DATA 1
LOCAL SITE RECOVERY LOG    : DATA 2
UPSTREAM SITE RECOVERY LOG : DATA 3
-------------------------------------------------------------------------------------------------------------------------
```

WHERE OCCURRED
The location, LUNAME, or IP address (*NNN.NNN.NNN*) of the location where heuristic damage occurred. Derived from the DB2 field QW0207HN.

LOCAL LOCATION
The name of this location (the location writing this IFCID). Derived from the DB2 field QW0207TN.

UPSTREAM COORDINATOR
The location, LUNAME, or IP address (*NNN.NNN.NNN*) of the upstream coordinator of this location. This field shows 'BLANK' if this location has no upstream coordinator. Derived from the DB2 field QW0207UN.

CICS/IMS COORDINATOR
The connection name of the local CICS or IMS coordinator. This field shows 'BLANK' if no local CICS or IMS coordinator exists. Derived from the DB2 field QW0207CO.

NETID The NETID portion of the LUWID. Derived from the DB2 field QW0207NT.

LUNAME
The LUNAME portion of the LUWID. Derived from the DB2 field QW0207LU.

INSTANCE
The instance number portion of the LUWID. Derived from the DB2 field QW0207IN.

LUW SEQ
The LUW sequence number (commit count) portion of the LUWID. Derived from the DB2 field QW0207CM.

TOKEN
The local token representing the LUWID. Derived from the DB2 field QW0207TK.

URID The recovery log RBA (URID) for the thread. Derived from the DB2 field QW0207UI.

ROLE The role of DB2 in the LUW. Derived from the DB2 field QW0207RL.

DAMAGE SITE ACTION
The action taken by the site with the heuristic damage. Derived from the DB2 field QW0207HA.

LOCAL SITE ACTION
The action taken by the local site. Derived from the DB2 field QW0207TA.

UPSTREAM SITE ACTION
The action taken by the upstream coordinator if one exists. Derived from the DB2 field QW0207UA.

DAMAGE SITE RECOVERY LOG
The recovery log name of the site where the heuristic damage occurred. Derived from the DB2 field QW0207HR.

LOCAL SITE RECOVERY LOG
The recovery log name of the local location. Derived from the DB2 field QW0207TR.

UPSTREAM SITE RECOVERY LOG
The recovery log name of the upstream coordinator (if an upstream coordinator exists). Derived from the DB2 field QW0207UR.

208 - DDF Syncpoint Protocol Err

DDF syncpoint protocol error shows the data from IFCID 208.

```
-------------------------------------------------------------------------------------------------------------------------
REMOTE LOCATION: M05EC00C          LAST OPERATION: RECEIVE  DB2 ROLE: PARTICIPANT  DETECTING SITE: LOCAL
LOCAL THREAD STATUS: INDOUBT      ASSUMED REMOTE THREAD STATUS: ROLLED BACK?
AFFECTED THREAD:
  NETID: USIBMSY   LUNAME:SY00CDB2  INSTANCE: x'A73916396F69'  COMMIT COUNT:     1   TOKEN: x'00000002'
  URID : x'0000154B5278'
LAST MESSAGE:
  SENT  :
0000  0001040A                                                                  | ....
  RCVD  :
0000  0001060A  0806                                                            | ......
VTAM RPL:
0000  00006270  82A53958  02A57940  00000000   00000024  00000000  007E0F38  00000000  | ...Îbv...v' .............=......
0020  7F6CB038  00000000  08000000  00000000   00000008  00000800  00020000  00000000  | "%..............................
0040  00000000  22000000  00000000  7F66117C   00000000  00000000  00000000  00000000  | ............"..@................
0060  00000000  00000000  7F70C258  00000000                                    | ........"ÎB.....

  EXT   :
0000  C1D7D7C3  70110000  01000003  7F661038   00000000  00000000  00000000  08000000  | APPCÎ.......".....................
0020  0017D45D  2A99736F  00000000  80000800   E2E8F0F0  C3C4C2F2  C9C2D4D9  C4C24040  | ..M).r.?........SY00CDB2IBMRDB
0040  11000000  09000000  00000000  7F66110C   00000000  00000000  00000000  00000000  | ............"....................
0060  00000000  00000000  00000000  00000000                                    | ................

QW0208PV    9
-------------------------------------------------------------------------------------------------------------------------
```

REMOTE LOCATION
The location name or LUNAME of the remote partner involved in the protocol error. Derived from the DB2 field QW0208LO.

LAST OPERATION
Indicates whether the last network operation was a send or receive. Derived from the DB2 field QW0208SR.

DB2 ROLE
The role of DB2 in the LUW. Derived from the DB2 field QW0208RL.

DETECTING SITE
The site which detected the error. Derived from the DB2 field QW0208DT.

LOCAL THREAD STATUS
The status of the local DB2 thread. Derived from the DB2 field QW0208TS.

ASSUMED REMOTE THREAD STATUS
The assumed status of the remote thread. Derived from the DB2 field QW0208PS.

NETID The NETID portion of the LUWID. Derived from the DB2 field QW0208NT.

LUNAME
The LUNAME portion of the LUWID. Derived from the DB2 field QW0208LU.

INSTANCE
The instance number portion of the LUWID. Derived from the DB2 field QW0208IN.

COMMIT COUNT
The LUW sequence number (commit count) portion of the LUWID. Derived from the DB2 field QW0208CM.

TOKEN
The local token representing the LUWID. Derived from the DB2 field QW0208TK.

URID The recovery log RBA (URID) for the thread. Derived from the DB2 field QW0208UR.

SENT The last message sent by this DB2 site during sync point processing. Derived from the DB2 field QW0208MS.

RCVD The last message received by this DB2 site during sync point processing. Derived from the DB2 field QW0208MR.

VTAM RPL
The VTAM RPL associated with the last compare states message received during the compare states exchange. Derived from the DB2 field QW0208VR.

EXT The VTAM RPL extension which describes the LU 6.2 verb indicators for the last message received. Derived from the DB2 field QW0208VX.

209 - DDF Syncpoint Comm Failure

DDF syncpoint communication failure shows the data from IFCID 209.

This record is written when a communication failure occurs after phase 1 of the SNA commit process. The thread that experiences the communication failure might still be indoubt at the participant location.

```
-------------------------------------------------------------------------------------------------------------------------
REMOTE PARTNER LOCATION: M05EC00C

INVOLVED THREAD:
  NETID: USIBMSY  LUNAME: SY30ADB2 INSTANCE: x'A72012826B27' LUW SEQ:     1 TOKEN: x'0000000A' URID: x'000014A5CDB0'
  ROLE: COORDINATOR   LOCAL THREAD STATUS:  ROLLED BACK
-------------------------------------------------------------------------------------------------------------------------
```

REMOTE PARTNER LOCATION
The location, LUNAME, or IP address (*NNN.NNN.NNN*) of the remote partner involved in the communication error. Derived from the DB2 field QW0209LO.

NETID The NETID portion of the LUWID. Derived from the DB2 field QW0209NT.

LUNAME
The LUNAME portion of the LUWID. Derived from the DB2 field QW0209LU.

INSTANCE
The instance number portion of the LUWID. Derived from the DB2 field QW0209IN.

LUW SEQ
The LUW sequence number (commit count) portion of the LUWID. Derived from the DB2 field QW0209CM.

TOKEN
The local token representing the LUWID. Derived from the DB2 field QW0209TK.

URID The recovery log RBA (URID) for the thread. Derived from the DB2 field QW0209UR.

ROLE The role of DB2 in the LUW. Derived from the DB2 field QW0209RL.

LOCAL THREAD STATUS
The status of the local DB2 thread. Derived from the DB2 field QW0209TS.

210 - Warm Start Log Name Change

Warm start log name change shows the data from IFCID 210.

This record is written when a remote site warm starts with a recovery log name that is different from its previous recovery log name. DB2 has no threads that require resolution, so the new recovery log name is accepted.

```
|-------------------------------------------------------------------------------
|LOCATION: SYD2              WARM START RECOVERY LOG: CURRENT RECOVERY LOG
|                             PREVIOUS RECOVERY LOG : PREVIOUS RECOVERY LOG
|-------------------------------------------------------------------------------
```

LOCATION
The location, LUNAME, or IP address (*NNN.NNN.NNN*) of the remote partner that sent the warm start indication. Derived from the DB2 field QW0210LO.

WARM START RECOVERY LOG
The name of the partner's warm start recovery log. Derived from the DB2 field QW0210WR.

PREVIOUS RECOVERY LOG
The name of the partner's previous recovery log. Derived from the DB2 field QW0210PR.

211 - Claim Data

Claim data shows the data from IFCID 211.

This record contains information about making and releasing a claim. One record is written for each request to make a claim or release a claim.

```
-------------------------------------------------------------------------------------------------------------------
DBID:   DSNDB06    PSID:  DSNDTX01      PARTITION NO.:    0    CLAIM REQUEST TYPE: ACQUIRE   CLAIM CLASS: RR READ
CLAIM DURATION: HELD UNTIL COMMIT   CLAIM RESULT: LOGICAL CLAIM NEEDED
REASON IF CLAIM UNSUCCESSFUL: RESOURCE IS STOPPED
-------------------------------------------------------------------------------------------------------------------
```

DBID The database identifier of the object of the claim request. This field contains 0 if the request is for a release of all claims. Derived from the DB2 field QW0211DB.

PSID The page set identifier of the object of the claim request. This field contains 0 if the request is for a release of all claims. Derived from the DB2 field QW0211PS.

PARTITION NO.
The partition number of the object of the claim request. This field contains 0 if the request is for a release of all claims or if the table space or index space is not partitioned (and the claim request is at the page set level rather than the logical partition level). Derived from the DB2 field QW0211PT.

CLAIM REQUEST TYPE
The claim request type. Derived from the DB2 field QW0211RQ.

CLAIM CLASS
The claim class. Derived from the DB2 field QW0211CC.

CLAIM DURATION
The claim duration. This field shows 'BLANK' if the claim is released. Derived from the DB2 field QW0211DU.

CLAIM RESULT
The result of the claim request. Derived from the DB2 field QW0211RC.

REASON IF CLAIM UNSUCCESSFUL
The reason for an unsuccessful claim. This field is only printed if the value in CLAIM RESULT is `UNSUCCESSFUL` . Derived from the DB2 field QW0211RS.

212 - Drain Data

Drain data shows the data from IFCID 212.

This record contains information about requesting and releasing a drain or a pseudo drain. One record is written for each request to drain a claim class or release a drain on a claim class. Another record is written for a drain that is only waiting for the claimers to release claims and not acquiring a drain lock (pseudo drain).

```
-------------------------------------------------------------------------------------------------------------------
DBID    CATD3DB1   PSID   CATD3TS2      PARTITION NO.     2    DRAIN REQUEST TYPE: DRAIN     CLAIM CLASS: WRITE
DRAIN LOCK MODE: EXCLUSIVE               DRAIN RESULT:   SUCCESSFUL
-------------------------------------------------------------------------------------------------------------------
```

DBID The database identifier of the object of the drain request. This field contains 0 if the request is for a release of all drains. Derived from the DB2 field QW0212DB.

PSID The page set identifier of the object of the drain request. This field contains 0 if the request is for a release of all drains. Derived from the DB2 field QW0212PS.

PARTITION NO.
The partition number of the object of the drain request. This field contains 0 if the request is for a release of all drains or if the table space or index space is non-partitioned (and the drain request is at the page set level rather than the logical partition level). Derived from the DB2 field QW0212PT.

DRAIN REQUEST TYPE
The drain request type. Derived from the DB2 field QW0212RQ.

CLAIM CLASS
The claim class. Derived from the DB2 field QW0212CC.

DRAIN LOCK MODE
The mode of the drain lock requested. This field shows 'BLANK' if the drain is released or no lock is requested. Derived from the DB2 field QW0212MO.

DRAIN RESULT
The result of the drain request. Derived from the DB2 field QW0212RC.

REASON IF DRAIN UNSUCCESSFUL
The reason for an unsuccessful drain. This field is only printed if the value in CLAIM RESULT is `UNSUCCESSFUL` . Derived from the DB2 field QW0212RS.

213 - Drain Lock Wait Start

Drain lock wait start shows the data from IFCID 213.

This record contains information about the beginning of a wait for a drain lock. For drain locks, this record is written instead of IFCID 44.

```
-------------------------------------------------------------------------------------------------------------------------
LOCK HASH VALUE: x'000020A0'                    LOCK NAME LENGTH    12          LOCK QUALIFIER: x'0001'
LOCK RES TYPE: WRITE                       DBID: CATD3DB1            PSID: CATD3X3P    PARTITION NO.     0
IRLM FUNCTION:  LOCK                       STATE: SHARED                   DURATION: MANUAL
REASON SUSP: LOCAL RESOURCE CONTENTION
QW0213FL  x'30'
-------------------------------------------------------------------------------------------------------------------------
```

LOCK HASH VALUE
The hash value of the locked resource. Derived from the DB2 field QW0213LH.

LOCK NAME LENGTH
The length of the lock name. Derived from the DB2 field QW0213LK.

LOCK QUALIFIER
The lock qualifier. Derived from the DB2 field QW0213KQ.

LOCK RES TYPE
The locked resource type or the type of locking operation. Derived from the DB2 field QW0213KT.

DBID The database ID of the object of the claim request. Derived from the DB2 field QW0213DB.

PSID The page set identifier of the object of the claim request. Derived from the DB2 field QW0213PS.

PARTITION NO.
The partition number of the object of the lock request. This field contains 0 if the table space or index space is not partitioned (and the lock request is at the page set level rather than the logical partition level). Derived from the DB2 field QW0213PT.

IRLM FUNCTION
The IRLM function. Derived from the DB2 field QW0213FC.

STATE
The lock state. Derived from the DB2 field QW0213ST.

DURATION
The lock duration.

MANUAL Varies depending on the ISOLATION parameter (QW0213DR=x'20')

MANUAL+1
Temporary change of consistency level from CS to RR during bind and DDL (QW0213DR=x'21')

COMMIT Until commit (QW0213DR=x'40')

COMMIT+1
Past commit; applies to locks needed to maintain the position for a cursor opened WITH HOLD (QW0213DR=x'41')

ALLOCATION
Until deallocation (QW0213DR=x'60')

PLAN For the duration of the plan (QW0213DR=x'80')

UTIL For the duration of the utility execution (QW0213DR=x'81')

INTEREST
Duration used for P-locks (QW0213DR=x'FE')

FREE ALL
Until all locks are freed (QW0213DR=x'FF')

N/A Not applicable for NOTIFY SUSPEND

REASON SUSP
The reason for the suspension. Derived from the DB2 field QW0213WS.

214 - Drain Lock Wait End

Drain lock wait end shows the data from IFCID 214.

This record contains information about the end of a wait for a drain lock. For drain locks, this record is written instead of IFCID 45.

```
REASON FOR RESUME             : NORMAL RESUME
REASON FOR SUSPEND            : x'hh'
IRLM LATCH CONTENTION       : YES
IRLM QUEUED REQUEST         : YES
LOCAL RESOURCE CONTENTION   : YES
GLOBAL RESOURCE CONTENTION  : YES
INTER-SYSTEM MESSAGE SENDING: YES
GLOBAL CONTENTION EXTENT      : x'hh'
XES GLOBAL CONTENTION       : YES
IRLM GLOBAL CONTENTION      : YES
FALSE CONTENTION            : YES
```

REASON FOR RESUME
The reason for the lock resume. Derived from the DB2 field QW0214R.

REASON FOR SUSPEND
The reason for the suspension. The nonserviceability values are: Derived from the DB2 field QW0214SR.

IRLM LATCH CONTENTION
Indicates whether IRLM latch contention occurred. Derived from the DB2 field QW0214W1.

IRLM QUEUED REQUEST
Indicates whether IRLM queued request occurred. Derived from the DB2 field QW0214W2.

LOCAL RESOURCE CONTENTION
Indicates whether local resource contention occurred. Derived from the DB2 field QW0214W3.

GLOBAL RESOURCE CONTENTION
Indicates whether intersystem communication was required to resolve an IRLM request. Derived from the DB2 field QW0214W5.

INTER-SYSTEM MESSAGE SENDING
Indicates whether any intersystem messages were sent. Derived from the DB2 field QW0214W7.

GLOBAL CONTENTION EXTENT
The extent of global contention. This is applicable only if the value in GLOBAL RESOURCE CONTENTION is `YES` . The nonserviceability values are: Derived from the DB2 field QW0214XR.

XES GLOBAL CONTENTION
Indicates whether XES global resource contention occurred. Derived from the DB2 field QW0214X3.

IRLM GLOBAL CONTENTION
Indicates whether IRLM global resource contention occurred. Derived from the DB2 field QW0214X4.

FALSE CONTENTION
Indicates whether there was IRLM or XES global resource contention. Derived from the DB2 field QW0214X4.

215 - Claim Count 0 Wait Start

Claim count 0 wait start shows the data from IFCID 215.

IFCID 215

This IFCID records the beginning of a wait for the number of pending claims to reach 0.

```
DBID:      1   PSID:      1   PARTITION NO.     0
CLAIM CLASS: WRITE            CLAIM COUNT:     42
```

DBID The database identifier of the object of the drain request. Derived from the DB2 field QW0215DB.

PSID The page set identifier of the object of the drain request. Derived from the DB2 field QW0215PS.

PARTITION NO.
The partition number of the object of the drain request. This field contains 0 if the object is a non-partitioned table space or non-partitioned index being drained at the page set level. Derived from the DB2 field QW0215PT.

CLAIM CLASS
The claim class. Derived from the DB2 field QW0215CC.

CLAIM COUNT
The number of claims pending for this resource. Derived from the DB2 field QW0215CT.

216 - Claim Count 0 Wait End

Claim count 0 wait end shows the data from IFCID 216.

This IFCID records the end of a wait for a claim count to reach 0.

```
DBID:      1   PSID:      1   PARTITION NO.     0
CLAIM CLASS: CS READ  REASON FOR RESUME: TIMEOUT
```

DBID The database identifier of the object of the drain request. Derived from the DB2 field QW0216DB.

PSID The page set identifier of the object of the drain request. Derived from the DB2 field QW0216PS.

PARTITION NO.
The partition number of the object of the drain request. This field contains 0 if the object is a non-partitioned table space or non-partitioned index being drained at the page set level. Derived from the DB2 field QW0216PT.

CLAIM CLASS
The claim class. Derived from the DB2 field QW0216CC.

REASON FOR RESUME
The reason for the resume. Derived from the DB2 field QW0216R.

218 - Lock Avoidance Summary

Lock avoidance summary shows the data from IFCID 218.

This record indicates whether a successful lock avoidance test occurred during a given unit of work. The record is externalized at the agent at each commit or rollback.

```
------------------------------------------------------------------------
LOCK AVOID DURING UNIT OF WORK: YES      NO. PAGE SET SUBRECORDS:     4
DBID: INSQDB   PSID: EVENTS   LOCK AVOID DURING UNIT OF WORK: YES
DBID: DSNDB06  PSID: SYSDBAUT LOCK AVOID DURING UNIT OF WORK: NO
------------------------------------------------------------------------
```

LOCK AVOID DURING UNIT OF WORK
Indicates whether there was a successful lock avoidance test during this unit of work. Derived from the DB2 field QW0218CT.

NO. PAGE SET SUBRECORDS
The number of page set subrecords contained in this record. The fields DBID, PSID, and LOCK AVOID DURING UNIT OF WORK are repeated for each page set that has a lock avoidance test. Derived from the DB2 field QW0218N.

DBID The database ID. Derived from the DB2 field QW0218PD.

PSID The page set ID. Derived from the DB2 field QW0218PP.

LOCK AVOID DURING UNIT OF WORK
Indicates whether there was a successful lock avoidance test for this page set during this unit of work. Derived from the DB2 field QW0218PC.

221 - Parallel Group Execution

Parallel group execution shows the data from IFCID 221.

This record contains information about the degree of parallelism for a parallel group.

The following example shows an IFCID 221 with three records. Each record has a common header. The first record has one repeating section type D, the second has one repeating section type C, and the third two repeating section types E. The records with section type C and E are shown in table format, with each entry of the table representing one repeating section. Section types C and D are correlated. Each entry in the record with section type C indicates how many entries are contained in the record with section type E. In this example, the record with section type C shows that DBID 257 has two members in the record with section type E, namely Q42Q and Q42R.

IFCID 221

```
-------------------------------------------------------------------------------------------------------------------------------
                                          PARALLEL DATA
LOCATION: 'BLANK'            COLLECTION        : 'BLANK'              PROGRAM        : DSNTEP42
STMT.NO :              1224  QUERYBLOCK NUMBER :          1          CONS.TOKEN     : X'15A70EDF064FC998'
PLANNED(BIND) DEGREE:    30  REP.SECTION TYPE  : D                  PARALL.GROUP NO:     1
PLANNED(RUN)  DEGREE:    30  ACTUAL(RUN) DEGREE:         30          REP.SECTIONS   :     1
TYPE OF PARALLELISM : SYS    NUMBER OF MEMBERS :          2          REASON         : NORMAL      RECORD     1 OF     3
.......................................................................................................................
LOW PAGE RANGE:  X'000000'  STATUS: NORMAL
LOW KEY RANGE:
0000  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
0020  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
0040  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
0060  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
0080  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
00A0  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
00C0  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
00E0  00000000  00000000  00000000  00000000                                             | ................
HIGH PAGE RANGE: X'001000'
HIGH KEY RANGE:
0000  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
0020  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
0040  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
0060  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
0080  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
00A0  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
00C0  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
00E0  00000000  00000000  00000000  00000000                                             | ................
-------------------------------------------------------------------------------------------------------------------------------
```

Figure 371. IFCID 221 with Partition Data (Section Type D)

```
-------------------------------------------------------------------------------------------------------------------------------
                                          PARALLEL DATA
LOCATION: 'BLANK'            COLLECTION        : 'BLANK'              PROGRAM        : DSNTEP42
STMT.NO :              1224  QUERYBLOCK NUMBER :          1          CONS.TOKEN     : X'15A70EDF064FC998'
PLANNED(BIND) DEGREE:    30  REP.SECTION TYPE  : C                  PARALL.GROUP NO:     1
PLANNED(RUN)  DEGREE:    30  ACTUAL(RUN) DEGREE:         30          REP.SECTIONS   :     1
TYPE OF PARALLELISM : SYS    NUMBER OF MEMBERS :          2          REASON         : NORMAL      RECORD     2 OF     3
.......................................................................................................................
                             BUFFERPOOL CONSTRAINED DATA
LENGTH: X'0008'
 DBID   PSID   TYPE   BPID   WITH_SECT.E
  257      2    T         0          2
.......................................................................................................................
```

Figure 372. IFCID 221 with Buffer Pool Constrained Data (Section Type C)

```
-------------------------------------------------------------------------------------------------------------------------------
                                          PARALLEL DATA
LOCATION: 'BLANK'            COLLECTION        : 'BLANK'              PROGRAM        : DSNTEP42
STMT.NO :              1224  QUERYBLOCK NUMBER :          1          CONS.TOKEN     : X'15A70EDF064FC998'
PLANNED(BIND) DEGREE:    30  REP.SECTION TYPE  : E                  PARALL.GROUP NO:     1
PLANNED(RUN)  DEGREE:    30  ACTUAL(RUN) DEGREE:         30          REP.SECTIONS   :     2
TYPE OF PARALLELISM : SYS    NUMBER OF MEMBERS :          2          REASON         : NORMAL      RECORD     3 OF     3
.......................................................................................................................
                        DETAIL BUFFERPOOL CONSTRAINED DATA
LENGTH: X'0012'
DB2_MEMBER        CONSTRAINED
Q42Q                   N
Q42R                   N
.......................................................................................................................
```

Figure 373. IFCID 221 with Detail Buffer Pool Constrained Data (Section Type E)

Parallel Data

LOCATION
The location name or RDB name. Derived from the DB2 field QW0221LN.

COLLECTION
The package collection ID. Derived from the DB2 field QW0221PC.

PROGRAM
The program name. Derived from the DB2 field QW0221PN.

STMT.NO
The statement number. It is the same as the QUERYNO in the PLAN_TABLE, if the PLAN_TABLE exists. Derived from the DB2 field QW0221SN.

QUERYBLOCK NUMBER
The query block number. It is the same as the QBLOCKNO in the PLAN_TABLE, if the PLAN_TABLE exists. Derived from the DB2 field QW0221QN.

CONS.TOKEN
The timestamp (consistency token). Derived from the DB2 field QW0221TS.

PLANNED(BIND) DEGREE
The planned degree of parallelism at bind time. Parallelism decisions are made at bind time. However, the value in this field is 0 if the statement has host variables, because host variables cause the parallelism decision to be made at run time. See field PLANNED(RUN) DEGREE. Derived from the DB2 field QW0221PD.

REP.SECTION TYPE
The type of the repeating section. Derived from the DB2 field QW0221TP.

PARALL.GROUP NO
The parallel group number. Derived from the DB2 field QW0221GN.

PLANNED(RUN) DEGREE
The planned degree of parallelism at run time. The value in this field is equal to the value in PLANNED(BIND) DEGREE unless the statement contains host variables. Derived from the DB2 field QW0221RD.

ACTUAL(RUN) DEGREE
The actual degree of parallelism at run time, taking into account only those DB2 members that have enough buffer pool storage. Derived from the DB2 field QW0221AD.

REP.SECTIONS
The number of repeating sections contained in this record. Derived from the DB2 field QW0221N.

TYPE OF PARALLELISM
The type of parallelism:

I/O I/O query parallelism

SYS Sysplex query parallelism

Derived from the DB2 field QW0221MO.

NUMBER OF MEMBERS
The number of DB2 members on which a query was executed during sysplex query parallel processing. Derived from the DB2 field QW0221XC.

REASON
The reason for deriving the planned (runtime) degree of parallelism:

NORMAL The planned runtime degree is derived from the planned bind time degree.

HOSTVAR
Host variable partitioning.

NO ESA No ESA sort support.

CURSOR The cursor might be used for an update or deletion.

EMPTY The parallel group is empty.

MVS/ESA
MVS/ESA enclave services are not available.

Derived from the DB2 field QW0221RN.

RECORD
The position of this record in the series of IFCID 221 records. Derived from the DB2 field QW0221TR.

OF The total number of IFCID 221 records in this series. Derived from the DB2 field QW0221NR.

Section Type D

LOW PAGE RANGE
If the partitioning scheme uses a page range, the low page number of the page range. Derived from the DB2 field QW0221PL.

STATUS
The status of this partition range:

NORMAL A parallel task is created for this partition range.

EMPTY No parallel task is created for this page range.

Derived from the DB2 field QW0221AN.

LOW KEY RANGE
If the partitioning scheme uses a key range, the first 240 bytes of the low boundary key range. Derived from the DB2 field QW0221KL.

HIGH PAGE RANGE
If the partitioning scheme uses a page range, the high page number of the page range. Derived from the DB2 field QW0221PH.

HIGH KEY RANGE
If the partitioning scheme uses a key range, the first 240 bytes of the high boundary key range. Derived from the DB2 field QW0221KH.

Buffer Pool Contrained Data (Section Type C)

LENGTH
The total length of all entries Derived from the DB2 field QW0221CL - 4.

DBID The database identifier. Derived from the DB2 field QW0221DB.

PSID The page set identifier. Derived from the DB2 field QW0221PS.

TYPE The type of page set:

T Table space

I Index

W Work file

Derived from the DB2 field QW0221TY.

BPID The buffer pool identifier. Derived from the DB2 field QW0221BP.

WITH_SECT.E
The number of detail buffer pool contrained data sections to follow in section type E. Derived from the DB2 field QW0221DN.

Detail Buffer Pool Contrained Data (Section Type E)

LENGTH
The total length of all individual constrained DB2 entries. Derived from the DB2 field QW0221CL - 4.

DB2_MEMBER
The name of the DB2 member. Derived from the DB2 field QW0221MN.

CONSTRAINED
Indicates whther the DB2 member is constrained. Derived from the DB2 field QW0221CS.

---

222 - Parallel Group Elapsed Time

Parallel group elapsed time shows the data from IFCID 222.

This record contains information about the elapsed time of a parallel group.

```
|-------------------------------------------------------------------------------------------------------------------------------
RECORD     1 OF     1
LOCATION: M05EC003          PACKAGE: PRODCOLL            PROGRAM: CSF3SP04            CON.TOKEN: X'15B995940B8DACAA'
STATEMENT NO:    84  QUERY BLOCK NO:     1  PARALLEL GROUP NO:     1  REPEAT.GRPS:     2
PIPE CREATION: 12/18/96 16:35:47.148952  PIPE TERMINATION: 12/18/96 16:35:47.493512  PIPE ELAPSED:         0.344560
QW0222FM      0   QW0222CS      0   QW0222PR         103 QW0222OD      0
.......................................................................................................................
SUB-PIPE CREATION   : 12/18/96 16:35:47.242775  SUB-PIPE ELAPSED:         0.076436
SUB-PIPE TERMINATION: 12/18/96 16:35:47.319211  TASK TOKEN      : X'7B450138'        MEMBER      : 'BLANK'
QW0222SR          21   QW0222OR           0   QW0222CT           0
.......................................................................................................................
SUB-PIPE CREATION   : 12/18/96 16:35:47.319217  SUB-PIPE ELAPSED:         0.059854
SUB-PIPE TERMINATION: 12/18/96 16:35:47.379071  TASK TOKEN      : X'7B45015C'        MEMBER      : 'BLANK'
QW0222SR          82   QW0222OR           0   QW0222CT           0
-------------------------------------------------------------------------------------------------------------------------------
```

RECORD
The position of this record in the series of IFCID 222 records. Derived from the DB2 field QW0222TR.

OF The total number of IFCID 222 records in this series. Derived from the DB2 field QW0222NR.

LOCATION
The location name or RDB name. Derived from the DB2 field QW0222LN.

PACKAGE
The package collection ID. Derived from the DB2 field QW0222PC.

PROGRAM
The program name. Derived from the DB2 field QW0222PN.

CON.TOKEN
The timestamp (consistency token). Derived from the DB2 field QW0222TS.

STATEMENT NO
The statement number. Derived from the DB2 field QW0222SN.

QUERY BLOCK NO
The query block number. Derived from the DB2 field QW0222QN.

PARALLEL GROUP NO
The parallel group number. Derived from the DB2 field QW0222GN.

REPEAT.GRPS
The number of repeat groups in the section. Derived from the DB2 field QW0222RN.

PIPE CREATION
The time of pipe creation in DB2 timestamp format. Derived from the DB2 field QW0222PS.

PIPE TERMINATION
The time of pipe termination in DB2 timestamp format. Derived from the DB2 field QW0222PE.

PIPE ELAPSED
The elapsed time between pipe creation and pipe termination in DB2 timestamp format. Derived from the DB2 field QW0222PS - QW0222PE.

SUB-PIPE CREATION
The time of subpipe creation in DB2 timestamp format. Derived from the DB2 field QW0222SS.

SUB-PIPE ELAPSED
The elapsed time between subpipe creation and subpipe termination in DB2 timestamp format. Derived from the DB2 field QW0222SS - QW0222SE.

SUB-PIPE TERMINATION
The time of subpipe termination in DB2 timestamp format. Derived from the DB2 field QW0222SE.

TASK TOKEN
The task token associated with the subpipe. Derived from the DB2 field QW0222TK.

MEMBER
The name of the DB2 member that supplies the data. Derived from the DB2 field QW0222SM.

223 - Lock Avoidance Detail

Lock avoidance detail shows the data from IFCID 223.

This record contains information about each successful lock avoidance test.

```
LOCK RES TYPE:  DATA PAGE
DBID: DSNDB06             OBID: SYSPLAN
TABLE_SPACE_TYPE: L
RESOURCE ID: x'001486A7'
QW0223U   x'0005000A000186A2'
QW0223O   x'0005000A000186A2'
QW0223CL  x'00'
```

LOCK RES TYPE
The resource type being accessed. Derived from the DB2 field QW0223KT.

DBID The database ID. Derived from the DB2 field QW0223KD.

OBID The page set OBID or table record OBID. Derived from the DB2 field QW0223KP.

TABLE_SPACE_TYPE
The type of the table space:

L Non-EA large table

N Non-large table

V EA-enabled large table

Derived from the DB2 field QW0223TY.

RESOURCE ID
The ID of the small resource. Derived from the DB2 field QW0223KR.

224 - SPROC Bypassed

SPROC bypassed shows the data from IFCID 224.

This record is written at the end of a unit of work. It contains a single counter which records the total columns for which an invalid select procedure was encountered. Invalid select procedures are bypassed by DB2 and can cause performance degradation.

```
COLUMNS          3
```

COLUMNS
The select procedure bypass column count. This is the total number of columns (rows × columns) for which a select procedure was bypassed because the select procedure was invalidated by applying service to DB2. Derived from the DB2 field QW0224CL.

226 - Page Latch Contention Start

Page latch contention start shows the data from IFCID 226.

This IFCID records the beginning of an agent suspend to wait for a page latch that is currently held under another agent.

```
DBID:  DSNDB06  PSID: SYSDBASE
PAGE NUMBER: x'01A21102'  LATCH TYPE: X
TABLE_SPACE_TYPE: L
BUFFERPOOL ID: 9999  ACE TOKEN: ZZ9
```

DBID The database ID. Derived from the DB2 fields QW0226DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0226DB is shown. However, if QW0226DB contains 0, N/A is displayed.

PSID The page set object identifier. Derived from the DB2 field QW0226OB. The identifier is translated to the page set object name if QW0105DN or

QW0107DN contains appropriate data. If neither QW0105DN nor QW0107DN contain appropriate data, the decimal identifier from QW0226OB is shown.

PAGE NUMBER
The number of the page being read or written. If the value in TABLE_SPACE_TYPE is L, the page number covers 4 bytes instead of 3. Derived from the DB2 field QW0226PN.

LATCH TYPE
The type of latch. Derived from the DB2 field QW0226F.

BUFFERPOOL ID
The buffer pool internal identifier. The values 0 through 49 are the identifiers for BP0 through BP49. The values 80 through 89 are the identifiers for BP32K through BP32K9. Derived from the DB2 field QW0226BP.

ACE TOKEN
The agent control element token of the requester. Derived from the DB2 field QW0226AC.

TABLE_SPACE_TYPE
The type of the table space:

L Non-EA large table

N Non-large table

V EA-enabled large table

Derived from the DB2 field QW0226FG.

227 - Page Latch Contention End

Page latch contention end shows the data from IFCID 227.

This IFCID records the end of an agent suspend to wait for a page latch.

```
DBID:  DSNDB06  PSID: SYSDBASE
PAGE NUMBER: x'01A21102'  CANCEL STATUS: N
ACE TOKEN: ZZ9        TABLE_SPACE_TYPE: L
```

DBID The database ID. Derived from the DB2 fields QW0227DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0227DB is shown. However, if QW0227DB contains 0, N/A is displayed.

PSID The page set object identifier. Derived from the DB2 field QW0227OB. The identifier is translated to the page set object name if QW0105DN or QW0107DN contains appropriate data. If neither QW0105DN nor QW0107DN contain appropriate data, the decimal identifier from QW0227OB is shown.

PAGE NUMBER
The number of the page being read or written. If the value in

TABLE_SPACE_TYPE is L, the page number covers 4 bytes instead of 3. Derived from the DB2 field QW0227PN.

CANCEL STATUS
Indicates whether the latch requester was canceled. Derived from the DB2 field QW0227F.

ACE TOKEN
The agent control element token of the requester. Derived from the DB2 field QW0227AC.

TABLE_SPACE_TYPE
The type of the table space:

L Non-EA large table

N Non-large table

V EA-enabled large table

Derived from the DB2 field QW0227FG.

228 - Archive Deallocation Start

Archive deallocation start shows the data from IFCID 228.

```
QW0228DV           1   QW0228DI  x'C6D9C5C4F1404040'
```

229 - Archive Deallocation End

Archive deallocation end shows the data from IFCID 229.

```
QW0229DV           1     QW0229CC  'BLANK'
```

230 - Group Buffer Pool Attributes

Group buffer pool attributes shows the data from IFCID 230. Each repeating section contains information about each group buffer pool to which this DB2 data sharing member is currently connected.

```
|-------------------------------------------------------------------------------------------------------------------------
|GROUP BUFFERPOOL ID           :    GBP4K                      ERROR FLAGS:    000
|ALLOCATED GBPOOL SIZE (4K)    :     9024   CURRENT DIRECTORY TO DATA RATIO:      5   CLASS CASTOUT THRESHOLD (%): 10
|ACTUAL NMB OF DIRECTORY ENTRIES:    35958   PENDING DIRECTORY TO DATA RATIO:      5   GBP CASTOUT THRESHOLD (%)  : 50
|ACTUAL NUMBER OF DATA ENTRIES  :     7187   GBP CHECKPOINT INTERVAL (MIN)  :      8   AUTOREC                    : YES
|DIRECTORY-ENTRY-RECLAIM        :        1   DATA-ENTRY-RECLAIM             :      1   GBP CACHE                  :  NO
|TOTAL-CHANGED                  :        4   XI-DIRECTORY-RECLAIM           :      2
|MODE                           :   DUPLEX                                  :      3
|SEC-GBP ALLOC                  :        5   SEC-GBP ALLOC DIRECTORIES      :      3   SEC-GBP DATA ENTRIES       :   4
|
|QBGBERC         0   QBGBERS         0
|-------------------------------------------------------------------------------------------------------------------------
```

GROUP BUFFERPOOL ID
The group buffer pool ID. Derived from the DB2 field QBGBGN.

ERROR FLAGS
The errors, if any, that occurred in data collection:

x'00' There were no errors.

x'01' An error occurred when the group buffer pool attributes were read from the SCA.

x'02' An addressing error occurred when the DB2 control blocks were accessed. The data collection process did not obtain serialization.

Derived from the DB2 field QBGBFLGS.

ALLOCATED GBPOOL SIZE (4K)
The allocated size of the group buffer pool in 4 KB blocks. Derived from the DB2 field QBGBGSZ.

CURRENT DIRECTORY TO DATA RATIO
The current directory entry per data entry ratio. Derived from the DB2 field QBGBGR1.

CLASS CASTOUT THRESHOLD (%)
The threshold at which class castout is to be initiated. It is expressed as a percentage of the group buffer pool size. Derived from the DB2 field QBGBGCT.

ACTUAL NMB OF DIRECTORY ENTRIES
The actual number of allocated directory entries. Derived from the DB2 field QBGBGDR.

PENDING DIRECTORY TO DATA RATIO
The pending directory entry per data entry ratio. Derived from the DB2 field QBGBGR2.

GBP CASTOUT THRESHOLD (%)
The threshold at which castout is to be initiated for the group buffer pool. It is expressed as a percentage of the size of the group buffer pool. Derived from the DB2 field QBGBGGT.

ACTUAL NUMBER OF DATA ENTRIES
The actual number of allocated data entries. Derived from the DB2 field QBGBGDT.

GBP CHECKPOINT INTERVAL (MIN)
The time interval (in minutes) between successive group buffer pool checkpoints. Derived from the DB2 field QBGBGCK.

AUTOREC
A flag indicating how the AUTOREC option of the ALTER GROUPBUFFERPOOL command has been set. It specifies whether automatic recovery takes place in case of a structure failure or loss of connectivity of all members of the group buffer pool. Derived from the DB2 field QBGBGAS.

DIRECTORY-ENTRY-RECLAIM
The number of times that a page name assignment required that a coupling facility directory entry be reclaimed (stolen). Derived from the DB2 field QBGBDRR.

DATA-ENTRY-RECLAIM
The number of times that a page name assignment required that a coupling facility data entry be reclaimed (stolen). Derived from the DB2 field QBGBDTR.

GBP CACHE
Caching attribute. Possible values are:

YES The GBP is used for both data caching and cross invalidation.

NO The GBP is used only for cross invalidation.

TOTAL CHANGED
The number of allocated data entries that are currently in **changed** state. This is a **snapshot** value and is not cumulative. Derived from the DB2 field QBGBTCC.

XI-DIRECTORY-ENTRY-RECLAIM
The number of times that a directory entry was stolen and one or more XI signals had to be sent because the page in the directory was cached in one or more DB2 buffer pools. Derived from the DB2 field QBGBRXI.

MODE Possible values are:

DUPLEX

SIMPLEX

Derived from DB2 field QBGBDUP.

SEC-GBP ALLOC
When MODE is DUPLEX, the allocated size of the secondary group buffer pool. Derived from DB2 field QBGBGSZ2.

SEC-GBP ALLOC DIRECTORIES
When MODE is DUPLEX, the number of allocated directory entries in the secondary group buffer pool. Derived from DB2 field QBGBGDR2.

SEC-GBP ALLOC DATA ENTRIES
When MODE is DUPLEX, the number of allocated data entries in the secondary group buffer pool. Derived from DB2 field QBGBGDT2.

231 - Parallel Group Task Time

Parallel group task time shows the data from IFCID 231.

```
STATEMENT NO:       1224  QUERY BLOCK NO:     1  PARALLEL GROUP NO:     1  REPEAT.GRPS:     2    RECORD     1 OF     1
GROUP CREATION: 09/24/96 12:40:57.760418  GROUP TERMINATION: 09/24/96 12:42:11.261163  GROUP ELAPSED:      1:13.500745
QW0231NG           1   QW0231NT          30
.....................................................................................................................
TASK SEQ. NUMBER:          1               TASK TOKEN  : X'6B9C08D0'
TASK CREATION   : 09/24/96 12:40:57.763105  TASK ELAPSED:      1:08.763455
TASK TERMINATION: 09/24/96 12:42:06.526560  CPU TIME    :        38.214432
MEMBER          : Q42Q                      CPU SU CONS :      32074          QW0231AC   311849464
TASK SEQ. NUMBER:          2               TASK TOKEN  : X'6B9C57A0'
TASK CREATION   : 09/24/96 12:40:57.765344  TASK ELAPSED:      1:08.529116
TASK TERMINATION: 09/24/96 12:42:06.294460  CPU TIME    :        37.548378
MEMBER          : Q42Q                      CPU SU CONS :      31515          QW0231AC   311862600
```

STATEMENT NO
The statement number. If the PLAN_TABLE exists, this is the same as QUERYNO in the PLAN_TABLE. Derived from the DB2 field QW0231SN.

QUERY BLOCK NO
The query block number. If the PLAN_TABLE exists, this is the same as QBLOCKNO in the PLAN_TABLE. Derived from the DB2 field QW0231QN.

PARALLEL GROUP NO
The parallel group number. If the PLAN_TABLE exists, this is the same as ACCESS_PGROUP_ID in the PLAN_TABLE. Derived from the DB2 field QW0231GN.

REPEAT.GRPS
The number of repeat groups in the section. Derived from the DB2 field QW0231RN.

RECORD
The position of this record in the series of IFCID 222 records. Derived from the DB2 field QW0231TR.

OF The total number of IFCID 231 records in this series. Derived from the DB2 field QW0231NR.

GROUP CREATION
The time of group creation in DB2 timestamp format. Derived from the DB2 field QW0231CT.

GROUP TERMINATION
The time of group termination in DB2 timestamp format. Derived from the DB2 field QW0231ET.

GROUP ELAPSED
The elapsed time between group creation and group termination in DB2 timestamp format. Calculated from QW0231ET − QW0231CT.

TASK SEQ. NUMBER
The task sequence number. Derived from the DB2 field QW0231TQ.

TASK TOKEN
The task token. Derived from the DB2 field QW0231TK.

TASK CREATION
The time of task creation in DB2 timestamp format. Derived from the DB2 field QW0231TC.

TASK ELAPSED
The elapsed time between task creation and task termination in DB2 timestamp format. If this value is negative, N/C is printed. Calculated from the DB2 field QW0231TT − QW0231TC.

TASK TERMINATION
The time of task termination in DB2 timestamp format. Derived from the DB2 field QW0231TT. The CPU execution time of the task. Derived from the DB2 field QW0231TX.

MEMBER
The name of the DB2 member on which the task was executed. Derived from the DB2 field QW0231TM. The CPU service units that the task consumed. Derived from the DB2 field QW0231SU.

233 - Call Stored Procedure

Call stored procedure shows the data from IFCID 233.

```
 LOCATION NAME: STLEC1           STATEMENT NO :  1455              CONSISTENCY TOKEN: X'1610807812419D80'  ENTRY/EXIT TYPE: ENTERING
 ROUTINE NAME : UF04F               ROUTINE TYPE     : FUNCTION             SCHEMA NAME    : SCHEMA1
 SQLCAID:       'BLANK'                   SQLCABC           0                  SQLERRP:  'BLANK'    SQLEXT:  'BLANK'
 SQLERRD1          0  SQLERRD2          0  SQLERRD3          0  SQLWARN0:  SQLERRD4          0  SQLERRD5          0  SQLERRD6          0
SQLWARN4:                                                                  SQLWARN8:  SQLERRM:
```

LOCATION NAME
The location name. Derived from the DB2 field QW0233LN.

COLLECTION ID
The package collection identifier. Derived from the DB2 field QW0233PC.

PROGRAM NAME
The program name. Derived from the DB2 field QW0233PN.

STATEMENT NO
The statement number of the statement executed. Derived from the DB2 field QW0233SN.

CONSISTENCY TOKEN
The hexadecimal value of the precompiler timestamp. Derived from the DB2 field QW0233TS.

ENTRY/EXIT TYPE
The entry or exit event type:

ENTERING
The agent is entering a stored procedure.

RETURNED
The agent has returned from a stored procedure.

Derived from the DB2 field QW0233EX.

ROUTINE NAME
The unqualified name of the stored procedure. Derived from the DB2 field QW0233PR.

ROUTINE TYPE
The routine type. Derived from the DB2 field QW0233TY.

SCHEMA NAME
The name of the schema associated with this routine. Derived from the DB2 field QW0233SC.

SQLCA Returned

This section contains the SQLCA fields and is only printed if the value in the `ENTRY/EXIT TYPE` field is `RETURNED`. Derived from the DB2 field QW0058SQ.

235 - DDF Condition Restart Data Loss

DDF condition restart data loss shows the data from IFCID 235.

This record is produced when a conditional DB2 restart results in partial information about a LUWID that may require resynchronization with a coordinator or participant.

```
-----------------------------------------------------------------------
REMOTE PARTNER LOCATION: SYD3
INVOLVED THREAD:
NETID: 'BLANK'   LUNAME: 'BLANK'   INSTANCE: x'404040404040'  LUW SEQ:     0  TOKEN: x'00000001' LOG RBA: x'404040404040'
ROLE : x'40'              LOCAL UOW STATUS: x'40'         RESYNC INFO DISPOSITION: x'40'
-----------------------------------------------------------------------
```

REMOTE PARTNER LOCATION
The location name, LUNAME, or IP address (*NNN.NNN.NNN*) of the remote partner involved in the unit of work. Derived from the DB2 field QW0235LO.

NETID The NETID portion of the LUWID. Derived from the DB2 field QW0235NT.

LUNAME
The LUNAME portion of the LUWID. Derived from the DB2 field QW0235LU.

INSTANCE
The instance number portion of the LUWID. Derived from the DB2 field QW0235IN.

LUW SEQ
The LUW sequence number (commit count) portion of the LUWID. Derived from the DB2 field QW0235CM.

TOKEN
The local token representing the LUWID. Derived from the DB2 field QW0235TK.

LOG RBA
The recovery log RBA (URID) for the thread. Derived from the DB2 field QW0235UR.

ROLE The role of DB2 in the LUW. Derived from the DB2 field QW0235RL.

LOCAL UOW STATUS
The local status of the DB2 thread when DB2 terminated. Derived from the DB2 field QW0235TS.

RESYNC INFO DISPOSITION
The disposition of the resynchronization information. Derived from the DB2 field QW0235TI.

236 - DDF SNA XLN Protocol Err

DDF SNA XLN protocol error shows the data from IFCID 236.

```
-------------------------------------------------------------------------------------------------------------------------
REMOTE LOCATION: SYD1       ├      LAST OPERATION: SEND
LAST MESSAGE:
  SENT   :
0000  E2E3C1D9  E340D6C6  40D3C1E2  E340D4C5   E2E2C1C7  C540E2C5  D5E36060  60606060  | START OF LAST MESSAGE SENT------
0020  60606060  60606060  60606060  60606060   60606060  60606060  60606060  60606060  | --------------------------------
0040  60606060  60606060  60606060  60606060   60606060  60606060  60606060  60606060  | --------------------------------
0060  60606060  60606060  60606060  60606060   60606060  60606060  60606060  6060      | ------------------------------
  RCVD   :
0000  E2E3C1D9  E36DD6C6  6DD3C1E2  E36D                                               | START_OF_LAST_
VTAM RPL:
0000  E2E3C1D9  E36DD6C6  6DE5E3C1  D46DD9D7   D3606060  60606060  60606060  60606060  | START_OF_VTAM_RPL---------------
0020  60606060  60606060  60606060  60606060   60606060  60606060  60606060  60606060  | --------------------------------
0040  60606060  60606060  60606060  60606060   60606060  60606060  60606060  60606060  | --------------------------------
0060  C5D4C46D  D6C66DE5  E3C1D4D3  6DD9D7D3                                           | END_OF_VTAML_RPL

  EXT    :
0000  E2E3C1D9  E36DD6C6  6DE5E3C1  D46DD9D7   D36DC5E7  E3C5D5E2  C9D6D560  60606060  | START_OF_VTAM_RPL_EXTENSION-----
0020  60606060  60606060  60606060  60606060   60606060  60606060  60606060  60606060  | --------------------------------
0040  60606060  60606060  60606060  60606060   60606060  60606060  606060C5  D5C46DD6  | ----------------------------END_O
0060  C66DE5E3  C1D460C5  E7E3C5D5  E2C9D6D5                                           | F_VTAM-EXTENSION
-------------------------------------------------------------------------------------------------------------------------
```

REMOTE LOCATION
The location name or LUNAME of the remote partner involved in the protocol error. Derived from the DB2 field QW0236LO.

LAST OPERATION
Indicates whether the last network operation was a send or receive. Derived from the DB2 field QW0236SR.

SENT The last message sent by this DB2 site during the XLN exchange. Derived from the DB2 field QW0236MS.

RCVD The last message received by this DB2 site during the XLN exchange. Derived from the DB2 field QW0236MR.

VTAM RPL
The VTAM RPL associated with the last XLN message received during the exchange log names (XLN). Derived from the DB2 field QW0236VR.

EXT The VTAM RPL extension which describes the LU 6.2 verb indicators for the last message received. Derived from the DB2 field QW0236VX.

237 - Set Current Degree

Set current degree shows the data from IFCID 237.

This record is produced when an SQL SET CURRENT DEGREE statements is executed.

```
PREV DEGREE: 1    NEW DEGREE: ANY  STATUS: SUCCESSFUL
```

PREV DEGREE
The previous (current) degree. Derived from the DB2 field QW0237OI.

NEW DEGREE
The new (attempted) degree. Derived from the DB2 field QW0237NI.

STATUS
The status of the statement. Derived from the DB2 field QW0237ST.

239 - Overflow Package/DBRM

Overflow package/DBRM shows the data from IFCID 239.

This record is produced when the agent has executed more that 10 packages.

```
|-------------------------------------------------------------------------------------------------------------------------
|                                    GENERAL PACKAGE OVERFLOW ACCOUNTING DATA
|NUMBER OF PACKAGES    12          FIRST SECTION    11         LAST SECTION    12
|.........................................................................................................................
|                                        PACKAGE/DBRM ACCOUNTING DATA
|LOCATION: PMO6D661            COLLECTION       : PMDEV                          PACKAGE ID   : PARALC01
|TOKEN:  X'15C7A6331A688408'   SECTION NMB      :     1        PROGRAM TYPE : PACKAGE   SCHEMA NAME  : xxxxxxxx
|SQL STMTS:               1    USED BY STOR.PROC:    NO        NON-ZERO CLASS 8:  YES   ACTIVITY NAME: xxxxxxxx
|SUCC AUTH CHECK :       NO    LAST EXECUTED    :   YES        NON-ZERO CLASS 7:  YES   ACTIVITY TYPE: TRIGGER EXECUTING
|CLASS 7 BEGINNING STORE CLOCK TIME 10/30/98 09:36:20.052939   ENDING STORE CLOCK TIME  10/30/98 09:36:20.619607
|        BEGINNING TCB CPU TIME                    0.092405   ENDING TCB CPU TIME                      0.093365
|        TOTAL ELAPSED TIME                       17.219923   DB2 ENTRY/EXIT                                  4
|        TOTAL TCB TIME                            0.006152
|CLASS 8 LOCK/LATCH SUSP TIME                      0.000000   LOCK/LATCH SUSP EVENTS                          0
|        SYNCHRONOUS I/O SUSP TIME                 0.000000   SYNCHRONOUS I/O SUSP EVENTS                     0
|        OTHER READ SUSP TIME                      0.000000   OTHER READ SUSP EVENTS                          0
|        OTHER WRITE SUSP TIME                     0.000000   OTHER WRITE SUSP EVENTS                         0
|        SERV.TASK SWITCH SUSP TIME               16.589673   SERV.TASK SWITCH SUSP EVENTS                    4
|        ARCH.LOG(QUIES) SUSP TIME                 0.000000   ARCH.LOG(QUIES) SUSP EVENTS                     0
|        ARCH.LOG READ SUSP TIME                   0.000000   ARCH.LOG READ SUSP EVENTS                       0
|        DRAIN LOCK SUSP TIME                      0.000000   DRAIN LOCK SUSP EVENTS                          0
|        CLAIM RELEASE SUSP TIME                   0.000000   CLAIM RELEASE SUSP EVENTS                       0
|        PAGE LATCH SUSP TIME                      0.000000   PAGE LATCH SUSP EVENTS                          0
|        NOTIFY MESSAGES SUSP TIME                 0.000000   NOTIFY MESSAGE EVENTS                          0
|        GLOBAL CONTENT. SUSP TIME                 0.000000   GLOBAL CONTENTION EVENTS                       0
|        SCHED.STOR PROC SUSP TIME                 0.000000   STORED PROCEDURE EVENTS                        0
|        SCHED.UDF SUSP TIME                       0.000000   UDF EXECUTED                                    0
|                                                  0.000000   STORED PROCEDURE EXECUTED                       0
|-------------------------------------------------------------------------------------------------------------------------
```

General Package Overflow Accounting Data

NUMBER OF PACKAGES
The number of packages. Derived from the DB2 field QPKGPKGN.

FIRST SECTION
The number of the first section in this record. Derived from the DB2 field QPKGPKNF.

LAST SECTION
The number of the last section in this record. Derived from the DB2 field QPKGPKNL.

Package/DBRM Accounting Data

LOCATION
The location name. This field shows 'BLANK' if the package or DBRM was executed locally. In all other cases, all times represent the time for locally executing the remote package for this application-directed requester. Derived from the DB2 field QPACLOCN.

COLLECTION
The package collection identifier. Derived from the DB2 field QPACCOLN.

PACKAGE ID
The program name. Derived from the DB2 field QPACPKID.

TOKEN
The consistency token. Derived from the DB2 field QPACCONT.

SECTION NMB
The number of this particular data section in the series. Derived from the DB2 field QPACRECN.

PROGRAM TYPE
The program type. Derived from the DB2 field QPACFLGS.

SCHEMA NAME
The schema name under which the stored procedure, user-defined function, or trigger is running. Derived from DB2 field QPACASCH

NON-ZERO CLASS 8
Indicates whether there is non-zero accounting class 8 data. Derived from the DB2 field QPACFLGS.

ACTIVITY NAME
Name of the stored procedure, user-define function, or trigger. Derived from the DB2 field QPACAANM.

SQL STMTS
The number of SQL statements issued in this package or DBRM. Derived from the DB2 field QPACSQLC.

USED BY STOR.PROC
Indicates whether this package was loaded by a stored procedure. Derived from the DB2 field QPACINSP.

LAST EXECUTED
Indicates whether this package or DBRM is either currently executing or is the most recently executed package or DBRM. Derived from the DB2 field QPACFLGS.

NON-ZERO CLASS 7
Indicates whether there is non-zero accounting class 7 data. Derived from the DB2 field QPACFLGS.

ACTIVITY TYPE
Indicates whether the activity is a stored procedure, user-defined function, or a trigger. Derived from DB2 field QPACAAFG.

SUCC AUTH CHECK
Indicates whether a successful package EXECUTE authorization check was made and DB2 catalog access was avoided. Derived from the DB2 field QPACPAC.

CLASS 7

BEGINNING STORE CLOCK TIME
The store clock time at entry to DB2 for the most recent execution of this package or DBRM. Derived from the DB2 field QPACSCB.

ENDING STORE CLOCK TIME
The store clock time at exit from DB2 after the most recent execution of this package or DBRM. Derived from the DB2 field QPACSCE.

BEGINNING TCB CPU TIME
The TCB CPU time at entry to DB2 for the most recent execution of this package or DBRM. Derived from the DB2 field QPACBJST.

ENDING TCB CPU TIME
The TCB CPU time at exit from DB2 after the most recent execution of this package or DBRM. Derived from the DB2 field QPACEJST.

TOTAL ELAPSED TIME
The total elapsed time for executing this package or DBRM. Derived from the DB2 field QPACSCT.

TOTAL TCB TIME
The total TCB CPU time for executing this package or DBRM. Derived from the DB2 field QPACTJST.

DB2 ENTRY/EXIT
The number of DB2 entries or exits during the execution of this package or DBRM. Derived from the DB2 field QPACARNA.

CLASS 8

LOCK/LATCH SUSP TIME
The accumulated lock and latch time. Derived from the DB2 field QPACAWTL.

LOCK/LATCH SUSP EVENTS
The number of wait trace events processed for lock/latch. Derived from the DB2 field QPACARNL.

SYNCHRONOUS I/O SUSP TIME
The accumulated elapsed I/O wait time. Derived from the DB2 field QPACAWTI.

SYNCHRONOUS I/O SUSP EVENTS
The number of wait trace events processed for I/O. Derived from the DB2 field QPACARNE.

OTHER READ SUSP TIME
The accumulated read I/O wait time. Derived from the DB2 field QPACAWTR.

OTHER READ SUSP EVENTS
The number of suspensions due to read I/O. Derived from the DB2 field QPACARNR.

OTHER WRITE SUSP TIME
The accumulated write I/O wait time. Derived from the DB2 field QPACAWTW.

OTHER WRITE SUSP EVENTS
The number of suspensions due to write I/O. Derived from the DB2 field QPACARNW.

SERV.TASK SWITCH SUSP TIME
The accumulated service task wait time. Derived from the DB2 field QPACAWTE.

SERV.TASK SWITCH SUSP EVENTS
The number of wait trace events processed for DB2 service tasks. Derived from the DB2 field QPACARNS.

ARCH.LOG(QUIES) SUSP TIME
The accumulated wait time due to the processing of ARCHIVE LOG MODE (QUIESCE) commands. Note that this is the amount of time for which the thread was suspended, not the amount of time that the commands took to complete. Derived from the DB2 field QPACALOG.

ARCH.LOG(QUIES) SUSP EVENTS
The number of ARCHIVE LOG MODE (QUIESCE) commands issued. Derived from the DB2 field QPACALCT.

ARCH.LOG READ SUSP TIME
The time spent waiting for archive reads (TAPE). Derived from the DB2 field QPACAWAR.

ARCH.LOG READ SUSP EVENTS
The number of wait trace events processed for archive reads. Derived from the DB2 field QPACANAR.

DRAIN LOCK SUSP TIME
The accumulated wait time for a drain lock. Derived from the DB2 field QPACAWDR.

DRAIN LOCK SUSP EVENTS
The number of wait trace events processed for waits for drain locks. Derived from the DB2 field QPACARND.

CLAIM RELEASE SUSP TIME
The accumulated wait time for a drain when waiting for claims to be released. Derived from the DB2 field QPACAWCL.

CLAIM RELEASE SUSP EVENTS
The number of wait trace events processed for waits for claims to be released. Derived from the DB2 field QPACARNC.

PAGE LATCH SUSP TIME
The accumulated wait time for page latch contention. Derived from the DB2 field QPACAWTP.

PAGE LATCH SUSP EVENTS
The number of page latch wait trace events processed. Derived from the DB2 field QPACARNH.

NOTIFY MESSAGES SUSP TIME
The elapsed time spent in waiting for suspensions processed for sending notify messages to other members in the data sharing group. Derived from the DB2 field QPACAWTG.

NOTIFY MESSAGES EVENTS
The number of wait trace events processed for sending notify messages to other members in the data sharing group. Derived from the DB2 field QPACARNG.

GLOBAL CONTENT. SUSP TIME
The elapsed time spent in waiting for suspensions due to global lock contentions. Derived from the DB2 field QPACAWTJ.

GLOBAL CONTENTION EVENTS
The number of wait trace events processed for group-level contentions in a data sharing environment. Derived from the DB2 field QPACARNJ.

SCHED.PROCEDURE SUSP TIME
The elapsed time spent in waiting for an available TCB before the stored procedure could be scheduled. Derived from the DB2 field QPACCAST.

STORED PROCEDURE EVENTS
The number of wait trace events processed for an unavailable TCB needed for a stored procedure. Derived from the DB2 field QPACCANM.

SCHED.UDF SUSP TIME
The elapsed time spent in waiting for an available TCB before the stored UDF be scheduled. Derived from the DB2 field QPACUDST.

UDF EVENTS
The number of wait trace events processed for an unavailable TCB needed for a UDF. Derived from the DB2 field QPACCUDNU.

STORED PROCEDURE EXECUTED
The number of stored procedures executed. This is only shown if DB2 accounting class 8 is active. Derived from DB2 field QPACSPNS.

247 - SQLDA data and INPUT HOST VARIABLE data

IFCID 0247 records SQLDA data AND INPUT HOST VARIABLE data related to a user application program. Each host variable is traced individually as it is moved from the user application area to the DB2 address space.

For dynamic SQL statements of lenght 5000 or less, you can use these records in combination with records from IFCID 0064 and IFCID 0063 to determine which statements are associated with which host variables. To do this, you need to match the statement number in this record to the statement number in an IFCID 0064 record. An IFCID 0063 Record that follows the IFCID 0064 record that has the same CORRELATION ID and ACE values contains the SQL statement associated with the host variables.

IFCID 249

```
    LOCATION: STLEC1                          DB2 PERFORMANCE MONITOR (V6)                                PAGE: 1-1
       GROUP: N/P                                  RECORD TRACE - LONG                      REQUESTED FROM: NOT SPECIFIED
      MEMBER: N/P                                                                                        TO: NOT SPECIFIED
   SUBSYSTEM: SSDQ                                                                                 ACTUAL FROM: 01/04/95 00:33:02.72
 DB2 VERSION: V4 R1                                                                                   PAGE DATE: 01/04/95
0PRIMAUTH CONNECT   INSTANCE      END USER       WS NAME                       TRANSACT
 ORIGAUTH CORRNAME  CONNTYPE      RECORD TIME    DESTNO ACE IFC  DESCRIPTION   DATA
 PLANNAME CORRNMBR                TCB CPU TIME             ID
 -------- -------- ------------ ---------------- ------ --- --- -------------- ----------------------------------------------------
 N/P      N/P      AA6D1796D693 N/P              N/P                           N/P
 N/P      N/P      'BLANK'     00:33:02.72254568     52   1 247 SQLDA & HOST   NETWORKID:  USIBMSY   LUNAME:  SYEC1DB2  LUWSEQ:     1
 N/P      N/P                  N/P                               VAR TRACING
          |-------------------------------------------------------------------------------------------------------------------------
          |                                        HOST VARIABLE TRACING
          |LOCATION NAME: STLEC1               STATEMENT NUMBER       :  1622   PRECOMPILER TIMESTAMP: X'154DA2291DBC95E0'
          |COLLECTION ID: 'BLANK'              NUMBER ENTRIES IN SQLDA:     1   FORMAT SQLDA         : B'1000'
          |PROGRAM NAME : QSP54                LENGTH EACH SQLDA ENTRY:    12
          |.........................................................................................................................
          |                                          SQLDA ENTRY
          |SQLDA NAME: 'BLANK'                       SQLDA ENTRY NUMBER:          1   DATA TYPE     :   496   LENGTH:     4
          |ADDRESS TO DATA          : X'02F30088'    PRECISION (IF DEC):          0   SCALE (ID DEC):     4
          |ADDRESS TO NULL INDICATOR: X'00000000'    NULL INDICATOR    : N/P
          |.........................................................................................................................
          |                                       SQLDA DATA SECTION
          |LENGTH OF DATAREA: X'0000'
          |SQLDA DATA: N/P
          |-------------------------------------------------------------------------------------------------------------------------
```

LOCATION NAME
Location name

STATEMENT NUMBER
Statement number

PRECOMPILER TIMESTAMP
Time stamp

COLLECTION ID
Collection Identifier

NUMBER ENTRIES IN SQLDA
Number of entries in the SQLDA

FORMAT SQLDA
Format. Possible values are:

B’1000’
Format is a compressed form of the the SQLDA.

B’0100’
Format is a complete SQLDA containing the data type, address and addresss of the indicator variable for each host variable.

B’0010’
Format is a variable length character format containing the length of the string and text.

PROGRAM NAME
Program name

LENGTH EACH SQLDA ENTRY
Length of each SQLDA entry.

SQLDA NAME
SQLDA name

SQLDA ENTRY NUMBER
SQLDA entry number.

DATA TYPE
Data type

LENGTH
Length of data for this entry

ADDRESS TO DATA

PRECISION (IF DEC)

SCALE (ID DEC)

ADDRESS TO NULL INDICATOR
If the value of DATA TYPE is odd (NULLABLE), this is the address of the NULL INDICATOR.

NULL INDICATOR>

LENGTH OF DATAREA

SQLDA DATA

249 - EDM Pool Invalidate DBD

EDM Pool invalidate DBD shows the data from IFCID 249.

This record traces DBD invalidations. A DBD is invalidated in the data sharing environment when one DB2 subsystem changes a DBD that is cached in another DB2 subsystem's EDM pool. The DBD cached in the other subsystem's EDM pool is invalidated. If a valid DBD is needed, it is read, resulting in multiple copies of the DBD in the EDM pool.

```
DBID           : USIBMSYSTDB2
DATABASE NAME  : DSNDB01
DB2 MEMBER NAME: AAAAAAAA
```

DBID The database ID. Derived from the DB2 fields QW0249ID, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0249ID is shown. However, if QW0249ID contains 0, N/A is displayed.

DATABASE NAME
The database name. Derived from the DB2 field QW0249NM.

DB2 MEMBER NAME
The name of the DB2 member causing the invalidation. Derived from the DB2 field QW0249MC.

250 - Connect/Rebuild Connect/Disconnect Group Bpool

Connect/rebuild connect/disconnect group buffer pool shows the data from IFCID 250. IFCID 250 records the connect, rebuild, or disconnect of a group buffer pool (coupling facility cache structure).

The DESCRIPTION column indicates whether a connect, rebuild, or disconnect occurred. That is, 250 - Connect Group Buffer Pool, 250 - Rebuild Group Buffer

IFCID 250

Pool, or 250 - Disconnect Group Buffer Pool is shown. The format of this record differs depending on whether there was a connect/rebuild, which have the same format, or a disconnect.

The following figure shows a connect/rebuild.

```
-------------------------------------------------------------------------------------------------------------------
STRUCTURE NAME: DSNCAT_GBP0       GROUP BP NAME: GBP0       RETURN CODE:          0  REASON CODE: X'00000000'
...................................................................................................................
STRUCTURE SIZE:        384  DIRECTORY ENTRIES :       1468  ALLOCATION  : NO              MAX NUMBER CASTOUT    :  1024
DATA ELEMENTS :        293  MAX STRUCTURE SIZE:        384  CONNECT TYPE: NEW CONNECTION  EXCLUSION LIST HONORED: YES
QW0250F1  B'00000000000000000000000000000000'
...................................................................................................................
SAF RETURN CODE: 9999999999  SAF REASON CODE: X'HHHHHHHH'
...................................................................................................................
COUPLING FACILITY NAME: XXXXXXXX  COUPLING FACILITY REASON: STRUCTURE ATTRIBUTES INCONSISTENT
MIN CONTROL SPACE : 9999999999  TOTAL SPACE : 9999999999  TOTAL CONTROL SPACE: 9999999999  TOTAL FREE SPACE: 9999999999
FREE CONTROL SPACE: 9999999999  STORAGE SIZE:      99999  MAXIMUM ELEMENT    :         999  MAXIMUM CASTOUT :      99999
-------------------------------------------------------------------------------------------------------------------
```

The following figure shows a disconnect.

```
-------------------------------------------------------------------------------------------------------------------
STRUCTURE NAME: DSNCAT_GBP0       GROUP BP NAME: GBP0       RETURN CODE:          0  REASON CODE: X'00000000'
...................................................................................................................
DISCONNECT TYPE: FAILED-PERSISTENT
-------------------------------------------------------------------------------------------------------------------
```

STRUCTURE NAME
The name of the coupling facility structure. Derived from the DB2 field QW0250SN.

GROUP BP NAME
The group buffer pool name. Derived from the DB2 field QW0250GN.

RETURN CODE
The return code. Derived from the DB2 field QW0250RC.

REASON CODE
The reason code. Derived from the DB2 field QW0250RC.

DISCONNECT TYPE
The type of disconnect. Derived from the DB2 field QW0250DD.

STRUCTURE SIZE
The structure size, that is, the number of 4 KB blocks. The actual size might be less than the requested size due to insufficient space in the preference list facilities. Derived from the DB2 field QW0250SZ.

DIRECTORY ENTRIES
The number of allocated directory entries. Derived from the DB2 field QW0250DR.

ALLOCATION
Indicates whether this connect caused a structure allocation. Derived from the DB2 field QW0250CA.

MAX NUMBER CASTOUT
The maximum number of castout classes. Derived from the DB2 field QW0250CO.

DATA ELEMENTS
The number of data elements allocated. For DB2 group buffer pools, the size of the data elements is 4 KB. Each data entry consists of one or more data elements. Derived from the DB2 field QW0250DT.

MAX STRUCTURE SIZE
The maximum structure size saved at the time the structure was allocated. The maximum structure size is obtained from the active policy at the time the structure is allocated. Derived from the DB2 field QW0250SM.

CONNECT TYPE
The type of connection. Derived from the DB2 field QW0250CD.

EXCLUSION LIST HONORED
Indicates whether the exclusion list was honored.

This field is only applicable if the value in ALLOCATION is YES . Otherwise, N/A is printed in this field. Derived from the DB2 field QW0250F2.

SAF RETURN CODE
The system authorization facility (SAF) return code. Derived from the DB2 field QW0250X1.

SAF REASON CODE
The SAF reason code. Derived from the DB2 field QW0250X2.

COUPLING FACILITY NAME
The coupling facility name. Derived from the DB2 field QW0250ZN.

COUPLING FACILITY REASON
The reason why the coupling facility was not suitable. Derived from the DB2 field QW0250ZR.

MIN CONTROL SPACE
The minimum control space required (in 4 KB blocks) to allocate the structure for which connect was requested. Derived from the DB2 field QW0250ZM.

TOTAL SPACE
The total space in the coupling facility in 4 KB blocks, including control and noncontrol space. Derived from the DB2 field QW0250ZG.

TOTAL CONTROL SPACE
The total control space in the coupling facility in 4 KB blocks. Derived from the DB2 field QW0250ZH.

TOTAL FREE SPACE
The total free space in 4 KB blocks, including control and noncontrol space. Derived from the DB2 field QW0250ZI.

FREE CONTROL SPACE
The free control space in 4 KB blocks. Derived from the DB2 field QW0250ZJ.

STORAGE SIZE
The storage increment size in 4 KB blocks. Derived from the DB2 field QW0250ZK.

MAXIMUM ELEMENT
The maximum element characteristic. DB2 always requests a 4 KB element size. Therefore, this field should always equal 4. Derived from the DB2 field QW0250ZL.

MAXIMUM CASTOUT
The maximum number of castout classes for a structure using this coupling facility. Derived from the DB2 field QW0250ZO.

251 - Bmgr PSET/Part P-lock Req

Buffer manager page set/partition P-lock request shows the data from IFCID 251.

```
|-------------------------------------------------------------------------------------------------------------------------
|P-LOCK TYPE     : PAGESET/PARTITION   DBID: DSNDB06    OBID: DSNAPH01      PARTITION NMBR  :     0     BP ID: x'00'
|IRLM FUNC CODE  : LOCK                        OBJECT TYPE : INDEXSPACE    REQUESTED STATE : SHARED
|CONDITIONAL     : YES                         RESTART     : YES           MODIFY          : NO
|DATABASE NAME   : DSNDB06                     PAGESET NAME: DSNAPH01      DB2 MEMBER NAME : 'BLANK'
|OLD HELD STATE  : NOT HELD                                                NEW HELD STATE  : SHARED
|OLD CACHED STATE: NOT HELD                                                NEW CACHED STATE: SHARED
|QW0251TK  x'00000000'     QW0251RC  x'00000000'     QW0251RS  x'00000000'     QW0251PC  x'0000'     QW0251F2  x'00'
|QW0251PA  x'800000'
|-------------------------------------------------------------------------------------------------------------------------
```

P-LOCK TYPE
The P-lock type. Derived from the DB2 field QW0251KT.

DBID The database ID. Derived from the DB2 fields QW0251KD, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0251KD is shown. However, if QW0251KD contains 0, N/A is displayed.

OBID The object ID. Derived from the DB2 fields QW0251KP, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0251KP is shown. However, if QW0251KP contains 0, N/A is displayed.

PARTITION NMBR.
The partition number. If this is a non-partitioned page set, 0 is printed in this field. Derived from the DB2 field QW0251KR.

BP ID The internal buffer pool ID (0-49 and 80-89). Derived from the DB2 field QW0251KU.

IRLM FUNC CODE
The IRLM function code. Derived from the DB2 field QW0251IF.

OBJECT TYPE
The object type. Derived from the DB2 field QW0251OB.

REQUESTED STATE
The requested lock state if the value in IRLM FUNC CODE is `LOCK` or `CHANGE` . If the value is `CHANGE FROM P-LOCK EXIT` , then this is the P-lock state requested by the other member causing the P-lock exit of this member. In this case, this field is 0 if the request from the other member was not in conflict with the state of this member. Derived from the DB2 field QW0251ST.

CONDITIONAL
Indicates whether the request was conditional. Derived from the DB2 field QW0251C1.

RESTART
Indicates whether there was a restart lock request.

If the lock is currently retained on behalf of this DB2, a restart request causes the lock to be changed from retained to active. If the lock is not retained, the lock grant process is as normal. Derived from the DB2 field QW0251C6.

MODIFY
Indicates whether this is a modify lock. Derived from the DB2 field QW0251C7.

DATABASE NAME
The database name. Derived from the DB2 field QW0251DN.

PAGESET NAME
The page set name. Derived from the DB2 field QW0251PN.

DB2 MEMBER NAME
The DB2 member name that depends on the value in IRLM FUNC CODE:

- If it is `CHANGE FROM P-LOCK EXIT` , the name in conflict with this member's currently held P-lock state
- If it is not `CHANGE FROM P-LOCK EXIT` and the P-lock was rejected, the name in conflict with this request

Derived from the DB2 field QW0251DB.

OLD HELD STATE
The previously held P-lock state. Derived from the DB2 field QW0251OS.

NEW HELD STATE
The newly held P-lock state. Derived from the DB2 field QW0251NS.

OLD CACHED STATE
The previous P-lock cached state. Derived from the DB2 field QW0251OC.

NEW CACHED STATE
The new P-lock cached state. Derived from the DB2 field QW0251NC.

254 - CF Cache Struct Stats

Coupling facility cache structure statistics shows the data from IFCID 254.

```
GROUP BUFFER POOL NAME              GBP0      EXPLICIT XI COUNTER           0
READ HIT                               0      CHANGED PAGE WRITE HIT        0      XI DIRECTORY ENTRY RECLAIM       0
READ MISS DIRECTORY HIT                0      CLEAN PAGE WRITE HIT          0      CASTOUT                          0
READ MISS ASSIGNMENT SUPPRESSED        0      WRITE MISS CACHE FULL         0      DIRECTORY ENTRY                  0
READ MISS NAME ASSIGNED                0      DIRECTORY ENTRY RECLAIM       0      DATA ENTRY                       0
READ MISS CACHE FULL                   0      DATE ENTRY RECLAIM            0      TOTAL CHANGED                    0
SEC-GBP CHANGED PAGE WRITE HIT         0      SEC-GBP DIRECTORY ENTRY       0      SEC-GBP TOTAL CHANGED            0
SEC-GBP WRITE MISS CACHE FULL          0      SEC-GBP DATA ENTRY            0
```

GROUP BUFFER POOL NAME
The name of the group buffer pool. Derived from the DB2 field QW0254GN.

EXPLICIT XI COUNTER
The number of times a request was made to the group coupling facility to explicitly cross invalidate a page and a number of XI signals were sent because the page was cached in one or more DB2 buffer pools.

READ HIT
The number of coupling facility read requests in which data was returned. Derived from the DB2 field QW0254RH.

CHANGED PAGE WRITE HIT
The number of coupling facility write requests for changed pages that has successfully completed. Derived from the DB2 field QW0254WH.

XI DIRECTORY ENTRY RECLAIM
The number of times that a directory entry was stolen and XI signals had to be sent because the page for the directory entry was cached in one or more DB2 buffer pools. Derived from the DB2 field QW0254XR.

READ MISS DIRECTORY HIT
The number of coupling facility read requests for a page in which data was not returned but the page name was already assigned in the coupling facility directory (SES did not have to assign a directory entry for the page). Derived from the DB2 field QW0254RD.

CLEAN PAGE WRITE HIT
The number of facility write requests for clean pages successfully completed. Derived from the DB2 field QW0254WC.

CASTOUT
The number of castout operations performed. Derived from the DB2 field QW0254CC.

READ MISS ASSIGNMENT SUPPRESSED
The number of times that a coupling facility read request specified a page for which no directory entry exists and no directory entry is created. DB2 does not create a directory entry if it does not need to register the page to the coupling facility for cross invalidation (XI); that is when no other DB2 member in the group has R/W interest in the page set/partition. Derived from the DB2 field QW0254RS

WRITE MISS CACHE FULL
The number of coupling facility write requests that could not complete due to a lack of coupling facility storage resources. Derived from the DB2 field QW0254WF.

DIRECTORY ENTRY
The number of allocated directory entries (not cumulative). Derived from the DB2 field QW0254DE.

READ MISS NAME ASSIGNED
The number of times that a coupling facility read request specified a page for which a directory entry was created. Derived from the DB2 field QW0254RN.

DIRECTORY ENTRY RECLAIM
The number of times that a page name assignment required a coupling facility directory entry to be reclaimed (stolen). Derived from the DB2 field QW0254DR.

DATA ENTRY
The number of allocated data entries (not cumulative). Derived from the DB2 field QW0254TE.

READ MISS CACHE FULL
The number of times that a coupling facility read request specified a page for which no directory entry exists and no directory entry is created due to the lack of storage in the group buffer pool. A non-zero value in this field indicates that the backing coupling facility cache structure size might be too small to support the current workload. Derived from the DB2 field QW0254RF.

DATA ENTRY RECLAIM
The number of times that a page name assignment required a coupling facility data entry to be reclaimed (stolen). Derived from the DB2 field QW0254TR.

TOTAL CHANGED
The snapshot value of the current number of changed pages. Derived from the DB2 field QW0254TC.

SEC-GBP CHANGED PAGE WRITE HIT
The number of successful coupling facility write requests for changed pages. Derived from the DB2 field QW02542W.

SEC-GBP WRITE MISS CACHE FULL
The number of unsuccessful coupling facility write requests because of insufficient coupling facility storage resources. Derived from the DB2 field QW02542F.

SEC-GBP DIRECTORY ENTRY
The number of allocated directory entries. This is a snapshot value. Derived from the DB2 field QW02542D.

SEC-GBP DATA ENTRY
The number of allocated data entries. This is a snapshot value. Derived from the DB2 field QW02542TC.

SEC-GBP TOTAL CHANGED
The number of allocated data entries that are currently in *changed* state. This is a snapshot value.

255 - Buffer Refresh Due to XI

IFCID 255 records the occurrence of a buffer refresh caused by cross invalidation (XI) of a data page in the group buffer pool. Cross invalidation occurs when a DB2 member of a data sharing group updates a data page and writes the newly changed page to the group buffer pool. All DB2 members that have this data page cached in their buffer pools are notified that the page was invalidated. If a member needs that data page, it must be refreshed.

```
DBID: TPCCE1     PIECE NUMBER: X'00'
OBID: TDIST000   PAGE NUMBER : X'00000002'
BPID:   0
TYPE: SYNCH      FROM: GBPOOL
```

DBID The database ID. Derived from the DB2 fields QW0255DB, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0142DB is shown. However, if QW0142DB contains 0, N/A is displayed.

PIECE NUMBER
The data set number of the page set. Derived from the DB2 field QW0255PN.

OBID The object ID. Derived from the DB2 fields QW0255OB, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0142OB is shown. However, if QW0255OB contains 0, N/A is displayed.

PAGE NUMBER
The relative page number within the data set. Derived from the DB2 field QW0255PG.

BPID The internal buffer pool ID. Derived from the DB2 field QW0255BP.

TYPE Indicates whether the buffer refresh was synchronous or asynchronous. Derived from the DB2 field QW0255AS.

FROM Indicates whether data was returned from the group buffer pool or DASD. Derived from the DB2 field QW0255DR.

256 - Alter Group Buffer Pool

Alter group buffer pool shows the data from IFCID 256.

```
GROUP BUFFER POOL ID:     GBP0
OLD      NEW
DIRECTORY TO DATA RATIO      :      5       10
CLASS CASTOUT THRESHOLD (%)  :     10       10
GBP CASTOUT THRESHOLD (%)    :     50       50
GBP CHECKPOINT INTERVAL (MIN):      8        8
GBP CACHE SETTING            :    YES       NO
AUTOREC                      :    YES       NO
```

This record is divided into two sections showing the old and the new status of the altered group buffer pool.

GROUP BUFFER POOL ID
The DB2 group buffer pool ID. Derived from the DB2 field QW0256GB.

DIRECTORY TO DATA RATIO
The directory entry to data entry ratio. This is the value specified in the RATIO keyword of the ALTER GROUPBUFFERPOOL command.

New status derived from the DB2 field QW0256NR.

Old status derived from the DB2 field QW0256OR.

CLASS CASTOUT THRESHOLD (%)
The threshold at which the class castout is to be initiated. It is expressed as a percentage of the group buffer pool size. This is the value specified in the CLASST keyword of the ALTER GROUPBUFFERPOOL command.

New status derived from the DB2 field QW0256NC.

Old status derived from the DB2 field QW0256OC.

GBP CASTOUT THRESHOLD (%)
The threshold at which the castout is to be initiated for the group buffer pool. This is the value specified in the GBPOOLT keyword of the ALTER GROUPBUFFERPOOL command.

New status derived from the DB2 field QW0256NG.

Old status derived from the DB2 field QW0256OG.

GBP CHECKPOINT INTERVAL (MIN)
The time interval (in minutes) between successive group buffer pool checkpoints. This is the value specified in the GBPCHKPT keyword of the ALTER GROUPBUFFERPOOL command.

New status derived from the DB2 field QW0256NK.

Old status derived from the DB2 field QW0256OK.

GBP CACHE SETTING
GBPCACHE value before and after the ALTER GROUPBUFFERPOOL command was issued. This field specifies whether DB2 should write changed pages for the group buffer pool dependant pageset or partitions directly to DASD and use the group buffer pool only for sending XI signals.

New status derived from the DB2 field QW0256NB.

Old status derived from the DB2 field QW0256OB.

AUTOREC
A flag indicating how the AUTOREC option of the ALTER GROUPBUFFERPOOL command has been set. It specifies whether DB2 should automatically recover if GBP fails. The old value specifies the AUTOREC value before the ALTER GBP command was issued. The new value specifies the AUTOREC value after the ALTER GBP command was issued.

New status derived from the DB2 field QW0256NA.

Old status derived from the DB2 field QW0256OA.

257 - IRLM Notify Req Detail

IRLM notify request detail shows the data from IFCID 257. IFCID 257 records the inter-DB2 notify message sending detail. The IRLM notify request is used to communicate among members of a DB2 data sharing group.

```
LOCK RES TYPE: N/P                                    NAME: N/P
STATE: X'00'                    NUMBER OF HOLDERS:     2  OPERATION
QW0257TK  X'80CF0000'   QW0257RM   10   QW0257FC  195     QW0257RC
.................................................................
QW0257LL          70
QW0257MS
0000  2400002C  C294A287  C4C2F2E5  F0F4F0F1   ADE01D31  D0655204
0020  00000000  00000000  80000000  00000000   00000000  00000000
0040  00000000  0000
```

LOCK RES TYPE
The locked resource type.

Note: For data sharing, `SKELETON CURSOR TABLE LOCKING` and `SKELETON PACKAGE TABLE LOCK` are LP-locks (an LP-lock has an L-lock component and a P-lock component). Derived from the DB2 field QW0021KT.

DBID The database ID. This field is not applicable if the value in LOCK RES TYPE is:

```
SKELETON CURSOR TABLE LOCKING
UTILITY SERIALIZATION LOCK
SKELETON PACKAGE TABLE LOCK
COLLECTION
```

```
BINDLOCK
ALTER BUFFER POOL
GROUP BUFFERPOOL START/STOP LOCK
GROUP BUFFER POOL LEV CASTOUT P-LOCK
CATMAINT MIGRATION LOCK
CATMAINT CONVERT CATALOG LOCK
CATMAINT CONVERT DIRECTORY LOCK
```

Derived from the DB2 field QW0021KD.

OBID The object ID. This field is not applicable if the value in LOCK RES TYPE is:

```
SKELETON CURSOR TABLE LOCKING
UTILITY SERIALIZATION LOCK
SKELETON PACKAGE TABLE LOCK
COLLECTION
BINDLOCK
ALTER BUFFER POOL
GROUP BUFFERPOOL START/STOP LOCK
DDF CDB P-LOCK
GROUP BUFFER POOL LEV CASTOUT P-LOCK
DBD P-LOCK
CATMAINT MIGRATION LOCK
CATMAINT CONVERT CATALOG LOCK
CATMAINT CONVERT DIRECTORY LOCK
```

Derived from the DB2 field QW0021KP.

RESOURCE ID

The hexadecimal identifier of the small resource. If LOCK RES TYPE is:

DATA PAGE LOCKING
First 3 bytes are the page number

PARTITION LOCKING
Last byte is the partition number

INDEX PAGE LOCKING
First 3 bytes are the page number and the last byte is the subpage number

HASH ANCHOR LOCK
First 3 bytes are the page number and the last byte is the anchor point ID

CS-READ DRAIN
Last byte is the partition number (optional)

RR-READ DRAIN
Last byte is the partition number (optional)

WRITE DRAIN
Last byte is the partition number (optional)

ROW LOCK
First 3 bytes are the page number and the last byte is the row ID of the record

INDEX END OF FILE LOCK
Last byte is the partition number (optional)

PAGESET/PARTITION P-LOCK
First byte is the 1-based partition number (optional)

PAGE P-LOCK
First byte is the 1-based partition number (optional) and the last 3 bytes are the relative page number

PAGESET/PARTIION LEV CASTOUT P-LOCK
First byte is the 1-based partition number (optional)

Note: In large partitioned table spaces, the page number covers 4 bytes instead of 3.

For all other lock resource types, the resource ID is not applicable. Derived from the DB2 field QW0021KR.

STATE
The lock state. This field is only applicable if the value in OPERATION is SEND . Otherwise, N/A is printed in this field. Derived from the DB2 field QW0257ST.

NUMBER OF HOLDERS
The number of lock holders notified. This field is only applicable if the value in OPERATION is SEND . Otherwise, N/A is printed in this field. Derived from the DB2 field QW0257NU.

OPERATION
The notify operation. Derived from the DB2 field QW0257OP.

REQUEST
Indicates whether the request was synchronous or asynchronous. This field is only applicable if the value in OPERATION is SEND . Otherwise, N/A is printed in this field. Derived from the DB2 field QW0257FL.

259 - Buffer Manager Pg P-lock Req

Buffer manager page P-lock request shows the data from IFCID 259. IFCID 259 records page P-locking dynamics for data sharing.

```
-------------------------------------------------------------------------------------------------------------------------
P-LOCK TYPE     : PAGE               DBID: TPCCE1     OBID: TODLN000      PARTITION NMBR  : 0         BP ID    : x'00'
IRLM FUNC CODE  : LOCK                     OBJECT TYPE : TABLESPACE    MODIFY          : NO        PAGE NMBR:  23
DB2 MEMBER NAME : 'BLANK'      CONDITIONAL: YES     RESTART: NO         REQUESTED STATE : SHARED
OLD HELD STATE  : NOT HELD                                             NEW HELD STATE  : NOT HELD
QW0259EV  x'D3'     QW0259TK  x'00000000'     QW0259RC  x'00000008'     QW0259RS  x'40000000'     QW0259PC  x'0000'
-------------------------------------------------------------------------------------------------------------------------
```

P-LOCK TYPE
The P-lock type. This field can only have one value: PAGE. Derived from the DB2 field QW0259KT.

DBID The database ID. Derived from the DB2 fields QW0259KD, and QW0105DN or QW0107DN.

If either QW0105DN or QW0107DN contains appropriate data, the database name is shown.

If neither QW0105DN nor QW0107DN contains appropriate data, the decimal identifier from QW0259KD is shown. However, if QW0259KD contains 0, N/A is displayed.

OBID The object ID. Derived from the DB2 fields QW0259KP, and QW0105TN or QW0107TN.

If either QW0105TN or QW0107TN contains appropriate data, the name of the object is shown.

If neither QW0105TN nor QW0107TN contains appropriate data, the decimal identifier from QW0259KP is shown. However, if QW0259KP contains 0, N/A is displayed.

PARTITION NMBR
The partition number. If this is a nonpartitioned page set, 0 is printed in this field. Derived from the DB2 field QW0259KR.

BP ID The internal buffer pool ID (0-49 and 80-89). Derived from the DB2 field QW0259KU.

IRLM FUNC CODE
The IRLM function code. Derived from the DB2 field QW0259IF.

OBJECT TYPE
The object type. Derived from the DB2 field QW0259OB.

MODIFY
Indicates whether this is a modify lock. Derived from the DB2 field QW0259C7.

PAGE NMBR
The relative page number. Derived from the DB2 field QW0259KQ.

DB2 MEMBER NAME
The DB2 member name that depends on the value in IRLM FUNC CODE:

- If it is `CHANGE FROM P-LOCK EXIT` , the name in conflict with this member's currently held P-lock state
- If it is not `CHANGE FROM P-LOCK EXIT` and the P-lock was rejected, the name in conflict with this request

Derived from the DB2 field QW0259DB.

CONDITIONAL
Indicates whether the request was conditional. Derived from the DB2 field QW0259C1.

RESTART
Indicates whether there was a restart lock request.

If the lock is currently retained on behalf of this DB2, a restart request causes the lock to be changed from retained to active. If the lock is not retained, the lock grant process is as normal. Derived from the DB2 field QW0259C6.

REQUESTED STATE
The requested lock state if the value in IRLM FUNC CODE is `LOCK` or `CHANGE` . If the value is `CHANGE FROM P-LOCK EXIT` , then this is the P-lock state requested by the other member causing the P-lock exit of this member. Derived from the DB2 field QW0259ST.

OLD HELD STATE
The previously held P-LOCK state. Derived from the DB2 field QW0259PS.

NEW HELD STATE
The newly held P-LOCK state. Derived from the DB2 field QW0259NS.

261 - Group Bufferpool Checkpoint

Group bufferpool checkpoint shows the data from IFCID 261. This IFCID records statistics related to the GBP checkpoint process and is written when the GBP checkpoint completes.

This record is only written in a data sharing environment.

```
-------------------------------------------------------------------------------------------------------------------------
BUFFERPOOL ID          :          0
CASTOUT P-LOCKS        :          0   NEW RECOVERY LRSN: X'ADE91D00AD07'    START TIME         : 12/13/96 12:06:
INIT BY SPECIAL CASTOUT:          0   OLD RECOVERY LRSN: X'ADE91B349E86'    ELAPSED TIME       : 00:00:00.659423
INIT W/O SENDING MSG   :          0   NEW MINIMUM LRSN : X'ADE8EE38F414'    READ DIRECTORY INFO:          1
INIT BY  SENDING MSG   :          0   OLD MINIMUM LRSN : X'ADE8EE38F414'    DIRECTORY ENTRIES  :          0
-------------------------------------------------------------------------------------------------------------------------
```

BUFFERPOOL ID
The internal identifier of the buffer pool. The values 0 through 49 are the identifiers for BP0 through BP49. The values 80 through 89 are the identifiers for BP32K through BP32K9. Derived from the DB2 field QW0261BP.

CASTOUT P-LOCKS
The number of page sets or partition castout P-locks obtained by the GBP checkpoint process. Derived from the DB2 field QW0261PD.

NEW RECOVERY LRSN
The global recovery record sequence number (LRSN) for this GBP checkpoint. Derived from the DB2 field QW0261NL.

START TIME
The date and time at which GBP checkpoint processing started. The RECORD TIME field shows when processing ended. Derived from the DB2 field QW0261TS.

INIT BY SPECIAL CASTOUT
The number of page sets and partitions for which a castout had to be initiated by a special castout process because the castout owner did not exist for the page set or partition. Derived from the DB2 field QW0261PS.

OLD RECOVERY LRSN
The global recovery log record sequence number (LRSN) of the GBP checkpoint prior to this one. Derived from the DB2 field QW0261OL.

ELAPSED TIME
The duration of the GBP checkpoint process. Calculated by QW0261TS - QWHSSTCK.

INIT W/O SENDING MSG
The number of page sets and partitions for which a castout was locally initiated without a message being sent. Derived from the DB2 field QW0261PL.

NEW MINIMUM LRSN
The minimum restart/redo point for this GBP checkpoint. Derived from the DB2 field QW0261NM.

READ DIRECTORY INFO
The number of coupling facility requests to read directory information. Derived from the DB2 field QW0261RD.

INIT BY SENDING MSG
The number of page sets and partitions for which a castout was initiated by sending a message to the castout owner. Derived from the DB2 field QW0261PN.

OLD MINIMUM LRSN
The minimum restart/redo point of the GBP checkpoint prior to this one. Derived from the DB2 field QW0261OM.

DIRECTORY ENTRIES
The number of directory entries for changed pages processed. Derived from the DB2 field QW0261DP.

262 - GBPOOLT Castout Threshold Processing

GBPOOLT castout threshold processing shows the data from IFCID 262. This IFCID contains statistics related to the GBPOOLT castout threshold processing for a GBP. It is only written if the GBPOOLT threshold has been reached.

This record is only written in a data sharing environment.

```
-------------------------------------------------------------------------------------------------------------------------
BUFFERPOOL ID          : 9999999999
READ CASTOUT CLASS     : 9999999999   CASTOUT P-LOCKS      : 9999999999  START TIME  : mm/dd/yy hh:mm:ss.nnnnnn
READ CASTOUT STATISTICS: 9999999999   CHANGED PAGES CASTOUT: 9999999999  ELAPSED TIME: hh:mm:ss.nnnnnn
INIT BY  SENDING MSG   : 9999999999   CHANGED PAGES IN GBP : 9999999999  FIRST CASTOUT CLASS: 99999
INIT W/O SENDING MSG   : 9999999999   CHANGED PAGES GBPOOLT: 9999999999  LAST  CASTOUT CLASS: 99999
-------------------------------------------------------------------------------------------------------------------------
```

BUFFERPOOL ID
The internal identifier of the buffer pool. The values 0 through 49 are the identifiers for BP0 through BP49. The values 80 through 89 are the identifiers for BP32K through BP32K9. Derived from the DB2 field QW0262BP.

READ CASTOUT CLASS
The number of coupling facility read castout class requests. Derived from the DB2 field QW0262RC.

CASTOUT P-LOCKS
The number of page set or partitions castout P-locks obtained by the GBPOOLT process. Derived from the DB2 field QW0262PD.

START TIME
The date and time at which the GBP castout started. The RECORD TIME field shows when processing ended. Derived from the DB2 field QW0262TS.

READ CASTOUT STATISTICS
The number of coupling facility requests to cast out statistics. Derived from the DB2 field QW0262RS.

CHANGED PAGES CASTOUT
The number of changed page names that were passed to the page set and partition castout owner for castout. Derived from the DB2 field QW0262CP.

ELAPSED TIME
The duration of the GBP castout process. Calculated by QW0262TS - QWHSSTCK.

INIT BY SENDING MSG
The number of page sets and partitions for which castout was initiated by sending a notify message to the castout owner. Derived from the DB2 field QW0262PN.

CHANGED PAGES IN GBP
The number of changed pages in group buffer pool. Derived from the DB2 field QW0262DP.

FIRST CASTOUT CLASS
The first castout class processed. Derived from the DB2 field QW0262FC.

INIT W/O SENDING MSG
The number of changed pages and partitions for which castout was locally initiated without a message being sent to the castout owner. Derived from the DB2 field QW0262PL.

CHANGED PAGES GBPOOLT
The number of changed pages required to reach the GBPOOLT. Derived from the DB2 field QW0262GT.

LAST CASTOUT CLASS
The last castout class processed. Sometimes the value in this field is smaller than the one in the FIRST CASTOUT CLASS field. This can happen if DB2 wraps around at the end of the castout class numbers. Derived from the DB2 field QW0262LC.

263 - Page Set and Partition Castout Detail

Page set and partition castout detail shows the data from IFCID 263. This IFCID records page set and partition castout statistics and is written by the page set or partition castout owner after the castout engine completed servicing the castout request.

This record is only written in a data sharing environment.

```
-------------------------------------------------------------------------------------------------------------------------
BUFFERPOOL ID          :          0   CASTOUT REASON     : GROUP BUFFER POOL CHECKPOINT
DATABASE ID            :          1   PAGE SET OBJECT ID :         68   START TIME         : 12/11/97 11:24:20.123456
PARTITION NUMBER       :          0   PRIVATE BUFFER     :         32   ELAPSED TIME       : 00:00:00.123456
CASTOUT DATA REQUESTS  :          2   UNLOCK FOR CASTOUT :          1   READ CASTOUT CLASS :          8
DELETE NAME REQUESTS   :          0   WRITE I/O REQUESTS :          1   GBP DEL NAME LIST  :          3
QW0263FL               :      X'20'
-------------------------------------------------------------------------------------------------------------------------
```

BUFFERPOOL ID
The internal identifier of the buffer pool. The values 0 through 49 are the identifiers for BP0 through BP49. The values 80 through 89 are the identifiers for BP32K through BP32K9. Derived from the DB2 field QW0263BP.

CASTOUT REASON
The reason why the castout was invoked.

- CLASS THRESHOLD
- GROUP BUFFER POOLT THRESHOLD
- GROUP BUFFER POOL CHECKPOINT
- GROUP BUFFER REBUILD
- SYNCHRONOUS CASTOUT
- CONVERTED TO NON-GBP-DEPENDENT OR ASYNCH. CASTOUT

Derived from DB2 field QW0263RS.

DATABASE ID
The ID of the database. Derived from the DB2 field QW0263DB.

PAGE SET OBJECT ID
The ID of the page set object. Derived from the DB2 field QW0263PS.

START TIME
The date and time at which castout processing started. Derived from the DB2 field QW0263TS.

PARTITION NUMBER
The partition number. It is 0 if this is a non-partitioned page set. Derived from the DB2 field QW0263PT.

PRIVATE BUFFER
The number of private buffer allocated to this engine (in 4K increments). Derived from the DB2 field QW0263PB.

ELAPSED TIME
The duration of the castout process. The RECORD TIME field shows when this process ended. Calculated by QW0263TS - QWHSSTCK.

CASTOUT DATA REQUESTS
The number of coupling facility requests to cast out data. Derived from the DB2 field QW0263CD.

UNLOCK FOR CASTOUT
The number of coupling facility requests to unlock for a castout. Derived from the DB2 field QW0263UN.

READ CASTOUT CLASS
The number of coupling facility requests to read a castout class. Derived from the DB2 field QW0263RC.

DELETE NAME REQUESTS
The number of coupling facility requests to delete a name. Derived from the DB2 field QW0263DN.

WRITE I/O REQUESTS
The number of write I/O requests. Derived from the DB2 field QW0263IO.

GBP DEL NAME LIST
The number of IXLCACHE delete_name_list requests to the secondary group buffer pool when the GBP MODE is DUPLEX. Derived from the DB2 field QW02632D.

267 - CF Rebuild/Alter/Start

CF rebuild/alter start shows the data from IFCID 267.

The DESCRIPTION column indicates the start of a coupling facility rebuild or alter. That is, 267 - CF Rebuild Start or 267 - CF Alter Start is shown. A rebuild or alter is reported in the same format.

```
OPERATION     : X
STRUCTURE NAME: XXXXXXXXXXXXXXX
REQUESTED SIZE: nnnnnnnn
QW0267ME  nnnnnnnn   QW0267ML  nnnnnnnn
QW0267F1  x'hh'      QW0267ER  x'hhhh'
QW0267LR  x'hhhh'    QW0267F2  x'hhhh'
```

OPERATION
The operation for the DB2 data sharing coupling facility structures:

F The rebuild due to the coupling facility structure failure or loss of connectivity to the coupling facility.

O The MVS rebuild initiated by the MVS operator command 'SETXCF START, REBUILD'.

M The rebuild caused by the maximum number of lock structure users being reached.

A The dynamic expansion or contraction initiated by the MVS operator command 'SETXCF START,ALTER'.

D Rebuild started to establish DUPLEX

P Duplexing being stopped, falling back to primary.

W Duplexing being stopped, switching to secondary.

S Dynamic expand/contract initiated by MVS SETXCF START,ALTER operator command against a secondary group buffer pool.

Derived from the DB2 field QW0267RS.

STRUCTURE NAME
The name of the CF structure. Derived from the DB2 field QW0267NM.

REQUESTED SIZE
The requested size of the CF structure in 4 KB increments. This field is valid only if the value in the REASON is `ALTER COMMAND` . Derived from the DB2 field QW0267SZ.

268 - CF Rebuild/Alter End

CF rebuild/alter end shows the data from IFCID 268.

This IFCID records the end of a rebuild, dynamic expansion, or contraction for any of the DB2 data sharing coupling facility structures.

```
OPERATION       : x                 START TIME     : mm/dd/yy hh:mm:ss.nnnnnn
OPERATION RESULT: x                 ELAPSED TIME   : hh:mm:ss.nnnnnn
REASON STOPPED  : x                 DIRECTORY COUNT: nnnnnnnn
STRUCTURE NAME  : xxxxxxxxxxxxxxxx  ELEMENT COUNT  : nnnnnnnn
MINIMUM SIZE    : nnnnnnnn          CURRENT SIZE   : nnnnnnnn
FLAGS           : X'hh'
```

OPERATION
The operation for the DB2 data sharing coupling facility structures:

F The rebuild due to the coupling facility structure failure or loss of connectivity to the coupling facility.

0 The MVS rebuild initiated by the MVS operator command 'SETXCF START, REBUILD'.

M The rebuild caused by the maximum number of lock structure users being reached.

A The dynamic expansion or contraction initiated by the MVS operator command 'SETXCF START,ALTER'.

D Rebuild started to establish DUPLEX

P Duplexing being stopped, falling back to primary.

W Duplexing being stopped, switching to secondary.

S Dynamic expand/contract initiated by MVS SETXCF START,ALTER operator command against a secondary group buffer pool.

Derived from the DB2 field QW0268FC.

START TIME
The date and time of the start of the rebuild. Derived from the DB2 field QW0268BT.

OPERATION RESULT
The result of the operation:

0 The operation completed successfully.

N The expansion or contraction completed successfully, however, the allocated size is smaller than the requested size.

S The rebuild, expansion, or contraction was stopped.

Derived from the DB2 field QW0268RC.

ELAPSED TIME
The duration of the rebuild.

Calculation: QWHSSTCK - QW0268BT

REASON STOPPED
The reason why the rebuild, expansion, or contraction was stopped:

C Duplexing rebuild stopped because of insufficient connectivity due to a change in the set of connectors

F Structure failed before the operation completed

G An MVS service failed before the operation completed

I New structure does not provide connectivity which is better than or equivalent to the current structure.

J The structure alter request could not complete due to a rebuild initiated for the structure.

K Rebuild process was stopped because of failure on connect to the new structure

L Lost connectivity to the structure

N New structure does not provide better connectivity than the current structure for a LossConn rebuild

O Operator requested to stop

P Duplexing was stopped by new CFRM policy

R Resource manager requested to stop

S Invalid ratio specified

T Rebuild process was stopped because the new lock structure is full

U Rebuild process was stopped because of failure of a required IRLM in the group

W Rebuild stopped due to successful group function level change--complete rebuild is not required

X Rebuild stopped due to unsuccessful completion of group function level change

This field is only valid if the value in OPERATION RESULT is S . Derived from the DB2 field QW0268RS.

DIRECTORY COUNT
If the structure was altered, this is the current directory count of the directory entries. If the GBP was rebuilt, this field is not used. For the SCA and lock structure, this is a serviceability field. Derived from the DB2 field QW0268DN.

STRUCTURE NAME
The name of the CF structure. Derived from the DB2 field QW0268NM.

ELEMENT COUNT
If the structure was altered, this is the current count of the elements. For an GBP with a 8 KB page size, the element count equals the data entry count. For a GBP with a 16 KB page size, the element count is eight times the data entry count. If the GBP was rebuilt, this field is not used. For the SCA and lock structure, this is a serviceability field. Derived from the DB2 field QW0268TN.

MINIMUM SIZE
If the structure was altered, this is the current minimum structure in increments of 4 KB. If the GBP was rebuilt, this is number of pages cast out by this member. Derived from the DB2 field QW0268MS.

CURRENT SIZE
If the structure was altered, this is the current structure size in increments of 4 KB. If the GBP was rebuild, this is number of pages written to the new structure by this member. Derived from the DB2 field QW0268CS.

FLAGS
If the value in this field is x'80', the subject structure is a group buffer pool. Derived from the DB2 field QW0268F1.

272 - Associate Locators

Associate Locators records information about the execution of an ASSOCIATE LOCATORS statement. DB2 produces one IFCID 272 record for each ASSOCIATE LOCATORS statement.

```
LOCATION: M05EC301          COLLECTION: 'BLANK'             PROGRAM: LOGF2PGD            CONS.TOKEN: X'15BCE73619FF8BAA'
STATEMENT NUMBER :   306                NUMBER OF LOCATORS:     2
STO PROC LOCATION: M05EC301             STO PROC QUALIFIER: SYSPROC                  STO PROC NAME: LOGF2SPX
```

LOCATION
The location name where the stored procedure executes.

Derivation: QW0272LN

COLLECTION
The Package collection identificator. This field is 'BLANK' if DB2 does not use a package to execute this statement.

Derivation: QW0272PC

PROGRAM
The program name.

Derivation: QW0272PG

CONS.TOKEN
The consistency token. The precompiler timestamp of the stored procedure program.

Derivation: QW0272TS

STATEMENT NUMBER
The statement number of ASSOCIATE LOCATORS statement.

Derivation: QW0272SN

NUMBER OF LOCATORS
The number of locators referenced in the ASSOCIATE LOCATORS statement.

Derivation: QW0272NL

STO PROC LOCATION
The location of the stored procedure.

Derivation: QW0272LP

STO PROC QUALIFIER
The qualifier of the stored procedure.

Derivation: QW0272QN

STO PROC NAME
The name of the stored procedure.

Derivation : QW0272PN

273 - Allocate Cursor

Allocate Cursor records information about the execution of an ALLOCATE CURSOR statement. DB2 produces one IFCID 273 record for each ALLOCATE CURSOR statement.

```
LOCATION: M05EC301          COLLECTION: 'BLANK'             PROGRAM: LOGF2PGD            CONS.TOKEN: X'15BCE73619FF8BAA'
STATEMENT NUMBER :   325
STO PROC LOCATION: M05EC301             STO PROC QUALIFIER  : SYSPROC                STO PROC NAME: LOGF2SPX
ALLOCATED CURSOR : CRS01                CURSOR NAME STO PROC: CRS1                   LOCATOR VALUE:          1
```

LOCATION
The location name where the store procedure executes.

Derivation: QW0273LN

COLLECTION
The Package collection identificator. This field is 'BLANK' if DB2 does not use a package to execute this statement.

Derivation: QW0273PC

PROGRAM
The program name.

Derivation: QW0273PG

CONS.TOKEN
The consistency token. The precompiler timestamp.

STATEMENT NUMBER
The statement number of ALLOCATE CURSOR statement.

Derivation: QW0273SN (QW0273TS).

STO PROC LOCATION
The location of the stored procedure.

Derivation: QW0273LP

STO PROC QUALIFIER
The qualifier of the stored procedure.

Derivation: QW0273QN

STO PROC NAME
The name of the stored procedure.

Derivation : QW0273PN

ALLOCATED CURSOR
The name of the ALLOCATE CURSOR statement.

Derivation: QW0273CN

CURSOR NAME STO.PROC
The name of cursor in the stored procedure.

Derivation: QW0273RN

LOCATOR VALUE
The value of the locator associated with the result set for which this cursor is defined.

Derivation: QW0273LV

305 - Table Check Constraint

Table check constraint shows the data from IFCID 305.

```
NAME: SECOND
TEXT: 'BLANK'
DBID: 4         OBID: 75
OPERATION: ENFORCE
RESULT: REJ
RECORD IDENTIFIER: X'00000000'
TABLE_SPACE_TYPE: N
CHARACTERS: ONE       TWO        THREE
```

NAME The check constraint name. Derived from the DB2 field QW0305CN.

TEXT The check constraint text. Derived from the DB2 field QW0305CT.

DBID The DBID of the database for the table on which the check constraint is defined. Derived from the DB2 field QW0305DB.

OBID The OBID of the table on which the check constraint is defined. Derived from the DB2 field QW0305OB.

OPERATION
The operation that is utilizing the check constraint function:

CREATE A check constraint is being defined with a CREATE TABLE operation.

ALTER ADD
A check constraint is being defined with an ALTER TABLE operation.

ALTER ADD ENFORCE
A check constraint is being enforced during an ALTER TABLE operation.

ALTER ADD DROP
A check constraint is being removed with an ALTER TABLE operation.

ENFORCE
A check constraint is being enforced. DB2 is checking that a row does not violate a check constraint.

Derived from the DB2 field QW0305OP.

RESULT
The result of the enforced check constraint:

REJ The check constraint was rejected due to a check constraint violation.

OK No check constraint was violated.

Derived from the DB2 field QW0305RS.

RECORD IDENTIFIER
The record identifier (RID) of the record that failed the check constraint. This field is only valid if the value in RESULT is REJ . Derived from the DB2 field QW0305ID.

TABLE_SPACE_TYPE
The type of the table space:

L Non-EA large table

N Non-large table

V EA-enabled large table

Derived from the DB2 field QW0305TY.

CHARACTERS
The first 30 characters of the rejected record that failed the check constraint condition. This field is only valid if the value in RESULT is REJ . Otherwise, N/A is printed in this field. Derived from the DB2 field QW0305RR.

311 - Global Temp Table Usage

Global temp table usage shows the data from IFCID 311.

```
TEMP TAB CREATOR  : 'BLANK'    TEMP TAB NAME: TTAB1               PACK LOCATION NAME: 'BLANK'
PROGRAM NAME      : DSNTEP3    CURSOR NAME  : N/A                 PACK COLLECTION ID: DSNTEP3
PACKAGE VERSION   : N/P
CURSOR HOLD STATUS: HO         WORKFILE TYPE: TT                  OPERATION         : DA
QW0311CA          :          0 QW0311TA     : 2133989320         QW0311CL          : WTTD
```

TEMP TAB CREATOR
The creator of the global temporary table. Derived from the DB2 field QW0311QN.

TEMP TABLE NAME
The name of the global temporary table. Derived from the DB2 field QW0311TN.

PACK LOCATION NAME
The package location name for the query that uses the global temporary table. Derived from the DB2 field QW0311LN.

PROGRAM NAME
The program name for the query that uses the global temporary table. Derived from the DB2 field QW0311PN.

CURSOR NAME
The cursor name for fetches. This field is only applicable if the value in WORKFILE TYPE is `RC` . Otherwise, N/A is printed. Derived from the DB2 field QW0311CN.

PACK COLLECTION ID
The package collection identifier for the query that uses the global temporary table. Derived from the DB2 field QW0311PC.

PACK VERSION
The package version for the query that uses the global temporary table. Derived from the DB2 field QW0311PVF.

CURSOR HOLD STATUS
The cursor hold status:

HO The cursor is held through commit.

'BLANK'
The cursor is not held through commit.

Derived from the DB2 field QW0311HO.

WORKFILE TYPE
The work file type:

TT Temporary table

C Cursor on a temporary table

TR Transition table

CT Cursor on transition table.

Derived from the DB2 field QW0311TY.

OPERATION
The operation using the global temporary table:

AT Alter the temporary table.

CI Create the temporary table instantiation. A work file is created for the temporary table.

OC Open the cursor on a temporary table.

D Delete work files for temporary table.

DA Delete all rows from the temporary table, but leave the workfiles structures intact.

CC Close cursor on the temporary table.

Derived from the DB2 field QW0311OP.

312 - DCE Security Integration - Server Support

DCE security integration - server support shows data from IFCID 312. It provides an audit trail for DCE security processing.

```
REQ COMMUNICATION ADDR: STB3327T         COMMUNICATION ADDR TYPE: SNA
DERIVED LOCAL USERID  : ADMF001          UUID REQ PRINCIPAL NAME: 000003ec-ae7a-21cf-b200-10005ac91892
PRINCIPAL NAME LENGTH :    20            UUID REQ PRINCIPAL CELL: ffe76ca8-a2cb-11cf-a345-10005ac91892
PRINCIPAL NAME        : /.../db2dev/mckeough
```

REQ COMMUNICATION ADDR
Requester's communication address. For SNA, this field contains the LU name. For TCP/IP, this field contains the dotted decimal ip address.

Derivation: QW0312AD

COMMUNICATION ADDR TYPE
Type of the communication address. Possible values are

- SNA
- TCP/IP

Derivation: QW0312CT

DERIVED LOCAL USERID
Derived local user ID.

Derivation: QW0312US

PRINCIPAL NAME LENGTH
Length of requesting principal name. This value can be up to 1010.

Derivation: QW0312LN

PRINCIPAL NAME
Requesting principal name. This is a 256-byte character field. This field can contain lowercase alphabetic characters.

Derivation: QW0312PR

UUID REQ PRINCIPAL NAME
The universal unique identifier (UUID) of the requesting principal. This is a 36-byte character field.

Derivation: QW0312UP

UUID REQ PRINCIPAL CELL
The UUID of the requesting principal's cell. This is a 36-byte character field.

Derivation: QW0312UC

313 - Uncommitted Unit of Recovery

Uncommitted unit of recovery (UR) shows data from IFCID 313. It reflects the same information given in the DB2 messages DSNR035I and DSNR036I.

```
UNCOMMITTED URID: XXXXXX     CHKPTS TAKEN  : 99999          LUW ID          : XXXXXXXXXXXXXXXXXXXXXXXX   TYPE OF UR: XX
CONNECTION ID   : XXXXXXXX   CORRELATION ID: XXXXXXXXXXXX   MESSAGE NUMBER  : XXXXXXXX
```

UNCOMMITTED URID
The ID of the uncommitted unit of recovery. Derived from the DB2 field QW0313ID.

CHKPTS TAKEN
For inflight units of recovery (UR), the number of checkpoints taken since the beginning of the UR. For indoubt URs, this field is set to -1 . Derived from the DB2 field QW0313CK.

LUW ID
The ID of the logical unit of work. Derived from the DB2 field QW0313LU.

TYPE OF UR
The type of uncommitted unit of recovery (UR):

FL Inflight UR

DU Indoubt UR

Derived from the DB2 field QW0313TY.

CONNECTION ID
The connection ID. Derived from the DB2 field QW0313CN.

CORRELATION ID
The correlation ID. Derived from the DB2 field QW0313CR.

MESSAGE NUMBER
The number of the DB2 message reflecting the information in this IFCID. Derived from the DB2 field QW0313MG.

314 - Authorization Exit Parameters

Authorization exit parameters shows data from IFCID 314. This record assists in debugging the exit. It is generated after the exit is called. It applies to authorization, checking, initialization, and termination and shows the contents of the parameter list.

```
ADDRESS EXPL     : X'hhhhhhhh'   EXIT RETURN CODE:     99999   STO CLOCK BEFORE EXIT CALL: hh:mm:ss.nnnnnn
ADDRESS WORK AREA: X'hhhhhhhh'   EXIT REASON CODE: 999999999   STO CLOCK AFTER  EXIT CALL: hh:mm:ss.nnnnnn
LENGTH WORK AREA : 9999999999
PARAMETER LIST   : 265chars
```

ADDRESS EXPL
The address of the exit parameter list. Derived from the DB2 field QW0314EL.

EXIT RETURN CODE
The return code from the exit:

0 Access allowed.

4 Check the DB2 authorization.

8 Access denied.

12 Unable to determine authorization. Do not call the exit again.

Derived from the DB2 field QW0314RC.

STO CLOCK BEFORE EXIT CALL
The store clock value before the exit was called. Derived from the DB2 field QW0314BC.

ADDRESS WORK AREA
The address of the work area. Derived from the DB2 field QW0314WA.

EXIT REASON CODE
The reason code from the user-defined exit. Derived from the DB2 field QW0314RS.

STO CLOCK AFTER EXIT CALL
The store clock value after the exit was called. Derived from the DB2 field QW0314AC.

LENGTH WORK AREA
The length of the work area. Derived from the DB2 field QW0314WL.

PARAMETER LIST
The list of parameters specific to the exit. Derived from the DB2 field QW0314PL.

322 - End Force-at-Commit

```
-----------------------------------------------------
 PAGES_WRITTEN : 22
-----------------------------------------------------
```

PAGES_WRITTEN
The number of pages written. Derived from DB2 field QW0322NP.

324 - Function Resolution

```
QBLOCKNO : 12345  FUNCT_SCHEMA : 1.....8  FUNCT_NAME : 1.............18  SPECIFIC_NAME : 1.............18
                  VIEW_CREATOR : 1.....8  VIEW_NAME  : 1.............18  FUNCT_TYPE    : SU
FUNC_TEXT : 1.....10.......20.......30.......40.......50.......60.......70.......80.......90.......100
          : 1.....110.......120.......130.......140.......150.......160.......170.......180.......190.......200
          : 1.....210.......220.......230.......240...........254
```

QUERYNO
The query number. Derived from DB2 field QW0324QN.

PLANNAME
The plan name. Derived from DB2 field QW0324PN.

COLLECTION_ID
The collection ID. Derived from DB2 field QW0324CI.

APPLNAME
The name of the application. Derived from DB2 field QW0324AL.

PROGNAME
The program name. Derived from DB2 field QW0324PG.

CONSIS_TOKEN
The consistency token. Derived from DB2 field QW0324CT.

BIND_TIME
The time stamp of the bind time. Derived from DB2 field QW0324TS.

VERSION
The version ID. Derived from DB2 fields QW0324VL and QW0324VN.

CURRENT_PATH
The current path. Derived from DB2 fields QW0324CL and QW0324CP.

FUNCT_SCHEMA
A short SQL identifier, either ordinary or delimited, following the concept of qualified names consistent with the ANSI/ISO SQL92 standard. Derived from DB2 field QW0324FS.

FUNCT_NAME
The name of a function without a qualifier. Derived from DB2 field QW0324FN.

SPECIFIC_NAME
Identifies the particular function. The specific name must identify a specific function name in the explicitly or implicitly specified schema. Derived from DB2 field QW0324FI.

FUNCT_TYPE
The classification of the function:

SU Scalar UDF

TU Table UDF

Derived from the DB2 field QW0324FY.

VIEW_CREATOR
The name of the view creator if the function is referenced in a view definition. Derived from DB2 field QW0324CV.

VIEW_NAME
The name of the view if the function is referenced in a view definition. Derived from DB2 field QW0324NV.

QUERY_BLOCKNO
A number that identifies the query block number being explained. Derived from DB2 field QW0324QB.

FUNCT_TEXT
Contains the text of the function reference, function name, and parameters. It can be up to 254 characters long. Derived from DB2 fields QW0324FL and QW0324FT.

325 - Trigger Activation

IFCID 325

```
-------------------------------------------------------------------------------------------------------------------------------
STATEMENT NO    :    12   SQL STATEMENT   : U   COLLECTION ID     : COLLECID              TRIGGER NAME : TRIGNAME
ACTIVATION TIME :     A   ENTRY/EXIT TYPE : E   TIMESTAMP         : X'1234567890098765'   SCHEMA NAME  : SCHEMNAM
GRANUALARY      :     R   EVALUATION      : F                                               PROG NAME    : PNAME

SQLCODE  : 1234567890  SQLSTATE :       STAT  SQLCAID  : SQLCA            SQLCABC  : 136  SQLERRP  : SQLERRP0  SQLEXT : 02000
SQLERRD1 : 1234567890  SQLERRD2 : 1234567890  SQLWARN0 : W  SQLWARN1 : W  SQLWARN2 : W    SQLWARN3 : W
SQLERRD3 : 1234567890  SQLERRD4 : 1234567890  SQLWARN4 : W  SQLWARN5 : W  SQLWARN6 : W    SQLWARN7 : W
SQLERRD5 : 1234567890  SQLERRD6 : 1234567890  SQLWARN8 : W  SQLWARN9 : W  SQLWARNA : W
SQLERRM  : ERROR MESSAGE FROM THE SQLCA
-------------------------------------------------------------------------------------------------------------------------------
```

STATEMENT NO
Statement number of the SQL statement that activated the trigger. Derived from DB2 field QW0325SN.

SQL STATEMENT
Triggering SQL statement. Possible values are:

D DELETE

I INSERT

U UPDATE

Derived from DB2 field QW0325SS.

COLLECTION ID
Collcetion ID of the package containing the statement that activated the trigger. Derived from DB2 field QW0325CO.

TRIGGER NAME
Trigger name. Derived from DB2 field QW0325NM.

ACTIVATION TIME
Possible values are:

A Trigger activation time is AFTER.

B Trigger activation time is BEFORE.

Derived from DB2 field QW0325AC.

ENTRY/EXIT TYPE
Possible values are:

E Trigger is starting.

X Trigger is ending.

Derived from DB2 field QW0325ET.

TIMESTAMP
Trigger timestamp. Derived from DB2 field QW0325TS.

SCHEMA NAME
Schema name of the trigger. Derived from DB2 field QW0325SC.

GRANULARITY
Possible values are:

R Trigger granularity is FOR EACH ROW.

S Trigger granularity is FOR EACH STATEMENT.

Derived from DB2 field QW0325GR.

EVALUATION
Triggered action condition evaluation. Possible values are:

T Triggered action tested TRUE

F Triggered action tested FALSE

N No triggered action condition.

Derived from DB2 field QW0325CN.

PROG NAME
Program or package containing the statement that activated the trigger. Derived from DB2 field QW0325PR.

SQLCA
This section contains the SQLCA fields. It is only printed if the value in the ENTRY/EXIT field is RETURNED. Derived from the DB2 field QW0058SQ.

IFCID 325

Chapter 66. The Dump Record Trace

The dump record trace is used to list all data from selected records of an input data set. The following command produces the dump record trace example shown in Figure 374.

```
:
RECTRACE
TRACE
FROM  (,18:45)
TO    (,19:00)
LEVEL (DUMP)
:
```

```
|----------------------------------------------------------------------------------------------------------------------
       A    B       C       D     E                                                   G
|0000  075C0000  C4D7D461  D4F0F5C5  C3F0F0C2   40404040  40404040  A76790FC  78BA4902  | .D..DPM.M05EC00B        x.......
       H         I                   F
|0020  E2000015  0D000000  00000000  00000000   A76790FC  78BA4902  C1C4D4C6  F0F0F340  | S..............x.......ADMF003
                           J                    K                   L
|0040  40404040  40404040  E2E8E2E3  60C4C9D9   80010001  00000000  00000000  0000001A  |         SYST-DIR................
       M                   N         O                              P
|0060  00030931  00C61C98  E2E2E3D9  A76790FC   78BA4902  00000068  0003150D  00000004  | .....F.qSSTRx...................
|0080  D4F0F5C5  C3F0F0C2  40404040  40404040   E4E2C9C2  D4E2E840  E2E8F3F0  C2C4C2F2  | M05EC00B        USIBMSY SY30BDB2
                           Q
|00A0  A76790FB  53830002  E4E2D9E3  F0F4F340   C1C4D4C6  F0F0F340  40404040  C4C2F2C3  | x....c..USRT043 ADMF003     DB2C
|00C0  C1D3D340  D8D4C6F3  F1F14040  C1C4D4C6   F0F0F340  00000007  00000000  00000000  | ALL QMF311  ADMF003 ............
|00E0  00000000  00000000  00000000  00000000   00000000  00000000  00000000  D4F0F5C5  | ............................M05E
|0100  C3F3F0C2  40404040  40404040  A76790FB   7699B301  D4F0F5C5  C3F3F0C2  40404040  | C30B        x....r..M05EC30B
|0120  40404040  C4E2D5F0  F3F0F1F0  00000000   00000000  C1C4D4C6  F0F0F340  40404040  |     DSN03010........ADMF003
|0140  40404040  E2E8E2E3  60C4C9D9  01010000   E4E2C9C2  D4E2E840  E2E8F3F0  C2C4C2F2  |     SYST-DIR....USIBMSY SY30BDB2
|0160  A76790FB  53830002  E4E2D9E3  F0F4F340   C1C4D4C6  F0F0F340  40404040  C4C2F2C3  | x....c..USRT043 ADMF003     DB2C
|0180  C1D3D340  D8D4C6F3  F1F14040  C1C4D4C6   F0F0F340  00000007  00000000  00000000  | ALL QMF311  ADMF003 ............
|01A0  00000000  00000000  00000000  00000000   D4F0F5C5  C3F3F0C2  40404040  40404040  | ................M05EC30B
|01C0  A76790FB  7699B301  D4F0F5C5  C3F3F0C2   40404040  40404040  C4E2D5F0  F3F0F1F0  | x....r..M05EC30B        DSN03010
|01E0  00000000  00000000  00000248  00E40001   00000560  00E40001  00000644  00400002  | ............U.....-.U....... ..
                                                R
|0200  00000508  00580001  0000032C  00DC0001   00000408  01000001  00000000  00000000  | ................................
|0220  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
|0240  00000000  00000000  A76790FC  47E91C02   A76790FC  78A70102  00000000  01520C00  | ........x....Z..x....x..........
|0260  00000000  0B228800  00000087  EBE20C00   00000087  FF9BA100  0000000C  40404040  | ......h....g.S.....g.. .....
|0280  40404040  00000000  00000000  00000001   00000000  00000000  00000000  00000000  |     ............................
|02A0  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
|02C0  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
|02E0  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
|0300  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
|0320  00000000  00000000  00000000  D4F0F5C5   C3F3F0C2  40404040  40404040  00000000  | ............M05EC30B        ....
|0340  00000001  00000000  00000000  000001A2   000006D9  00000000  00000001  00000003  | ...............s...R............
|0360  00000005  00000000  00000001  00000000   00000000  00000000  00000000  00000000  | ................................
|0380  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
|03A0  00000000  00000000  00000000  00000000   00000000  00000000  80000113  00000000  | ................................
|03C0  00000001  00000000  00000001  00000000   00000001  00000000  00000000  00000000  | ................................
|03E0  00000000  00000001  00000000  00000000   00000000  00000000  00000002  00000000  | ................................
|0400  C4E2D5F0  F3F0F1F0  54C4E2D5  F0F3F0F1   F0D4F0F5  C5C3F3F0  C2404040  40404040  | DSN03010.DSN03010M05EC30B
|0420  40E4E2C9  C2D4E2E8  40E2E8F3  F0C2C4C2   F2C4C2F2  C3C1D3D3  40C2C1E3  C3C84040  |  USIBMSY SY30BDB2DB2CALL BATCH
|0440  40C1C4D4  C6F0F0F3  40404040  40C1C4D4   C6F0F0F3  40D8D4C6  F3F1F140  40000000  |  ADMF003     ADMF003 QMF311  ...
|0460  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
|0480  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
|04A0  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
|04C0  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
|04E0  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
|0500  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000004  | ................................
|0520  8000F0F1  00000005  00000000  00000000   0000049E  00000001  00000000  0000002B  | ..01............................
|0540  00000014  00000000  00000001  00000000   0000000B  00000000  00000000  00000000  | ................................
|0560  209500E4  D8E7E2E3  00000000  00000001   00000000  00000000  00000000  00000000  | .n.UQXST........................
|0580  00000000  00000000  00000000  00000000   00000000  00000000  00000000  00000000  | ................................
|----------------------------------------------------------------------------------------------------------------------
```

Figure 374. Dump Record Trace Example (Part 1 of 3)

Figure 374. Dump Record Trace Example (Part 2 of 3)

```
ACE       ACE          ACE       ACE          ACE       ACE          ACE       ACE          ACE       ACE
NUMBER    ADDRESS      NUMBER    ADDRESS      NUMBER    ADDRESS      NUMBER    ADDRESS      NUMBER    ADDRESS
_____ ____________     ______ ____________    ______ ____________    ______ ____________    ______ ____________
1   X'08FF6D28'
RECORD TRACE COMPLETE
```

Figure 374. Dump Record Trace Example (Part 3 of 3)

Product-sensitive programming interface

Refer to Chapter 64. General Record Trace Information for a description of the trace header.

End of Product-sensitive programming interface

Product-sensitive programming interface

The left-hand side of the trace shows a full hexadecimal dump of the record and the section on the right shows the same data in character format. The following table describes selected fields in Figure 374.

End of Product-sensitive programming interface

Label	Hexadecimal	Description
A	075C	Record length (LL)
B	0000	Binary zeros (ZZ)
C	C4D7D4	Literal identifier DPM
D	61	DB2 release number
E	D4F0F5C5 C3F0F0C2 40404040 40404040	Location
F	00000000 A76790FC	Sort timestamp
G	A76790FC 78BA4902	Data sharing group name
H	E2000015	Subsystem ID
I	0D000000 00000000	Member name
J	E2E8E2E3 60C4C9D9	Timezone adjusted timestamp
K	80010001 00000000	Correlation name
L	00000000 0000001A	Correlation number
M	00030931 00C61C98	Connection type
N	E2E2E3D9	Flags: record type, correlation data present, CPU data present, and DDF data present
O	00000000 00000000	DBID/OBID translation section definition
P	0003	IFCID
Q	E4E2D9E3 F0F4F340 C1C4D4C6 F0F0F340 40404040 C4C2F2C3	LUWID: network ID, LUNAME, instance number, and commit count
R	00000408	Pointer to the first self-defining section

Column Descriptions

Product-sensitive programming interface

The following columns are shown on the dump record trace:

PRIMAUTH
The authorization ID under which the transaction is running. Derived from the DB2 field QWHCAID.

ORIGAUTH
The original authorization ID under which the transaction started. Derived from the DB2 field QWHCOPID.

PLANNAME
The DB2 plan name. Derived from the DB2 field QWHCPLAN.

CONNECT
The connection ID. Derived from the DB2 field QWHCCN.

CORRNAME
The correlation name. Derived from the DB2 field QWHCCV.

CORRNMBR
The correlation number. Derived from the DB2 field QWHCCV.

CONNTYPE
The type of connection being used to interface with DB2. Derived from the DB2 field QWHCCST.

INSTANCE
The unique number assigned to a thread. Derived from the DB2 field QWHSUNIQ.

RECORD TIME
The timestamp contained in the trace record. The format is hours, minutes, seconds, and hundred-millionths of a second. Derived from the DB2 field QWHSSTCK.

TCB CPU TIME
The CPU time stored in the trace record. The format is minutes, seconds, and hundred-millionths of a second. Derived from the DB2 field QWHUCPU.

DEST SEQ NO
The destination sequence number. Derived from the DB2 field QWHSWSEQ.

ACE The relative number of the agent control element address in the ACE cross-reference table. This table is printed at the end of each location for every trace specified. Derived from the DB2 field QWHSACE.

IFCID The instrumentation facility component identification (DB2 trace record type). Derived from the DB2 field QWHSIID.

DESCRIPTION
A brief description of the IFCID record. The description indicates whether the record contains accounting, statistics, or performance data. For performance data, the description also indicates the event.

DATA The data is printed in the standard hexadecimal dump format. The character format is on the right.

Column Descriptions

Note: The self-defining section starts at offset x'01E8'. The IFC data sections start at offset x'0248'.

End of Product-sensitive programming interface

ACE Cross-Reference Table

Product-sensitive programming interface

For every trace specified, an ACE cross-reference table is printed at the end of each location. The columns of the ACE cross-reference table are:

ACE NUMBER
The cross-reference number for the hexadecimal address of the agent control element. The lowest valid cross-reference number is 1. 0 indicates that the ACE address is not available.

ACE ADDRESS
The hexadecimal address of the agent control element. Derived from the DB2 field QWHSACE.

End of Product-sensitive programming interface

Field Descriptions

Product-sensitive programming interface

This section describes the general format of the IFCID records presented in the dump record trace. The records are presented in the requested sequence. There is one entry on the report for each record selected from the input data set, therefore, the report can show more than one record of the same IFCID record type. Use the record time field on the report to distinguish between records with the same IFCID record type.

Notes:

1. An arrow (-->) pointing to the right on the trace indicates the start of an event.
2. An arrow (<--) pointing to the left on the trace indicates the end of an event.

Logical Unit of Work Identifiers

The logical unit of work identifiers are shown in the DATA column in front of the formatted data:

```
NETWORKID:  USIBMSY   LUNAME:  SY30BDB2  LUWSEQ:     2
```

NETWORKID
The network identifier. Derived from the DB2 field QWHSNID.

LUNAME
The logical unit name. Derived from the DB2 field QWHSLUNM.

LUWSEQ
The sequence number of the logical unit of work. Derived from the DB2 field QWHSLUCC.

DDF Data

DDF data is only printed if there is a DDF header. The following is printed in the DATA column after the record:

```
REQUESTING LOCATION:  USIBMSYSTDB2
REQUESTING TIMESTAMP: 03/18/95 18:54:53.90530718
AR NAME: USIBMSYSTDB2         PRDID: DB2 V5 R1 M0
```

REQUESTING LOCATION
The location requesting the work. Derived from the DB2 field QWHDRQNM.

REQUESTING TIMESTAMP
The timestamp of the requester location. Derived from the DB2 field QWHDTSTP.

AR NAME
The name of the application requester. Derived from the DB2 field QWHDSVNM. QWHDSVNM is the SRVNAM parameter of the DDM exchange server attributes command (EXCSAT).

PRDID
The name, version, release, and modification level of the product making the request. Derived from the DB2 field QWHDPRID.

Accounting Token

All record trace reports show the value (in hexadecimal) of the accounting token in the DATA column when it contains a value other than blanks or binary zeros.

The accounting token is used to correlate CICS records with DB2 records for the same task. If TOKENI=YES for TYPE=INIT, TOKENE=YES for TYPE=ENTRY, or both applies, in the resource control table, then the CICS LUWID minus the commit count (2 bytes) is passed to this field.

```
ACCTKN X'00000000000000000000000000000000000000000000'
```

The first 8 bytes contain the network name, and the following 8 bytes contain the LUNAME. The final 6 bytes are the unique value.

End of Product-sensitive programming interface

Logical Unit of Work Identifiers

Chapter 67. The Record Trace File Data Set

The record trace file data set is a sequential data set of formatted records suitable for loading into the DB2 PM erformance Database using the DB2 load utility and from which reports can be produced using a reporting facility such as Query Management Facility (QMF). See “Part 8. The Performance Database” on page 557 for more information.

Record Trace File Output Records

The output of the FILE subcommand is a sequential variable blocked data set. The content of the output data set is determined by the FILE command options you specify, and by the input SMF/GTF records processed.

This data set contains SQL statement records and RID pool records.

Descriptions of the Record Trace File data sets and the fields contained can be found in the SDGOSAMP library under the following names:

DGONDMBI
For SQL (IFCIDs 22 and 63) records

DGOND125
For RID pool (IFCID 125) records

Part 14. The SQL Activity Report Set

This part of the *DB2 PM Report Reference* describes the SQL Activity report set. It is divided into the following chapters:

SQL Activity

- **Chapter 68. Introduction to the SQL Activity Report Set** provides you with a brief introduction to the SQL Activity report set.
- **Chapter 69. General SQL Activity Information** contains information that is common to all traces and reports. This includes information on the input to SQL Activity, summarization, sorting, and workload detail. This chapter also discusses the interpretation of report and trace headers.
- **Chapter 70. The SQLACTIVITY Command** describes how to generate reports and traces. It also describes the subcommands, options, and keywords used with the SQLACTIVITY command.
- **Chapter 71. The SQL Activity Report** describes the SQL Activity report and provides examples of the report.
- **Chapter 72. The SQL Activity Trace** describes the SQL Activity trace and provides examples of the trace. The SQL Activity trace index is also described.
- **Chapter 73. Field Descriptions** describes the fields in the SQL Activity report and trace.

Refer also to the sections of the *DB2 PM Batch User's Guide* that deal with SQL Activity.

Chapter 68. Introduction to the SQL Activity Report Set

The SQL Activity report set consists of reports and traces and provides information on the SQL Activity taking place during the processing of a DB2 application.

SQL Activity covers the processing of an SQL statement and all the DB2 activities related to that statement, namely elapsed and TCB times plus all scan, sort, I/O, lock suspension, exit, data capture, locking, RID list, query parallelism, minibind, and UDF information. These activities are called *workload detail* in this report set.

In most situations, an SQL Activity trace gives details on either a DB2 thread or part of a reused thread between two signons. In CP query and Sysplex query parallelism, an originating thread and multiple parallel threads are created to execute an SQL statement. Data from parallel threads can also be included in the originating thread if you specify an INPUTDD containing the relevant data in your JCL. In the following, the term *thread* is used to include the originating and the parallel threads. The trace is a collection of threads presented in LUWID sequence with an index to help you find a particular thread.

An SQL Activity report is an aggregation of threads ordered by the combination of DB2 PM identifiers you specify. If you do not specify any DB2 PM identifiers with ORDER, the default order of PRIMAUTH and PLANNAME is used. The report is a summary of all the work belonging to, and ordered by, those identifiers.

The following information is collected for each thread provided that the appropriate IFCIDs are available:

- Thread identification (DB2 PM identifiers, DB2 LUWID, CICS LUWID, ACE, thread start and stop time, thread type, and location)
- Programs (DBRMs and packages), stored procedures, cursors used, UDF, and triggers.
- SQL statements executed within the thread with their workload detail
- Events and time spent in DDF processing
- Time spent in signon processing
- Time spent in thread creation and termination
- Time spent in autobind processing
- Accounting information

You can control the level of summarization, the sorting of events, and the workload detail within a unit of reporting.

Chapter 69. General SQL Activity Information

Tuning DB2

This part of the *DB2 PM Report Reference* identifies and describes the specific DB2 data which is reported for the purpose of tuning DB2. For general tuning advice on DB2, refer to the DB2 Administration Guide 'Performance, Monitoring, and Tuning' chapters for the specific release of DB2.

This chapter contains information common to all SQL Activity reports and traces. Information is provided on:

- DB2 trace headers in SQL Activity
- Input to SQL Activity
- Summarization, sorting, and workload detail
- Interpretation of report and trace headers

DB2 Trace Headers in SQL Activity Trace

CPU, correlation, and distribution headers are not absolutely required for an SQL Activity report or trace; records without such headers are also processed and reported.

The CPU header is required for the reporting of CPU times for the SQL statements. And in most cases, the CPU times are helpful in the analysis of the SQL.

The correlation header is required for the reporting of DB2 PM identifiers.

The distributed header is needed to produce meaningful reports when distributed activity is involved.

Header data is obtained from the TDATA option of the DB2 START TRACE command for which you must specify the following:

COR To obtain the correlation header, which contains:
- primary authorization ID
- connection ID
- connection type
- correlation ID
- plan name
- original authorization ID
- end user
- transaction name
- workstation name

CPU To obtain the CPU header, which contains the CPU time.

DIST To obtain the distributed header. This shows:
- Requester location name
- Requesting timestamp
- Application requester name

- Product ID

If you omit the TDATA option, correlation headers and distributed headers, if present, are included by default. However, specifying TDATA(CPU) overrides the default and *only* CPU headers are included. If you want CPU, correlation, and distributed headers, all must be specified, as in the following example:

```
-START TRACE(P) CLASS(2,3,4,6,8,9,10,13,16,17) DEST(GTF) TDATA(CPU,COR,DIST)
```

Input to SQL Activity

Input to the SQL Activity report set consists of DB2 instrumentation data. The DB2 trace types and classes used by SQL Activity are listed in Table 113.

Table 113. DB2 Trace Types and Classes Used by SQL Activity

DB2 Trace Type	DB2 Class	Description
Accounting	1	Accounting data
	2	DB2 times
	3	Suspensions, system events
	5	IFI and data capture events
	7	Package information—in DB2 time
	8	Package information—wait time in DB2
Performance	2	Subsystem related events
	3	SQL related events
	4	Buffer manager, I/O, and EDM pool requests
	6	Locking information
	8	Data manager detail
	9	Sort detail
	10	Bind activity
	13	Edit and validation exits
	16	Events associated with distributed activity
	17	Drain and claim detail

Each DB2 trace type and class contains one or more instrumentation facility component identifiers (IFCIDs). The IFCIDs associated with the DB2 trace types and classes used by SQL Activity are listed in Table 114.

Table 114. IFCIDs Used by SQL Activity

DB2 Trace Type	DB2 Class	DB2 IFCID	Record Type
Accounting	1	3	Accounting data
	2		DB2 times
	3		Suspensions, system events
	5		IFI and data capture events
Accounting	7	239	Package information—in DB2 time
	8		Package information—wait time in DB2

Table 114. IFCIDs Used by SQL Activity (continued)

DB2 Trace Type	DB2 Class	DB2 IFCID	Record Type
Performance	2	68	Rollback begin
		69	Rollback end
		70	Commit phase-2 begin
		71	Commit phase-2 end
		72	Create thread begin
		73	Create thread end
		74	Terminate thread begin
		75	Terminate thread end
		84	Commit phase-1 begin
		85	Commit phase-1 end
		86	Signon begin
		87	Signon end
		88	Sync. begin
		89	Sync. end
		174	Archive log (quiesce) suspend
		175	Archive log (quiesce) resume
		22	Minibind
		53	Other SQL statements
		55	Set current SQLID
		58	Common SQL end
		59	Fetch begin
		60	Select begin
		61	Insert, update, or delete begin
		62	DCL/DDL begin
		63	SQL statement to be parsed
		64	Prepare begin
		65	Open begin
		66	Close begin
		92	Access method services begin
		95	Sort begin
		96	Sort end
		97	Access method services end
		177	Package allocation
		233	Call stored procedure
		237	Set current degree
		272	Associate locators begin
		273	Allocate cursor begin
		324	Function resolution (UDF)

Table 114. IFCIDs Used by SQL Activity (continued)

DB2 Trace Type	DB2 Class	DB2 IFCID	Record Type
Performance	4	6	Read I/O begin
		7	Read I/O end
		8	Sync. write begin
		9	Write end
		226	Page latch wait begin
		227	Page latch wait end
Performance	6	20	Page and row locking summary
		44	Lock suspend
		45	Lock resume
		213	Drain lock wait begin
		214	Drain lock wait end
		218	Lock avoidance summary
Performance	8	15	Index scan begin
		16	Insert scan begin
		17	Sequential scan begin
		18	Common scan end
		106	System parameters
		125	RID list processing
		221	Parallel group degree
		222	Parallel group elapsed
		231	Paralled group task time
		305	Table check constraint
Performance	9	28	Sort runs
		95	Sort begin
		96	Sort end
Performance	10	105	DBID/OBID
		107	Data set open/close
		108	Autobind begin
		109	Autobind end
Performance	13	11	Validation exit
		12	Encode edit exit
		19	Decode edit exit

Table 114. IFCIDs Used by SQL Activity (continued)

DB2 Trace Type	DB2 Class	DB2 IFCID	Record Type
Performance	16	157	Requesting agent data (system-directed)
		159	Requesting agent data (system-directed)
		160	Requesting agent data (system-directed and application-directed)
		162	Requesting agent data (system-directed and application-directed)
		163	Serving agent data (system-directed and application-directed)
		183	Requesting agent data (application-directed)
Performance	17	213	Drain lock wait begin
		214	Drain lock wait end
		215	Claim count zero wait begin
		216	Claim count zero wait end
		188	Data capture

Notes:

1. The minimum requirement for SQL Activity to produce reports and traces is the presence of one of the following paired IFCID events: 59/58, 60/58, 61/58, 62/58, 64/58, 65/58, 66/58, or 183 ‘invocation’/183 ‘return’ (for an SQL statement), or one of the following unpaired IFCID events: 53, 55, 237.
2. If you need the query parallelism workload, IFCID 106 must be present.
3. In Sysplex query parallelism, traces must be started for each DB2 member involved in the processing of the SQL statement. These traces must be specified in the INPUTDD in your JCL to be included in your report.

Summarization

You can summarize the SQL events by:

Occurrence
Individual SQL statement occurrences are shown. Summarization by occurrence is only available for traces and is the default.

Statement number
All SQL statements with the same statement number within the same DBRM or package name are summarized.

Cursor
All SQL statements with the same cursor name within the same DBRM or package name are summarized.

Program
All SQL statements with the same DBRM or package name are summarized.This is the default for reports

Statement type
All SQL statements with the same statement type are summarized.

You can request any combination of these criteria.

When you summarize, events with the same characteristics are shown as a single entry. As an example, if you were to summarize by statement number and you had 3 occurrences of statement 777, one of 778 and four of 779 in the same package, three entries would be created. One for each statement number.

An SQL Activity trace also automatically includes a summary by thread and, if there is more than one thread per location, a summary by location.

Notes:

1. The statement number is printed in a summary by cursor if an SQL statement does not include the cursor name, or if summarization by cursor is not appropriate for that statement. The following SQL statements are not summarized by cursor:
   - PREPARE
   - INSERT
   - UPDATE (noncursor or noncurrent of cursor)
   - DELETE (noncursor or noncurrent of cursor)
   - DESCRIBE
   - SQL COMMIT
   - SQL ROLLBACK
   - SQL statement at application requester using application-directed method of access
   - CALL

   In a summary by cursor, these statements are organized by the statement number.
2. The statement type is printed in a summary by cursor and a summary by statement number if an SQL statement does not include the statement number or cursor name.
3. If DDL and DCL statements are present in a summary by cursor or a summary by statement number, they are organized by statement type.

SQL Activity prints all the SQL it receives. If some SQL cannot be summarized at the requested level, it is presented in the closest possible summary format.

Sorting

Events within each summary can be sorted by:

- Average elapsed time
- Average TCB time
- Number of scans
- Rows processed
- Pages scanned
- Records sorted
- Sort work files
- I/O requests

- I/O time
- Lock suspensions
- Lock suspension time
- Exits
- Exit time
- Default, which is the default

If the default sorting order is used, the different summary levels are sorted as follows:

- Summary by occurrence - sorted in timestamp order
- Summary by statement number - sorted in numerical order within program
- Summary by cursor - sorted in alphabetical order within program
- Summary by program - sorted in alphabetical order of package or DBRM name
- Summary by statement type - sorted in alphabetical order.

Workload Detail

Workload detail is available on all summary levels. The workload figures are applied to the event being summarized. The following workload detail can be reported for each event:

- Workload highlights
- Scan, RID list, and query parallelism activity
- Sort activity
- I/O activity
- Locking activity
- Exit activity
- Data capture activity
- Accounting
- Minibind, see 2
- UDF, see 3

Any combination can be requested including all or none. None is the default.

Notes:

1. The more workload detail you request, the more time DB2 PM requires for processing your request. It is recommended that you do not specify WORKLOAD(ALL) with a large amount of input data unless absolutely necessary.
2. When you request WORKLOAD, if IFCID 22 is contained, with workload, in the input, minibind activity is included automatically as part of the workload detail.
3. When you request WORKLOAD, if IFCID 324 is contained, with workload, in the input, UDF activity is automatically included as part of the workload detail.

Thread Types

The SQL Activity report set can process data originating at different DB2 locations in the same DB2 PM run. Multiple input data sets, in any of SMF, GTF, and DPMOUT data set format, can be logically concatenated in the DD statements for INPUTDD. The data is grouped by locations and reported according to the options specified in the SQLACTIVITY command.

The thread or, in a thread reuse situation, that part of it that is between two consecutive signon or resignon points, is the basic unit of reporting for the SQL Activity report set. DB2 PM uses the following categorization of DB2 threads:

- **Allied thread**

  An allied thread does not involve distributed activity, that is, neither is it initiated by a remote location nor does it request data from a remote location. All of its SQL statements refer to local objects.

- **Allied-distributed thread**

  An allied-distributed thread is not initiated by a remote location but it requests data from one or more server locations. Therefore, some of its SQL statements refer to a three-part table name or an alias residing at a remote location if the thread uses the DB2 private protocol, or are previously bound at a remote location if the thread uses DRDA protocol.

- **DBAT** (Database access thread)

  A DBAT is initiated, created, and performed by a thread on behalf of a remote (requester) location. All of its SQL statements refer to objects that reside at the location where it is executing. They are either dynamically bound on behalf of the requester location if DB2 private protocol is used, or part of a package bound for DRDA protocol.

- **DBAT-distributed thread**

  A DBAT-distributed thread is initiated by a remote (requester) location that in turn requests data from one or more server locations. This is known as a *hop*. Its SQL statements are part of a package bound for DRDA protocol, but they refer to a three-part table name or an alias residing at a remote location.

  For example, when location A uses the DRDA protocol to access data at location B and, in the same unit of work, accesses data at location C (using DB2 private protocol), the thread created at location A is an allied-distributed thread, the thread created at location B is a DBAT-distributed thread, and the thread created at location C is a DBAT.

Note: A variation of the hop is possible where the third thread, the DBAT, can be at location A. This is known as *loopback*. Thus, there are two threads at location A: an allied-distributed thread and a DBAT.

The following DB2 PM terms can be helpful in understanding the concepts of the different thread types :

- **Distributed transaction** is initiated by DB2 at one (requester) location and performed at one or more remote (server) locations.

  Distributed transactions consist of local activity represented by an allied-distributed thread and remote activity represented by one or more DBATs. Therefore, SQL Activity records are needed for the allied-distributed thread as well as all the corresponding DBATs.

The order in which data is printed in the SQL Activity reports and traces is as follows:

- **SQL Activity reports and traces** are location-oriented. Activity performed at one or more locations is shown. Records relevant to SQL Activity are sorted by start time and location within the thread's LUWID and presented in that order. For a given location, the SQL Activity data for the following is reported:
  - Nondistributed transactions, that is, the allied threads at that location.
  - Local activity of distributed transactions originating at that location, that is, the allied-distributed threads from that location without the corresponding DBATs at other locations.
  - Remote activity performed at that location, that is, the DBATs at that location.

  Reports and traces can be single-site or multisite:
  - Single-site reports and traces present the data for one location. You can obtain a single-site SQL report or trace by processing input data that only contains records from a single location or by requesting a single location using the INCLUDE/EXCLUDE option.
  - Multisite reports and traces present the SQL Activity data for more than one location in the same DB2 PM run. The data is arranged in alphabetical order by location name.

Headers Used in SQL Activity

A header is printed at the top of every SQL Activity trace, report, and index page.

SQL Activity Report Header

An example of the SQL Activity report header is shown in Figure 375.

```
   LOCATION: EDUCDB2P                        DB2 PERFORMANCE MONITOR (V6)                              PAGE: 1-1
      GROUP: N/P                                 SQL ACTIVITY - REPORT                    REQUESTED FROM: NOT SPECIFIED
     MEMBER: N/P                                                                                        TO: NOT SPECIFIED
  SUBSYSTEM: DB2P                           ORDER: WSNAME-ENDUSER-TRANSACT                    ACTUAL FROM: 03/11/99 07:24:35.49
DB2 VERSION: V6                                                                                         TO: 03/11/99 07:24:35.63
                                                    SUMMARIZED BY PROGRAM

WSNAME  : HUGOS_WORKSTATION1    ENDUSER : HUGO_VON_EICHORN    TRANSACT: UEBERRASCHUNGSEIER_SIND_SEHR_GUT
                                                                        THREAD TOTAL:     1  START AET: N/P       STOP AET: N/P

       EVENT            COUNT     TOT.ELAPS  TOTAL TCB                                    DETAIL
                                  AET/EVENT  TCB/EVENT
-------------------- ----------- ---------- --------- ------------------------------------------------------------------------------

DSNESM68                     1    0.134154  0.007978 PACKAGE: EDUCDB2P.DSNESPCS.DSNESM68.X'149EEA901A79FE48'
                                                       STMTTYPE             COUNT   AET/OCCUR TCB/OCCUR
                                                       PREPARE                  1    0.134154  0.007978
SQL ACTIVITY REPORT COMPLETE
```

Figure 375. SQL Activity Report Header

SQL Activity Trace Header

An example of the SQL Activity trace header is shown in Figure 376.

```
LOCATION: DSNAPC3                          DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-1
     GROUP: GROUP_1                               SQL ACTIVITY - TRACE                  REQUESTED FROM: NOT SPECIFIED
    MEMBER: MEMBER_1                                                                              TO: NOT SPECIFIED
 SUBSYSTEM: APC3                                                                        ACTUAL FROM: 04/08/99 03:28:52.13
DB2 VERSION: V6
                                                SUMMARIZED BY OCCURRENCE

            PRIMAUTH: XXASP09           CONNECT : BATCH              CORRNAME: XXASP09F   CONNTYPE: TSO
            ORIGAUTH: XXASP09           PLANNAME: LOCCURHL           CORRNMBR: 'BLANK'    THRDTYPE: ALLIED
            ENDUSER : 1234567890123456  WSNAME  : 123456789012345678  TRANSACT: 12345678901234567890123456789012
```

Figure 376. SQL Activity Trace Header

SQL Activity Trace Index Header

An example of the SQL Activity trace index header is shown in Figure 377.

```
   LOCATION: USIBMSYSTDB2                  DB2 PERFORMANCE MONITOR (V6)                          PAGE: 0-3
      GROUP: DSNCAT                              SQL ACTIVITY - TRACE                  REQUESTED FROM: NOT SPECIFIED
     MEMBER: SSDQ                                                                              TO: NOT SPECIFIED
  SUBSYSTEM: SSDQ                                                                        ACTUAL FROM: 02/17/99 06:09:09.40
DB2 VERSION: V6                                                                                 TO: 02/17/99 06:09:32.96
                                                      INDEX
     SQL TRACE #       1
```

Figure 377. SQL Activity Trace Index Header—Example

The report headers contain the standard DB2 PM header information and the following additional data:

SORTED BY
The event by which the report or trace is sorted, which can be the default or as specified in the SORTBY option.

WITH *detail* **WORKLOAD**
The workload details included in the report or trace as specified in the WORKLOAD option.

DB2 PM identifiers
Control the order of the SQL Activity data printed. If you do not specify any DB2 PM identifiers with ORDER, the default order of PRIMAUTH-PLANNAME is used. For more information, see “Chapter 1. DB2 PM Identifiers” on page 3 and “ORDER” on page 26.

TRACE #
Each trace occurrence and thread within the TRACE subcommand is numbered sequentially in the format *x.yyyy*, where:

- *x* can be 1 through 5, representing the five TRACE subcommands
- *yyyyy* can be 1 through 99 999, representing each thread being traced.

DB2 LUWID
The identifier of the logical unit of work. The following parts of this identifier are printed:

- The network ID
- The name of the logical unit, which is the name by which VTAM recognizes the DB2 subsystem
- The instance number

ACE ADDRESS
The agent control element absolute address in hexadecimal.

START TIME
The timestamp showing when the startup of the thread ended or, if the REQUESTED FROM time is after the thread begin, the REQUESTED FROM timestamp.

START ELAPSED
The thread start elapsed time, if calculable.

START REASON
The event that started the thread:

- CREATE THREAD
- CREATE DBAT
- NEW USER
- RESIGNON
- IN PROGRESS—no thread start IFCID present.

STOP TIME
The timestamp showing when the thread stopped or, if the REQUESTED TO time is after the thread end, the REQUESTED TO timestamp.

STOP ELAPSED
The thread stop elapsed time, if calculable.

STOP REASON
The event that stopped the thread:

- TERMINATE THREAD
- DEALLOCATE DBAT
- NEW USER
- RESIGNON
- ACCOUNTING FOUND—the thread terminated with the accounting record
- LOCATION CHANGED—the thread was terminated due to a location change
- END OF FILE—the thread was terminated because there were no records left to process.

START AET
The average thread start elapsed time.

STOP AET
The average thread stop elapsed time.

AUTOBIND AET
The average autobind elapsed time, if present.

ARCHIVE LOG AET
The average archive log (quiesce) elapsed time, if present.

Chapter 70. The SQLACTIVITY Command

You use the SQLACTIVITY command to reduce data, and to generate reports and traces. The command can be used once in a job step. However, it can be used in the same job step with commands of the other report sets. The following subcommands are associated with the SQLACTIVITY command:

- REDUCE
- REPORT
- TRACE

This chapter is intended for the user who wants to build a command stream using the DB2 PM command language.

Building a Command Stream

Figure 378 is a sample of the JCL required to produce SQL activity reports and traces. A description of the DD statements follows the sample.

```
//DB2PM   JOB (INSTALLATION DEPENDENCIES)
//*
//* ================================================================*
//*          D B 2  P M   R E P O R T   G E N E R A T I O N          *
//* ================================================================*
//*
//        EXEC PGM=DB2PM
//* FOLLOWING ARE DB2PM SYSTEM DDNAMES
//STEPLIB  DD  DSN=DGO.V6R1M0.SDGOLOAD,DISP=SHR
//DPMPARMS DD  DSN=DGO.V6R1M0.DPMPARMS,DISP=SHR
//INPUTDD  DD  DSN=DGO.V6R1M0.DPMIN61,DISP=SHR
//DPMLOG   DD  SYSOUT=*
//SYSOUT   DD  SYSOUT=*
//JOBSUMDD DD  SYSOUT=*
//SYSPRMDD DD  SYSOUT=*
//DPMOUTDD DD  DSN=DGO.V6R1M0.DPMOUT.DATA,DISP=OLD
//SYSUDUMP DD  DUMMY
//* FOLLOWING ARE DB2PM REPORT SET DDNAMES
//SQTRCDD1 DD  SYSOUT=*
//SQRPTDD  DD  SYSOUT=*
//SQLWORK  DD  DSN=DGO.V6R1M0.SQL.WORKDD,DISP=OLD
//* FOLLOWING IS THE DB2PM COMMAND STREAM
//SYSIN   DD  *

  .
  .
  .
  SQLACTIVITY
       REDUCE
          INCLUDE     (PRIMAUTH(USER026))
       TRACE
          SUMMARIZEBY (CURSOR)
          SORTBY      (TCBTIME)
       REPORT
  .
  .
  .
  EXEC
```

Figure 378. Sample JCL for Requesting SQL Activity Functions

The DB2 PM command language shown in Figure 378 is not appropriate in all circumstances. You must modify it to meet your requirements.

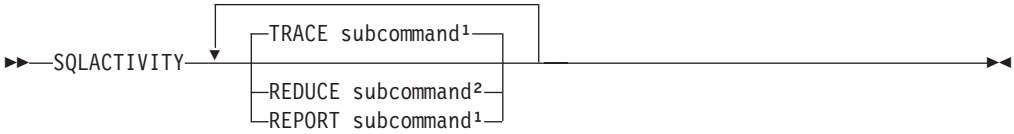
Most of the DD statements with a SYSOUT destination do not have to be specified because they are dynamically allocated by DB2 PM.

Notes:

1. There is an advantage in omitting DPMOUTDD from your JCL. For more information, see the description of DPMOUTDD on page “DPMOUTDD” on page 13.
2. The DB2 PM command stream is only processed if EXEC is included as the last command. Otherwise, no report is generated. DB2 PM checks the syntax of your command stream and writes it, together with any information, warning, or error messages generated.

Using the SQLACTIVITY Command

The command can be used once in a job step.



Notes:

1. You can specify both TRACE and REPORT up to 5 times.
2. You cannot specify REDUCE without specifying at least one REPORT or one TRACE.

Figure 379. Syntax of the SQLACTIVITY Command

Using the REDUCE Subcommand

You use the REDUCE subcommand to reduce the volume of data that is input to subsequent SQL report and or trace. You can use reduce once with the SQLACTIVITY command.

The REDUCE subcommand in SQL Activity is used to specify the interval for DISTRIBUTE because there is no interval in SQL Activity report.

Using the REPORT Subcommand

You use the REPORT subcommand to generate reports from records. Up to five REPORT subcommands can be specified within each SQLACTIVITY command.

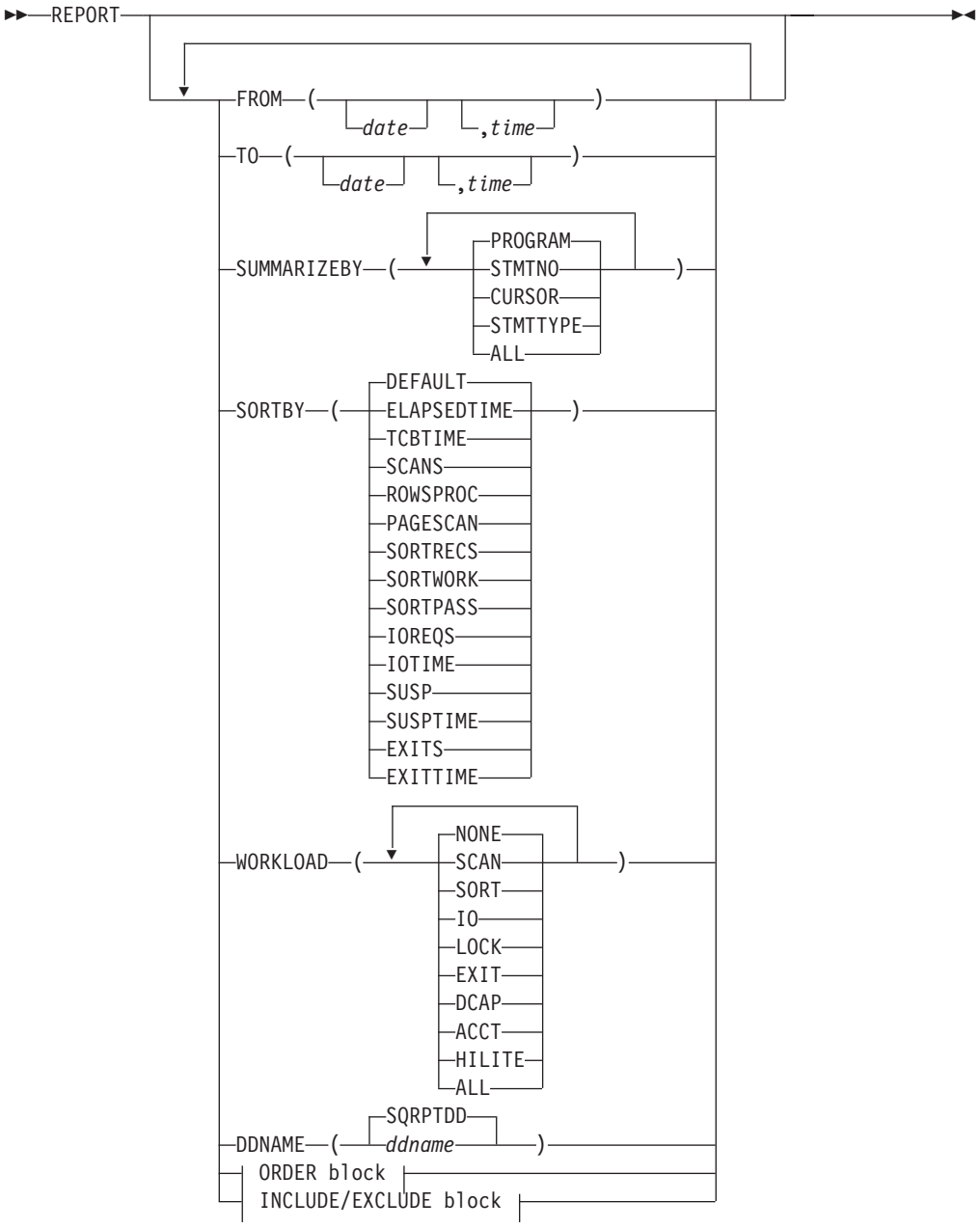


Figure 380. Syntax of the REPORT Subcommand

The following options can be used with the REPORT subcommand:

FROM/TO

Limits the range of records included in the reporting process by date and time. See"FROM/TO" on page 21 for more information.

SUMMARIZEBY

Selects the SQL events to be summarized. You can specify one entry of SUMMARIZEBY for each REPORT subcommand. The following events can be specified:

- STMTNO (statement number)
- CURSOR (cursor)
- PROGRAM (program)

- STMTTYPE (statement type)
- ALL (all of the above)

The default for SUMMARIZEBY is PROGRAM.

Refer to “Summarization” on page 1129 for more information about summarization.

WORKLOAD

Displays workload detail for each event. The following detail can be reported:

- HILITE (workload highlights)
- SCAN (scan and RID list)
- SORT (sort activity)
- IO (I/O activity)
- LOCK (lock suspension and page and row locking activity)
- EXIT (exit activity)
- DCAP (data capture activity)
- ACCT (accounting)
- MINIBIND
- UDF (function definition)
- ALL (all workload activity)
- NONE (no workload activity)

The default for WORKLOAD is NONE.

Refer to “Workload Detail” on page 1131 for more information about workload detail.

SORTBY

Sorts the SQL events within each summary level within each thread. You can specify one entry of SORTBY for each REPORT subcommand. One of the following events can be specified:

- ELAPSEDTIME (average elapsed time)
- TCBTIME (average TCB time)
- SCANS (number of scans)
- ROWSPROC (rows processed)
- PAGESCAN (pages scanned)
- SORTRECS (records sorted)
- SORTWORK (workfiles sorted)
- IOREQS (I/O requests)
- IOTIME (elapsed time for each I/O request)
- SUSP (lock suspensions)
- SUSPTIME (elapsed time for each lock suspension)
- EXITS (number of exits)
- EXITTIME (elapsed time for each exit)
- DEFAULT (default)

If the default SORTBY option is used, the sort sequence depends on the summary level specified.

Refer to “Sorting” on page 1130 for more information about sorting and default.

DDNAME
Specifies the data set to which the report is written.

ORDER
Specifies the DB2 PM identifiers and their sequence for sorting the report, and, in summary reports, which identifiers are used for aggregation. You can order by one, two, or three identifiers separated by a dash and specify up to five sets of the identifiers for each entry of ORDER separated by at least one blank. You can specify one entry of ORDER for each REPORT subcommand. The default for ORDER is PRIMAUTH-PLANNAME.

For more information, refer to “ORDER” on page 26 and “Chapter 1. DB2 PM Identifiers” on page 3.

INCLUDE/EXCLUDE
Includes or excludes data associated with specific DB2 PM identifiers. If you omit this option, all records are included.

Refer to “Chapter 1. DB2 PM Identifiers” on page 3 for definitions of DB2 PM identifiers.

Refer to “INCLUDE/EXCLUDE” on page 28 for more information on how to use the INCLUDE/EXCLUDE option.

Examples Using REPORT

Example 1:

```
⋮
   INCLUDE (LOCATION(R(LOCN01 LOCN05)))
⋮
```

This example specifies the following:

- Data is included that is only associated with the location in the range of LOCN01 to LOCN05

Example 2:

```
⋮
REPORT
   FROM    (03/18/99,10:00:00.00)
   TO      (03/19/99,12:00:00.00)
   EXCLUDE (LOCATION(LOCN10 LOCN12 LOCN15 LOCN20))
⋮
```

This example specifies the following:

- Records are used with the time and date range of 10:00 a.m. on 18 March 1999 to noon on 19 March 1999
- Data is excluded that is associated with the following locations:
  - LOCN10
  - LOCN12
  - LOCN15
  - LOCN20

Using the TRACE Subcommand

You use the TRACE subcommand to produce traces with an entry for every DB2 SQL event.

Up to five traces can be requested in a job step.

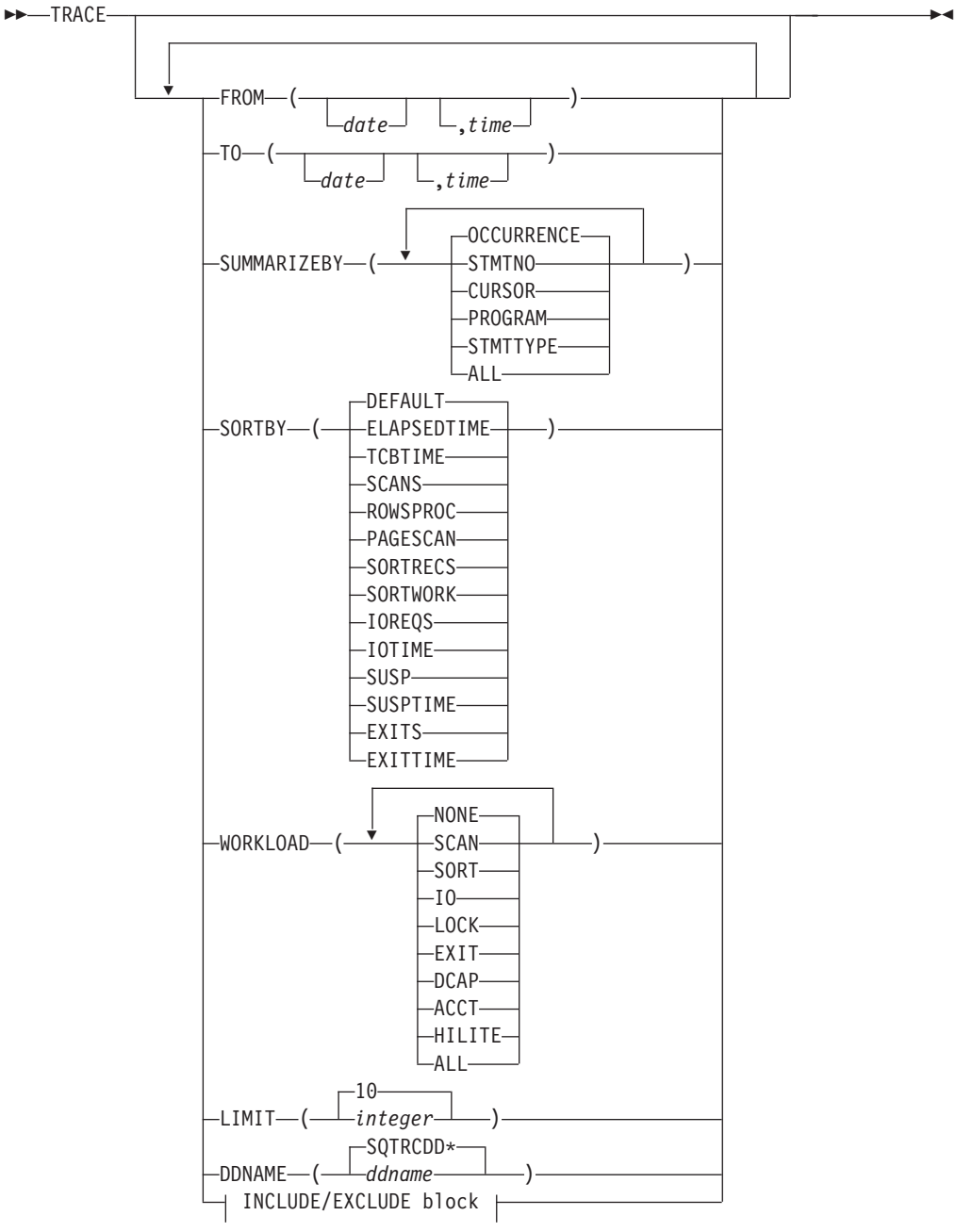


Figure 381. Syntax of the TRACE Subcommand

The following options can be used with the TRACE subcommand:

FROM/TO
Limits the range of records included in the trace by date and time. See "FROM/TO" on page 21 for more information.

SUMMARIZEBY

Selects the SQL events to be summarized. You can specify one entry of SUMMARIZEBY for each TRACE subcommand. The following events can be specified:

- OCCURRENCE (SQL statement occurrence)
- STMTNO (statement number)
- CURSOR (cursor)
- PROGRAM (program)
- STMTTYPE (statement type)
- ALL (all of the above levels are summarized)

The default for SUMMARIZEBY is OCCURRENCE.

Refer to “Summarization” on page 1129 for more information about summarization.

WORKLOAD

Displays the workload detail for each event. The following detail can be reported:

- HILITE (workload highlights)
- SCAN (scan, RID list, and query parallelism activity)
- SORT (sort activity)
- IO (I/O activity)
- LOCK (lock suspension and page and row locking activity)
- EXIT (exit activity)
- DCAP (data capture activity)
- ACCT (accounting)
- MINIBIND
- UDF (function resolution)
- ALL (all workload activity)
- NONE (no workload activity)

The default for WORKLOAD is NONE.

Refer to “Workload Detail” on page 1131 for more information about workload detail.

SORTBY

Sorts the SQL events within each summary level within each thread. You can specify one entry of SORTBY for each TRACE subcommand. One of the following events can be specified:

- ELAPSEDTIME (average elapsed time)
- TCBTIME (average TCB time)
- SCANS (number of scans)
- ROWSPROC (rows processed)
- PAGESCAN (pages scanned)
- SORTRECS (records sorted)
- SORTWORK (workfiles sorted)
- IOREQS (I/O requests)
- IOTIME (elapsed time for each I/O request)

- SUSP (lock suspensions)
- SUSPTIME (elapsed time for each lock suspension)
- EXITS (number of exits)
- EXITTIME (elapsed time for each exit)
- DEFAULT (default)

If the default SORTBY option is used, the sort sequence depends on the summary level specified.

Refer to “Sorting” on page 1130 for more information about sorting and default.

DDNAME
Specifies the data set to which the trace is written.

LIMIT Sets the maximum number of threads processed by TRACE. The range is 1 to 99 999. If, for example, 3 is specified for LIMIT, no more than three threads are reported. A different limit can be set for each of the five possible traces. The default is 10.

INCLUDE/EXCLUDE
Includes or excludes data associated with specific DB2 PM identifiers. If you omit this option, all records are included. Identifiers valid for this subcommand are shown on page “DB2 PM Identifiers used with INCLUDE/EXCLUDE” on page 30.

See the note on page 29 for special considerations when including or excluding IFCIDs.

Refer to “INCLUDE/EXCLUDE” on page 28 for more information on how to use the INCLUDE/EXCLUDE option. Refer to “Chapter 1. DB2 PM Identifiers” on page 3 for definitions of DB2 PM identifiers.

Important:

Because many IFCID records used by SQL activity are paired events, BEGIN and END records are necessary to obtain a valid report.

Use INCLUDE/EXCLUDE carefully with IFCID, particularly where multiple BEGINs share a common END. For example, you can exclude IFCID 62 if you do not want to see paired DDL/DCL activity, but if you exclude IFCID 58, no paired SQL will be shown at all.

To produce meaningful distributed traces and reports, IFCIDs 157, 159, 160, 162, 163, and 183 are necessary. Do not exclude any of these IFCIDs if you want to report distributed activity.

If you want to show thread reuse transactions, IFCIDs 86, 87, and 163 are necessary to produce meaningful output.

IFCID 177 contains the package version ID when one is available. Do not exclude IFCID 177 if you want the package version ID reported.

The following table summarizes the IFCID pairs you can use with INCLUDE/EXCLUDE.

Begin IFCID	End IFCID
6 - READ I/O BEGIN	7 - READ I/O END
8 - SYNC. WRITE BEGIN	9 - WRITE END
• 15 - INDEX SCAN BEGIN • 16 - INSERT SCAN BEGIN • 17 - SEQUENTIAL SCAN BEGIN	18 - Common SCAN END
44 - LOCK SUSPEND	45 - LOCK RESUME
• 59 - FETCH BEGIN • 60 - SELECT BEGIN • 61 - INSERT/UPDATE/DELETE BEGIN • 62 - DDL/DCL BEGIN • 64 - PREPARE BEGIN • 65 - OPEN BEGIN • 66 - CLOSE BEGIN • 233 – CALL STORED PROCEDURE • 272 - ASSOCIATE LOCATORS BEGIN • 273 - ALLOCATE CURSOR BEGIN	58 - Common SQL END
68 - ROLLBACK BEGIN	69 - ROLLBACK END
70 - COMMIT PHASE 2 BEGIN	71 - COMMIT PHASE 2 END
72 - CREATE THREAD BEGIN	73 - CREATE THREAD END
74 - TERMINATE THREAD BEGIN	75 - TERMINATE THREAD END
84 - COMMIT PHASE 1 BEGIN	85 - COMMIT PHASE 1 END
86 - SIGNON BEGIN	87 - SIGNON END
88 - SYNC. BEGIN	89 - SYNC. END
92 - ACCESS METHOD SERVICES BEGIN	97 - ACCESS METHOD SERVICES END
95 - SORT BEGIN	96 - SORT END
108 - AUTOBIND BEGIN	109 - AUTOBIND END
174 - ARCHIVE LOG (QUIESCE) SUSPEND	175 - ARCHIVE LOG (QUIESCE) RESUME
213 - DRAIN LOCK WAIT BEGIN	214 - DRAIN LOCK WAIT END
215 - CLAIM COUNT ZERO WAIT BEGIN	216 - CLAIM COUNT ZERO WAIT END
226 - PAGE LATCH WAIT BEGIN	227 - PAGE LATCH WAIT END

Example Using TRACE

⋮

```
TRACE

   FROM        (,08:00:00.00)

   TO          (,08:10:00.00)

   SUMMARIZEBY (STMTNO)

   SORTBY      (ELAPSEDTIME)

   LIMIT       (20)

   INCLUDE     (PRIMAUTH(UID0001 UID0003 UID0005)
```

```
                PLANNAME(PLIT2A01,PLIT2A02))
⋮
```

It is summarized by statement number and sorted by elapsed time.

It reports the ten-minute period from 8:00 a.m. to 8:10 a.m. and includes only data that contains any of the following primary authorization IDs:

- UID0001
- UID0003
- UID0005

using any of the following plan names:

- PLIT2A01
- PLIT2A02

LIMIT has set the maximum number of threads processed to 20.

The trace is written to the data set defined by the default ddname SQTRCDD1.

Chapter 71. The SQL Activity Report

This chapter contains examples of SQL Activity reports and the commands used to generate them. These reports are summarized and sorted at different levels. They can be summarized at the following levels:

- Statement number
- Cursor
- Program
- Statement type

The SQL Activity report groups SQL Activity according to a combination of up to three DB2 PM identifiers. This grouping is applied to any SUMMARIZEBY, SORTBY, or WORKLOAD options you specify.

The ORDER subcommand specifies by which DB2 PM identifiers, and in which order, the SQL Activity is reported. If you do not specify any DB2 PM identifiers with ORDER, the default order of PRIMAUTH and PLANNAME is used. For more information, see “Chapter 1. DB2 PM Identifiers” on page 3.

Example of an SQL Activity Report

Figure 382 to Figure 385 on page 1149 show excerpts of an SQL Activity report summarized by all. The layout of the report is similar for each of the possible summary levels. The order is plan name within primary authorization ID, by default. The following command was used:

```
⋮
SQLACTIVITY
     REPORT
        SUMMARIZEBY (ALL)
⋮
```

```
   LOCATION: SYS1DSN2                        DB2 PERFORMANCE MONITOR (V6)                              PAGE: 1-1
      GROUP: DSN2                               SQL ACTIVITY - REPORT                  REQUESTED FROM: NOT SPECIFIED
     MEMBER: SE11                                                                                      TO: NOT SPECIFIED
  SUBSYSTEM: SE11                             ORDER: PRIMAUTH-PLANNAME                    ACTUAL FROM: 09/20/99 06:55:37.58
DB2 VERSION: V6                                                                                        TO: 09/20/99 07:05:37.61
                                                  SUMMARIZED BY STMTNO
PRIMAUTH: WRL         PLANNAME: PARALCPU                                THREAD TOTAL:    11  START AET: 0.053771  STOP AET: N/P
       EVENT            COUNT     TOT.ELAPS  TOTAL TCB                                      DETAIL
                                  AET/EVENT  TCB/EVENT
-------------------- ----------- ----------- --------- ------------------------------------------------------------------------------
PACKAGE                                       SYS1DSN2.PARAL.PARALC01.X'158A622D10FD8B50'
                                              DB2PMV6TEST
                                              ACQUIRE(USE)       REOPT(N)  RELEASE(COMMIT)      ISO(CS)  DYNAMICRULES(RUN)
                                              PREPARE(NODEFER)                 PROTOCOL(NOT_SPEC)  OPTHINTS(NP)

#   120                       1 7:10.524819 47.134431 OPEN        CURSOR: CRS1               ISO(CS) REOPT(NO)  KEEP UPD LOCKS: NO
                                7:10.524819 47.134431

#   137                   12888   36.562407  8.188774 FETCH       CURSOR: CRS1
                                   0.002837  0.000635
```

Figure 382. Summarized by—Statement Number

This summary level presents totals for each statement number belonging to the selected combination of DB2 PM identifiers. The events are qualified by package name.

By default, the package names are sorted alphabetically and the statement numbers are sorted numerically within each package.

Note: Not every statement can be summarized by statement number. DDL, for example, has no statement numbers. An event name is chosen from the closest possible level of summarization, which is the statement type LOCK in this example.

```
   LOCATION: SYS1DSN2                        DB2 PERFORMANCE MONITOR (V6)                              PAGE: 1-2
      GROUP: DSN2                                SQL ACTIVITY - REPORT                       REQUESTED FROM: NOT SPECIFIED
     MEMBER: SE11                                                                                      TO: NOT SPECIFIED
  SUBSYSTEM: SE11                             ORDER: PRIMAUTH-PLANNAME                          ACTUAL FROM: 09/20/99 06:55:37.58
DB2 VERSION: V6                                                                                        TO: 09/20/99 07:05:37.61
                                                 SUMMARIZED BY CURSOR
PRIMAUTH: WRL         PLANNAME: PARALCPU                                THREAD TOTAL:    11  START AET: 0.053771  STOP AET: N/P
       EVENT            COUNT     TOT.ELAPS  TOTAL TCB                                      DETAIL
                                  AET/EVENT  TCB/EVENT
-------------------- ----------- ----------- --------- ------------------------------------------------------------------------------

PACKAGE                                       SYS1DSN2.PARAL.PARALC01.X'158A622D10FD8B50'
                                              DB2PMV6TEST
                                              ACQUIRE(USE)       REOPT(N)  RELEASE(COMMIT)      ISO(CS)  DYNAMICRULES(RUN)
                                              PREPARE(NODEFER)                 PROTOCOL(NOT_SPEC)  OPTHINTS(NP)
CRS1                          1 7:47.087226 55.323204 STMTTYPE             COUNT   AET/OCCUR TCB/OCCUR
                                7:47.087226 55.323204 FETCH                12888    0.002837  0.000635
                                              OPEN                             1 7:10.524819 47.134431
```

Figure 383. Summarized by—Cursor

This summary level shows totals for each cursor name belonging to the selected combination of DB2 PM identifiers that are qualified by package name. By default, the package names and the events within each package are sorted alphabetically.

```
   LOCATION: SYS1DSN2                        DB2 PERFORMANCE MONITOR (V6)                              PAGE: 1-3
      GROUP: DSN2                                SQL ACTIVITY - REPORT                       REQUESTED FROM: NOT SPECIFIED
     MEMBER: SE11                                                                                      TO: NOT SPECIFIED
  SUBSYSTEM: SE11                             ORDER: PRIMAUTH-PLANNAME                          ACTUAL FROM: 09/20/99 06:55:37.58
DB2 VERSION: V6                                                                                        TO: 09/20/99 07:05:37.61
                                                 SUMMARIZED BY PROGRAM
PRIMAUTH: WRL         PLANNAME: PARALCPU                                THREAD TOTAL:    11  START AET: 0.053771  STOP AET: N/P
       EVENT            COUNT     TOT.ELAPS  TOTAL TCB                                      DETAIL
                                  AET/EVENT  TCB/EVENT
-------------------- ----------- ----------- --------- ------------------------------------------------------------------------------

PARALC01                      1 7:47.087226 55.323204 PACKAGE: SYS1DSN2.PARAL.PARALC01.X'158A622D10FD8B50'
                                7:47.087226 55.323204 DB2PMV6TEST
                                              ACQUIRE(USE)       REOPT(N)  RELEASE(COMMIT)      ISO(CS)  DYNAMICRULES(RUN)
                                              PREPARE(NODEFER)                 PROTOCOL(NOT_SPEC)  OPTHINTS(NP)
                                              STMTTYPE             COUNT   AET/OCCUR TCB/OCCUR
                                              FETCH                12888    0.002837  0.000635
                                              OPEN                     1 7:10.524819 47.134431
```

Figure 384. Summarized by—Program

This summary level presents totals for all programs belonging to the selected combination of DB2 PM identifiers. Package names are embedded in the summary details.

```
   LOCATION: SYS1DSN2                        DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-4
      GROUP: DSN2                               SQL ACTIVITY - REPORT                      REQUESTED FROM: NOT SPECIFIED
     MEMBER: SE11                                                                                    TO: NOT SPECIFIED
  SUBSYSTEM: SE11                              ORDER: PRIMAUTH-PLANNAME                        ACTUAL FROM: 09/20/99 06:55:37.58
DB2 VERSION: V6                                                                                      TO: 09/20/99 07:05:37.61
                                                   SUMMARIZED BY STMTTYPE
PRIMAUTH: WRL         PLANNAME: PARALCPU                                 THREAD TOTAL:    11  START AET: 0.053771  STOP AET: N/P
       EVENT            COUNT     TOT.ELAPS  TOTAL TCB                                        DETAIL
                                  AET/EVENT  TCB/EVENT
------------------- ----------- ----------- --------- ------------------------------------------------------------------------------

FETCH                    12888   36.562407  8.188774
                                  0.002837  0.000635

OPEN                         1 7:10.524819 47.134431
                               7:10.524819 47.134431
```

Figure 385. Summarized by—Statement Type

This summary level presents totals for each statement type executed by this combination of DB2 PM identifiers. By default, the events are sorted alphabetically. There is no further qualification at this level.

Example of an SQL Activity Report with Workload

The following examples show excerpts of an SQL Activity report with workload detail, generated by the following command:

```
⋮
SQLACTIVITY
     REPORT
        SUMMARIZEBY  (ALL)
        WORKLOAD     (ALL)
⋮
```

```
   LOCATION: SYS1DSN2                        DB2 PERFORMANCE MONITOR (V6)                          PAGE: 2-1
      GROUP: DSN2                                SQL ACTIVITY - REPORT                    REQUESTED FROM: NOT SPECIFIED
     MEMBER: SE21                                                                                   TO: NOT SPECIFIED
  SUBSYSTEM: SE21                              ORDER: PRIMAUTH-PLANNAME                       ACTUAL FROM: 09/20/99 06:55:37.58
DB2 VERSION: V6                                                                                    TO: 09/20/99 07:05:37.61
                                        SUMMARIZED BY STMTNO, WITH ALL WORKLOAD
PRIMAUTH: WRL         PLANNAME: DSNESPRR                              THREAD TOTAL:    11  START AET: N/P       STOP AET: N/P
       EVENT            COUNT     TOT.ELAPS  TOTAL TCB                                      DETAIL
                                  AET/EVENT  TCB/EVENT
-------------------- ---------- ---------- --------- ------------------------------------------------------------------------------

DBRM                                          DSNESM68
#   119                     13                DESCRIBE

#   119                     25    0.777747  0.641076 PREPARE     CURSOR: C1
                                  0.031110  0.025643
      --- WORKLOAD HILITE ----------------------------------------------------------------------------------------------------
      SCANS   :     8  RECS/SORT:  3.00  I/O REQS:        1  SUSPENDS   :        2  EXITS    :        2  AMS              :        1
      ROWSPROC:     8  WORK/SORT:  2.00  AET/I/O : 1.374752  AET/SUSP   : 0.485483  AET/EXIT : 0.048234  AET/AMS          : 0.094745
      PAGESCAN:    47  PASS/SORT:  2.00  DATACAPT:      YES  RIDS UNUSED:        2  CHECKCON : REJECTED  DEGREE REDUCTION :        3
      LOB_PAGSCAN:    12345          LOB_UPD_PAGE:    12345

      --- SCAN ACTIVITY -------------------------------------------------------------------------------------------------------
                                ------ROWS------  --QUALIFIED AT--  ----------ROWS----------- --MASS- --PAGES- ---------RI--------
      DATABASE  PAGESET   SCANS   PROCESS  EXAMINE  STAGE 1  STAGE 2  INSERTS  UPDATES  DELETES DELETES  SCANNED     SCANS  DELETES
      MEMBER    TYPE
      DSNDB06   SYSDBASE     70        70        0       70        0        0        0        0      70      164         0        0
      SE21      INDX
      DSNDB06   SYSDBASE     46        46       46        0        0        0        0        0      46       46         0        0
      SE21      SEQD
      TOTAL                116       116       46       70        0        0        0        0     116      210         0        0
#   193                      12    0.003194  0.002885 CLOSE       CURSOR: C1
                                  0.000266  0.000240

#   193                      69 2:12.298682  0.070083 FETCH       CURSOR: C1
                                  1.917372  0.001016
      --- WORKLOAD HILITE ----------------------------------------------------------------------------------------------------
      SCANS   :     8  RECS/SORT:  3.00  I/O REQS:        1  SUSPENDS   :        2  EXITS    :        2  AMS              :        1
      ROWSPROC:     8  WORK/SORT:  2.00  AET/I/O : 1.374752  AET/SUSP   : 0.485483  AET/EXIT : 0.048234  AET/AMS          : 0.094745
      PAGESCAN:    47  PASS/SORT:  2.00  DATACAPT:      YES  RIDS UNUSED:        2  CHECKCON : REJECTED  DEGREE REDUCTION :        3
      LOB_PAGSCAN:    12345          LOB_UPD_PAGE:    12345

      --- SCAN ACTIVITY -------------------------------------------------------------------------------------------------------
                                ------ROWS------  --QUALIFIED AT--  ----------ROWS----------- --MASS- --PAGES- ---------RI--------
      DATABASE  PAGESET   SCANS   PROCESS  EXAMINE  STAGE 1  STAGE 2  INSERTS  UPDATES  DELETES DELETES  SCANNED     SCANS  DELETES
      MEMBER    TYPE
      DSNDB04   DGO71J5L      6        31       31       31        0        0        0        0       6       24         0        0
      SE21      SEQD
      DSNDB04   DGO719AX      6        25       25       25        0        0        0        0       6       24         0        0
      SE21      SEQD
      TOTAL                 12        56       56       56        0        0        0        0      12       48         0        0

     --- LOCK SUSPENSION ACTIVITY ------------------------------------------------------------------------------------------
                                                  ---------- SUSPEND REASON ----------  NORML  RESUME TIMEO  RESUME DEADL  RESUME
      RESOURCE NAME               TYPE       REQUEST  LOCAL LATCH IRLMQ GROUP NOTIF OTHER COUNT     AET COUNT     AET COUNT     AET
      MEMBER
      DSNDB04             DGO71J5L PAGESET    LOCK         0     0     0     2     0     0     1 59.5816     1 72.4844     0     N/C
      SE21
#   193                      13    0.003721  0.003398 OPEN        CURSOR: C1                ISO(RR) REOPT(NO)  KEEP UPD LOCKS: NO
                                  0.000286  0.000261

#   218                       4    0.010126  0.007825 DELETE      CURSOR: C1                ISO(RR) REOPT(NO)
```

Figure 386. Summarized by—Statement Number, with All Workload

This page of the report shows the summary by statement number for primary authorization ID WRL and plan name DSNESPRR for location SYS1DSN2. It includes all workload contained in the input.

```
   LOCATION: SYS1DSN2                          DB2 PERFORMANCE MONITOR (V6)                                PAGE: 2-4
      GROUP: DSN2                                  SQL ACTIVITY - REPORT                          REQUESTED FROM: NOT SPECIFIED
     MEMBER: SE21                                                                                          TO: NOT SPECIFIED
  SUBSYSTEM: SE21                                ORDER: PRIMAUTH-PLANNAME                          ACTUAL FROM: 09/20/99 06:55:37.58
DB2 VERSION: V6                                                                                          TO: 09/20/99 07:05:37.61
                                                SUMMARIZED BY CURSOR, WITH ALL WORKLOAD
PRIMAUTH: WRL         PLANNAME: DSNESPRR                                 THREAD TOTAL:    11  START AET: N/P       STOP AET: N/P
       EVENT            COUNT     TOT.ELAPS  TOTAL TCB                                        DETAIL
                                  AET/EVENT  TCB/EVENT
-------------------- ---------- ---------- --------- ------------------------------------------------------------------------------------
DBRM                                                  DSNESM68
C1                          13 2:12.305597  0.076366 STMTTYPE             COUNT   AET/OCCUR TCB/OCCUR              COMMITS:     2
                                 10.177354  0.005874 CLOSE                   12    0.000266  0.000240
                                                     FETCH                   69    1.917372  0.001016
                                                     OPEN                    13    0.000286  0.000261
      --- WORKLOAD HILITE ------------------------------------------------------------------------------------------------------------
      SCANS   :     8  RECS/SORT:  3.00  I/O REQS:        1  SUSPENDS   :        2  EXITS    :        2  AMS              :        1
      ROWSPROC:     8  WORK/SORT:  2.00  AET/I/O : 1.374752  AET/SUSP   : 0.485483  AET/EXIT : 0.048234  AET/AMS          : 0.094745
      PAGESCAN:    47  PASS/SORT:  2.00  DATACAPT:      YES  RIDS UNUSED:        2  CHECKCON : REJECTED  DEGREE REDUCTION :        3
      LOB_PAGSCAN:    12345          LOB_UPD_PAGE:    12345
      --- SCAN ACTIVITY --------------------------------------------------------------------------------------------------------------
                                  ------ROWS------  --QUALIFIED AT--  ----------ROWS----------- --MASS- --PAGES- ---------RI--------
      DATABASE  PAGESET   SCANS   PROCESS  EXAMINE  STAGE 1  STAGE 2  INSERTS  UPDATES  DELETES DELETES  SCANNED     SCANS  DELETES
      MEMBER    TYPE
      DSNDB04   DGO71J5L      6        31       31       31        0        0        0        0       6       24         0        0
      SE21      SEQD
      DSNDB04   DGO719AX      6        25       25       25        0        0        0        0       6       24         0        0
      SE21      SEQD
      TOTAL                  12        56       56       56        0        0        0        0      12       48         0        0
      --- LOCK SUSPENSION ACTIVITY --------------------------------------------------------------------------------------------------
                                                          ---------- SUSPEND REASON ---------- NORML  RESUME TIMEO  RESUME DEADL  RESUME
      RESOURCE NAME               TYPE       REQUEST  LOCAL LATCH IRLMQ GROUP NOTIF OTHER COUNT     AET COUNT     AET COUNT     AET
      MEMBER
      DSNDB04             DGO71J5L PAGESET    LOCK         0     0     0     2     0     0     1 59.5816     1 72.4844     0     N/C
      SE21
      --- PAGE & ROW LOCKING ---------------------------------------------------------------------------
                                        LOCK   MAXIMUM PAGE   # LOCK   HIGHEST   TS      LOCK AVOID
      MEMBER     DATABASE   PAGESET    COUNT    SIZE   OR ROW LOCKS    ESCAL      LOCK   TYPE    SUCCESSFUL
      SE21       DSNDB04    DGO71J5L       2   PAGE              1        0         X   SIMPL          NO
      SE21       DSNDB04    DGO719AX       2   PAGE              1        0         X   SIMPL          NO
      SE21       DSNDB06    SYSDBASE       2   TABLE             0        0        IS   SIMPL          NO
      SUMMARY : MAX PAGE OR ROW LOCKS HELD        3  LOCK ESCALATIONS : SHARED      0  EXCLUSIVE         0

      TOTAL                               6                              0
#   119                        13                 DESCRIBE
#   119                        25    0.777747  0.641076 PREPARE     CURSOR: C1
                                    0.031110  0.025643
      --- WORKLOAD HILITE ------------------------------------------------------------------------------------------------------------
      SCANS   :     8  RECS/SORT:  3.00  I/O REQS:        1  SUSPENDS   :        2  EXITS    :        2  AMS              :        1
      ROWSPROC:     8  WORK/SORT:  2.00  AET/I/O : 1.374752  AET/SUSP   : 0.485483  AET/EXIT : 0.048234  AET/AMS          : 0.094745
      PAGESCAN:    47  PASS/SORT:  2.00  DATACAPT:      YES  RIDS UNUSED:        2  CHECKCON : REJECTED  DEGREE REDUCTION :        3
      LOB_PAGSCAN:    12345          LOB_UPD_PAGE:    12345
```

Figure 387. Summarized by—Cursor, with All Workload

This page of the report shows the summary by cursor for primary authorization ID WRL and plan name DSNESPRR for location SYS1DSN2. It includes all workload contained in the input.

```
   LOCATION: SYS1DSN2                             DB2 PERFORMANCE MONITOR (V6)                                PAGE: 2-7
      GROUP: DSN2                                     SQL ACTIVITY - REPORT                         REQUESTED FROM: NOT SPECIFIED
     MEMBER: SE21                                                                                               TO: NOT SPECIFIED
  SUBSYSTEM: SE21                                   ORDER: PRIMAUTH-PLANNAME                           ACTUAL FROM: 09/20/99 06:55:37.58
DB2 VERSION: V6                                                                                                 TO: 09/20/99 07:05:37.61
                                               SUMMARIZED BY PROGRAM, WITH ALL WORKLOAD
PRIMAUTH: WRL         PLANNAME: DSNESPRR                                    THREAD TOTAL:    11  START AET: N/P      STOP AET: N/P
       EVENT            COUNT    TOT.ELAPS  TOTAL TCB                                        DETAIL
                                 AET/EVENT  TCB/EVENT

-------------------- ----------- ----------- --------- -----------------------------------------------------------------------------
DSNESM68                        1 2:15.220670  0.785512 DBRM: DSNESM68
                                                       STMTTYPE              COUNT   AET/OCCUR TCB/OCCUR              COMMITS:     2
                                                       CLOSE                    12    0.000266  0.000240
                                                       DELETE                    4    0.002531  0.001956
                                                       DESCRIBE                 13
                                                       FETCH                    69    1.917372  0.001016
                                                       INSERT                    4    0.523041  0.008089
                                                       OPEN                     13    0.000286  0.000261
                                                       PREPARE                  25    0.031110  0.025643
                                                       UPDATE                    4    0.008759  0.006973
      --- WORKLOAD HILITE --------------------------------------------------------------------------------------------------------
      SCANS   :     8  RECS/SORT:  3.00  I/O REQS:        1  SUSPENDS   :        2  EXITS    :        2  AMS              :        1
      ROWSPROC:     8  WORK/SORT:  2.00  AET/I/O : 1.374752  AET/SUSP   : 0.485483  AET/EXIT : 0.048234  AET/AMS          : 0.094745
      PAGESCAN:    47  PASS/SORT:  2.00  DATACAPT:      YES  RIDS UNUSED:        2  CHECKCON : REJECTED  DEGREE REDUCTION :        3
      LOB_PAGSCAN:    12345         LOB_UPD_PAGE:    12345
      --- SCAN ACTIVITY ----------------------------------------------------------------------------------------------------------
                                 ------ROWS------  --QUALIFIED AT--  ----------ROWS----------- --MASS- --PAGES- ---------RI--------
      DATABASE  PAGESET   SCANS   PROCESS  EXAMINE  STAGE 1  STAGE 2  INSERTS  UPDATES  DELETES DELETES  SCANNED     SCANS  DELETES
      MEMBER    TYPE
      DSNDB04   DGO71J5L     12        53       53       33        0        2        2        0      12       44         0        0
      SE21      SEQD
      DSNDB04   DGO719AX     12        43       43       25        0        2        0        0      12       44         0        0
      SE21      SEQD
      DSNDB06   SYSDBASE     70        70        0       70        0        0        0        0      70      164         0        0
      SE21      INDX
      DSNDB06   SYSDBASE     46        46       46        0        0        0        0        0      46       46         0        0
      SE21      SEQD
      TOTAL                 140       212      142      128        0        4        2        0     140      298         0        0
      --- LOCK SUSPENSION ACTIVITY -----------------------------------------------------------------------------------------------
                                                       ---------- SUSPEND REASON ---------- NORML  RESUME TIMEO  RESUME DEADL  RESUME
      RESOURCE NAME             TYPE       REQUEST  LOCAL LATCH IRLMQ GROUP NOTIF OTHER COUNT     AET COUNT     AET COUNT     AET
      MEMBER
      N/P                             N/P  CHANGE       0     0     0     1     0     0     1 0.09668     0     N/C     0     N/C
      SE21
      N/P                             N/P  LOCK         0     0     0     2     0     0     2 0.14444     0     N/C     0     N/C
      SE21
      DSNDB04           DGO71J5L PAGESET   LOCK         0     0     0     2     0     0     1 59.5816     1 72.4844     0     N/C
      SE21
      DSNDB04           DGO719AX P/P CAST  LOCK         0     0     0     1     0     0     1 0.00707     0     N/C     0     N/C
      SE21
      --- PAGE & ROW LOCKING ----------------------------------------------------------------------------
                                           LOCK   MAXIMUM PAGE   # LOCK   HIGHEST   TS      LOCK AVOID
      MEMBER     DATABASE   PAGESET    COUNT    SIZE   OR ROW LOCKS    ESCAL     LOCK   TYPE    SUCCESSFUL
      SE21       DSNDB04    DGO71J5L       2   PAGE              1        0        X   SIMPL          NO
      SE21       DSNDB04    DGO719AX       2   PAGE              1        0        X   SIMPL          NO
      SE21       DSNDB06    SYSDBASE       2   TABLE             0        0       IS   SIMPL          NO
      SUMMARY : MAX PAGE OR ROW LOCKS HELD         3  LOCK ESCALATIONS : SHARED      0  EXCLUSIVE        0

      TOTAL                           6                              0
```

Figure 388. Summarized by—Program, with All Workload

This page of the report shows the summary by program for primary authorization ID WRL and plan name DSNESPRR for location SYS1DSN2. It includes all workload contained in the input.

```
   LOCATION: SYS1DSN2                        DB2 PERFORMANCE MONITOR (V6)                          PAGE: 2-8
      GROUP: DSN2                               SQL ACTIVITY - REPORT                  REQUESTED FROM: NOT SPECIFIED
     MEMBER: SE21                                                                                  TO: NOT SPECIFIED
  SUBSYSTEM: SE21                               ORDER: PRIMAUTH-PLANNAME                  ACTUAL FROM: 09/20/99 06:55:37.58
DB2 VERSION: V6                                                                                    TO: 09/20/99 07:05:37.61
                                          SUMMARIZED BY STMTTYPE, WITH ALL WORKLOAD
PRIMAUTH: WRL         PLANNAME: DSNESPRR                                THREAD TOTAL:    11  START AET: N/P       STOP AET: N/P
       EVENT            COUNT     TOT.ELAPS  TOTAL TCB                                        DETAIL
                                  AET/EVENT  TCB/EVENT
-------------------- ---------- ---------- --------- ----------------------------------------------------------------------------------------
CLOSE                        12    0.003194  0.002885
                                   0.000266  0.000240
DELETE                        4    0.010126  0.007825
                                   0.002531  0.001956
      --- WORKLOAD HILITE ---------------------------------------------------------------------------------------------------------------
      SCANS   :     8  RECS/SORT:  3.00  I/O REQS:        1  SUSPENDS   :        2  EXITS    :        2  AMS             :        1
      ROWSPROC:     8  WORK/SORT:  2.00  AET/I/O : 1.374752  AET/SUSP   : 0.485483  AET/EXIT : 0.048234  AET/AMS         : 0.094745
      PAGESCAN:    47  PASS/SORT:  2.00  DATACAPT:      YES  RIDS UNUSED:        2  CHECKCON : REJECTED  DEGREE REDUCTION :        3
      LOB_PAGSCAN:    12345          LOB_UPD_PAGE:    12345
      --- SCAN ACTIVITY -----------------------------------------------------------------------------------------------------------------
                                 ------ROWS------  --QUALIFIED AT--  ----------ROWS----------- --MASS- --PAGES- ---------RI--------
      DATABASE  PAGESET   SCANS   PROCESS  EXAMINE  STAGE 1  STAGE 2  INSERTS  UPDATES  DELETES DELETES  SCANNED     SCANS  DELETES
      MEMBER    TYPE
      DSNDB04   DGO71J5L      2        11       11        0        0        0        0        0       2        8         0        0
      SE21      SEQD
      DSNDB04   DGO719AX      2         9        9        0        0        0        0        0       2        8         0        0
      SE21      SEQD
      TOTAL                   4        20       20        0        0        0        0        0       4       16         0        0
DESCRIBE                     13

FETCH                        69 2:12.298682  0.070083
                                   1.917372  0.001016
      --- WORKLOAD HILITE ---------------------------------------------------------------------------------------------------------------
      SCANS   :     8  RECS/SORT:  3.00  I/O REQS:        1  SUSPENDS   :        2  EXITS    :        2  AMS             :        1
      ROWSPROC:     8  WORK/SORT:  2.00  AET/I/O : 1.374752  AET/SUSP   : 0.485483  AET/EXIT : 0.048234  AET/AMS         : 0.094745
      PAGESCAN:    47  PASS/SORT:  2.00  DATACAPT:      YES  RIDS UNUSED:        2  CHECKCON : REJECTED  DEGREE REDUCTION :        3
      LOB_PAGSCAN:    12345          LOB_UPD_PAGE:    12345
      --- SCAN ACTIVITY -----------------------------------------------------------------------------------------------------------------
                                 ------ROWS------  --QUALIFIED AT--  ----------ROWS----------- --MASS- --PAGES- ---------RI--------
      DATABASE  PAGESET   SCANS   PROCESS  EXAMINE  STAGE 1  STAGE 2  INSERTS  UPDATES  DELETES DELETES  SCANNED     SCANS  DELETES
      MEMBER    TYPE
      DSNDB04   DGO71J5L      6        31       31       31        0        0        0        0       6       24         0        0
      SE21      SEQD
      DSNDB04   DGO719AX      6        25       25       25        0        0        0        0       6       24         0        0
      SE21      SEQD
      TOTAL                  12        56       56       56        0        0        0        0      12       48         0        0
      --- LOCK SUSPENSION ACTIVITY -----------------------------------------------------------------------------------------------------
                                                          ---------- SUSPEND REASON ----------  NORML  RESUME TIMEO  RESUME DEADL  RESUME
      RESOURCE NAME                TYPE       REQUEST  LOCAL LATCH IRLMQ GROUP NOTIF OTHER COUNT     AET COUNT     AET COUNT     AET
      MEMBER
      DSNDB04             DGO71J5L PAGESET    LOCK         0     0     0     2     0     0     1 59.5816     1 72.4844     0     N/C
      SE21
INSERT                        4    2.092164  0.032354
                                   0.523041  0.008089
```

Figure 389. Summarized by—Statement Type, with All Workload

Chapter 72. The SQL Activity Trace

This chapter contains examples of SQL Activity traces and the commands used to generate them. These traces are summarized at different levels. They can be summarized at the following levels:

- Occurrence
- Statement number
- Cursor
- Program
- Statement type

Note: The trace also automatically includes a summary by thread and, if there is more than one thread per location, a summary by location. Each summary begins on a new page of the trace.

Example of an SQL Activity Trace

The following examples show excerpts of an SQL Activity trace summarized at all levels, generated by the following command:

```
⋮
SQLACTIVITY
     TRACE
        SUMMARIZEBY (ALL)
⋮
```

```
   LOCATION: DSNAPC3                           DB2 PERFORMANCE MONITOR (V6)                               PAGE: 1-1
      GROUP: GROUP_1                                SQL ACTIVITY - TRACE                        REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER_1                                                                                       TO: NOT SPECIFIED
  SUBSYSTEM: APC3                                                                                  ACTUAL FROM: 04/08/99 03:28:52.13
DB2 VERSION: V6
                                                    SUMMARIZED BY OCCURRENCE

             PRIMAUTH: XXASP09           CONNECT : BATCH              CORRNAME: XXASP09F   CONNTYPE: TSO
             ORIGAUTH: XXASP09           PLANNAME: LOCCURHL           CORRNMBR: 'BLANK'    THRDTYPE: ALLIED
             ENDUSER : 1234567890123456  WSNAME  : 123456789012345678  TRANSACT: 12345678901234567890123456789012

TRACE # 1.1                 DB2 LUWID: APCNET.SYDAPC3.X'A44FECDC9ED4'                          ACE ADDRESS: X'02684398'

START TIME: 04/08/99 03:28:52.13  START ELAPSED:                0.028475    START REASON: CREATE THREAD
STOP TIME : 04/08/99 03:29:02.63  STOP ELAPSED :                0.009044    STOP REASON : TERMINATE THREAD

NL     EVENT          TIMESTAMP   ELAP.TIME  TCB  TIME                                   DETAIL
-------------------- ----------- ----------- --------- ------------------------------------------------------------------------------
CALL                 03:28:40.08    4.325677           STMT#   313 PROCEDURE: CSF3SP01                SQLSTATE: N/P   SQLCODE:      0
                                                       SCHEDULE TIME:    2.279645  SCHEDULE TCB: N/P
PACKAGE                                                M05EC003.PRODCOLL.CSF3SP01.X'15C14A6204FE6D86'
                                                       ACQUIRE(USE)       REOPT(N)  RELEASE(COMMIT)      ISO(CS)  DYNAMICRULES(BIND)
                                                       PREPARE(NODEFER)   PROTOCOL(NOT_SPEC)        OPTHINT( )
SELECT               03:28:42.35    0.510555           STMT#   109                            ISO(CS) SQLSTATE: 02000 SQLCODE:    100
                                                       REOPTIMIZED(NO)  KEEP UPDATE LOCKS:
                                                       TEXT: PARM CHAR(5) INOUT, CHAR(5) INOUT, CHAR(20) INOUT, DECIMAL(10,3) INOUT,
                                                             SMALLINT INOUT, INTEGER INOUT, CHAR(5) INOUT, VARCHAR(50) INOUT, FLOAT
                                                             INOUT, FLOAT INOUT, VARCHAR(20) INOUT, INTEGER INOUT, CHAR(20) INOUT,
                                                             CHAR(74) INOUT
PREPARE              03:28:42.87    0.445684           STMT#   161                                    SQLSTATE: 00000 SQLCODE:      0
                                                       TEXT: INSERT INTO CATE3TB5_VF VALUES( ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?,
                                                             ?)
INSERT               03:28:43.31    1.085400           STMT#   171                            ISO(CS) SQLSTATE: 00000 SQLCODE:      0
                                                       REOPTIMIZED(NO)  KEEP UPDATE LOCKS: YES
SELECT               03:28:44.40    0.000861           STMT#   199                            ISO(CS) SQLSTATE: 00000 SQLCODE:      0
                                                       REOPTIMIZED(NO)  KEEP UPDATE LOCKS: YES
DBRM                                                   CSF3AP01
DESCRIBE             03:28:44.40                       STMT#   313                                    SQLSTATE: 00000 SQLCODE:      0
SYNC.                03:28:44.40    0.155893
DESCRIBE             03:28:44.56                       STMT#   512                                    SQLSTATE: 00000 SQLCODE:      0
 1  CALL             09:00:00.00 25:00.00000 25:00.000 STMT#    64 PROCEDURE: MANFREDS STOPROC01      SQLSTATE: N/P   SQLCODE:      0
                                                       SCHEDULE TIME: N/P          SCHEDULE TCB: N/P        SCHEMA : MANF__01
 2  CALL             09:05:00.00 15:00.00000 15:00.000 STMT#   264 PROCEDURE: MANFREDS STOPROC02      SQLSTATE: N/P   SQLCODE:      0
                                                       SCHEDULE TIME: N/P          SCHEDULE TCB: N/P        SCHEMA : MANF__02
 3  CALL             09:10:00.00 5:00.000000 5:00.0000 STMT#   364 PROCEDURE: MANFREDS STOPROC03      SQLSTATE: N/P   SQLCODE:      0
                                                       SCHEDULE TIME: N/P          SCHEDULE TCB: N/P        SCHEMA : MANF__03
 4  INVOKE           09:11:00.00 1:00.000000 1:00.0000 STMT#   464 FUNCTION : MANFREDS USERFUNCT      SQLSTATE: N/P   SQLCODE:      0
                                                       SCHEDULE TIME: N/P          SCHEDULE TCB: N/P        SCHEMA : MANF__04
PACKAGE                                                DBO1LOC.NULLID.SQLL16N1.X'4741427143444B4D'
                                                       ACQUIRE(USE)    REOPT(N)  RELEASE(COMMIT)      ISO(CS)  DYNAMICRULES(RUN)
                                                       PREPARE(NODEFER)                     PROTOCOL(NOT_SPEC) OPTHINT(12345678)
SELECT               03:28:44.59    0.004778           STMT#   109                            ISO(CS) SQLSTATE: 02000 SQLCODE:    100
                                                       REOPTIMIZED(NO)  KEEP UPDATE LOCKS: N/P

TRIGGER              03:28:50.01    0.123456       N/A STMT#   180 SCHEMA : TRSCHEMA NAME: TRIGNAME   SQLSTATE: 12345 SQLCODE: 12345
                                                                   ACT    : BEFORE   OPER: UPDATE     GRAN    : STMT  COND    : FALSE

OPEN                 03:28:52.15    0.000208  0.000207 STMT#   189 CURSOR: C1HOLD             ISO(CS) SQLSTATE: 00000 SQLCODE:      0
                                                       REOPTIMIZED(YES)                               KEEP UPDATE LOCKS: YES

FETCH                03:28:52.18    0.252314  0.002603 STMT#   196 CURSOR: C1HOLD                     SQLSTATE: 00000 SQLCODE:      0

UPDATE               03:28:55.46    0.932496  0.003920 STMT#   213 CURSOR: C1HOLD             ISO(CS) SQLSTATE: 00000 SQLCODE:      0

INSERT               03:29:01.43    1.137912  0.007616 STMT#   245                   REOPT(N) ISO(CS) SQLSTATE: 00000 SQLCODE:      0

CLOSE                03:29:02.60    0.000451  0.000451 STMT#   256 CURSOR: C1HOLD                     SQLSTATE: 00000 SQLCODE:      0
```

Figure 390. SQL Activity Trace Summarized by Occurrence

Summary by occurrence shows individual SQL statement occurrences. In this thread the SQL statements belong to one package, the name of which is printed at the head of its work. When present, SQL text and DDF information is embedded in the events. Commits appear as standalone events. The events are, by default, sorted in timestamp sequence.

```
   LOCATION: DSNAPC3                          DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-1
      GROUP: GROUP_1                               SQL ACTIVITY - TRACE                  REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER_1                                                                              TO: NOT SPECIFIED
  SUBSYSTEM: APC3                                                                       ACTUAL FROM: 09/20/99 06:42:18.13
DB2 VERSION: V6
                                                SUMMARIZED BY STMTNO

             PRIMAUTH: XXASP09           CONNECT : BATCH              CORRNAME: XXASP09F   CONNTYPE: TSO
             ORIGAUTH: XXASP09           PLANNAME: LOCCURHL           CORRNMBR: 'BLANK'    THRDTYPE: ALLIED
             ENDUSER : 1234567890123456  WSNAME  : 12345678901234567  TRANSACT: 12345678901234567890123456789012

TRACE # 1.7                 DB2 LUWID: DEIBMIPS.IPVANE21.X'AD7F37CCED27'                    ACE ADDRESS: X'05A493B8'
START TIME: 09/20/99 06:42:18.13  START ELAPSED:               0.079205    START REASON: CREATE THREAD
STOP TIME : 09/20/99 06:55:33.00  STOP ELAPSED :               0.009735    STOP REASON : TERMINATE THREAD
       EVENT            COUNT     TOT.ELAPS  TOTAL TCB                                    DETAIL
                                  AET/EVENT  TCB/EVENT
-------------------- ---------- ---------- --------- ------------------------------------------------------------------------------
PACKAGE                                               SYS1DSN2.DSNESPRR.DSNESM68.X'149EEA901A79FE48'
                                                      ACQUIRE(USE)       REOPT     RELEASE(COMMIT)      ISO(RR)  DYNAMICRULES(RUN)
                                                      PREPARE(NODEFER)
    119                        4    1.880333  0.086749 PREPARE     CURSOR: C1
                                    0.470083  0.021687
      --- MINIBIND ---------------------------------------------------------------------------------------------------------------
      QUERYNO  : 1383      PLANNAME      : DSNTEP61            COST          : 35        PARALLELISM_DISABLED : N/A
      QBLOCKNO : 2         COLLID        : DSNTEP61            PROGNAME      : DSNTEP61  CONSISTENCY_TOKEN    : 15769AE806DB8B8E
      APPLNAME : N/P       WHEN_OPTIMIZE : 'BLANK'             OPT_HINT_IDENT: N/P       OPTIMIZE_HINTS_USED  : YES
      UNITS    : 12345     MILLI_SEC     : 12345               COST_CATEGORY : N/P
      BIND_TIME: 04/08/99 03:28:55.211328  VERSION: N/P
      ..............................................................................................................
      PLANNO          : 1                  METHOD    : FIRST TABLE ACCESSED  SORTN_UNIQ      : NO     SORTC_UNIQ     : NO
      DATABASE        : DSNDB04            NEXTSTEP  : NOT APPLICABLE        SORTN_JOIN      : NO     SORTC_JOIN     : NO
      OBJECT          : 21                 ACCESSTYPE: TABLE SPACE SCAN (R)  SORTN_ORDERBY   : NO     SORTC_ORDERBY  : NO
      CREATOR         : X                  PAGE_RANGE      : NO              SORTN_GROUPBY   : NO     SORTC_GROUPBY  : NO
      TNAME           : TBUF0401           JOIN_TYPE       : NO              SORTN_PGROUP_ID : 0      SORTC_PGROUP_ID: 0
      CORRELATION_NAME: N/P                MERGE_JOIN_COLS : 0               ACCESS_DEGREE   : 0      JOIN_DEGREE    : 0
      TSLOCKMODE      : IS                 PARALLELISM_MODE: NO              ACCESS_PGROUP_ID: 0      JOIN_PGROUP_ID : 0
      ACCESS_NAME     : N/A                ACCESS_CREATOR  : N/A             MATCHCOLS       : N/A    PREFETCH       : SEQ
      OPERATION       : N/A                PREFETCH_INDEX  : N/A             MIXOPSEQ        : N/A    DIRECT_ROW_ACC : N/A
      INDEXONLY       : N/A                COLUMN_FN_EVAL  : N/A             PAGES_FOR_TABLE : 12345  TAB_CARDINALITY: 123456789A
 #   193                        1    0.000444  0.000271 OPEN        CURSOR: C1                ISO(RR) REOPT(NO)  KEEP UPD LOCKS: NO
                                    0.000444  0.000271
LOCK                            3    0.043214  0.033272
                                    0.014405  0.011091
```

Figure 391. SQL Activity Trace Summarized by Statement Number

This summary level presents totals for each statement number belonging to the thread. The events are qualified by the package name.

From this level on, timestamps are not appropriate so the second column becomes a count of the occurrences of each event. SQL text is omitted.

By default, the package names are printed alphabetically and the statement numbers are sorted numerically within each package.

Note: Not every statement can be summarized by statement number. DCL, for example, has no statement number. An event name is chosen from the closest possible level of summarization, which is the statement type GRANT in this example.

```
   LOCATION: DSNAPC3                          DB2 PERFORMANCE MONITOR (V6)                              PAGE: 1-1
      GROUP: GROUP_1                               SQL ACTIVITY - TRACE                    REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER_1                                                                                    TO: NOT SPECIFIED
  SUBSYSTEM: APC3                                                                                   ACTUAL FROM: 09/20/99 06:42:18.13
DB2 VERSION: V6
                                                SUMMARIZED BY CURSOR

             PRIMAUTH: XXASP09           CONNECT : BATCH               CORRNAME: XXASP09F   CONNTYPE: TSO
             ORIGAUTH: XXASP09           PLANNAME: LOCCURHL            CORRNMBR: 'BLANK'    THRDTYPE: ALLIED
             ENDUSER : 1234567890123456  WSNAME  : 123456789012345678  TRANSACT: 12345678901234567890123456789012

TRACE # 1.1                 DB2 LUWID: APCNET.SYDAPC3.X'A44FECDC9ED4'                        ACE ADDRESS: X'02684398'

START TIME: 09/20/99 06:42:18.13  START ELAPSED:               0.079205    START REASON: CREATE THREAD
STOP TIME : 09/20/99 06:55:33.00  STOP ELAPSED :               0.009735    STOP REASON : TERMINATE THREAD
       EVENT            COUNT     TOT.ELAPS  TOTAL TCB                                    DETAIL
                                  AET/EVENT  TCB/EVENT
-------------------- ----------- ---------- --------- ------------------------------------------------------------------------------------
PACKAGE                                                SYS1DSN2.DSNESPRR.DSNESM68.X'149EEA901A79FE48'
                                                       ACQUIRE(USE)       REOPT     RELEASE(COMMIT)      ISO(RR)  DYNAMICRULES(RUN)
                                                       PREPARE(NODEFER)                PROTOCAL(NOT_SPEC)
C1                            1    0.000444  0.000271 STMTTYPE             COUNT   AET/OCCUR TCB/OCCUR              COMMITS:     2
                                   0.000444  0.000271 OPEN                     1    0.000444  0.000271
#   119                       4    1.880333  0.086749 PREPARE     CURSOR: C1
                                   0.470083  0.021687

      --- MINIBIND ----------------------------------------------------------------------------------------------------------------
      QUERYNO  : 1383      PLANNAME      : DSNTEP61            COST          : 35        PARALLELISM_DISABLED : N/A
      QBLOCKNO : 2         COLLID        : DSNTEP61            PROGNAME      : DSNTEP61  CONSISTENCY_TOKEN    : 15769AE806DB8B8E
      APPLNAME : N/P       WHEN_OPTIMIZE : 'BLANK'             OPT_HINT_IDENT: N/P       OPTIMIZE_HINTS_USED  : YES
      UNITS    : 12345     MILLI_SEC     : 12345               COST_CATEGORY : N/P
      BIND_TIME: 04/08/99 03:28:55.211328  VERSION: N/P
      ..................................................................................................................
      PLANNO          : 1                  METHOD    : FIRST TABLE ACCESSED  SORTN_UNIQ      : NO     SORTC_UNIQ     : NO
      DATABASE        : DSNDB04            NEXTSTEP  : NOT APPLICABLE        SORTN_JOIN      : NO     SORTC_JOIN     : NO
      OBJECT          : 21                 ACCESSTYPE: TABLE SPACE SCAN (R)  SORTN_ORDERBY   : NO     SORTC_ORDERBY  : NO
      CREATOR         : X                  PAGE_RANGE      : NO              SORTN_GROUPBY   : NO     SORTC_GROUPBY  : NO
      TNAME           : TBUF0401           JOIN_TYPE       : NO              SORTN_PGROUP_ID : 0      SORTC_PGROUP_ID: 0
      CORRELATION_NAME: N/P                MERGE_JOIN_COLS : 0               ACCESS_DEGREE   : 0      JOIN_DEGREE    : 0
      TSLOCKMODE      : IS                 PARALLELISM_MODE: NO              ACCESS_PGROUP_ID: 0      JOIN_PGROUP_ID : 0
      ACCESS_NAME     : N/A                ACCESS_CREATOR  : N/A             MATCHCOLS       : N/A    PREFETCH       : SEQ
      OPERATION       : N/A                PREFETCH_INDEX  : N/A             MIXOPSEQ        : N/A    DIRECT_ROW_ACC : N/A
      INDEXONLY       : N/A                COLUMN_FN_EVAL  : N/A             PAGES_FOR_TABLE : 12345  TAB_CARDINALITY: 123456789A
LOCK                          3    0.043214  0.033272
                                   0.014405  0.011091
```

Figure 392. SQL Activity Trace Summarized by All—Cursor

This summary level shows totals for each cursor name belonging to the thread that is qualified by package name. By default, the package names and the events within each package are sorted alphabetically.

```
   LOCATION: DSNAPC3                          DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-1
      GROUP: GROUP_1                               SQL ACTIVITY - TRACE                  REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER_1                                                                              TO: NOT SPECIFIED
  SUBSYSTEM: APC3                                                                       ACTUAL FROM: 09/20/99 06:42:18.13
DB2 VERSION: V6
                                                SUMMARIZED BY PROGRAM

             PRIMAUTH: XXASP09           CONNECT : BATCH              CORRNAME: XXASP09F   CONNTYPE: TSO
             ORIGAUTH: XXASP09           PLANNAME: LOCCURHL           CORRNMBR: 'BLANK'    THRDTYPE: ALLIED
             ENDUSER : 1234567890123456  WSNAME  : 12345678901234567  TRANSACT: 12345678901234567890123456789012

TRACE # 1.7                 DB2 LUWID: DEIBMIPS.IPVANE21.X'AD7F37CCED27'                    ACE ADDRESS: X'05A493B8'
START TIME: 09/20/99 06:42:18.13  START ELAPSED:               0.079205    START REASON: CREATE THREAD
STOP TIME : 09/20/99 06:55:33.00  STOP ELAPSED :               0.009735    STOP REASON : TERMINATE THREAD
       EVENT            COUNT     TOT.ELAPS  TOTAL TCB                                    DETAIL
                                  AET/EVENT  TCB/EVENT
-------------------- ---------- ---------- --------- ------------------------------------------------------------------------------
DSNESM68                     1    1.923991  0.120291 PACKAGE: SYS1DSN2.DSNESPRR.DSNESM68.X'149EEA901A79FE48'
                                  1.923991  0.120291 ACQUIRE(USE)       REOPT     RELEASE(COMMIT)      ISO(RR)  DYNAMICRULES(RUN)
                                                     PREPARE(NODEFER)
                                                     STMTTYPE             COUNT   AET/OCCUR TCB/OCCUR               COMMITS:     2
                                                     LOCK                     3    0.014405  0.011091
                                                     OPEN                     1    0.000444  0.000271
                                                     PREPARE                  4    0.470083  0.021687
     --- MINIBIND ---------------------------------------------------------------------------------------------------------------
     QUERYNO  : 1383      PLANNAME      : DSNTEP61           COST          : 35        PARALLELISM_DISABLED : N/A
     QBLOCKNO : 2         COLLID        : DSNTEP61           PROGNAME      : DSNTEP61  CONSISTENCY_TOKEN    : 15769AE806DB8B8E
     APPLNAME : N/P       WHEN_OPTIMIZE : 'BLANK'            OPT_HINT_IDENT: N/P       OPTIMIZE_HINTS_USED  : YES
     UNITS    : 12345     MILLI_SEC     : 12345              COST_CATEGORY : N/P
     BIND_TIME: 04/08/99 03:28:55.211328  VERSION: N/P
     ..............................................................................................................
     PLANNO          : 1                 METHOD    : FIRST TABLE ACCESSED  SORTN_UNIQ      : NO     SORTC_UNIQ     : NO
     DATABASE        : DSNDB04           NEXTSTEP  : NOT APPLICABLE        SORTN_JOIN      : NO     SORTC_JOIN     : NO
     OBJECT          : 21                ACCESSTYPE: TABLE SPACE SCAN (R)  SORTN_ORDERBY   : NO     SORTC_ORDERBY  : NO
     CREATOR         : X                 PAGE_RANGE      : NO              SORTN_GROUPBY   : NO     SORTC_GROUPBY  : NO
     TNAME           : TBUF0401          JOIN_TYPE       : NO              SORTN_PGROUP_ID : 0      SORTC_PGROUP_ID: 0
     CORRELATION_NAME: N/P               MERGE_JOIN_COLS : 0               ACCESS_DEGREE   : 0      JOIN_DEGREE    : 0
     TSLOCKMODE      : IS                PARALLELISM_MODE: NO              ACCESS_PGROUP_ID: 0      JOIN_PGROUP_ID : 0
     ACCESS_NAME     : N/A               ACCESS_CREATOR  : N/A             MATCHCOLS       : N/A    PREFETCH       : SEQ
     OPERATION       : N/A               PREFETCH_INDEX  : N/A             MIXOPSEQ        : N/A    DIRECT_ROW_ACC : N/A
     INDEXONLY       : N/A               COLUMN_FN_EVAL  : N/A             PAGES_FOR_TABLE : 12345  TAB_CARDINALITY: 123456789A
```

Figure 393. SQL Activity Trace Summarized by Program

This summary level presents totals for each program name belonging to the thread.

```
   LOCATION: DSNAPC3                          DB2 PERFORMANCE MONITOR (V6)                              PAGE: 1-1
      GROUP: GROUP_1                               SQL ACTIVITY - TRACE                    REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER_1                                                                                    TO: NOT SPECIFIED
  SUBSYSTEM: APC3                                                                                  ACTUAL FROM: 09/20/99 06:42:18.13
DB2 VERSION: V6
                                                 SUMMARIZED BY STMTTYPE

             PRIMAUTH: XXASP09           CONNECT : BATCH               CORRNAME: XXASP09F   CONNTYPE: TSO
             ORIGAUTH: XXASP09           PLANNAME: LOCCURHL            CORRNMBR: 'BLANK'    THRDTYPE: ALLIED
             ENDUSER : 1234567890123456  WSNAME  : 123456789012345678  TRANSACT: 12345678901234567890123456789012

TRACE # 1.7                 DB2 LUWID: DEIBMIPS.IPVANE21.X'AD7F37CCED27'                      ACE ADDRESS: X'05A493B8'
START TIME: 09/20/99 06:42:18.13  START ELAPSED:                0.079205    START REASON: CREATE THREAD
STOP TIME : 09/20/99 06:55:33.00  STOP ELAPSED :                0.009735    STOP REASON : TERMINATE THREAD
       EVENT            COUNT     TOT.ELAPS  TOTAL TCB                                        DETAIL
                                  AET/EVENT  TCB/EVENT
-------------------- ----------- ---------- --------- ------------------------------------------------------------------------------------------
LOCK                           3    0.043214  0.033272
                                    0.014405  0.011091
OPEN                           1    0.000444  0.000271
                                    0.000444  0.000271
PREPARE                        4    1.880333  0.086749
                                    0.470083  0.021687
      --- MINIBIND ------------------------------------------------------------------------------------------------------------------------
      QUERYNO  : 1383      PLANNAME      : DSNTEP61           COST          : 35        PARALLELISM_DISABLED : N/A
      QBLOCKNO : 2         COLLID        : DSNTEP61           PROGNAME      : DSNTEP61  CONSISTENCY_TOKEN    : 15769AE806DB8B8E
      APPLNAME : N/P       WHEN_OPTIMIZE : 'BLANK'            OPT_HINT_IDENT: N/P       OPTIMIZE_HINTS_USED  : YES
      UNITS    : 12345     MILLI_SEC     : 12345              COST_CATEGORY : N/P
      BIND_TIME: 04/08/99 03:28:55.211328  VERSION: N/P
      ..........................................................................................................................
      PLANNO          : 1                  METHOD    : FIRST TABLE ACCESSED  SORTN_UNIQ      : NO     SORTC_UNIQ     : NO
      DATABASE        : DSNDB04            NEXTSTEP  : NOT APPLICABLE       SORTN_JOIN      : NO     SORTC_JOIN     : NO
      OBJECT          : 21                 ACCESSTYPE: TABLE SPACE SCAN (R)  SORTN_ORDERBY   : NO     SORTC_ORDERBY  : NO
      CREATOR         : X                  PAGE_RANGE      : NO              SORTN_GROUPBY   : NO     SORTC_GROUPBY  : NO
      TNAME           : TBUF0401           JOIN_TYPE       : NO              SORTN_PGROUP_ID : 0      SORTC_PGROUP_ID: 0
      CORRELATION_NAME: N/P                MERGE_JOIN_COLS : 0               ACCESS_DEGREE   : 0      JOIN_DEGREE    : 0
      TSLOCKMODE      : IS                 PARALLELISM_MODE: NO              ACCESS_PGROUP_ID: 0      JOIN_PGROUP_ID : 0
      ACCESS_NAME     : N/A                ACCESS_CREATOR  : N/A             MATCHCOLS       : N/A    PREFETCH       : SEQ
      OPERATION       : N/A                PREFETCH_INDEX  : N/A             MIXOPSEQ        : N/A    DIRECT_ROW_ACC : N/A
      INDEXONLY       : N/A                COLUMN_FN_EVAL  : N/A             PAGES_FOR_TABLE : 12345  TAB_CARDINALITY: 123456789A
```

Figure 394. SQL Activity Trace Summarized by Statement Type

This summary level presents totals for each statement type executed by the thread. By default, the events are sorted alphabetically. There is no further qualification at this level.

```
   LOCATION: DSNAPC3                          DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-1
      GROUP: GROUP_1                               SQL ACTIVITY - TRACE                  REQUESTED FROM: NOT SPECIFIED
     MEMBER: MEMBER_1                                                                              TO: NOT SPECIFIED
  SUBSYSTEM: APC3                                                                        ACTUAL FROM: 09/20/99 06:42:18.13
DB2 VERSION: V6
                                                SUMMARIZED BY THREAD

             PRIMAUTH: XXASP09           CONNECT : BATCH              CORRNAME: XXASP09F   CONNTYPE: TSO
             ORIGAUTH: XXASP09           PLANNAME: LOCCURHL           CORRNMBR: 'BLANK'    THRDTYPE: ALLIED
             ENDUSER : 1234567890123456  WSNAME  : 123456789012345678  TRANSACT: 12345678901234567890123456789012

TRACE # 1.7                 DB2 LUWID: DEIBMIPS.IPVANE21.X'AD7F37CCED27'                    ACE ADDRESS: X'05A493B8'
START TIME: 09/20/99 06:42:18.13  START ELAPSED:               0.079205    START REASON: CREATE THREAD
STOP TIME : 09/20/99 06:55:33.00  STOP ELAPSED :               0.009735    STOP REASON : TERMINATE THREAD
       EVENT            COUNT     TOT.ELAPS  TOTAL TCB                                    DETAIL
                                  AET/EVENT  TCB/EVENT
-------------------- ---------- ---------- --------- ------------------------------------------------------------------------------------
X'AD7F37CCED27'               1    1.923991  0.120291 STMTTYPE             COUNT   AET/OCCUR TCB/OCCUR              COMMITS:     2
                                   1.923991  0.120291 LOCK                     3    0.014405  0.011091
                                                      OPEN                     1    0.000444  0.000271
                                                      PREPARE                  4    0.470083  0.021687

      --- MINIBIND ---------------------------------------------------------------------------------------------------------------
      QUERYNO  : 1383      PLANNAME      : DSNTEP61            COST          : 35        PARALLELISM_DISABLED : N/A
      QBLOCKNO : 2         COLLID        : DSNTEP61            PROGNAME      : DSNTEP61  CONSISTENCY_TOKEN    : 15769AE806DB8B8E
      APPLNAME : N/P       WHEN_OPTIMIZE : 'BLANK'             OPT_HINT_IDENT: N/P       OPTIMIZE_HINTS_USED  : YES
      UNITS    : 12345     MILLI_SEC     : 12345               COST_CATEGORY : N/P
      BIND_TIME: 04/08/99 03:28:55.211328  VERSION: N/P
      ..............................................................................................................................
      PLANNO          : 1                  METHOD    : FIRST TABLE ACCESSED  SORTN_UNIQ      : NO     SORTC_UNIQ     : NO
      DATABASE        : DSNDB04            NEXTSTEP  : NOT APPLICABLE        SORTN_JOIN      : NO     SORTC_JOIN     : NO
      OBJECT          : 21                 ACCESSTYPE: TABLE SPACE SCAN (R)  SORTN_ORDERBY   : NO     SORTC_ORDERBY  : NO
      CREATOR         : X                  PAGE_RANGE      : NO              SORTN_GROUPBY   : NO     SORTC_GROUPBY  : NO
      TNAME           : TBUF0401           JOIN_TYPE       : NO              SORTN_PGROUP_ID : 0      SORTC_PGROUP_ID: 0
      CORRELATION_NAME: N/P                MERGE_JOIN_COLS : 0               ACCESS_DEGREE   : 0      JOIN_DEGREE    : 0
      TSLOCKMODE      : IS                 PARALLELISM_MODE: NO              ACCESS_PGROUP_ID: 0      JOIN_PGROUP_ID : 0
      ACCESS_NAME     : N/A                ACCESS_CREATOR  : N/A             MATCHCOLS       : N/A    PREFETCH       : SEQ
      OPERATION       : N/A                PREFETCH_INDEX  : N/A             MIXOPSEQ        : N/A    DIRECT_ROW_ACC : N/A
      INDEXONLY       : N/A                COLUMN_FN_EVAL  : N/A             PAGES_FOR_TABLE : 12345  TAB_CARDINALITY: 123456789A
```

Figure 395. SQL Activity Trace Summarized by Thread

These totals are printed to further summarize the SQL in this thread.

The SQL Activity Trace Index

The SQL Activity trace index provides a page index to the threads traced during the execution of an SQLACTIVITY command. An SQL Activity trace index is produced for each TRACE subcommand and is printed after the requested trace starting on a new page.

Each thread on the trace is listed in timestamp order followed by various DB2 PM identifiers.

If one thread satisfies the selection criteria for more than one TRACE subcommand, it is presented on each relevant trace, and there is an entry on each corresponding SQL Activity trace index.

Figure 396 on page 1162 shows an SQL Activity trace index.

```
   LOCATION: SYS1DSN2                                    DB2 PERFORMANCE MONITOR (V6)                                    PAGE: 0-2
      GROUP: DSN2                                            SQL ACTIVITY - TRACE                             REQUESTED FROM: NOT SPECIFIED
     MEMBER: SE21                                                                                                        TO: NOT SPECIFIED
  SUBSYSTEM: SE21                                                                                                   ACTUAL FROM: 09/20/99 06:45:39.34
DB2 VERSION: V6                                                                                                          TO: 09/20/99 06:55:33.00
                                                                      INDEX
     SQL TRACE #       1
                                                                              REQUESTER                                     ACE     TRACE   STARTS
    TRACE START      CONNECT  CORRNAME CORRNMBR PRIMAUTH ORIGAUTH PLANNAME   SERVER            INSTANCE    ADDRESS     NO   PAGE NO
-------------------- -------- -------- -------- -------- -------- -------- ------------------ ------------ -------- -------- -------
09/20/99 06:42:18.13 TSO      WRL1     'BLANK'  WRL1     WRL1     DSNESPRR SYS1DSN2           AD7F37CCED27 05A493B8 1.7         2-69
09/20/99 06:45:39.34 TSO      WRL      'BLANK'  WRL      WRL      DSNESPRR PMO2DE21           AD7F37E1032D 05CDA8C8 1.4          2-1
09/20/99 06:49:32.14 TSO      WRL      'BLANK'  WRL      WRL      DSNESPRR PMO2DE21           AD7F38C0A3B0 05CDA8C8 1.5          2-7
09/20/99 06:55:44.54 TSO      WRL      'BLANK'  WRL      WRL      DSNESPRR PMO2DE21           AD7F3A23F5F9 05CDA8C8 1.6         2-38
SQL ACTIVITY TRACE COMPLETE
```

Figure 396. SQL Activity Trace Index

This example represents the trace index for location SYS1DSN2. From this page you can see the following:

- This trace is the result of the first TRACE subcommand.
- There are four threads.
- There were no dates or times specified on the TRACE subcommand or on the GLOBAL command.
- Both allied threads and DBATs are present. For allied threads, the requester location is the same as the local location (for example, the first entry shown in Figure 396). For DBATs, the requester location is different to the local location (for example, the second entry shown in Figure 396).

Chapter 73. Field Descriptions

This chapter describes all fields in the SQL Activity trace and SQL Activity report, except for those belonging to accounting. For a description of the accounting fields, refer to “Chapter 23. Accounting Long Report” on page 243 and “Chapter 25. Accounting Long Trace” on page 251.

Note: In query CP and Sysplex query parallelism, the TCB time in the reports and traces only reflects the TCB time of the originating record. For the TCB time of the parallel records, refer to the query parallelism workload detail block described in “Query Parallelism” on page 1171.

Summary Part of the Trace and Report

The following section explains all fields contained in the summary part of the SQL Activity trace and report.

NL Nesting level of stored procedures and user-defined functions. This is valid for trace only. Values are summarized by occurrence.

EVENT
The event being reported or traced, such as the cursor name in a summary by cursor or the program name in a summary by program.

COUNT
The number of occurrences of this event.

TIMESTAMP
The timestamp of the event begin.

TOT.ELAPS
The total elapsed time of the event, that is the elapsed time for all statements within the event.

AET/EVENT
The average elapsed time of the event.

TOTAL TCB
The total TCB time of the event, that is the TCB time for all statements within the event.

TCB/EVENT
The average TCB time of the event.

ELAP.TIME
The elapsed time of the event.

TCB TIME
The TCB time of the event.

Package details
The details belonging to the individual packages are described in alphabetical order in Table 115 on page 1164.

Table 115. Detail Description

Detail	Description
	The fully-qualified package name, if applicable. It consists of: • The location name of the DB2 subsystem where the package was bound • The name of the package collection • The name of the program • The consistency token generated by the DB2 precompiler, if present • The version ID of the package, if present To avoid duplication, the package name is not embedded in the detail when the events are sorted in default sequence. It is printed once at the head of its work.
ACQUIRE	The acquire level of the package showing USE or ALLOCATE.
DYNAMICRULES	The value of the DYNAMICRULES option on the BIND/REBIND command: **RUN** Runtime rules apply to a dynamic SQL statement for authorization checking and object qualification at run time. **BIND** Bind-time rules apply to a dynamic SQL statement for authorization checking and object qualification at run time. **N/P** DYNAMICRULES was not specified.
ISO	The isolation level of the package: **CS** Cursor stability **RS** Read stability **RR** Repeatable read **UR** Uncommitted read
OPTHINT	Value of opimization hints, if used.
PROTOCOL	DB protocol: **DRDA** Convert three-part names to DRDA **PRIVATE** Three-part names use private protocol **NOT_SPEC** DB protocol was not specified.
PREPARE	Indicates whether the preparation of dynamic SQL statements was deferred: **DEFER** The preparation of the dynamic SQL statements that refer to remote objects was deferred until run time. **NODEFER** The dynamic SQL statements were prepared at bind time.

Table 115. Detail Description (continued)

Detail	Description
RELEASE	The release level of the package, showing the option COMMIT or DEALLOCATE, if available.
REOPT	Indicates whether the access path of the SQL statement was reoptimized: **REOPT(Y)** The access path was reoptimized at run time. **REOPT(N)** The access path was only optimized at bind time. **'BLANK'**

DETAIL

The details belonging to the individual events other than package are described in alphabetical order in Table 116.

Notes:

1. The DDF information is included in all summaries, if present.
2. OTHER is generated for SQL statement types that SQL Activity does not understand.

Table 116. Detail Description

Detail	Description
AET/OCCUR	The average elapsed time for each occurrence.
COMMITS	The total number of the following statements for the requester: • Rollback • Commit phase 2 • Sync The total number of the following statements for the server: • Commit request received • Backout request received
COUNT	The number of occurrences as derived from the statement type.
CURSOR	The name of the cursor, if applicable.
CURSOR_NAME	Allocate cursor name.
DBRM	The name of the program, if applicable. To avoid duplication, the DBRM name is not embedded in the detail when the events are sorted in default sequence. It is printed once at the head of its work.
FUNCTION	Function name.
ISOLATION	The isolation level of the statement: **CS** Cursor stability **RS** Read stability **RR** Repeatable read **UR** Uncommitted read

Table 116. Detail Description (continued)

Detail	Description
KEEP UPDATE LOCKS; KEEP UPD. LOCKS	Indicates whether X locks are used. X locks can only be used for SQL OPEN CURSOR statements and an isolation level of RS and RR.
LOCAL	The number of statements that were distributed without going through VTAM.
# LOCATORS	Number of locators
# LOCATOR_VAL	Number of locators
NAME	The object name, without qualifier, in the DDL statement.
NEW DEGREE	The requested degree of parallelism regardless of whether the request is successful.
NEW SQLID	The requested SQL ID regardless of whether the request is successful.
PREVIOUS DEGREE	The previous or current degree of parallelism. If the statement executed successfully, this is the previous degree of parallelism. If it executed unsuccessfully, this is the current degree of parallelism.
PREVIOUS SQLID	The previous or current SQL ID. If the request to change the SQL ID is successful, this is the user's previous SQL ID. If it is unsuccessful, this is the user's current SQL ID.
PROCEDURE	The unqualified stored procedure name.
PROC_LOC	Location of stored procedure
PROC_NAME	Name of stored procedure
PROC_QUALIF	Qualifier of stored procedure
REMOTE	The number of statements that went through VTAM.
REOPTIMIZED	Indicates whether the access path of the SQL statement was reoptimized: **YES** The access path was reoptimized at run time. **NO** The access path was only optimized at bind time.
SCHEDULE TCB	The TCB time for scheduling the stored procedure.
SCHEDULE TIME	The elapsed time for scheduling the stored procedure. This field also includes the time for processing application logic, if any, up to the first SQL statement within the stored procedure.
SCHEMA	Schema name.
SERVER	The server location in a distributed transaction. If there are multiple server locations, an asterisk (*) is printed.
SQLCODE	The return code from the SQL event. Obtained from the DB2 SQLCODE which remaps the DB2 field.
SQLSTATE	The SQL state.

Table 116. Detail Description (continued)

Detail	Description
STATUS	The status of the statement: • SUCCESSFUL • FAILED • SYSADM - Although authorization validation failed, the statement is successful because the user had SYSADM authority.
STMT#	The number of the statement executed. **Note:** For implicit connects, the statement number shown is the number of the SQL statement that caused the connect.
STMTTYPE	The statement type. **Note:** In a summary by statement number, you find the statement number instead of the statement type.
TCB/OCCUR	The average TCB time for each occurrence. It is the TCB time spent at the location being traced or reported on this line. For requester locations, it shows only the small amount of processing done at the requester.
TEXT	The text of the SQL statement, if present. **Notes:** 1. The text is only printed in a summary by occurrence if it is a dynamic SQL. 2. Text exceeding 5000 characters is truncated. 3. Host variables are presented as :H.
TYPE	The type of object in the DDL statement.

Index Part of the Trace

The following section explains all fields contained in the index part of the summary.

TRACE START
The start time of the trace of the thread.

DB2 PM identifiers
Control the order of the SQL Activity data printed. If you do not specify any DB2 PM identifiers with ORDER, the default order of PRIMAUTH and PLANNAME is used. For more information, see “Chapter 1. DB2 PM Identifiers” on page 3.

SERVER
Reported in the same column as REQUESTER. All server locations involved are listed in alphabetical sequence below the requester location.

TRACE NO
The number of the thread, in the format *x.yyyyy*, where *x* is the number of the TRACE subcommand and *yyyyy* is the number of the thread reported as a result of that TRACE subcommand.

STARTS PAGE NO
The number of the page on which the beginning of the thread is reported. It is shown in the format *x-yyyyy*, where *x* is the location number and *yyyyy* is the page number within the location.

Note: If more than one summary level is selected, STARTS PAGE NO relates to the first summary printed for that thread.

Workload Detail

Workload detail is available on all summary levels. The workload figures are applied to the event being summarized.

Any workload performed during thread creation is shown on the first SQL statement occurrence encountered in a thread.

Workload Hilite

This block shows the highlights of the workload activity performed by the event. All workload fields available in the SORTBY option are included.

An example of the workload hilite block is shown in Figure 397.

```
--- WORKLOAD HILITE ------------------------------------------------------------------------------------------------------
SCANS   :     8  RECS/SORT:  3.00  I/O REQS:        1  SUSPENDS   :        2  EXITS    :        2  AMS             :        1
ROWSPROC:     8  WORK/SORT:  2.00  AET/I/O : 1.374752  AET/SUSP   : 0.485483  AET/EXIT : 0.048234  AET/AMS          : 0.094745
PAGESCAN:    47  PASS/SORT:  2.00  DATACAPT:      YES  RIDS UNUSED:        2  CHECKCON : REJECTED  DEGREE REDUCTION :        3
LOB_PAGSCAN:    12345          LOB_UPD_PAGE:    12345
```

Figure 397. Workload Highlights Block Example

The following table describes the fields in the workload hilite block:

Column	Description
SCANS	The total number of scans performed by the data manager.
RECS/SORT	The average number of records per sort.
I/O REQS	The number of SYNCHRONOUS and ASYNCHRONOUS READ and SYNCHRONOUS WRITE I/O requests per event.
SUSPENDS	The number of LOCK SUSPENSIONS per event.
EXITS	The number of validation, encode edit, and decode edit exits per event.
AMS	The number of times Access Method Services (AMS) was invoked within the event. AMS can be invoked by: • Creating a DB2 page set (table space, table partition, index space) • Expanding an existing DB2 page set • Deleting a DB2 page set
ROWSPROC	The number of rows processed (of all record types).
WORK/SORT	The average number of work files per sort.
AET/I/O	The average elapsed time I/O requests.
AET/SUSP	The average elapsed time for LOCK SUSPENSIONS.
AET/EXIT	The average elapsed time per EXIT invocation.
AET/AMS	The average elapsed time of the AMS invocations within the event.
PAGESCAN	The number of pages scanned.
DATACAPT	The data capture indicator; shows whether IFCID 188 is present.
RIDS UNUSED	The number of times RID list processing was not used because nor RID storage was available or the number of RIDs exceeded the maximum limit.

Column	Description
CHECKCON	Indicates that a table check constraint was performed for the current SQL event: **OK** The check constraint was ok. **REJECTED** The row to be inserted or updated was rejected due to a check constraint. **N/P** No check was performed. For DB2 releases prior to DB2 Version 4, N/A is printed.
DEGREE REDUCTION	The difference between planned and negotiated runtime degree. This field shows N/P for DB2 PM Version 6. This field is only used for reports.
LOB_PAGSCAN	The number of LOB pages scanned.
LOB_UPD_PAGE	The number of LOB pages updated.
SYSPLEX QUERY PARALLELISM USED	This field is shown if the query is executed on more than one member, this field shows the number of members. Otherwise this field is blank.

Notes:

1. The hilite block always prints all of its fields. If other detail blocks are requested, then some of the highlights are shown twice-once in the hilite block and again in the detail block.
2. If the records required for a field are not present, N/P is printed for that field. N/A is printed if the field is not relevant to the level of DB2.

Scan Activity

This block shows the total scan activity for each object, performed by the event. The database name and page set name for each scan are printed if they are available. These do not usually occur in DB2 trace records. The decimal database ID (DBID) and object ID (OBID) occur instead. When possible, DB2 PM translates the DBID and OBID into database names and page set names. If DB2 PM cannot make a translation, the DBID or OBID decimal number is printed instead.

An example of the scan activity workload block is shown in Figure 398.

```
--- SCAN ACTIVITY ------------------------------------------------------------------------------------------------------------
                                ------ROWS------  --QUALIFIED AT--  ----------ROWS---------- --MASS- --PAGES- ---------RI--------
DATABASE  PAGESET   SCANS   PROCESS  EXAMINE  STAGE 1  STAGE 2  INSERTS  UPDATES  DELETES DELETES  SCANNED     SCANS  DELETES
MEMBER    TYPE
DBPARALL  TSPARALL      1    120013   120013   120013        0        0        0        0       1     5716         0        0
SE11      SEQD
DBPARALL  TSPARALL      2    239980   239980   239980        0        0        0        0       2    11430         0        0
SE12      SEQD
WRKSE12   DSN4K01      21    489406   489406   489406        0   738530        0        0      21     7303         0        0
SE12      SEQW
DBPARALL  TSPARALL      2    140007   140007   140007        0        0        0        0       2     6669         0        0
SE21      SEQD
TOTAL                  26    989406   989406   989406        0   738530        0        0      26    31118         0        0
```

Figure 398. Scan Activity Workload Block Example

The following table describes the fields in the scan activity workload block:

Column	Description
DATABASE	The database name. If the name is not available, the decimal DBID is printed. If it is a release prior to DB2 PM Version 6 and scan activity is built from IFCID 53 or IFCID 58, DBID information is not available and therefore the field is left blank.
MEMBER	The name of the DB2 member within the DB2 data sharing group. This field shows N/P in a non-data-sharing environment or N/A if the DB2 release is earlier than DB2 Version 4.
PAGESET	The page set name. If the name is not available, the decimal OBID is printed. If it is a release prior to DB2 PM Version 6 and and scan activity is built from IFCID 53 or IFCID 58, OBID information is not available and therefore the field is left blank. **Note:** If the value shown in the TYPE column is INDX, this column shows the table space name, not the index name.
TYPE	Indicates whether the scan performed by the data manager is an index file (INDX), a sequential data file (SEQD), or a sequential work file (SEQW).
SCANS	The total number of scans performed by the data manager.
ROWS PROCESS	The number of rows processed (of all record types) in the page set, index space, or table space. If the table space contains more than one table, scanned rows from all tables are counted. For index scans, this value represents the number of index entries processed.
ROWS EXAMINE	The number of rows of a specific record type processed by the scan. If the table space contains more than one table, scanned rows from the specific table only are counted. For index scans, this value represents the number of index entries processed. For a table space containing only one table, the value of ROWS EXAMINE is the same as the value of ROWS PROCESS.
QUALIFIED AT STAGE 1	The total number of rows that were qualified at stage 1.
QUALIFIED AT STAGE 2	The total number of rows that were qualified at stage 2. The value in this field cannot be greater than the value in QUALIFIED AT STAGE 1.
ROWS INSERTS	The number of rows inserted by the data manager.
ROWS UPDATES	The number of rows updated by the data manager.
ROWS DELETES	The number of rows deleted by the data manager.
MASS DELETES	The number of times a DELETE was performed with no WHERE clause.
PAGES SCANNED	The number of GETPAGE requests the data manager issued to the buffer manager. For an index scan, the field shows the number of GETPAGE requests on index pages (not index subpages).

Column	Description
RI SCANS	The number of additional GETPAGE requests the data manager issued to the buffer manager to enforce referential constraints.
RI DELETES	The number of additional rows deleted or set to null due to referential integrity.

RID List Processing

This block shows the record ID (RID) list activity performed by the event.

An example of the RID list processing workload block is shown in Figure 399.

```
--- RID LIST PROCESSING ---------------------------------------------------------------------------------------
RIDS IN FINAL LIST:        38  RID LIST USED:     2  UNUSED (LIMIT EXCEEDED):     5   UNUSED (NO STORAGE):     1
DATABASE  PAGESET    THRESHOLD RIDS OBTAINED         RIDS EXCEEDED LIMIT
NHDBASE1  NHINDEX1        4075            36                            3
NHDBASE2  NHINDEX2       36000            87                            2
           AVERAGE    20037.50         61.50                         2.50
```

Figure 399. RID List Processing Workload Block Example

The following table describes the fields in the RID list processing workload block:

Field	Description
RIDS IN FINAL LIST	The number of RIDs in the final list.
RID LIST USED	The number of times RID list was used.
UNUSED (LIMIT EXCEEDED)	The number of RID lists not used because the number of RIDs exceeded the maximum limit.
UNUSED (NO STORAGE)	The number of RID lists not used because no RID storage was available.
DATABASE	The database name for the index.
PAGESET	The internal identifier index fan-set descriptor for the index.
THRESHOLD	The threshold value for the index. The threshold value for list prefetch and ORing multiple indexes for access is the maximum of 25 percent of the table size (in bytes) or the number of RIDs that one RID block can hold. For ANDing multiple indexes, it is 25 percent of the table size. The average is the total value of this field divided by the number of indices (database/page set combinations).
RIDS OBTAINED	The number of RIDs obtained from an index. The average is the total value of this field divided by the number of indices (database/page set combinations).
RIDS EXCEEDED LIMIT	The number of RIDs which exceeded the maximum limit. The average is the total value of this field divided by the number of indices (database/page set combinations).

Query Parallelism

This block shows query parallelism activity performed by the event.

Note: In query CP and Sysplex query parallelism, this is the only place where the TCB time of the parallel records is shown.

An example of a query parallelism workload block is shown in Figure 400.

```
--- QUERY PARALLELISM -------------------------------------------------------------------------
QUERY  PARALLEL  PLANNED  PLANNED  NEGOTIATED           PIPE            TASK            NUMBER OF
BLOCK  GROUP     AT BIND  AT  RUN  AT     RUN    REASON  ELAPSED TIME    CPU TIME   TYPE  MEMBERS
    1         1        3        3           3    NORMAL      0.895716    0.043467    CP           3
```

Figure 400. Query Parallelism Workload Block Example

The following table describes the fields in the query parallelism workload block:

Field	Description
QUERY BLOCK	The query block number.
PARALLEL GROUP	The parallel group number.
PLANNED AT BIND	The degree of parallelism planned at bind time. This field contains 0 if host variables in the statement caused the parallelism decision to be made at bind time.
PLANNED AT RUN	The degree of parallelism planned at run time.
NEGOTIATED AT RUN	The degree of parallelism negotiated at run time, which depends on buffer pool availability. If the value in this field is 1, the plan for parallel I/O processing falls back to sequential execution mode.
REASON	The reason for deriving the planned runtime degree of parallelism: **NORMAL** The planned runtime degree is derived from planned bind-time degree. **HOSTVAR** Host variable partitioning **NOESA** No ESA sort support **CURSOR** Cursor that can be used for update and delete. **EMPTY** Empty parallel group **ENCLUNAV** MVS/ESA enclave services are not available **UNKNOWN** None of the above
PIPE ELAPSED TIME	The time of pipe creation subtracted from the time of pipe termination.

Field	Description
TASK CPU TIME	The sum of the normalized CPU times spent for the parallel tasks. In Sysplex query parallelism, the CPU times are normalized by the conversion factor that is derived from IFCID 106 and related to the conversion factor of the originating task. If IFCID 106 is not present, asterisks are printed. For DB2 releases prior to DB2 Version 4, N/A is printed. The task CPU time is calculated as follows: • Let CV_O be the conversion factor for the member where the originating thread is running. • Let CV_P be the conversion factor for the member where the parallel thread is running. • Let TCB_P be the TCB time that is recorded by DB2 for an activity of the parallel thread. • Then the following formula applies: Normalized TCB time for that activity = (TCB_P * (CV_O / CV_P))
TYPE	The type of parallelism: **CP** CP parallelism **I/O** I/O parallelism **SYS** Sysplex query parallelism
NUMBER OF MEMBERS	The number of members on which the query executed.

Sort Activity

This block shows sort activity for each sort performed by the event.

An example of the sort activity workload block is shown in Figure 401.

```
--- SORT ACTIVITY ------------------------------------------------------------------------------------------
MEMBER      :     SE11  WORKFILES             :    72.00  RECORDS     :      2.45  MAX REQUESTED   :        5
TOTAL SORTS :        4  INITIAL WORKFILES     :     1.00  RECORD SIZE :  18292.50  AVG REQUESTED   :     3.35
SORT KEYS   :     2.00  WORKFILES PARTITIONED :     2.00  KEY SIZE    :     30.27  MAX NOT ACQUIRED:        1
SORT COLUMNS:    25.00  PARTITIONING          :      YES  DATA SIZE   :     92.13  AVG NOT ACQUIRED:     1.00
AET/SORT    : 2.990676  PARTITIONING & SORTING:      YES  ROWS DELETED:      0.00  MAX RETURN CODE :        4
SORT TYPE   :  ESA-TAG  PARTITION TYPE        : LASTPASS  MERGE PASSES:      1.00
```

Figure 401. Sort Activity Workload Block Example

The following table describes the fields in the sort activity workload block:

I/O Activity

This block shows the I/O activity for each object performed by the event.

The following example shows the I/O activity workload block.

```
--- I/O ACTIVITY ------------------------------------------------------------------------------------------------------------------------
      DATABASE  PAGESET  - I/O REQUEST -  ------- READ REQUEST  (WITH OR WITHOUT I/O) -------  ------------ WRITE REQUEST ----------
      MEMBER    BP       TOTAL     AET    TOTAL  TYPE   AET/WITH    %WITH PAGE/WITH  %WITHOUT  TOTAL  TYPE  CAST      AET  PAGE/WRIT
      DBPARALL  TSPARALL
      SE12      BP4          3  0.1296        3  SYNCH  0.129597   100.00      1.00      0.00
      WRKSE12   DSN4K01
      SE12      BP0        102  0.0164      102  SYNCH  0.016358   100.00      1.00      0.00
```

Figure 402. I/O Activity Workload Block Example

The following table describes the fields in the I/O activity workload block:

Field	Description
DATABASE	The database name. If the name is not available, the decimal DBID/OBID is printed.
PAGESET	The page set name. If the name is not available, the decimal DBID/OBID is printed.
MEMBER	The name of the DB2 member within the DB2 data sharing group. This field shows N/P in a non-data-sharing environment or N/A if the DB2 release is earlier than DB2 Version 4.
BP	The buffer pool name.
I/O REQUEST TOTAL	The total number of I/O requests.
I/O REQUEST AET	The average elapsed time for each I/O request.
READ REQUEST TOTAL	The number of read I/O requests of a specific type.
READ REQUEST TYPE	The type of read request: **SYNCH** Synchronous read request **SEQPF** Sequential prefetch request **DYNPF** Dynamic prefetch request **LSTPF** List prefetch request
READ REQUEST AET/WITH	The average elapsed time for a read with I/O of a specific type.
READ REQUEST %WITH	The percentage of total read requests with I/O for a particular type.
READ REQUEST PAGE/WITH	The pages read for each read request with I/O of a particular type.
READ REQUEST %WITHOUT	The percentage of total read requests without I/O for a particular type. This can occur because all the pages requested by a prefetch read were already in the buffer pool.
WRITE REQUEST TOTAL	The number of write I/O requests.
WRITE REQUEST TYPE	The type of write request.
WRITE REQUEST CAST	Indicates whether the write operations were initiated due to a coupling facility castout. For DB2 releases prior to DB2 Version 4, N/A is printed.
WRITE REQUEST AET	The average elapsed time for each write.
WRITE REQUEST PAGE/WRITE	The number of pages written.

Lock Suspension Activity

This block shows the lock suspension activity for each object performed by the event.

An example of the lock suspension activity workload block is shown in Figure 403.

```
--- LOCK SUSPENSION ACTIVITY ------------------------------------------------------------------------------------------------
                                                ---------- SUSPEND REASON ---------- NORML  RESUME TIMEO  RESUME DEADL  RESUME
RESOURCE NAME                TYPE       REQUEST  LOCAL LATCH IRLMQ GROUP NOTIF OTHER COUNT     AET COUNT     AET COUNT     AET
MEMBER
DBPARALL            TSPARALL DATAPAGE   NOTIFY       0     0     0    24    24     0    24 0.74382     0     N/C     0     N/C
SE11
DBPARALL            TSPARALL DATAPAGE   LOCK         0     3     0     0     0     0     3 0.04096     0     N/C     0     N/C
SE11
DBPARALL            TSPARALL DATAPAGE   LOCK         0     5     0     0     0     0     5 0.06957     0     N/C     0     N/C
SE12
DBPARALL            TSPARALL DATAPAGE   UNLOCK       0     1     0     2     2     0     3 0.59058     0     N/C     0     N/C
SE21
```

Figure 403. Lock Suspension Activity Workload Block Example

The following table describes the fields in the lock suspension activity workload block:

Field	Description
RESOURCE NAME	The name of the resource on which the suspended request is made. The content of the field depends on the resource type: • The plan name for SKCT • The collection and package IDs for SKPT • The collection ID for COLLECT • The database name for DATABASE, CDB PLK, DBD PLCK • The buffer pool ID for ALTERBUF, GBP S/S, P/P PLCK, PAGEPLCK, GBP CAST, P/P CAST • The anchor point ID for HASH-ANC • The row ID for ROW • N/A for MASS, UTILITY, BINDLOCK, ALTERBUF, CATM MIG, CATM CAT, CATM DIR • The database and page set names for all others The database and page set names are translations obtained from the IFCIDs 105 and 107. If these records are unavailable, the decimal DBIDs and OBIDs are printed.
MEMBER	The name of the DB2 member within the DB2 data sharing group. This field shows N/P in a non-data-sharing environment or N/A if the DB2 release is earlier than DB2 Version 4.

Field	Description
TYPE	The type of the locked resource: **DATAPAGE** Data page lock **DATABASE** Locking of the DBD **PAGESET** Page set locking **PARTITION** Partitions of partitioned table spaces and indexes. Applies to DB2 Version 4 and later releases. **DATASET** Partitions of partitioned table spaces and indexes. Applies to releases prior to DB2 Version 4. **SKCT** Skeleton cursor table locking **INDEXPAGE** Index page locking **OPENLOCK** Page set or data set open lock **DBALLOC** Start and stop lock on database allocation table **SYSLGRNG** Buffer manager SYSLGRNG recording lock **UTILSER** Utility serialization lock **MASSDEL** Mass delete lock. A mass delete is a delete without a WHERE clause, which deletes all the records in a table. **TABLE** Table locking **HASH-ANC** Hash anchor lock **SKPT** Skeleton package table lock **COLLECT** Collection ID lock **BINDLOCK** Autobind and remote bind serialization lock for the serialization of local autobinds of packages, remote binds and remote rebinds of packages **ALTERBUF** Alter buffer pool lock **ROW** Data row locking **INDEXEOF** Index end of file lock **GBP S/S** Group buffer pool start and stop lock **TREEPLCK** Index tree P-lock

Field	Description
	P/P PLCK Page set or partition P-lock **PAGEPLCK** Page P-lock **CDB PLCK** DDF CDB P-lock **GBP CAST** Group buffer pool level castout P-lock **P/P CAST** Page set or partition level castout P-lock **RLF PLCK** RLF P-lock **DBD PLCK** DBD P-lock **CATM MIG** CATMAINT migration lock **CATM CAT** CATMAINT convert catalog lock **CATM DIR** CATMAINT convert directory lock **LPL/GREC** Database group exception LPL and GRECP lock **UTIL UID** Utility UID lock **UTIL EXC** Utility exclusive execution lock **SCA ACCS** SCA access for restart or redo information **EXCP UPD** Database group exception update lock **RPR_DBD** Repair DBD test and diagnose lock **DBCMD SER** Database command serialization

Field	Description
REQUEST	The type of request that has been suspended: **LOCK** IRLM lock request **UNLOCK** IRLM unlock request **CHANGE** IRLM change request **QUERY** IRLM query request **NOTIFY** IRLM notify request **DRAIN** Drain request **LATCH** Latch request
SUSPEND REASON LOCAL	The number of suspensions due to local resource contentions.
SUSPEND REASON LATCH	The number of suspensions due to IRLM latch contentions.
SUSPEND REASON IRLMQ	The number of suspensions due to IRLM queued requests.
SUSPEND REASON GROUP	The number of suspensions due to global contention.
SUSPEND REASON NOTIFY	The number of suspensions due to intersystem message sending.
SUSPEND REASON OTHER	The number of suspensions due to reasons other than those listed previously. **Note:** For drain suspensions, the suspension reason is always “waiting for the claim count to reach zero” and is categorized as OTHER.
NORML RESUME COUNT	The number of suspensions that ended in the task, resuming normal processing after the lock request has completed.
NORML RESUME AET	The normal resume average elapsed time. This is the normal resume elapsed time divided by the NORML RESUME COUNT.
TIMEO RESUME COUNT	The number of suspensions that ended in a timeout.
TIMEO RESUME AET	The average elapsed timeout time. This is the elapsed timeout time divided by the TIMEO RESUME COUNT.
DEADL RESUME COUNT	The number of suspensions that ended in a deadlock. **Note:** Drain suspensions do not end in a deadlock.
DEADL RESUME AET	The average elapsed deadlock time. This is the elapsed deadlock time divided by the DEADL RESUME COUNT.

Page and Row Locking Activity

This block shows the page locking, row locking, and lock avoidance activity for each object, performed by the event.

The page and row locking activity block is only printed if a commit occurred or a thread terminated.

In summary by occurrence, page and row locking activity information generated for explicit commits is shown on the relevant commit events.

In summaries by cursor or program, any explicit commits occurring during the life of that cursor or program are counted. Page and row locking activity caused by those commits is shown on the relevant cursor or program.

In summaries by statement number or statement type, commits are not counted. Because page and row locking activity is not relevant for these summary levels, it is not printed.

Any page or row locking activity occurring when a thread terminated is shown in the summary by thread. This activity is added to any page or row locking which took place in the body of the thread. Therefore, page and row locking figures in summary by thread can be greater than the sum of page locking figures shown in the body of the thread. The difference is the page and row locking activity occurring at thread termination.

An example of the page and row locking workload block is shown in the following figure.

```
--- PAGE & ROW LOCKING ------------------------------------------------------------------------
                                        LOCK   MAXIMUM PAGE   # LOCK   HIGHEST   TS      LOCK AVOID
MEMBER     DATABASE   PAGESET    COUNT    SIZE   OR ROW LOCKS    ESCAL      LOCK   TYPE    SUCCESSFUL
SE11       DBPARALL   TSPARALL       1   PAGE              1        0              SPL           YES
SUMMARY : MAX PAGE OR ROW LOCKS HELD         1  LOCK ESCALATIONS : SHARED      0  EXCLUSIVE       0

SE12       DBPARALL   TSPARALL       2   PAGE              5        0              SPL           YES
SUMMARY : MAX PAGE OR ROW LOCKS HELD         5  LOCK ESCALATIONS : SHARED      0  EXCLUSIVE       0

SE21       DBPARALL   TSPARALL       1   PAGE              2        0              SPL           YES
SUMMARY : MAX PAGE OR ROW LOCKS HELD         2  LOCK ESCALATIONS : SHARED      0  EXCLUSIVE       0

TOTAL                                 4                                0
```

Figure 404. Page and Row Locking Workload Block Example

Notes:

1. The DBID and OBID are obtained from IFCID 20.
2. The values in MAX PAGE OR ROW LOCKS HELD, LOCK ESCALATIONS SHARED, and LOCK ESCALATIONS EXCLUSIVE are accumulated within a subsystem. They are reset only at thread deallocation or when a new user signon occurs.
3. The values in MAXIMUM PAGE OR ROW LOCKS, HIGHEST LOCK, and # LOCK ESCAL are reset at commit time for dynamic BINDs and for static BINDs for which release (commit) is specified. Otherwise, these values accumulate until thread deallocation or until a new user signon occurs.
4. IFCID 218 is an additional lock summary record, written for lock avoidance. It indicates whether a successful lock avoidance test occurred during a given unit of work. The record is externalized for the agent at each commit or rollback.
5. For each event, the relevant IFCID 20 and 218 records are processed. If there is a DBID/OBID combination present for IFCID 218 but not for IFCID 20, the IFCID 20 fields show N/P. If there is a DBID/OBID combination present for IFCID 20 but not for IFCID 218, the IFCID 218 field (LOCK AVOID SUCCESSFUL) shows N/P.

The following table describes the fields in the page and row locking workload block:

Field	Description
MEMBER	The name of the DB2 member within the DB2 data sharing group. This field shows N/P in a non-data-sharing environment or N/A if the DB2 release is earlier than DB2 Version 4.
DATABASE	The database name, if available. If the name is not available, the decimal DBID is printed instead.

Field	Description
PAGESET	The page set name, if available. If the name is not available, the decimal OBID is printed instead.
COUNT	The number of page locking or row locking occurrences for each page set. • Specific database and page set: – At commit time: always 1 – At thread termination: the number of times this database and page set occurred on a commit record • TOTAL – At commit time: the total number of page sets listed – At thread termination: the sum of the values for all page sets
LOCK SIZE	The lock size used: **PAGE** Page lock **ROW** Row lock **TABLE** Table space or table lock **LOB** LOB lock **UNKN** Unknown lock ********* Multiple lock sizes
MAXIMUM PAGE OR ROW LOCKS	The maximum number of either page locks or row locks held at one time against this object.
# LOCK ESCAL	The number of lock escalations: • 0 if no escalations occur • For simple table spaces and partitioned table spaces not using selective partition locking (SPL): 1 if any escalation occurred for this table space in this logical unit of work • For segmented table spaces: the number of tables within the table space that have experienced lock escalations • For partitioned table spaces using SPL: the number of partitions for which locks escalated within the table space The TOTAL contains the sum of all values in this column.
HIGHEST LOCK	The highest table space lock state. If the table space is simple or partitioned not using SPL, it is the highest lock state for this database or page set. At trace end, it is the largest value from any commit for this object. The following values are possible: **IS** Intent share **IX** Intent exclusive **S** Share **U** Update share **SIX** Share with intent exclusive **X** Exclusive If the table space is segmented or partitioned using SPL, this field is blank.

Field	Description
TS TYPE	The table space type: **SIMPL** Simple table space **SEG** Segmented table space **PARTI** Partitioned table space **SPL** Partitioned table space using selective partition locking (SPL) **LOB** LOB table space
LOCK AVOID SUCCESSFUL	Indicates whether there was a successful lock avoidance test during the unit of work.
MAX PAGE OR ROW LOCKS HELD	The maximum number of page locks and row locks held at one time across all objects.
LOCK ESCALATIONS: SHARED	The total of shared lock escalations.
LOCK ESCALATIONS: EXCLUSIVE	The total of exclusive lock escalations.

Exit Activity

This block shows the exits performed by the event.

Here is an example of the exits workload block:

```
--- EXITS ----------------------------------------------------------------
MEMBER     VALIDATION  TOTAL   AET/EXIT   EDIT TOTAL  AET/EXIT
SE11                      1    N/C                 0  0.000060
```

Figure 405. Exits Workload Block Example

The following table describes the fields in the exits workload block:

Field	Description
MEMBER	The name of the DB2 member within the DB2 data sharing group. This field shows N/P in a non-data-sharing environment or N/A if the DB2 release is earlier than DB2 Version 4.
VALIDATION TOTAL	The number of results of a validation exit call written for every validation row.
VALIDATION AET/EXIT	The summarized elapsed validation time divided by the value in VALIDATION TOTAL.
EDIT TOTAL	The summary of results of an edit exit call to encode a record written for every row edited and the results of an edit exit call to decode a record written for every row decoded.
EDIT AET/EXIT	The summarized elapsed edit time divided by the value in EDIT TOTAL.

Data Capture Activity

This block shows the average data capture activity performed by the event.

An example of the data capture workload block is shown in Figure 406.

```
--- DATA CAPTURE ------------------------------------------------------------
DESCRIBES     :      3.14  MAX READ TIME:  1.928397  DATA DESC RETURNED:     3.77
AET/DESCRIBE  :  0.028367  RECS RETURNED:     24.86  TABLES RETURNED   :     0.00
LOG READS     :      5.20  RECS CAPTURED:     29.15
AET/EXTRACTION:  1.044382  ROWS RETURNED:    132.50
```

Figure 406. Data Capture Workload Block Example

The following table describes the fields in the data capture workload block:

Field	Description
DESCRIBES	The average number of data capture describes.
AET/DESCRIBE	The average elapsed time of data capture describes.
LOG READS	The average number of log reads performed.
AET/EXTRACTION	The average elapsed time of log extraction.
MAX READ TIME	The longest elapsed time of a log read.
RECS RETURNED	The average number of log records returned.
RECS CAPTURED	The average number of records that were captured for this update. To perform all data capture updates, all captured log records need to be returned.
ROWS RETURNED	The average number of data rows returned.
DATA DESC RETURNED	The average number of data capture data descriptions returned.
TABLES RETURNED	The average number of data capture tables returned.

Minibind Activity

This block shows minibind activity performed by the event. One block is printed for each IFCID 22 encountered. Note that this block is not printed in the SQL Activity report.

If the IFCIDs 105 and 107 are present before IFCID 22, the DBID and OBID can be translated.

An example of the minibind workload block is shown in Figure 407.

```
--- MINIBIND ----------------------------------------------------------------------------------------------------------
QUERYNO  : 1383      PLANNAME      : DSNTEP61            COST          : 35        PARALLELISM_DISABLED : N/A
QBLOCKNO : 2         COLLID        : DSNTEP61            PROGNAME      : DSNTEP61  CONSISTENCY_TOKEN    : 15769AE806DB8B8E
APPLNAME : N/P       WHEN_OPTIMIZE : 'BLANK'             OPT_HINT_IDENT: N/P       OPTIMIZE_HINTS_USED  : YES
UNITS    : 12345     MILLI_SEC     : 12345               COST_CATEGORY : N/P
BIND_TIME: 04/08/99 03:28:55.211328  VERSION: N/P
.....................................................................................................................
PLANNO          : 1                 METHOD    : FIRST TABLE ACCESSED  SORTN_UNIQ      : NO     SORTC_UNIQ     : NO
DATABASE        : DSNDB04           NEXTSTEP  : NOT APPLICABLE        SORTN_JOIN      : NO     SORTC_JOIN     : NO
OBJECT          : 21                ACCESSTYPE: TABLE SPACE SCAN (R)  SORTN_ORDERBY   : NO     SORTC_ORDERBY  : NO
CREATOR         : X                 PAGE_RANGE      : NO              SORTN_GROUPBY   : NO     SORTC_GROUPBY  : NO
TNAME           : TBUF0401          JOIN_TYPE       : NO              SORTN_PGROUP_ID : 0      SORTC_PGROUP_ID: 0
CORRELATION_NAME: N/P               MERGE_JOIN_COLS : 0               ACCESS_DEGREE   : 0      JOIN_DEGREE    : 0
TSLOCKMODE      : IS                PARALLELISM_MODE: NO              ACCESS_PGROUP_ID: 0      JOIN_PGROUP_ID : 0
ACCESS_NAME     : N/A               ACCESS_CREATOR  : N/A             MATCHCOLS       : N/A    PREFETCH       : SEQ
OPERATION       : N/A               PREFETCH_INDEX  : N/A             MIXOPSEQ        : N/A    DIRECT_ROW_ACC : N/A
INDEXONLY       : N/A               COLUMN_FN_EVAL  : N/A             PAGES_FOR_TABLE : 12345  TAB_CARDINALITY: 123456789A
```

Figure 407. Minibind Workload Block Example

Here is an example of the minibind workload block with multiple index.

```
--- MINIBIND ----------------------------------------------------------------------------------------------------
QUERYNO  : 1383      PLANNAME      : DSNTEP61           COST          : 35        PARALLELISM_DISABLED : N/A
QBLOCKNO : 2         COLLID        : DSNTEP61           PROGNAME      : DSNTEP61  CONSISTENCY_TOKEN    : 15769AE806DB8B8E
APPLNAME : N/P       WHEN_OPTIMIZE : 'BLANK'            OPT_HINT_IDENT: N/P       OPTIMIZE_HINTS_USED  : YES
UNITS    : 12345     MILLI_SEC     : 12345              COST_CATEGORY : N/P
BIND_TIME: 04/08/99 03:28:55.211328  VERSION: N/P
.....................................................................................................
PLANNO          : 1                  METHOD    : FIRST TABLE ACCESSED  SORTN_UNIQ      : NO     SORTC_UNIQ     : NO
DATABASE        : DSNDB04            NEXTSTEP  : NOT APPLICABLE        SORTN_JOIN      : NO     SORTC_JOIN     : NO
OBJECT          : 21                 ACCESSTYPE: TABLE SPACE SCAN (R)  SORTN_ORDERBY   : NO     SORTC_ORDERBY  : NO
CREATOR         : X                  PAGE_RANGE      : NO              SORTN_GROUPBY   : NO     SORTC_GROUPBY  : NO
TNAME           : TBUF0401           JOIN_TYPE       : NO              SORTN_PGROUP_ID : 0      SORTC_PGROUP_ID: 0
CORRELATION_NAME: N/P                MERGE_JOIN_COLS : 0               ACCESS_DEGREE   : 0      JOIN_DEGREE    : 0
TSLOCKMODE      : IS                 PARALLELISM_MODE: NO              ACCESS_PGROUP_ID: 0      JOIN_PGROUP_ID : 0
PREFETCH        : NO                 COLUMN_FN_EVAL  : N/P             PAGES_FOR_TABLE : 12345  TAB_CARDINALITY: 123456789A
DIRECT_ROW_ACC  : N/A
.....................................................................................................
   ACCESS_CREATOR   ACCESS_NAME          MATCHCOLS   INDEXONLY   PREFETCH_INDEX        OPERATION      MIXOPSEQ
   SYSADM           PXPS$PKSK            1           NO          NO                    SCAN           1
   SYSADM           UXS#SKNK             1           YES         NO                    SCAN           1
```

The following table describes the fields in the minibind workload block:

Field	Description
QUERYNO	The number identifying the statement to be prepared.
PLANNAME	The plan name or package ID.
COST	The relative cost of the SQL statement. It might not relate to the actual CPU or elapsed time for the query.
PARALLELISM_DISABLED	Indicates whether query parallelism is disabled by the resource limit facility (RLF) for dynamic queries: **NO** The RLF does not affect this statement. **I/O ONLY** Query I/O parallelism is disabled. **CP ONLY** Query CP parallelism is disabled. **CP + I/O** Query I/O and CP parallelism is disabled. **X** Sysplex query parallelism is disabled. **X + I/O** Sysplex query and query I/O parallelism is disabled. **X + CP** Sysplex query and query CP parallelism is disabled. **YES** The entire query parallelism (I/O, CP, and Sysplex) is disabled. **N/A** Query parallelism does not apply to this statement.
QBLOCKNO	The position of the query in the statement.
COLLID	The collection ID of the package.
PROGNAME	The name of the package containing the statement to be prepared.
CONSISTENCY_TOKEN	The consistency token.
APPLNAME	The name of the application plan.

Field	Description
WHEN_OPTIMIZE	Indicates when the access path of the SQL statement is optimized: **'BLANK'** The statement is bound with NOREOPT or has no input variables. The access path shown here is the one that will be used at runtime because it is only optimized at bind time. **B** This is a static statement bound with REOPT with at least one input variable. The access path shown here is not necessarily the one that will be used at runtime because it has been determined at bind time and will be reoptimized at runtime time. **R** This is a dynamic statement bound with REOPT with at least one input variable. The access path shown here is the one that the statement will use because it is only optimized at runtime.
OPT_HINT_IDENT	
OPTIMIZE_HINTS_USED	
UNITS	Cost in CPU units.
MILLI_SEC	Cost in milliseconds.
COST_CATEGORY	Cost category.
BIND_TIME	The date and time at which the plan or package to which the SQL statement belongs was bound.
VERSION	The version ID of the package (64 characters).
PLANNO	The number of the step in which the query is processed.
METHOD	The join method used for the step.
SORTN_UNIQ	Indicates whether the new table is sorted to remove duplicate rows.
SORTC_UNIQ	Indicates whether the composite table is sorted to remove duplicate rows.
DATABASE	The database ID.
NEXTSTEP	The next step in a join. NOT APPLICABLE is printed if this is the last step of a join, or if this is not a join.
SORTN_JOIN	Indicates whether the new table is sorted for a merge scan join or hybrid join. For a hybrid join, this is a sort of the RID list.
SORTC_JOIN	Indicates whether the composite table is sorted for a nested loop join, merge scan join, or hybrid join.
OBJECT	The internal ID of the table space.
ACCESSTYPE	The method of accessing the new table. N/P is printed if there is no access type.
SORTN_ORDERBY	Indicates whether the new table is sorted for ORDER BY.
SORTC_ORDERBY	Indicates whether the composite table is sorted for ORDER BY.
CREATOR	The creator of the new table accessed in this step.
PAGE_RANGE	Indicates whether the table qualifies for page range screening so that plans scan only the partitions that are needed.
SORTN_GROUPBY	Indicates whether the new table is sorted for GROUP BY.
SORTC_GROUPBY	Indicates whether the composite table is sorted for GROUP BY.
TNAME	The name of the table accessed in this step, without qualifier. This field is blank if a view is used instead of a real table.

Field	Description
JOIN_TYPE	The type of join: **LEFT** Left outer join **FULL** Full outer join **INNER** Inner join **NO** Not applicable **N/A** For releases prior to Version 4.
SORTN_PGROUP_ID	The parallel group ID for the parallel sort of the new table. A parallel group is the collective term for consecutive operations (in this case a sort) executed in parallel that have the same number of parallel tasks.
SORTC_PGROUP_ID	The parallel group ID for the parallel sort of the composite table.
CORRELATION_NAME	The correlation name of a table or view that is specified in the statement. If no correlation name is specified, the field is blank.
MERGE_JOIN_COLS	The number of columns that are joined during a merge scan join.
ACCESS_DEGREE	The number of parallel tasks or operations activated by a query.
JOIN_DEGREE	The number of parallel tasks or operations used in joining the composite table with the new table.
TSLOCKMODE	Indicates the lock mode to be acquired on the new table or its table space. If the isolation can be determined at bind time, possible values are: **IS** Intent share lock **IX** Intent exclusive lock **S** Share lock **U** Update lock **X** Exclusive lock **SIX** Share with intent exclusive lock **N** UR isolation, no lock If the isolation cannot be determined at bind time, the lock mode determined by the isolation at run time is shown by the following values: **NS** For UR isolation: no lock. For CS or RR isolation: an S lock. **NIS** For UR isolation: no lock. For CS or RR isolation: an IS lock. **NSS** For UR isolation: no lock. For CS isolation: an IS lock. For RR isolation: an S lock. **SS** For UR or CS isolation: no lock. For RR isolation: an S lock.
PARALLELISM_MODE	The kind of parallelism used at bind time: **I/O** Query I/O parallelism **CP** Query CP parallelism **X** Sysplex query parallelism **NO** No parallelism was used.
ACCESS_PGROUP_ID	The ID of the parallel group for accessing the new table.

Field	Description
JOIN_PGROUP_ID	The ID of the parallel group for joining the composite table with the new table.
ACCESS_NAME	The index name. This field applies only to index scans. N/A is printed for table space scans or when no index is used.
ACCESS_CREATOR	The index creator.
STATEMENT_CACHE	Statement cache flag. Possible values are: **YES** The prepared statement is retrieved from the prepared statement cache. **NO** The prepared statement is not retrieved from the prepared statement cache.
MATCHCOLS	The number of index keys used in an index scan. This field is 0 if either no index is used or an index is used that has no matching columns.
PREFETCH	Indicates what kind of prefetch of the data is used: **SEQ** Sequential prefetch **LIST** List prefetch **No** No prefetch
OPERATION	The type of index access operation.
PREFETCH_INDEX	Indicates whether data pages are to be read in advance by a prefetch.
MIXOPSEQ	The sequence number of a step in a multiple index operation.
DIRECT_ROW_ACC	Indicates whether direct row access was used.
INDEXONLY	Indicates whether the access to an index alone is sufficient to carry out the step.
COLUMN_FN_EVAL	Indicates when an SQL column function is evaluated.
PAGES_FOR_TABLE	Pages for table.
TAB_CARDINALITY	Table cardinality.

Accounting

The layout of the accounting section is identical to the accounting long report or trace, depending on whether an SQL Activity report or trace has been requested.

For SQL Activity traces, the fields in this section are described in “Chapter 25. Accounting Long Trace” on page 251. For SQL Activity reports, the fields in this section are described in “Chapter 23. Accounting Long Report” on page 243.

Function Resoultion Activity

The following figure shows the layout of the function resolutions block.

```
--- FUNCTION RESOLUTION(S) ------------------------------------------------------------------------------------------------------
QUERYNO  : 1383       PLANNAME : DSNTEP61  COLLECTION_ID : DSNTEP61
APPLNAME : xxxxxxxx   PROGNAME : xxxxxxxx  CONSIS_TOKEN  : xxxxxxxxxxxxxxxx
BIND_TIME: 04/08/99 03:28:55.21  VERSION : xxxxxxxx10xxxxxxxx20xxxxxxxx30xxxxxxxx40xxxxxxxx50xxxxxxxxxxx64
CURRENT_PATH : ........10........20........30........40........50........60........70........80........90.......100
               .......110.......120.......130.......140.......150.......160.......170.......180.......190.......200
               .......210.......220.......230.......240...........254
.....................................................................................................................
FUNCT_SCHEMA : xxxxxxxx  FUNCT_NAME : xxxxxxxxxxxxxxxxx  SPECIFIC_NAME : xxxxxxxxxxxxxxxxx  FUNCT_TYPE : xxxxx
VIEW_CREATOR : NAME-111  VIEW_NAME  : xxxxxxxxxxxxxxxxx  QUERY_BLOCKNO : 53
FUNCT_TEXT   : ........10........20........30........40........50........60........70........80........90.......100
               .......110.......120.......130.......140.......150.......160.......170.......180.......190.......200
               .......210.......220.......230.......240...........254
```

Figure 408. SQL Activity Function Resolutions Workload Block

Field	Description
QUERYNO	The query number.
PLANNAME	The plan name.
COLLECTION_ID	The collection ID.
APPLNAME	The name of the application.
PROGNAME	The program name.
CONSIS_TOKEN	The consistency token.
BIND_TIME	The time stamp of the bind time.
VERSION	The version ID.
CURRENT_PATH	The current path.
FUNCT_SCHEMA	A short SQL identifier, either ordinary or delimited, following the concept of qualified names consistent with the ANSI/ISO SQL92 standard.
FUNCT_NAME	The name of a function without a qualifier.
SPECIFIC_NAME	Identifies the particular function. The specific name must identify a specific function name in the explicitly or implicitly specified schema.
FUNCT_TYPE	The classification of the function: **SCALAR** Scalar UDF **TABLE** Table UDF
VIEW_CREATOR	The name of the view creator if the function is referenced in a view definition.
VIEW_NAME	The name of the view if the function is referenced in a view definition.
QUERY_BLOCKNO	A number that identifies the query block number being explained.
FUNCT_TEXT	Contains the text of the function reference, function name, and parameters. It can be up to 254 characters long.

Part 15. The System Parameters Report Set

This part of the *Report Reference* describes the system parameters report set. It is divided into the following sections:

- Chapter 74. Introduction to System Parameters Report Set provides a brief overview of the system parameters report set.
- Chapter 75. Generating System Parameters Reports explains how the system parameters reports are generated and the GLOBAL command affects the reports.
- Chapter 76. The System Parameters Report provides an example of the system parameters report with descriptions of the fields contained in the reports.

Chapter 74. Introduction to System Parameters Report Set

The system parameters report provides information about the configuration of the DB2 system being monitored.

A system parameters report entry is produced for every location present in the input data. An entry is also produced if DB2 was restarted with changed system parameters or a change to the system parameters was detected when the statistics interval was reached.

Buffer pool and group buffer pool attributes can be changed while a system is active. If the appropriate DB2 trace class is active, the changes are recorded in the system parameters report in the order of occurrence.

The system parameters reports show information on:

- Storage sizes
- Tracing, checkpoint, and pseudoclose
- Operator functions
- Data installation
- IRLM installation
- Lock escalation
- Archive log installation
- Protection installation
- Log installation
- Data definition control support
- Databases and spaces started automatically
- Distributed data facility
- Routine
- Data sharing
- Buffer pools
- ALTER BUFFERPOOL commands
- Group buffer pools
- Other system parameters

Input to System Parameters Reports

Table 117 shows the input to the system parameters report set.

Table 117. System Parameters Report Set—Input

DB2 Trace Type	DB2 Class	DB2 IFCID	Record Type
Performance	1-11, 13, 14	106	System parameters that are active when a trace is started
Accounting	1		
Statistics	1		
Global	1, 2, 3		
Statistics	1	202	Buffer-pool-related dynamic system parameters (for DB2 Version 3 and later releases)

Table 117. System Parameters Report Set—Input (continued)

DB2 Trace Type	DB2 Class	DB2 IFCID	Record Type
Statistics	V5	230	DB2 data sharing global statistics (DB2 Version 4 and later releases)
Performance	10	201	Status of a buffer pool before and after an ALTER BUFFERPOOL command (for DB2 Version 3 and later releases)
		256	Status of a group buffer pool before and after an ALTER GROUPBUFFERPOOL command (for DB2 Version 4 and later releases)

Chapter 75. Generating System Parameters Reports

There is no DB2 PM command to generate system parameters reports. The reports are generated automatically for each DB2 PM execution if you defined the appropriate ddname in your JCL and the input data is available.

The ddname for the system parameters report is SYSPRMDD. You can specify any other ddname using the DB2 PM GLOBAL command. If you specify another ddname, make sure your JCL contains a valid DD definition for the new ddname.

The following figure shows an example of an SYSPRMDD definition.

```
.
.
.
//SYSPRMDD DD  SYSOUT=*
.
.
.
```

If you do not want system parameters reports, omit the ddname from your JCL (the preferred method), or specify DUMMY in the definition.

With the exception of the INCLUDE/EXCLUDE option, the GLOBAL command does not affect the system parameters reports. For example, if FROM/TO is used to limit the record timestamps, system parameters reports are generated even when the timestamps of the records are outside these times.

When INCLUDE/EXCLUDE is used with LOCATION, GROUP, MEMBER, or SUBSYSTEMID. No system parameters reports are generated for those locations, groups, members, or subsystems excluded by this process.

Chapter 76. The System Parameters Report

Tuning DB2

This chapter identifies and describes the specific DB2 data which is reported for the purpose of tuning DB2. For general tuning advice on DB2, refer to the DB2 Administration Guide 'Performance, Monitoring, and Tuning' chapters for the specific release of DB2.

This chapter describes in detail the system parameters report. It consists of the following sections:

- System parameters report header description
- System parameters report example
- Field descriptions.

System Parameters Report Header

The system parameters reports contain the following information in the header at the top of each page:

```
   LOCATION: STLEC1                    DB2 PERFORMANCE MONITOR (V6)                    PAGE: 1-1
      GROUP: GRPA                         SYSTEM PARAMETERS REPORT
     MEMBER: M2
  SUBSYSTEM: SSDQ                                                   ACTUAL FROM: 04/26/98 22:50:03.98
DB2 VERSION: V6
```

Figure 409. System Parameters Report Header Example

The DB2 PM system parameters report header contains the following information, described line by line:

LOCATION
The DB2 reporting location. If the location name is not available, the DB2 data sharing group name is printed in this field. If the DB2 data sharing group name does not exist, the DB2 subsystem ID is printed.

DB2 PERFORMANCE MONITOR
The product name and version.

PAGE The page number in the format *lll-nnnnnn* , where *lll* denotes the location number within the report and *nnnnnn* the page number within the location.

GROUP
The name of the DB2 data sharing group. This field shows N/P if there is no group name and N/A if the DB2 release is earlier than DB2 Version 4.

SYSTEM PARAMETERS REPORT
The title of the report.

MEMBER
The name of the DB2 data sharing member. This field shows N/P if there is no member name and N/A if the DB2 release is earlier than DB2 Version 4.

This field is not printed on the report page showing the GROUP BUFFERPOOLS PARAMETERS.

ALTER BUFFERPOOL
The report page description. This can be either blank, ALTER BUFFERPOOL, or GROUP BUFFERPOOLS PARAMETERS.

SUBSYSTEM
The ID of the local DB2 subsystem. This field is not printed on the report page showing the GROUP BUFFERPOOLS PARAMETERS.

ACTUAL FROM
The date and time of the first record in the report shown for a specific location. They change with the location.

DB2 VERSION
The DB2 version and release of the subsystem that generated the data.

Example of the System Parameters Report

Figure 410 is an example of the system parameters report.

```
   LOCATION: GSDLHULB                    DB2 PERFORMANCE MONITOR (V6)                    PAGE: 1-1
      GROUP: DSN2                          SYSTEM PARAMETERS REPORT
     MEMBER: HULB
  SUBSYSTEM: HULB                                                    ACTUAL FROM: 07/03/99 09:02:55.58
DB2 VERSION: V6

 STORAGE SIZES INSTALLATION PARAMETERS (DSNTIPC,DSNTIPE)
 ------------------------------------------------------
 MAX NO OF USERS CONCURRENTLY RUNNING IN DB2 (CTHREAD).....70
 MAX NO OF TSO CONNECTIONS (IDFORE).....40
 MAX NO OF BATCH CONNECTIONS (IDBACK).....20
 MAX NO OF REMOTE CONNECTIONS (CONDBAT).....32
 MAX NO OF CONCURRENT REMOTE ACTIVE CONNECTIONS (MAXDBAT).....32
 MAXIMUM SIZE OF EDM POOL IN BYTES (EDMPOOL).....6,540,288
 MAXIMUM SIZE OF SORT POOL IN BYTES (SRTPOOL).....897,024
 MAXIMUM SIZE OF RID POOL IN BYTES (MAXRBLK).....4,489,216
 3990 CACHE (SEQCACH).....BYPASS
 UTILITY CACHE OPTION (SEQPRES).....NO
 MAXIMUM KEPT DYNAMIC STATEMENTS (MAXKEEPD).....5,000
 CONTRACT THREAD STORAGE (CONTSTOR).....YES

 TRACING, CHECKPOINT & PSEUDO-CLOSE PARAMETERS (DSNTIPN)
 -------------------------------------------------------
 START AUDIT TRACE (AUDITST).....NO
 START GLOBAL TRACE (TRACSTR).....16
 TRACE TABLE SIZE IN 4K BYTES (TRACTBL).....16
 START SMF ACCOUNTING (SMFACCT).....1
 START SMF STATISTICS (SMFSTAT).....1,3,4,5
 STATISTICS TIME INTERVAL IN MINUTES (STATIME).....5
 START MONITOR TRACE (MON).....NO
 MONITOR BUFFER SIZE IN BYTES (MONSIZE).....8,192
 CHECKPOINT FREQUENCY (LOGLOAD).....50,000
 PSEUDO-CLOSE FREQUENCY (PCLOSEN).....5
 PSEUDO-CLOSE TIMER (PCLOSET).....10
 UR CHECK FREQUENCY (URCHKTH).....167
 LIMIT BACKOUT (LBACKOUT).....AUTO
 BACKOUT DURATION (BACKODUR).....15

 OPERATOR FUNCTIONS INSTALLATION PARAMETERS (DSNTIPO)
 ---------------------------------------------------
 WTO ROUTE CODES (ROUTCDE).....1
 RESOURCE LIMIT FACILITY AUTOMATIC START (RLF).....NO
 RESOURCE LIMIT SPECIFICATION TABLE SUFFIX (RLFTBL).....01
 RESOURCE LIMIT SPEC TABLE ERROR ACTION (RLFERR).....NOLIMIT
 AUTO BIND (ABIND).....YES
 ALLOW EXPLAIN AT AUTOBIND (ABEXP).....YES
 DPROP SUPPORT (EDPROP).....ANY
 SITE TYPE (SITETYP).....LOCALSITE
 TRACKER SITE (SPRMTRKR).....YES
 READ COPY2 ARCHIVE (ARC2FRST).....YES

 DATA INSTALLATION PARAMETERS (DSNTIPA2)
 --------------------------------------
 ICF CATALOG QUALIFIER (CATALOG).....DSN2

 IRLM INSTALLATION PARAMETERS (DSNTIPI)
 --------------------------------------
 IRLM SUBSYSTEM NAME (IRLMSID).....I513
 IRLM RESOURCE TIMEOUT IN SECONDS (IRLMRWT).....60
 IRLM AUTOMATIC START (IRLMAUT).....YES
 IRLM START PROCEDURE NAME (IRLMPRC).....HULBIRLM
 SECONDS DB2 WILL WAIT FOR IRLM START (IRLMSWT).....600
 UTILITY TIMEOUT FACTOR (UTIMOUT).....6
 U LOCK FOR REPEATABLE READ OR READ STABILITY (RRULOCK).....NO

 ARCHIVE LOG INSTALLATION PARAMETERS (DSNTIPA)
 ---------------------------------------------
 NUMBER OF ARCHIVE LOG COPIES (TWOARCH).....1
 COPY 1 PREFIX (ARCPFX1).....DSN2.HULB.ARCHLOG1
 COPY 2 PREFIX (ARCPFX2).....DSN2.HULB.ARCHLOG2
 CATALOG ARCHIVE DATASETS (CATALOG).....YES
 COPY1 ARCHIVE LOG DEVICE TYPE (UNIT).....DASD
 COPY2 ARCHIVE LOG DEVICE TYPE (UNIT2).....'BLANK'
 SPACE ALLOCATION METHOD (ALCUNIT).....CYLINDER
 PRIMARY SPACE ALLOCATION (PRIQTY).....48
 SECONDARY SPACE ALLOCATION (SECQTY).....2
 ARCHIVE LOG BLOCK SIZE IN BYTES (BLKSIZE).....20,480
 MAXIMUM READ TAPE UNITS (MAXRTU).....2
 TAPE UNIT DEALLOCATION PERIOD(LOGPDMIN,LOGPDSEC).....0
 MAX NUMBER OF DATASETS RECORDED IN BSDS (MAXARCH).....1,000
 FIRST ARCHIVE COPY MASS STG GROUP NAME (MSGVP).....'NONE'
 SECOND ARCHIVE COPY MASS STG GROUP NAME (MSGVP2).....'NONE'
 DAYS TO RETAIN ARCHIVE LOG DATA SETS (ARCRETN).....9,999
 ISSUE WTOR BEFORE MOUNT FOR ARCHIVE VOLUME (ARCWTOR).....YES
 COMPACT DATA (COMPACT).....NO
 TIMESTAMP ARCHIVE LOG DATA SETS (TSTAMP).....NO
 EXTENDED DATESTAMP INDICATOR (TIMESTAMP).....YES
 QUIESCE PERIOD (QUIESCE).....5

 DISTRIBUTED DATA FACILITY PANEL 1 (DSNTIPR)
 -------------------------------------------
 DDF STARTUP OPTION (DDF).....COMMAND
 RLST ACCESS ERROR (RLFERRD).....NOLIMIT
 RESYNCHRONIZATION INTERVAL IN MINUTES (RESYNCH).....2
 DBAT STATUS (CMTSTAT).....ACTIVE
 HOP SITE AUTHORIZATION (HOPAUTH).....PKGOWNER
 IDLE THREAD TIMEOUT INTERVAL (IDTHTOIN).....0
 EXTENDED SECURITY (EXTSEC).....N/P

 DISTRIBUTED DATA FACILITY PANEL 2 (DSNTIP5)
 -------------------------------------------
 TCP/IP ALREADY VERIFIED (TCPALVER).....NO
 EXTRA BLOCKS REQ (EXTRAREQ).....15
 EXTRA BLOCKS SRV (EXTRASRV).....22,617
```

Figure 410. Example of the System Parameters Report (Part 1 of 4)

```
   LOCATION: GSDLHULB                    DB2 PERFORMANCE MONITOR (V6)                    PAGE: 1-2
      GROUP: DSN2                          SYSTEM PARAMETERS REPORT
     MEMBER: HULB
  SUBSYSTEM: HULB                                                    ACTUAL FROM: 07/03/98 09:02:55.58
DB2 VERSION: V6

 PROTECTION INSTALLATION PARAMETERS (DSNTIPP)
 --------------------------------------------
 DB2 AUTHORIZATION ENABLED (AUTH).........................YES
 SYSTEM ADMINISTRATOR 1 AUTHORIZATION ID (SYSADM).........SYSADM
 SYSTEM ADMINISTRATOR 2 AUTHORIZATION ID (SYSADM2)........SCFA
 SYSTEM OPERATOR 1 AUTHORIZATION ID (SYSOPR1).............SYSOPR
 SYSTEM OPERATOR 2 AUTHORIZATION ID (SYSOPR2).............SCFA
 DEFAULT (UNKNOWN) USER AUTHORIZATION ID (DEFLTID).......IBMUSER
 RESOURCE LIMIT TABLE CREATOR AUTH ID (RLFAUTH).........SYSIBMAB
 ARCHIVE LOG RACF PROTECTION (PROTECT).....................NO
 PACKAGE AUTHORIZATION CACHE SIZE (CACHEPAC)..............5,000
 PLAN AUTHORIZATION CACHE SIZE (AUTHCACH).................1,024
 ROUTINE AUTHORIZATION CACHE SIZE (CACHERAC)..............32,768
 BIND NEW PACKAGE (BINDNV)..............................BINDADD

 LOG INSTALLATION PARAMETERS (DSNTIPL,DSNTIPH)
 ---------------------------------------------
 NUMBER OF ACTIVE LOG COPIES (TWOACTV).....................1
 INPUT BUFFER SIZE IN K BYTES (INBUFF).....................28
 OUTPUT BUFFER SIZE IN K BYTES (OUTBUFF)...................400
 WRITE THRESHOLD ON NO OF FILLED BUFFER (WRTHRSH)..........20

 DATA DEFINITION CONTROL SUPPORT (DSNTIPZ)
 -----------------------------------------
 INSTALL DD CONTROL (RGFINSTL).............................NO
 CONTROL ALL APPLICATIONS (RGFDEDPL).......................NO
 REQUIRE FULL NAMES (RGFFULLQ).............................YES
 UNREGISTERED DDL DEFAULT (RGFDEFLT).....................ACCEPT
 REGISTER TABLE OWNER (RGFCOLID).....................DSNRGCOL
 DDL REGISTRATION DATABASE NAME (RGFDBNAM)............DSNRGFDB
 APPL REGISTRATION TABLE NAME (RGFNMPRT).....DSN_REGISTER_APPL
 OBJECT REGISTRATION TABLE NAME (RGFNMORT).....DSN_REGISTER_OBJT
 ESCAPE CHARACTER (RGFESCP)...............................X'40'

 ROUTINE PARAMETERS (DSNTIPX)
 ----------------------------
 DB2 PROC NAME (STORPROC)...............................HULBSPAS
 MAX ABEND COUNT (STORMAX)...................................0
 TIMEOUT VALUE (STORTIME)...................................300
 WLM ENVIRONMENT (WLMENV)....................................W

 DATA SHARING PARAMETERS (DSNTIPK,DSNTIPA1)
 ------------------------------------------
 GROUP NAME (GRPNAME).....................................DSN2
 MEMBER NAME (MEMBNAME)...................................HULB
 DATA SHARING ENABLED.....................................YES
 MAXIMUM NUMBER OF MEMBERS..................................248
 PARALLELISM ASSISTANT (ASSIST)...........................YES
 PARALLELISM COORDINATOR (COORDNTR).......................YES
 SU CONVERSION FACTOR.....................................7,850

 OTHER SYSTEM PARAMETERS
 -----------------------
 MAX NO OF DATA SETS CONCURRENTLY IN USE (DSMAX)..........1,800
 DUAL BSDS MODE (TWOBSDS).................................YES
 IRLM INITIALIZATION INQUIRY BY DB2.......................10
 ASYNC DRAIN START - %DSMAX................................1
 ASYNC DRAIN STOP - %DSMAX.................................3
 CHECKPOINTS BETWEEN LEVEL ID UPDATES (DLDFREQ)............0
 IMS/BMP TIMEOUT FACTOR (BMPTOUT)..........................0
 IMS/DLI TIMEOUT FACTOR (DLITOUT)..........................1
 STATIC DESCRIBE (DESCSTAT)...............................YES
 ROLL UP PARALLEL TASK ACCOUNTING (PTASKROL)..............YES

 LOCK ESCALATION PARAMETERS (DSNTIPJ)
 ------------------------------------
 MAX PAGE OR ROW LOCKS PER TABLE SPACE (NUMLKTS)..........1,000
 MAX PAGE OR ROW LOCKS PER USER (NUMLKUS).............10,000
 WAIT FOR RETAINED LOCKS (RETLWAIT).......................N/P

 APPLICATION PROGRAMMING DEFAULTS PANEL 1 (DSNTIPF)
 --------------------------------------------------..........37
 EBCDIC SBCS CCSID (SCCSID)................................37
 EBCDIC MBCS CCSID (MCCSID)................................N/P
 EBCDIC GBCS CCSID (GCCSID)................................N/P
 ASCII SBCS CCSID (ASCCSID)...............................819
 ASCII MBCS CCSID (AMCCSID)................................N/P
 ASCII GBCS CCSID (AGCCSID)................................N/P
 DECIMAL POINT OPTION (DECIMAL).....................PERIOD
 DEFAULT CHARSET (CHARSET).....................ALPHANUM
 DEFAULT DELIMITER (DELIM)...................APOST
 DEFAULT ENCODING SCHEME (ENSCHEME).....................EBCDIC
 DEFAULT HOST LANGUAGE (DEFLANG).....................COBOL
 DEFAULT MIXED GRAPHIC (MIXED).............................NO
 DEFAULT SQL DELIMITER (SQLDELI).....................DEFAULT
 DIST SQL STRING DELIMITER (DSQLDELI).....................APOST
 DECIMAL ARITHMETIC (DECARTH)..............................15
 USE FOR DYNAMIC RULES....................................YES

 APPLICATION PROGRAMMING DEFAULTS PANEL 2 (DSNTIP4)
 --------------------------------------------------
 DATE FORMAT (DATE).....................................ISO
 TIME FORMAT (TIME).....................................ISO
 LOCAL DATE LENGTH (DATELEN)...............................N/A
 LOCAL TIME LENGTH (TIMELEN)...............................N/A
 STD SQL LANGUAGE (STDSQL).................................NO
 CURRENT DEGREE (CDSSRDEF).................................1
 CACHE DYNAMIC SQL (CACHEDYN)..............................NO
 OPTIMIZATION HINTS ALLOWED (OPTHINT)......................NO
 VARCHAR FROM INDEX (RETVLCFK).............................NO
 RELEASE CURSOR HOLD LOCKS (RELCURHL)......................NO
```

Figure 410. Example of the System Parameters Report (Part 2 of 4)

```
   LOCATION: GSDLHULB                    DB2 PERFORMANCE MONITOR (V6)                    PAGE: 1-3
      GROUP: DSN2                          SYSTEM PARAMETERS REPORT
     MEMBER: HULB
  SUBSYSTEM: HULB                                                    ACTUAL FROM: 07/03/98 09:02:55.58
DB2 VERSION: V6

 SIZES PANEL 2 (DSNTIP7)
 -----------------------
 USER LOB VALUE STORAGE (LOBVALA).....................2,031,616
 SYSTEM LOB VALUE STORAGE (LOBVALS)...................2,031,616

 DATABASES AND SPACES STARTED AUTOMATICALLY (DSNTIPS)
 ----------------------------------------------------
 ALL
```

Figure 410. Example of the System Parameters Report (Part 3 of 4)

```
    LOCATION: GSDLHULB                      DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-4
      GROUP: DSN2                            SYSTEM PARAMETERS REPORT
     MEMBER: HULB
  SUBSYSTEM: HULB                                                          ACTUAL FROM: 07/03/98 09:02:55.58
DB2 VERSION: V6


 GROUP BUFFER POOL PARAMETERS
 ---------------------------------------------------------------------------------------
 TIMESTAMP             07/03/98 09:12:25.51          CURRENT DIRECTORY TO DATA RATIO             5
 MEMBER                                 M2           CLASS CASTOUT THRESHOLD (%)                10
 GBP ID                               GBP0           GBP CASTOUT THRESHOLD (%)                  50
 ALLOCATED GBP SIZE (4K)               256           GBP CHECKPOINT INTERVAL (MIN)               8
 ACTUAL DIRECTORY                      942           GBP CACHE SETTING                         YES
 ACTUAL DATA ENTRY                     187           AUTO REC                                  YES
 PENDING DIRECTORY TO DATA RATIO         5
 MODE                                DUPLEX
 SEC-GBP ALLOC                        12345
 SEC-GBP ALLOC DIRECTORY ENTRY        23451
 SEC GBP DATA ENTRY                   34512

 ALTER GROUP BUFFER POOL COMMAND ISSUED                                                 OLD          NEW
 ---------------------------------------------------------------------------------------------------------
 TIMESTAMP             07/03/98 09:14:31.29          CURRENT DIRECTORY TO DATA RATIO             5            4
 MEMBER                                 M2           CLASS CASTOUT THRESHOLD (%)                10           11
 GBP ID                               GBP0           GBP CASTOUT THRESHOLD (%)                  50           51
                                                     GBP CHECKPOINT INTERVAL (MIN)               8            9
                                                     GBP CACHE SETTING                         YES          YES
                                                     AUTO REC                                  YES           NO

BUFFER POOL PARAMETERS
---------------------------------------------------------------------------------------------------------
TIMESTAMP             07/03/98 09:12:25.51          VIRTUAL POOL TYPE                                 PRIMARY
BP ID                                  BP0          VIRTUAL POOL SIZE                                   3,000
                                                    HIPERPOOL SIZE                                          0
                                                    VIRTUAL POOL SEQUENTIAL THRESHOLD                      80
                                                    HIPERPOOL SEQUENTIAL THRESHOLD                         80
                                                    HORIZONTAL DEFERRED WRITE THRESHOLD                    50
                                                    VERTICAL DEFERRED WRITE THRESHOLD (PERCENTAGE)         10
                                                    VERTICAL DEFERRED WRITE THRESHOLD (BUFFERS)             0
                                                    VIRTUAL POOL PARALLEL SEQUENTIAL THRESHOLD             50
                                                    ASSISTING PARALLEL SEQUENTIAL THRESHOLD                 0
                                                    CASTOUT                                                NO
                                                    PAGE STEAL METHOD                                     LRU

ALTER BUFFER POOL COMMAND ISSUED                                                                      OLD          NEW
---------------------------------------------------------------------------------------------------------------------
TIMESTAMP             07/03/98 09:14:31.29          VIRTUAL POOL TYPE                                 PRIMARY      DSPACE
BP ID                                  BP0          VIRTUAL POOL SIZE                                   2,000        3,000
                                                    HIPERPOOL SIZE                                          0            0
                                                    VIRTUAL POOL SEQUENTIAL THRESHOLD                      80           80
                                                    HIPERPOOL SEQUENTIAL THRESHOLD                         80           80
                                                    HORIZONTAL DEFERRED WRITE THRESHOLD                    50           50
                                                    VERTICAL DEFERRED WRITE THRESHOLD (PERCENTAGE)         10           10
                                                    VERTICAL DEFERRED WRITE THRESHOLD (BUFFERS)             0            0
                                                    VIRTUAL POOL PARALLEL SEQUENTIAL THRESHOLD             50           50
                                                    ASSISTING PARALLEL SEQUENTIAL THRESHOLD                 0           20
                                                    CASTOUT                                                NO           NO
                                                    PAGE STEAL METHOD                                     LRU         FIFO
```

Figure 410. Example of the System Parameters Report (Part 4 of 4)

Field Descriptions

The tables in this section describe the fields on the system parameters report. The field descriptions are divided into blocks as they appear on the report. The names in parentheses on the title are the names of the DB2 installation panels containing the listed parameters. The following is a description of the table columns:

Field The field label. The names in parentheses on the parameters are the names of the DB2 ZPARMs for the parameters.

Description
Description of the field.

V4 The field is applicable to DB2 Version 4.

V5 The field is applicable to DB2 Version 6.

V6 The field is applicable to DB2 Version 6.

Storage Sizes Installation Parameters (DSNTIPC,DSNTIPE)

The fields contained in the storage sizes installation parameters block are shown in Table 118.

Table 118. Storage Sizes Installation Parameters (DSNTIPC,DSNTIPE)

Field	Description	V4	V5	V6
MAX NO OF USERS CONCURRENTLY RUNNING IN DB2 (CTHREAD)	The maximum number of concurrent allied threads. This includes threads for IMS, CICS, TSO (foreground and batch), and utilities. Install parameter MAX USERS on panel DSNTIPE, or ZPARM CTHREAD in DSN6SYSP.	●	●	●
MAX NO OF TSO CONNECTIONS (IDFORE)	The maximum number of concurrent TSO foreground connections (QMF, DSN, DB2I, and SPUFI). Install parameter MAX TSO CONNECT on panel DSNTIPE, or ZPARM IDFORE in DSN6SYSP.	●	●	●
MAX NO OF BATCH CONNECTIONS (IDBACK)	The maximum number of concurrent connections from batch jobs and utilities. Install parameter MAX BATCH CONNECT on panel DSNTIPE, or ZPARM IDBACK in DSN6SYSP.	●	●	●
MAX NO OF REMOTE CONNECTIONS (CONDBAT)	The maximum number of connected remote threads. Install parameter MAX REMOTE CONNECTED on panel DSNTIPE, or ZPARM CONDBAT in DSN6SYSP.	●	●	●
MAX NO OF CONCURRENT REMOTE ACTIVE CONNECTIONS (MAXDBAT)	The maximum number of database access threads (DBATs) that can actively process SQL requests. Install parameter MAX REMOTE ACTIVE on panel DSNTIPE, or ZPARM MAXDBAT in DSN6SYSP.	●	●	●
MAXIMUM SIZE OF EDM POOL IN BYTES (EDMPOOL)	The maximum size (in bytes) of the EDM pool that can be specified on the DB2 Install panel. Install parameter EDMPOOL STORAGE on panel DSNTIPC, or ZPARM EDMPOOL in DSN6SPRM.	●	●	●
MAXIMUM SIZE OF SORT POOL IN BYTES (SRTPOOL)	The maximum size of the sort work area allocated for each concurrent sort user. Install parameter SORT POOL SIZE on panel DSNTIPC, or ZPARM SPRMSP in DSN6SPRM.	●	●	●

Table 118. Storage Sizes Installation Parameters (DSNTIPC,DSNTIPE) (continued)

Field	Description	V4	V5	V6
MAXIMUM SIZE OF RID POOL IN BYTES (MAXRBLK)	The maximum number of RID blocks in the system. Install parameter RID POOL SIZE on panel DSNTIPC, or ZPARM MAXRBLK in DSN6SPRM.	●	●	●

3990 CACHE (SEQCACH)	Indicates whether DB2 specifies sequential 3990 cache for sequential prefetch and dynamic prefetch. DFSMS controls can specify which data sets are not to be cached. The possible values of this field are different for each of the supported DB2 releases.
	
	The possible values for DB2 Version 4 and later releases are:
	`SEQ`
	`BYPASS`
	
	Install parameter SEQUENTIAL CACHE on panel DSNTIPE, or ZPARM SEQCACH in DSN6SPRM.
		●	●	●

UTILITY CACHE OPTION (SEQPRES)	Specifies whether certain DB2 utilities allow data to remain longer in the 3990 cache when reading data: **YES** Utilities with the options LOAD PART integer RESUME and REPORG TABLESPACE PART for a table that has large nonpartitioned indexes, allow data to remain longer in the 3990 cache and thus might improve the performance of subsequent writes. **NO** The DB2 utilities use the 3990 cache in the same way as any other application, that is, according to the sequential cache option. Install parameter UTILITY CACHE OPTION on panel DSNTIPE, or ZPARM SEQPRES in DSN6PRM.	●	●	●
MAXIMUM KEPT DYNAMIC STATEMENTS (MAXKEEPD)	This parameter specifies the total number of prepared dynamic SQL statements that can be saved past a commit point on all threads in the system using the KEEPDYNAMIC(YES) BIND option. Each kept dynamic statement occupies storage in the DBM1 address space. When this limit is reached, DB2 uses an LRU algorithm to keep the number of idle statements within this limit.		●	●

Tracing, Checkpoint and Pseudo-Close Parameters (DSNTIPN)

The fields contained in the tracing, checkpoint and pseudo-close parameters block are shown in Table 119.

Table 119. Tracing, Checkpoint and Pseudo-Close Parameters (DSNTIPN)

Field	Description	V4	V5	V6
START AUDIT TRACE (AUDITST)	The AUDIT TRACE classes started. If all classes are started, the value is `ALL`. If AUDIT TRACE is not started, the value is `NO`. Install parameter AUDIT TRACE on panel DSNTIPN, or ZPARM AUDITST in DSN6SYSP.	●	●	●
START GLOBAL TRACE (TRACSTR)	The GLOBAL TRACE classes started. If all classes are started, the value is `ALL`. If GLOBAL TRACE is not started, the value is `NO`. Install parameter TRACE AUTO START on panel DSNTIPN, or ZPARM TRACSTR in DSN6SYSP.	●	●	●
TRACE TABLE SIZE IN 4K BYTES (TRACTBL)	The size of the resident trace table in kilobytes. Install parameter TRACE SIZE on panel DSNTIPN, or ZPARM TRACTBL in DSN6SYSP.	●	●	●
START SMF ACCOUNTING (SMFACCT)	The SMF ACCOUNTING TRACE classes started. If all classes are started, the value is `ALL`. If SMF ACCOUNTING TRACE is not started, the value is `NO`. Install parameter SMF ACCOUNTING on panel DSNTIPN, or ZPARM SMFACCT in DSN6SYSP.	●	●	●
START SMF STATISTICS (SMFSTAT)	The SMF STATISTICS TRACE classes started. If all classes are started, the value is `ALL`. If SMF STATISTICS TRACE is not started, the value is `NO`. Install parameter SMF STATISTICS on panel DSNTIPN, or ZPARM SMFSTAT in DSN6SYSP.	●	●	●
STATISTICS TIME INTERVAL IN MINUTES (STATIME)	The time interval (in minutes) between statistics collection. Statistics records are written at the end of this interval. Install parameter STATISTICS TIME on panel DSNTIPN, or ZPARM STATIME in DSN6SYSP.	●	●	●

Table 119. Tracing, Checkpoint and Pseudo-Close Parameters (DSNTIPN) (continued)

Field	Description	V4	V5	V6
START MONITOR TRACE (MON)	The MONITOR TRACE classes started. If all classes are started, the value is `ALL`. If MONITOR TRACE is not started, the value is `NO`. Install parameter MONITOR TRACE on panel DSNTIPN, or ZPARM MON in DSN6SYSP.	●	●	●
MONITOR BUFFER SIZE IN BYTES (MONSIZE)	The size of the monitor buffer in total bytes. Install parameter MONITOR SIZE on panel DSNTIPN, or ZPARM MONSIZE in DSN6SYSP.	●	●	●
CHECKPOINT FREQUENCY (LOGLOAD)	The number of log records (not control intervals) written between checkpoints. Install parameter CHECKPOINT FREQ on panel DSNTIPN, or ZPARM LOGLOAD in DSN6SYSP.	●	●	●
PSEUDO-CLOSE FREQUENCY (PCLOSEN)	The pseudoclose frequency. It specifies the number of checkpoints required before a data set that was not updated can be a pseudoclose candidate. ZPARM PCLOSEN in DSN6SPRM.	●	●	●
PSEUDO-CLOSE TIMER (PCLOSET)	The pseudoclose timer. It specifies the amount of time (in minutes) that must elapse before a data set can be a pseudoclose candidate. ZPARM PCLOSET in DSN6SPRM.	●	●	●
UR CHECK FREQUENCY (URCHKTH)	The number of complete checkpoint cycles before DB2 issues a warning message to the console about an uncommitted unit of recovery (UR). It can be a number between 0 and 255. 0, which is the default, indicates that no message is issued.		●	●
LIMIT BACKOUT (LBACKOUT)	Limit restart backout activity. Possible values are: • YES • NO • AUTO			●
BACKOUT DURATION	Checkpoints worth of log records by which backout is limited.			●

Operator Functions Installation Parameters (DSNTIPO)

The fields contained in the operator functions installation parameters block are shown in Table 120.

Table 120. Operator Functions Installation Parameters (DSNTIPO)

Field	Description	V4	V5	V6
WTO ROUTE CODES (ROUTCDE)	The individual write-to-operator routing codes started. Install parameter WTO ROUTE CODES on panel DSNTIPO, or ZPARM ROUTCDE in DSN6SYSP.	●	●	●
RESOURCE LIMIT FACILITY AUTOMATIC START (RLF)	Indicates whether the resource limit facility (RLF) is started automatically. Install parameter RLF AUTO START on panel DSNTIPO, or ZPARM RLF in DSN6SYSP.	●	●	●
RESOURCE LIMIT SPECIFICATION TABLE SUFFIX (RLFTBL)	The last two characters of the resource limit specification table name. Install parameter RLST NAME SUFFIX on panel DSNTIPO, or ZPARM RLFTBL in DSN6SYSP.	●	●	●
RESOURCE LIMIT SPEC TABLE ERROR ACTION (RLFERR)	The action taken by DB2 when the governor cannot use the resource limit specification table: **NOLIMIT** The dynamic SQL statements run without limit. **NORUN** The dynamic SQL statements are immediately terminated with an SQL error code. A number from 1 to 5 000 000 represents the number of CPU service units allowed for a query. Install parameter RLST ACCESS ERROR on panel DSNTIPN, or ZPARM RLFERR in DSN6SYSP.	●	●	●
ALLOW AUTOBIND OPERATIONS (ABIND)	Indicates whether autobind operations are allowed: **YES** The plan or package is automatically rebound. **NO** Any invalid plan or package must be rebound before it can be operational. Install parameter AUTO BIND on panel DSNTIPB, or ZPARM ABIND in DSN6SPRM.	●	●	●
ALLOW EXPLAIN AT AUTOBIND (ABEXP)	Indicates whether explain happens at autobind time for plans and packages which were originally bound with EXPLAIN(YES). Install parameter EXPLAIN PROCESSING on panel DSNTIPO, or ZPARM ABEXP in DSNDQWPZ.	●	●	●

Table 120. Operator Functions Installation Parameters (DSNTIPO) (continued)

Field	Description	V4	V5	V6
DPROP SUPPORT (EDPROP)	Indicates whether DPROP is used to propagate changes: **NO** SQL changes are not propagated. **ONLY** Affected tables are updated if the application is running in an IMS environment. DPROP is used to propagate changes. **ANY** Affected tables are updated regardless of the application environment. DPROP is used to propagate changes. Install parameter DPROP SUPPORT on panel DSNTIPO, or ZPARMs EDPROP and CHGDC in DSN6SPRM.	●	●	●
TRACKER SITE (SPRMTRKR)	Indicates whether the site is a tracker site. Install parameter TRACKER TYPE on panel DSNTIPO, or ZPARM SPRMTRKR in DSN6SPRM.	●	●	●
READ COPY2 ARCHIVE (ARC2FRST)	Read COPY2 archives first.			●

Data Installation Parameters (DSNTIPA2)

The field contained in the data installation parameters block is shown in Table 121.

Table 121. Data Installation Parameters (DSNTIPA2)

Field	Description	V4	V5	V6
ICF CATALOG QUALIFIER (CATALOG)	The ALIAS of the VSAM ICF catalog where DB2 VSAM data sets are cataloged. It is used as the high-level qualifier for all DB2 system data sets. Install parameter CATALOG ALIAS on panel DSNTIPA2, or ZPARM CATALOG in DSN6SPRM.	●	●	●

IRLM Installation Parameters (DSNTIPI)

The fields contained in the IRLM installation parameters block are shown in Table 122.

Table 122. IRLM Installation Parameters (DSNTIPI)

Field	Description	V4	V5	V6
IRLM SUBSYSTEM NAME (IRLMSID)	The name by which the IRLM subsystem is known to MVS. Install parameter SUBSYSTEM NAME on panel DSNTIPI, or ZPARM IRLMSID in DSN6SPRM.	●	●	●

Table 122. IRLM Installation Parameters (DSNTIPI) (continued)

Field	Description	V4	V5	V6
IRLM RESOURCE TIMEOUT IN SECONDS (IRLMRWT)	The maximum amount of time (in seconds) that DB2 waits for the release of a locked resource. Install parameter RESOURCE TIMEOUT on panel DSNTIPI, or ZPARM IRLMRWT in DSN6SPRM.	●	●	●
IRLM AUTOMATIC START (IRLMAUT)	Indicates whether IRLM is started automatically by DB2. Install parameter AUTO START on panel DSNTIPI, or ZPARM IRLMAUT in DSN6SPRM.	●	●	●
IRLM START PROCEDURE NAME (IRLMPRC)	The name of the IRLM procedure which DB2 uses to start IRLM. Install parameter PROC NAME on panel DSNTIPI, or ZPARM IRLMPRC in DSN6SPRM.	●	●	●
SECONDS DB2 WILL WAIT FOR IRLM START (IRLMSWT)	The number of seconds that DB2 waits for IRLM to ready itself for work. If this time expires and IRLM is still not ready, DB2 abends. This applies whether or not DB2 autostarts IRLM. Install parameter TIME TO AUTOSTART on panel DSNTIPI, or ZPARM IRLMSWT in DSN6SPRM.	●	●	●
UTILITY TIMEOUT FACTOR (UTIMOUT)	The number of resource timeouts that a utility waits for a lock or for all claims on a resource of a particular claim class to be released. Install parameter UTILITY TIMEOUT on panel DSNTIPI, or ZPARM UTIMOUT in DSN6SPRM.	●	●	●
U LOCK FOR REPEATABLE READ OR READ STABILITY (RRULOCK)	Indicates whether the U lock mode was used for an updated cursor with repeatable read isolation or read stability: **YES** The U lock was used for repeatable read or read stability. **NO** The S lock was used for repeatable read or read stability. Install parameter U LOCK FOR RR/RS on panel DSNTIPI, or ZPARM RRULOCK in DSN6SPRM.	●	●	●

Archive Log Installation Parameters (DSNTIPA,DSNTIPH)

The fields contained in the archive log installation parameters block are shown in Table 123.

Table 123. Archive Log Installation Parameters (DSNTIPA,DSNTIPH)

Field	Description	V4	V5	V6
NUMBER OF ARCHIVE LOG COPIES (TWOARCH)	The number of archive log data sets. Install parameter NUMBER OF COPIES on PANEL DSNTIPH, or ZPARM TWOARCH in DSN6LOGP.	●	●	●
COPY 1 PREFIX (ARCPFX1)	The data set name prefix character string of the copy-1 archive log data set. Install parameter Archive Logs: COPY1 PREFIX on panel DSNTIPH, or ZPARM ARCPFX1 in DSN6ARVP.	●	●	●
COPY 2 PREFIX (ARCPFX2)	The data set name prefix character string for the copy-2 archive log data set. Install parameter Archive Logs: COPY2 PREFIX on panel DSNTIPH, or ZPARM ARCPFX2 in DSN6ARVP.	●	●	●
CATALOG ARCHIVE DATA SETS (CATALOG)	Indicates whether the archive data sets are cataloged in the primary IFC catalog.	●	●	●
COPY1 ARCHIVE LOG DEVICE TYPE (UNIT)	The type of device for COPY1 archive logs. Install parameter DEVICE TYPE 1 on panel DSNTIPA, or ZPARM UNIT in DSN6ARVP.	●	●	●
COPY2 ARCHIVE LOG DEVICE TYPE (UNIT2)	The type of device for COPY2 archive logs. Install parameter DEVICE TYPE 2 on panel DSNTIPA, or ZPARM UNIT2 in DSN6ARVP.	●	●	●
SPACE ALLOCATION METHOD (ALCUNIT)	The unit used in allocating archive data sets. Possible values are CYLINDER, TRACK, and BLOCK. Install parameter ALLOCATION UNITS on panel DSNTIPA, or ZPARM ALCUNIT in DSN6ARVP.	●	●	●
PRIMARY SPACE ALLOCATION (PRIQTY)	The primary space quantity used in allocating archive data sets. Install parameter PRIMARY QUANTITY on panel DSNTIPA, or ZPARM PRIQTY in DSN6ARVP.	●	●	●
SECONDARY SPACE ALLOCATION (SECQTY)	The secondary space quantity used in allocating archive data sets. Install parameter SECONDARY QTY on panel DSNTIPA, or ZPARM SECQTY in DSN6ARVP.	●	●	●

Table 123. Archive Log Installation Parameters (DSNTIPA,DSNTIPH) (continued)

Field	Description	V4	V5	V6
ARCHIVE LOG BLOCK SIZE IN BYTES (BLKSIZE)	The block size of the archive log data sets. Install parameter BLOCK SIZE on panel DSNTIPA, or ZPARM BLKSIZE in DSN6ARVP.	●	●	●
MAXIMUM READ TAPE UNITS (MAXRTU)	The maximum number of tape units that can be allocated for archive read purposes. Install parameter READ TAPE UNITS on panel DSNTIPA, or ZPARM MAXRTU in DSN6LOGP.	●	●	●
TAPE UNIT DEALLOCATION PERIOD (LOGPDMIN,LOGPDSEC)	The time interval in seconds for which an allocated archive read tape unit is allowed to remain unused before it is deallocated.	●	●	●
MAX NUMBER OF DATASETS RECORDED IN BSDS (MAXARCH)	The maximum number of archive log data sets that can be recorded in the BSDS. If you have a dual archive, then this number is for each log data set. If the maximum specified is 500, then allow 500 COPY-1 and 500 COPY-2 data sets in the BSDS. Install parameter RECORDING MAX on panel DSNTIPA, or ZPARM MAXARCH in DSN6LOGP	●	●	●
FIRST ARCHIVE COPY MASS STG GROUP NAME (MSGVP)	The mass storage system volume group name of the first storage group. If mass storage is used, the name of the first storage group is shown. If mass storage is not used, `NONE` is shown. Install parameter MSVGP 1 on panel DSNTIPA, or ZPARM MSGVP in DSN6ARVP.	●	●	●
SECOND ARCHIVE COPY MASS STG GROUP NAME (MSGVP2)	The mass storage system volume group name of the second storage group. If mass storage is used, the name of the second storage group is shown. If mass storage is not used, `NONE` is shown. Install parameter MSVGP 2 on panel DSNTIPA, or ZPARM MSGVP2 in DSN6ARVP.	●	●	●
DAYS TO RETAIN ARCHIVE LOG DATA SETS (ARCRETN)	The number of days the archive log data sets are to be retained. Install parameter RETENTION PERIOD on panel DSNTIPA, or ZPARM ARCRETN in DSN6ARVP.	●	●	●

Table 123. Archive Log Installation Parameters (DSNTIPA,DSNTIPH) (continued)

Field	Description	V4	V5	V6
ISSUE WTOR BEFORE MOUNT FOR ARCHIVE VOLUME (ARCWTOR)	Indicates whether a a write-to-operator-with-reply message is written before a mount request for an archive volume. Install parameter WRITE TO OPER on panel DSNTIPA, or ZPARM ARCWTOR in DSN6ARVP.	●	●	●
COMPACT DATA (COMPACT)	Indicates whether data written to archive logs should be compacted. This is applicable only if the device is 3480. Install parameter COMPACT DATA on panel DSNTIPA, or ZPARM COMPACT in DSN6ARVP.	●	●	●
TIMESTAMP ARCHIVE LOG DATA SETS (TSTAMP)	Indicates whether a timestamp is inserted in the archive log data sets. Install parameter TIMESTAMP ARCHIVES on panel DSNTIPH, or ZPARM TSTAMP in DSN6ARVP.	●	●	●
EXTENDED TIMESTAMP INDICATOR (TIMESTAMP)	Indicates that the timestamp includes time with date in YYYYDDD format.	●	●	●
QUIESCE PERIOD (QUIESCE)	The maximum amount of time (in seconds) permitted for DB2 to attempt a full system quiesce. Install parameter QUIESCE PERIOD on panel DSNTIPA, or ZPARM QUIESCE in DSN6ARVP.	●	●	●

Distributed Data Facility Parameters 2 (DSNTIP5)

The fields contained in the distributed data facility parameters block are shown in Table 124.

Table 124. Distributed Data Facility Parameters (DSNTIPR)

Field	Description	V4	V5	V6
DB2 STARTUP OPTION (DDF)	The startup option for the distributed data facility (DDF). Install parameter DDF STARTUP OPTION on panel DSNTIPR, or ZPARM DDF in DSN6FAC.	●	●	●

Table 124. Distributed Data Facility Parameters (DSNTIPR) (continued)

Field	Description	V4	V5	V6
RLST ACCESS ERROR ACTION (RLFERRD)	The action taken by DB2 if the governor cannot use the resource limit specification table during a request from another DB2 subsystem: **NOLIMIT** The remote query runs without limit. **NORUN** The remote query is immediately terminated. A number from 1 to 5 000 000 represents the number of CPU service units allowed for a remote query. Install parameter RLST ACCESS ERROR on panel DSNTIPR, or ZPARM RLFERRD in DSN6FAC.	●	●	●
RESYNCHRONIZATION INTERVAL IN MINUTES (RESYNCH)	The number of minutes between two resynchronization intervals. Install parameter RESYNC INTERVAL on panel DSNTIPR, or ZPARM RESYNC in DSN6FAC.	●	●	●
DBAT STATUS (CMTSTAT)	The status of a DBAT that commits or rolls back and holds no database locks or cursors. Install parameter DDFTHREADS on panel DSNTIPR, or ZPARM CMTSTAT in DSN6FAC.	●	●	●
HOP SITE AUTHORIZATION (HOPAUTH)	The authorization applied to static statements in a distributed 'hop' environment. Possible values are `PKGOWNER` (the package owner's authorization is used), and `RUNNER` (the runner's authorization is used). This field is valid for non-DB2 requesters only. ZPARM HOPAUTH in DSNDSPRM.	●	●	●
IDLE THREAD TIMEOUT INTERVAL (IDTHTOIN)	Indicates the time in minutes that an active server thread can remain in the system before being canceled by DB2. A value of 0 indicates that server threads cannot be timed out. Install parameter IDLE THREAD TIMEOUT on panel DSNTIPR, or ZPARM IDTHTOIN in DSN6FAC.	●	●	●
EXTENDED SECURITY (EXTSEC)	Indicates whether DDF enables you to change the RACF password using the DRDA change password function. If so, DDF returns descriptive error reason codes when RACF detects security errors.	●	●	●

Distributed Data Facility Parameters 2 (DSNTIP5)

The fields contained in the distributed data facility parameters 2 block are shown in Table 125.

Table 125. Distributed Data Facility Parameters (DSNTIPR)

Field	Description	V4	V5	V6
TCP/IP ALREADY VERIFIED (TCPALVER)	If this field indicates YES, TCP/IP clients can connect to DB2 by specifying only a user ID without any authentication information (this means no password, no RACF PassTicket, and no DCE ticket). If this field indicates NO (which is the default), TCP/IP clients must provide authentication information to gain access to DB2.		●	●
EXTRA BLOCKS REQ (EXTRAREQ)	Number of extra blocks for requester.			●
EXTRA BLOCKS SRV (EXTRASRV)	Number of extra blocks for server.			●

Protection Installation Parameters (DSNTIPP)

The fields contained in the protection installation parameters block are shown in Table 126.

Table 126. Protection Installation Parameters (DSNTIPP)

Field	Description	V4	V5	V6
DB2 AUTHORIZATION ENABLED (AUTH)	Indicates whether the SQL statements GRANT and REVOKE are active. If not, all authorization checking is disabled and GRANT statements have no effect. Install parameter USE PROTECTION on panel DSNTIPP, or ZPARM AUTH in DSN6SPRM.	●	●	●
SYSTEM ADMINISTRATOR 1 AUTHORIZATION ID (SYSADM)	The authorization ID of the system administrator 1. Install parameter SYSTEM ADMIN 1 on panel DSNTIPP, or ZPARM SYSADM in DSN6SPRM.	●	●	●
SYSTEM ADMINISTRATOR 2 AUTHORIZATION ID (SYSADM2)	The authorization ID of the system administrator 2. Install parameter SYSTEM ADMIN 2 on panel DSNTIPP, or ZPARM SYSADM2 in DSN6SPRM.	●	●	●
SYSTEM OPERATOR 1 AUTHORIZATION ID (SYSOPR1)	The authorization ID of the system operator 1. Install parameter SYSTEM OPERATOR 1 on panel DSNTIPP, or ZPARM SYSOPR1 in DSN6SPRM.	●	●	●

Table 126. Protection Installation Parameters (DSNTIPP) (continued)

Field	Description	V4	V5	V6
SYSTEM OPERATOR 2 AUTHORIZATION ID (SYSOPR2)	The authorization ID of the system operator 1. Install parameter SYSTEM OPERATOR 2 on panel DSNTIPP, or ZPARM SYSOPR2 in DSN6SPRM.	●	●	●
DEFAULT (UNKNOWN) USER AUTHORIZATION ID (DEFLTID)	The authorization ID of the system default user. Install parameter UNKNOWN AUTHID on panel DSNTIPP, or ZPARM DEFLTID in DSN6SPRM.	●	●	●
RESOURCE LIMIT TABLE CREATOR AUTH ID (RFLAUTH)	The authorization ID of the resource limit specification table. Install parameter RESOURCE AUTHID on panel DSNTIPP, or ZPARM RLFAUTH in DSN6SYSP.	●	●	●
ARCHIVE LOG RACF PROTECTION (PROTECT)	Indicates whether RACF protection is used for the archive logs. Install parameter ARCHIVE LOG RACF on panel DSNTIPP, or ZPARM PROTECT in DSN6ARVP.	●	●	●
PACKAGE AUTHORIZATION CACHE (CACHEPAC)	Indicates how much storage will be allocated to the caching of package authorization information for all package on this DB2 member. Install parameter PACKAGE AUTH CACHE on panel DSNTIPP, or ZPARM CACHEPAC in DSN6SPRM.		●	●
PLAN AUTHORIZATION CACHE SIZE (AUTHCACH)	Indicates the size of the authorization cache. Install parameter PLAN AUTH CACHE on panel DSNTIPP, or ZPARM AUTHCACH in DSN6SPRM.	●	●	●
BIND NEW PACKAGE (BINDNV)	Indicates the authorities required to add a new package or a new version of an existing package. Install parameter BIND NEW VERSION on panel DSNTIPP, or ZPARM BINDNV in DSN6SPRM.	●	●	●

Log Installation Parameters (DSNTIPL,DSNTIPH)

The fields contained in the log installation parameters block are shown in Table 127.

Table 127. Log Installation Parameters (DSNTIPL,DSNTIPH)

Field	Description	V4	V5	V6
NUMBER OF ACTIVE LOG COPIES (TWOACTV)	The number of active log copies. Install parameter NUMBER OF COPIES on panel DSNTIPH, or ZPARM TWOACTV in DSN6LOGP.	●	●	●
INPUT BUFFER SIZE IN K BYTES (INBUFF)	The log input buffer pool size in kilobytes. A separate buffer pool exists for each open active log data set. If necessary, the input entered is rounded up to the next 4KB multiple. Install parameter INPUT BUFFER on panel DSNTIPL, or ZPARM INBUFF in DSN6LOGP.	●	●	●
OUTPUT BUFFER SIZE IN K BYTES (OUTBUFF)	The log output buffer pool size in kilobytes. There is only one output buffer pool per DB2 subsystem. Because BSDS updates occur whenever there is a buffer wraparound, increase this parameter to reduce BSDS I/O, especially in LOAD or REORG with the log and mass insert operations. Also, increase this parameter to avoid having log writes wait for an available buffer in a subsystem with a heavy update workload. If necessary, the input entered is rounded up to the next 4 KB multiple. Install parameter OUTPUT BUFFER on DSNTIPL, or ZPARM OUTBUFF in DSN6LOGP.	●	●	●
WRITE THRESHOLD ON NO OF FILLED BUFFER (WRTHRSH)	The number of log output buffers to be filled before an asynchronous log output buffer write is started. Install parameter WRITE THRESHOLD on panel DSNTIPA, or ZPARM WRTHRSH in DSN6LOGP.	●	●	●

Data Definition Control Support (DSNTIPZ)

The fields contained in the data definition control support block are shown in Table 128.

Table 128. Data Definition Control Support (DSNTIPZ)

Field	Description	V4	V5	V6
INSTALL DD CONTROL (RGFINSTL)	Indicates whether data definition support has been installed. Install parameter INSTALL DD CONTROL SUPPORT on panel DSNTIPZ, or ZPARM RGFINSTL in DSN6SPRM.	●	●	●

Table 128. Data Definition Control Support (DSNTIPZ) (continued)

Field	Description	V4	V5	V6
CONTROL ALL APPLICATIONS (RGFDEDPL)	Indicates whether the DB2 system is completely controlled by a set of closed applications. Install parameter CONTROL ALL APPLICATIONS on panel DSNTIPZ, or ZPARM RGFDEDPL in DSN6SPRM.	●	●	●
REQUIRE FULL NAMES (RGFFULLQ)	Indicates whether registered objects require fully-qualified names. Install parameter REQUIRE FULL NAMES on panel DSNTIPZ, or ZPARM RGFFULLQ.	●	●	●
UNREGISTERED DDL DEFAULT (RGFDEFLT)	The action taken for DDL that names an unregistered object. Possible values are: **REJECT** Reject the DDL that names an unregistered object **ACCEPT** Accept the DDL that names an unregistered object **APPL** Reject the DDL that names an unregistered object if the current application is not registered Install parameter UNREGISTRATION DDL DEFAULT on panel DSNTIPZ, or ZPARM RGFDEFLT in DSN6SPRM.	●	●	●
REGISTER TABLE OWNER (RGFCOLID)	The owner of the application registration table and the object registration table. Install parameter REGISTRATION OWNER on panel DSNTIPZ, or ZPARM RGFCOLID in DSN6SPRM.	●	●	●
DDL REGISTRATION DATABASE NAME (RGFDBNAM)	The name of the database containing the registration tables. Install parameter REGISTRATION DATABASE on panel DSNTIPZ, or ZPARM RGFDBNAM in DSN6SPRM.	●	●	●
APPL REGISTRATION TABLE NAME (RGFNMPRT)	The name of the application registration table. Install parameter APPL REGISTRATION TABLE on panel DSNTIPZ, or ZPARM RGFNMPRT in DSN6SPRM.	●	●	●

Table 128. Data Definition Control Support (DSNTIPZ) (continued)

Field	Description	V4	V5	V6
OBJECT REGISTRATION TABLE NAME (RGFNMORT)	The name of the object registration table. Install parameter OBJT REGISTRATION TABLE on panel DSNTIPZ, or ZPARM RGFNMORT in DSN6SPRM.	●	●	●
ESCAPE CHARACTER (RGFESCP)	The data definition escape character for ART and ORT search. Install parameter ART/ORT ESCAPE CHARACTER on panel DSNTIPZ, or ZPARM RGFESCP in DSN6SPRM.	●	●	●

Routine Parameters (DSNTIPX)

The fields contained in the routine parameters block are shown in Table 129.

Table 129. Stored Procedures Parameters (DSNTIPX)

Field	Description	V4	V5	V6
DB2 PROC NAME (STORPROC)	The name of the MVS JCL procedure used to start the DB2 stored procedures address space. Install parameter MVS PROC NAME on panel DSNTIPX, or ZPARM STORPROC in DSN6SYSP.	●	●	●
MAX ABEND COUNT (STORMAX)	The number of times a stored procedure is allowed to terminate abnormally, after which SQL CALL statements for the stored procedure are rejected. Install parameter MAX ABEND COUNT on panel DSNTIPX, or ZPARM STORMAX in DSN6SYSP.	●	●	●
TIMEOUT VALUE (STORTIME)	The number of seconds before DB2 ceases to wait for an SQL CALL statement to be assigned to one of the TCBs in the DB2 stored procedures address space. Install parameter TIMEOUT VALUE on panel DSNTIPX, or ZPARM STORTIME in DSN6SYSP.	●	●	●
WLM ENVIRONMENT (WLMENV)	Workload manager environment.	●	●	●

Data Sharing Parameters (DSNTIPK,DSNTIPA1)

The fields contained in the data sharing parameters block are shown in Table 130.

Table 130. Data-Sharing Parameters (DSNTIPK,DSNTIPA1)

Field	Description	V4	V5	V6
GROUP NAME (GRPNAME)	The name of the data sharing group. Install parameter GROUP NAME on panel DSNTIPK, or ZPARM GRPNAME in DSN6GRP.	●	●	●
MEMBER NAME (MEMBNAME)	The name of the member in the data sharing group. Install parameter MEMBER NAME on panel DSNTIPK, or ZPARM MEMBNAME in DSN6GRP.	●	●	●
DATA SHARING ENABLED	Indicates whether data sharing is enabled. Install parameter DATA SHARING on panel DSNTIPA1.	●	●	●
MAXIMUM NUMBER OF MEMBERS	The maximum number of members. This field is a constant set to 248.	●	●	●
PARALLELISM ASSISTANT (ASSIST)	Specifies whether this DB2 is allowed to assist a parallelism coordinator with parallel processing: **YES** This DB2 is considered an assistant at both bind and run time. To be a viable assistant at run time, this DB2's VPPSEQT and VPXPSEQT buffer pool thresholds must be greater than 0. **NO** This DB2 is not considered an assistant at either bind or run time. Install parameter ASSISTANT on panel DSNTIPK or ZPARM ASSIST in DSN6GRP.		●	●
PARALLELISM COORDINATOR (COORDNTR)	Indicates whether a DB2 subsystem can be a parallelism coordinator. Install parameter COORDINATOR on panel DSNTIPK or ZPARM COORDNTR in DSN6GRP.		●	●
SU CONVERSION FACTOR	The CPU service unit conversion factor. This factor allows for converting CPU time to a common unit, called *service unit (SU)*. The conversion factor used depends on the machine being used. With the SU, you can add up CPU execution times across multiple DB2s running on different machines.		●	●

Other System Parameters

The fields contained in the other system parameters block are shown in Table 131.

Table 131. Other System Parameters

Field	Description	V4	V5	V6
MAX NO OF DATA SETS CONCURRENTLY IN USE (DSMAX)	The maximum number of concurrently open data sets before a deferred close. This is not an absolute limit but rather a target level of maximum open data sets that is used by the deferred close process of DB2. ZPARM DSMAX in DSN6SPRM.	●	●	●
DUAL BSDS MODE (TWOBSDS)	Specifies whether two BSDS data sets are used. ZPARM TWOBSDS in DSN6LOGP.	●	●	●
IRLM INITIALIZATION INQUIRY BY DB2	The period of time (in seconds) DB2 waits until it inquires whether IRLM has completed initialization.	●	●	●
ASYNC DRAIN START - %DSMAX	The percentage of maximum open data sets the current open data sets must reach to trigger the asynchronous drain operation. For example, if the maximum open data sets is equal to 1000, and ASYNC DRAIN START is equal to 1%, then an asynchronous drain operation is triggered when the current open data sets is 1% less than the maximum open data sets (when there are 990 open data sets).	●	●	●
ASYNC DRAIN STOP - %DSMAX	The percentage of maximum open data sets the current open data sets must reach to stop the asynchronous drain operation. For example, if the maximum open data sets is equal to 1000, and ASYNC DRAIN STOP is equal to 3%, then an asynchronous drain operation is stopped when the current open data sets is 3% less than the maximum open data sets (when there are 970 open data sets).	●	●	●
CHECKPOINTS BETWEEN LEVEL ID UPDATES (DLDFREQ)	The number of checkpoints between the updates of the level ID of a page set or partition. ZPARM DLDFREQ in DSN6SYSP.	●	●	●
IMS/BMP TIME-OUT FACTOR (BMPTOUT)	A factor used to determine the resource timeout value for an IMS/BMP region. The DB2 default value is 0.	●	●	●
IMS/DLI TIME-OUT FACTOR (DLITOUT)	A factor to determine the resource timeout value for an IMS/DLI region. The DB2 default value is 0.	●	●	●

Table 131. Other System Parameters (continued)

Field	Description	V4	V5	V6
STATIC DESCRIBE (DESCSTAT)	Indicates whether the describe information is built during the bind, that is, DESCRIBE is allowed for bound, static SQL statements.		●	●

Lock Escalation Parameters (DSNTIPJ)

The fields contained in the lock escalation parameters block are shown in Table 132.

Table 132. Lock Escalation Parameters (DSNTIPJ)

Field	Description	V4	V5	V6
MAXIMUM PAGE OR ROW LOCKS PER TABLE SPACE (NUMLKTS)	The maximum number of page locks or row locks that a thread can hold concurrently against a single table space for which LOCKSIZE ANY was specified before DB2 escalates the locking level to a table space lock. **Note:** Row locks are only applicable to DB2 Version 4 and later releases. Install parameter LOCKS PER TABLE(SPACE) on panel DSNTIPJ, or ZPARM NUMLKTS in DSN6SPRM.	●	●	●
MAXIMUM PAGE OR ROW LOCKS PER USER (NUMLKUS)	The maximum number of page locks or row locks that a thread can hold concurrently against all table spaces in the system. This includes locks against data and index pages. Each lock takes 128-256 bytes. **Note:** Row locks are only applicable to DB2 Version 4 and later releases. Install parameter LOCKS PER USER on panel DSNTIPJ, or ZPARM NUMLKUS in DSN6SPRM.	●	●	●
WAIT FOR RETAINED LOCKS (RETLWAIT)	Indicates whether your request is suspended until the incompatible retained lock becomes available.	●	●	●

Application Programming Defaults (DSNTIPF)

The fields contained in the application programming defaults block are shown in Table 133.

Table 133. Application Programming Defaults (DSNTIPF)

Field	Description	V4	V5	V6
EBCDIC SBCS CCSID (SCCSID)	The EBCDIC single-byte coded character set ID. ZPARM SCCSID in DSNHDECP.		●	●

Table 133. Application Programming Defaults (DSNTIPF) (continued)

Field	Description	V4	V5	V6
EBCDIC MBCS CCSID (MCCSID)	The EBCDIC mixed coded character set ID. N/A specifies that a single-byte CCSID was specified on panel DSNTIPF and no mixed CCSID is defined. ZPARM MCCSID in DSNHDECP.		●	●
EBCDIC GBCS CCSID (GCCSID)	The EBCDIC graphic coded character set ID. N/A specifies that a single-byte CCSID was specified on panel DSNTIPF and no mixed CCSID is defined. ZPARM GCCSID in DSNHDECP.		●	●
ASCII SBCS CCSID (ASCCSID)	The ASCII single-byte coded character set ID. ZPARM ASCCSID in DSNHDECP.		●	●
ASCII MBCS CCSID (AMCCSID)	The ASCII mixed coded character set ID. N/A specifies that a single-byte CCSID was specified on panel DSNTIPF and no mixed CCSID is defined. ZPARM AMCCSID in DSNHDECP.		●	●
ASCII GBCS CCSID (AGCCSID)	The ASCII graphic coded character set ID. N/A specifies that a single-byte CCSID was specified on panel DSNTIPF and no mixed CCSID is defined. ZPARM AGCCSID in DSNHDECP.		●	●
DECIMAL POINT OPTION (DECIMAL)	Indicates whether the decimal contains a comma (,) or a period (.). This parameter is used for dynamic SQL and COBOL programs. It is not used or supported by other languages. Install parameter DECIMAL POINT IS on panel DSNTIPF, or ZPARM DECIMAL in DSNHDECP.		●	●
DEFAULT CHARSET (CHARSET)	The default character set, which can be ALPHANUM or KATAKANA. ZPARM CHARSET in DSNHDECP.		●	●
DEFAULT DELIMITER (DELIM)	The string delimiter for COBOL. Install parameter STRING DELIMITER on panel DSNTIPF, or ZPARM DELIM in DSNHDECP.		●	●
DEFAULT ENCODING SCHEME (ENSCHEME)	The default encoding scheme, which can be ASCII or EBCDIC. Install parameter DEF ENCODING SCHEME on panel DSNTIPF, or ZPARM ENSCHEME in DSNHDECP.		●	●

Table 133. Application Programming Defaults (DSNTIPF) (continued)

Field	Description	V4	V5	V6
DEFAULT HOST LANGUAGE (DEFLANG)	The default programming language for your site. Install parameter LANGUAGE DEFAULT on panel DSNTIPF, or ZPARM DEFLANG in DSNHDECP.		●	●
DEFAULT MIXED GRAPHIC (MIXED)	Indicates whether the code points X'0E' and X'0F' are the shift-out and shift-in controls for character strings that include double-byte characters. Install parameter MIXED DATA on panel DSNTIPF, or ZPARM MIXED in DSNHDECP.		●	●
DEFAULT SQL DELIMITER (SQLDELI)	The string delimiter for SQL. Install parameter SQL STRING DELIMITER on panel DSNTIPF, or ZPARM SQLDELI in DSNHDECP.		●	●
DIST SQL STRING DELIMITER (DSQLDELI)	The SQL delimiter for bind operations at this DB2 when the requester does not provide DB2 with this information. Install parameter DIST SQL STR DELIMTR on panel DSNTIPF, or ZPARM DSQLDELI in DSNHDECP.		●	●
RELEASE CURSOR HOLD LOCKS (RELCURHL)	Release cursor with hold locks. When this parameter is YES, DB2 bypasses lock promotion of data locks for CURSOR_WITH_HOLD. When NO, DB2 promotes the locks. Lock promotion causes a lock to be held across a commit until the next commit. Bypassing lock promotion causes a lock to be released until the next commit.		●	●
DECIMAL ARITHMETIC (DECARTH)	Indicates the rules of precision for a decimal field. Install parameter DECIMAL ARITHMETIC on panel DSNTIPF, or ZPARM DECARTH in DSNHDECP.		●	●
USE FOR DYNAMIC RULES	Indicates to DB2 whether DYNAMICRULES(BIND) should use the precompiler options or use the DECP values for dynamic SQL statements. Possible values are: • YES • NO			●

Application Programming Defaults Panel 2 (DSNTIP4)

The fields contained in the application programming defaults block are shown in Table 134.

Table 134. Application Programming Defaults panel 2 (DSNTIP4)

Field	Description	V4	V5	V6
DATE FORMAT (DATE)	The default output format for dates. Install parameter DATE FORMAT on panel DSNTIPF, or ZPARM DATE in DSNHDECP.		●	●
TIME FORMAT (TIME)	The default output format for times. Install parameter TIME FORMAT on panel DSNTIPF, or ZPARM TIME in DSNHDECP.		●	●
LOCAL DATE LENGTH (DATELEN)	The length of the longest field required to hold a date when a locally defined date exit routine is used. Install parameter LOCAL DATE LENGTH on panel DSNTIPF, or ZPARM DATELEN in DSNHDECP.		●	●
LOCAL TIME LENGTH (TIMELEN)	The length of the longest field required to hold a time when a locally defined time exit routine is used. Install parameter LOCAL TIME LENGTH on panel DSNTIPF, or ZPARM TIMELEN in DSNHDECP.		●	●
SQL LANGUAGE (STDSQL)	Specifies whether the SQL language used conforms to the 1986 ANSI SQL standard implemented by DB2 or to the SQL language defined by DB2: **YES** Conforms to the 1986 ANSI SQL standard **NO** Conforms to the SQL language defined by DB2 **86** Conforms to the 1986 ANSI SQL standard Install parameter STD SQL LANGUAGE on panel DSNTIPF, or ZPARM STDSQL in DSNHDECP.		●	●
CURRENT DEGREE (CDSSRDEF)	Contains the default for the current degree special register. Install parameter CURRENT DEGREE on panel DSNTIP4, or ZPARM CDSSRDEF in DSN6SPRM.		●	●
CACHE DYNAMIC SQL (CACHEDYN)	This parameter indicates whether DB2 can cache prepared SQL statements in the EDM pool by making a copy from the prepared statement cache. When caching is enabled, all plans and packages on the DB2 system are eligable to store and retrieve prepared statements from the cache.		●	●

Table 134. Application Programming Defaults panel 2 (DSNTIP4) (continued)

Field	Description	V4	V5	V6
ACCESS PATH HINTS	Access path hints allowed. Possible values are: • YES • NO			●
VARCHAR	Get VARCHAR data from index. Possible values are: • YES • NO			●

SIZES PANEL 2 (DSNTIP7)

The fields contained in the sizes 2 block are shown in Table 135.

Table 135. Sizes 2 (DSNTIP7)

Field	Description	V4	V5	V6
USER LOB VALUE STORAGE (LOBVALA)	Storage used for user application LOBs.		●	●
SYSTEM LOB VALUE STORAGE (LOBVALs)	Storage used for system LOBs.		●	●

Databases and Table Spaces Started Automatically (DSNTIPS)

Databases and table spaces are started or deferred automatically during a DB2 startup. If they are started, the word STARTED is printed in the heading. If they are deferred, the word DEFERRED is printed in the heading. If all are started or deferred, the word ALL is printed in the value.

If individual databases or table spaces are started or deferred, they are printed as DATABASE NAME.TABLESPACE NAME. If an entire database is started or deferred, only the database name is printed.

Buffer Pool Information Page

The fields contained in the buffer pool information page are shown in Table 136.

Table 136. Buffer Pool Information Page

Field	Description	V4	V5	V6
BUFFER POOL ID	The name of the buffer pool.	●	●	●
VIRTUAL POOL SIZE	The size of the virtual buffer pool.	●	●	●
HIPERPOOL SIZE	The size of the hiperpool.	●	●	●
VIRTUAL POOL SEQUENTIAL THRESHOLD	The sequential steal threshold for the virtual buffer pool.	●	●	●
HIPERPOOL SEQUENTIAL THRESHOLD	The sequential steal threshold for the hiperpool.	●	●	●
HORIZONTAL DEFERRED WRITE THRESHOLD	The deferred write threshold for the virtual buffer pool.	●	●	●
VERTICAL DEFERRED WRITE THRESHOLD	The vertical deferred write threshold for the virtual buffer pool.	●	●	●

Table 136. Buffer Pool Information Page (continued)

Field	Description	V4	V5	V6
VIRT. POOL PARALLEL SEQUENTIAL THRESHOLD	The parallel I/O sequential steal threshold for the virtual buffer pool.	●	●	●
ASSISTING PARALLEL SEQUENTIAL THRESHOLD	The sequential threshold for Sysplex query processing, expressed as a percentage of the sequential threshold for parallel query processing (VPPSEQT). This value allows you to control how much buffer resource is used when this DB2 is assisting another member of the group in parallel processing. If the threshold is set to 0, this buffer pool is not used to assist other data sharing members in parallel processing. In a non-data-sharing environment this value is ignored.	●	●	●
CASTOUT	The CASTOUT attribute for the hiperspace used to back the hiperpool: **YES** The hiperpool is mapped to a CASTOUT = YES hiperspace (the hiperpool is volatile). **NO** The hiperpool is mapped to a CASTOUT = NO hiperspace (the hiperpool is not volatile).	●	●	●

Alter Buffer Pool

This section of the system parameters report shows the buffer pool status resulting from any ALTER BUFFERPOOL commands that have been issued.

In DB2 Version 3 and later releases, buffer pool attributes can be changed while DB2 is active using the DB2 ALTER BUFFERPOOL command. If the performance trace class 10 is active, the changes are recorded in the system parameters report in the order of occurrence.

The first line of each entry in this section shows the status of the buffer pool before the command was entered and the second line the changes caused by the command.

The fields contained in the ALTER BUFFERPOOL page are shown in Table 137.

Table 137. Alter Buffer Pool Page

TIMESTAMP	The time at which the ALTER BUFFERPOOL command was issued (adjusted by any GLOBAL TIMEZONE parameter).	●	●	●
BP ID	The name of the buffer pool.	●	●	●
VIRTUAL POOL SIZE	The size of the virtual buffer pool.	●	●	●

Table 137. Alter Buffer Pool Page (continued)

HIPERPOOL SIZE	The size of the hiperpool.	●	●	●
VIRTUAL POOL SEQUENTIAL THRESHOLD	The sequential steal threshold for the virtual buffer pool.	●	●	●
HIPERPOOL SEQUENTIAL THRESHOLD	The sequential steal threshold for the hiperpool.	●	●	●
HORIZONTAL DEFERRED WRITE THRESHOLD	The deferred write threshold for the virtual buffer pool.	●	●	●
VERTICAL DEFERRED WRITE THRESHOLD	The vertical deferred write threshold for the virtual buffer pool.	●	●	●
VIRT. POOL PARALLEL SEQUENTIAL THRESHOLD	The parallel I/O sequential steal threshold for the virtual buffer pool.	●	●	●
ASSISTING PARALLEL SEQUENTIAL THRESHOLD NEW	The assisting parallel sequential threshold before and after the ALTER BUFFERPOOL command was issued.			●
CASTOUT	CASTOUT attribute for the hiperspace used to back the hiperpool. The possible values are `YES` and `NO`.	●	●	●

Group Buffer Pools Parameters

This section of the system parameters report shows the merged group buffer pool data from all the members of a DB2 data sharing group. To produce this report, statistics class 5 must be active.

At each member's statistics interval or whenever a DB2 START TRACE command is issued for a member, an IFCID 230 record is produced showing information about the group buffer pools connected to that particular member of a data sharing group. If the IFCID 230 record indicates that the status of the group buffer pools has changed since the last IFCID 230 record was produced (regardless of which member produced it), or if this is the first IFCID 230 encountered, the new status of the group buffer pools is printed.

The status of the group buffer pools changes if the IFCID 230 record indicates one of the following:

- A member uses a new group buffer pool.
- A member does not use a group buffer pool that it used previously.
- At least one of the group buffer pool attributes has changed.

Also, all the group buffer pools connected to the member, whether or not they have changed, are printed for easier identification of those group buffer pools that were connected to the member at that time.

This section also shows every occurrence of the ALTER GROUPBUFFERPOOL command, regardless of which system it was issued at, which group buffer pools were altered, or which of their attributes were changed. The old values are always printed whereas only those values which were actually changed are printed as new values.

The fields contained in the GROUP BUFFERPOOLS PARAMETERS page are shown in Table 138.

Table 138. Group Buffer Pools Parameters Page

Field	Description	V4	V5	V6
TIMESTAMP	The date and time when the parameters of the group buffer pools were recorded or the date and time that the ALTER GROUPBUFFERPOOL command was issued (adjusted by any GLOBAL TIMEZONE parameter).		●	●
MEMBER	The name of the DB2 member to which the group buffer pools are connected, or the name of the DB2 member where the ALTER GROUPBUFFERPOOL command was issued.		●	●
GROUP BPOOL ID	The DB2 group buffer pool ID.		●	●
ALLOCATED GROUP BPOOL SIZE (4K)	The allocated size of the group buffer pool in 4K blocks.		●	●
ACTUAL DIRECTORY ENTRIES	The actual number of allocated directory entries.		●	●
ACTUAL DATA ENTRIES	The actual number of allocated data entries.		●	●
PENDING DIRECTORY TO DATA RATIO	The pending directory-entry-to-data-entry ratio.		●	●
MODE	Simplex or Duplex indicator.			●
SEC-GBP ALLOC	When the GBP is duplexed, this is the allocated size of the secondary GBP.			●
SEC-GBP ALLOC DIRECTORY ENTRY	When the GBP is duplexed, this is the allocated directory entries in the secondary GBP.			●
SEC-GBP ALLOC	When the GBP is duplexed, this is the allocated size of the secondary GBP.			●
SEC-GBP ALLOC DATA ENTRY	When the GBP is duplexed, this is the allocated data entries in the secondary GBP.			●
CURRENT DIRECTORY TO DATA RATIO	The current directory-entry-to-data-entry ratio. For the ALTER GROUPBUFFERPOOL commands, this field reports the value specified in the RATIO keyword.		●	●
CLASS CASTOUT THRESHOLD	The threshold at which the class castout is to be initiated. It is expressed as a percentage of the size of the group buffer pool. For the ALTER GROUPBUFFERPOOL commands, it reports the value specified in the CLASST keyword.		●	●

Table 138. Group Buffer Pools Parameters Page (continued)

Field	Description	V4	V5	V6
GROUP BPOOL CASTOUT THRESHOLD	The threshold at which the castout is to be initiated for the group buffer pool. It is expressed as a percentage of the size of the group buffer pool. For the ALTER GROUPBUFFERPOOL commands, it reports the value specified in the GBPOOLT keyword.		●	●
GROUP BPOOL CHECKPOINT INTERVAL	The time interval, in minutes, between successive group buffer pool checkpoints. For the ALTER GROUPBUFFERPOOL commands, it reports the value specified in the GBPCHKPT keyword.		●	●
SEC-GBP ALLOC	When the GBP is duplexed, this is the allocated size of the secondary GBP.			●
GBP CACHE SETTINGS	The GBP cache attribute. Possible values are: **YES** GBP is used for both data caching and cross-invalidation. **NO** GBP is used for cross-invalidation only.			●
AUTOREC	Indicates whether automatic recovery takes place in case of a structure failure or a loss of connectivity. If it does, all members of the group are recovered to the group buffer pool.			●

Part 16. The Utility Activity Report Set

This part of the *DB2 PM Report Reference* describes the Utility Activity report set. It is divided into the following chapters:

- **"Chapter 77. Introduction to the Utility Activity Report Set" on page 1229** provides you with a brief introduction to the Utility Activity report set.
- **"General Utility Activity Information" on page 1229** describes the input to Utility Activity and ORDER processing. It also provides a detailed overview of the types of activity reported.
- **"Chapter 80. The Utility Activity Reports" on page 1247** describes the Utility Activity report and provides an example.

- **“Chapter 81. The Utility Activity Trace” on page 1251** describes the Utility Activity trace and provides an example.

Chapter 77. Introduction to the Utility Activity Report Set

The Utility Activity report set provides information on the utility and bind activity taking place during the processing of a DB2 application.

A Utility Activity trace presents threads in chronological order. A Utility Activity report is an aggregation of threads ordered by the combination of DB2 PM identifiers you specify.

The following information is collected for each thread, provided that the appropriate IFCIDs are available:

- Thread identification (DB2 PM identifiers, thread start and stop time, and location)
- Utility and bind statements executed, with the appropriate elapsed and TCB times
- In a trace, associated workload detail: bind activity, exits, I/O activity, lock suspensions, page and row locking activity, and utility phases.

Utility Activity reports and traces can process data originating at different DB2 locations. Multiple input data sets are logically concatenated in the JCL, resulting in one data set containing mixed records. Once the data from multiple locations is available, you can produce multisite or single-site reports and traces.

- *Multisite* reports separate activity according to the location where the activity occurs. Data is presented in location sequence, and includes the activity initiated both locally and remotely.
- *Single-site reports* include data from a single DB2 subsystem only. They are obtained by processing an input data set containing data from a single site or by specifying a single location using INCLUDE/EXCLUDE.

General Utility Activity Information

Tuning DB2

This part of the *DB2 PM Report Reference* identifies and describes the specific DB2 data which is reported for the purpose of tuning DB2. For general tuning advice on DB2, refer to the DB2 Administration Guide 'Performance, Monitoring, and Tuning' chapters for the specific release of DB2.

This chapter contains information common to all Utility Activity reports and traces. Information is provided on:

- DB2 trace headers in Utility Activity
- Input to Utility Activity reports and traces
- The functions of the Utility Activity report set
- The DB2 PM identifiers used in Utility Activity
- ORDER processing
- The types of Utility Activity reported
- Interpretation of report and trace headers

DB2 Trace Headers in Utility Activity Trace

Utility Activity requires the correlation header to be present in the data. Records without a correlation header are bypassed. The CPU header is not absolutely required for a Utility Activity report or trace; records without a CPU header are processed and reported. However, the CPU header is required for the reporting of CPU times for Utility Activity. The distributed header is needed to produce meaningful reports where distributed activity is involved.

Header data is obtained via the TDATA option of the DB2 START TRACE command for which you must specify the following:

COR To obtain the correlation header. The DB2 correlation header contains the primary authorization ID, the connection ID, the connection type, the correlation ID, the plan name, and the original authorization ID.

CPU To obtain the CPU header. The CPU header contains the CPU time.

DIST To obtain the distributed header. This shows:

- Requester location name
- Requesting timestamp
- Application requester name
- Product ID

If you omit the TDATA option, correlation headers and distributed headers, if present, are included by default. However, specifying TDATA(CPU) overrides the default and *only* CPU headers are included. If you want CPU, correlation, and distributed headers, all must be specified, as in the following example:

```
-START TRACE(P) CLASS(3,4,6,10,13,16,17) DEST(GTF) TDATA(CPU,COR,DIST)
```

Input to Utility Activity Reports

Input to the Utility Activity report set consists of DB2 instrumentation data. The DB2 trace types and classes used by Utility Activity are listed in Table 139.

Table 139. DB2 Trace Types and Classes Used by Utility Activity

DB2 Trace Type	DB2 Class	Description
Accounting	1	Accounting data
Performance	3	SQL related events
	4	Buffer manager, I/O, and EDM pool requests
	6	Locking information
	10	Bind activity
	13	Edit and validation exits
	16	Events associated with distributed activity
	17	Drain and claim detail

The DB2 trace types and classes shown in Table 140 are the input for the Utility Activity report set. These are grouped in different types of events.

Table 140. DB2 Input to Utility Activity

DB2 Trace Type	DB2 Class	DB2 IFCID	Record Type
Accounting	1	3	Accounting data

Table 140. DB2 Input to Utility Activity (continued)

DB2 Trace Type	DB2 Class	DB2 IFCID	Record Type
Bind Events			
Performance	3	22	Minibinds generated by DB2 at bind prepare time
		63	SQL statement to be parsed
		177	Package allocation
Performance	10	108	Begin bind or rebind plan/package
		109	End bind or rebind plan/package
		110	Begin free plan/package
		111	End free plan/package
Performance	16	183	Requesting agent data
Utilities			
Performance	10	23	Start utility run, start of subtask.
		24	Phase info, subtask info.
		25	End utility run, end subtask.
I/O Events			
Performance	4	6	Begin read I/O, data set on DASD to buffer pool
		7	End read I/O, data set on DASD to buffer pool
		8	Begin synchronous write I/O
		9	Write end
		226	Page latch wait begin
		227	Page latch wait end
Lock Suspension Events			
Performance	6	44	Lock suspension or an identity call to the IRLM
		45	Lock resumption
		213	Beginning of a wait for a drain lock
		214	End of a wait for a drain lock
Performance	17	213	Beginning of a wait for a drain lock
		214	End of a wait for a drain lock
		215	Begin of a wait for the claim count to go to zero
		216	End of a wait for the claim count to go to zero
Page and Row Locking Events			

Table 140. DB2 Input to Utility Activity (continued)

DB2 Trace Type	DB2 Class	DB2 IFCID	Record Type
Performance	6	20	Page and row locking summary
		218	Lock avoidance summary
Exit Events			
Performance	13	11	Validation exit
		12	Encode edit exit
		19	Decode edit exit

Functions of the Utility Activity Report Set

The following functions are provided in the Utility Activity report set:

- REPORT

  REPORT enables you to show a summary of the DB2 bind and Utility Activity for all threads for a unique combination of DB2 PM identifiers.
- TRACE

  TRACE enables you to show DB2 bind and Utility Activity for a particular thread and the workload detail for all or selected events. Unlike the report, the data is not aggregated but is listed individually.
- REDUCE

  REDUCE enables you to specify the interval and input filters for the DISTRIBUTE subcommand. It can also be used to specify FROM/TO times that affect the TRACE, REPORT, and DISTRIBUTE subcommands. That is, REDUCE can be considered a global command for other Utility Activity functions.

  Refer to “The DISTRIBUTE Command” on page 44 for more information about the DISTRIBUTE command.

ORDER Processing

Unlike the other DB2 PM report sets, ORDER processing is available for the REPORT *and* TRACE subcommands.

Ordering Reports

You use the ORDER option of REPORT to specify the DB2 PM identifiers and their sequence for sorting the report. For example, the following command produces two reports; the first is ordered by primary authorization ID within requesting location, the second is ordered by plan name within connection ID.

```
⋮
UTILITY
     REPORT
        ORDER (REQLOC-PRIMAUTH CONNECT-PLANNAME)
⋮
```

Ordering Traces

You use the ORDER option of TRACE to specify the DB2 PM identifiers reported in the trace. This option is only used to provide thread identifiers. The traces are printed in the order in which the threads end and are not sorted by these identifiers.

Types of Utility Activity Reported

The DB2 performance trace collects data that can be grouped by performance class. DB2 PM Utility Activity reports provide a logical grouping based on the type of DB2 event. Two types of activity are reported:

- *Bind* activity is broken into individual types of bind operations:
  - BIND
  - REBIND
  - FREE
- *Utility* activity is subdivided into the utility phases, and their relevant item types .

Bind Activity

Bind activity, including remote bind activity, is divided into the following events:

- Bind plan or bind package events occur when an explicit DB2 BIND subcommand is issued.
- Bind remote package events occur when an explicit DB2 BIND PACKAGE subcommand is issued for a remote location using the application-directed method.
- Rebind plan or rebind package events occur when an explicit DB2 REBIND subcommand is issued to rebind an existing plan or package.
- Rebind remote package events occur when an explicit DB2 REBIND PACKAGE subcommand is issued for a remote location using the application-directed method to rebind an existing package.
- Free plan or free package events occur when a DB2 FREE PLAN or FREE PACKAGE subcommand is issued to remove a DB2 plan or package from the DB2 catalog and directory. The information available for these events is the plan name or package ID, location name, collection ID, and version name for packages.
- Free remote package events occur when a DB2 FREE REMOTE PACKAGE subcommand is issued to remove a DB2 package from the DB2 catalog and directory for a remote location using the application-directed method and to rebind an existing package.

  The information available for these events is the package ID, location name, collection ID, and version name for packages.
- Connect events occur when a DB2 BIND CONNECT or CONNECT RESET subcommand is implicitly issued for REMOTE BIND, REBIND, or FREE.

Utility Activity

Most utility events are composed of detail events called phases. An event which does not have any detail events consists of one phase with the same name as the event. UTILINIT and UTILTERM phases are not reported. Each phase can have an item type. The item types are reported as abbreviations as shown in Table 141.

Table 141. Phase Item Types

Abbreviation	Item type
I	Index
FK	Foreign key
IF	Index/Foreign key
O	Object
P	Page
PK	Primary key
R	Record
T	Table

Notes:

1. For parallel subtasks, SORT is a summarization of SORTIN, SORT, and SORTOUT.
2. RECOVER INDEX and REBUILD INDEX are synonymous, both are supported.

Headers Used in Utility Activity

DB2 PM header information is printed at the top of each Utility Activity report or trace page. There are two types of headers:

- The Utility Activity report header
- The Utility Activity trace header.

Utility Activity Report Header

The Utility Activity reports contain information in the header at the top of each page as shown in Figure 411.

```
   LOCATION: USIBMSYSTDB2                DB2 PERFORMANCE MONITOR (V6)                        PAGE: 1-1
      GROUP: DSNCAT                          UTILITY ACTIVITY REPORT          REQUESTED FROM: NOT SPECIFIED
     MEMBER: SSDQ                                                                        TO: NOT SPECIFIED
  SUBSYSTEM: SSDQ                             ORDER: PRIMAUTH-PLANNAME            ACTUAL FROM: 02/18/99 23:50:43.70
DB2 VERSION: V6                                                                          TO: 02/19/99 02:35:57.68
```

Figure 411. Utility Activity Report Header Example

Utility Activity Trace Header

The Utility Activity traces contain information in the header at the top of each page as shown in Figure 412.

```
   LOCATION: USIBMSYSTDB2                DB2 PERFORMANCE MONITOR (V6)                        PAGE: 1-1
      GROUP: DSNCAT                          UTILITY ACTIVITY TRACE           REQUESTED FROM: NOT SPECIFIED
     MEMBER: SSDQ                                                                        TO: NOT SPECIFIED
  SUBSYSTEM: SSDQ                                                                 ACTUAL FROM: 02/18/99 23:50:43.70
DB2 VERSION: V6                                                                     PAGE DATE: 02/18/99

                                  IDENTIFIED BY PRIMAUTH/PLANNAME/INSTANCE
                                            WITH ALL WORKLOAD
```

Figure 412. Utility Activity Trace Header Example

The report and trace header shows the following information:

LOCATION
The DB2 reporting location. If the location name is not available, the DB2

data sharing group name is printed in this field. If the DB2 data sharing group name does not exist, the DB2 subsystem ID is printed.

DB2 PERFORMANCE MONITOR (V6)
The product name and version.

PAGE The page number in the format *lll-nnnnnn*, where *lll* denotes the location number within the report and *nnnnnn* the page number within the location.

GROUP
The name of the DB2 data sharing group. This field shows N/P if there is no group name and N/A if the DB2 release is earlier than DB2 Version 4.

REQUESTED FROM/TO
The FROM/TO times specified in the REPORT or TRACE subcommand.

MEMBER
The name of the DB2 data sharing member. This field shows N/P if there is no member name and N/A if the DB2 release is earlier than DB2 Version 4.

SUBSYSTEM
The identifier of the local DB2 subsystem (DB2ID).

ORDER
If the ORDER option is used to arrange the order of the entries in the report, the selected keywords are printed in this field of the header.

ACTUAL FROM
The date and time of the first record in the location.

ACTUAL TO
The date and time of the last record in the location.

DB2 VERSION
The version of the DB2 generating the data.

PAGE DATE
The date of the timestamps printed on this page. A date change causes a page break.

IDENTIFIED BY
Shows the identifiers specified with the ORDER option.

WITH *detail* **WORKLOAD**
The workload details as specified on the WORKLOAD option of the TRACE subcommand.

Chapter 78. The UTILITY Command

You use the UTILITY command to generate reports and traces. The command can be used once in a job step. However, it can be used in the same job step with commands of the other report sets. The following subcommands are associated with the UTILITY command:

- REDUCE
- REPORT
- TRACE

You can choose between two methods for entering DB2 PM commands:

- **The Interactive Report Facility (IRF)**

  The IRF provides a series of interactive menus and panels you can use to specify the commands and options required to generate reports and traces, as well as review and edit your selections. You can either generate the command stream and submit the job in background, or execute your job in foreground. Refer to the *DB2 PM Batch User's Guide* for more information on the IRF.
- **The DB2 PM Command Language**

  You can use an editor to enter the DB2 PM commands in the proper syntax, specifying the appropriate subcommands, options, and keywords, and the JCL required to execute the job.

This chapter is intended for the user who wants to build a command stream using the DB2 PM command language.

Building a Command Stream

Figure 413 is a sample of the JCL required to produce utility activity reports and traces. A description of the DD statements can be found in "DD Statements" on page 10.

```
//DB2PM   JOB (INSTALLATION DEPENDENCIES)
//*
//* ================================================================*
//*          D B 2  P M   R E P O R T   G E N E R A T I O N         *
//* ================================================================*
//*
//        EXEC PGM=DB2PM
//* FOLLOWING ARE DB2PM SYSTEM DDNAMES
//STEPLIB  DD  DSN=DGO.V6R1M0.SDGOLOAD,DISP=SHR
//DPMPARMS DD  DSN=DGO.V6R1M0.DPMPARMS,DISP=SHR
//INPUTDD  DD  DSN=DGO.V6R1M0.DPMIN61,DISP=SHR
//DPMLOG   DD  SYSOUT=*
//SYSOUT   DD  SYSOUT=*
//JOBSUMDD DD  SYSOUT=*
//SYSPRMDD DD  SYSOUT=*
//DPMOUTDD DD  DSN=DGO.V6R1M0.DPMOUT.DATA,DISP=OLD
//DISTDD   DD  DSN=DGO.V6R1M0.DIST.DATA,DISP=OLD
//SYSUDUMP DD  DUMMY
//* FOLLOWING ARE DB2PM REPORT SET DDNAMES
//UTRPTDD  DD  SYSOUT=*
//UTTRCDD1 DD  SYSOUT=*
//UTWORK   DD  DSN=DGO.V6R1M0.UT.WORKDD,DISP=OLD
//* FOLLOWING IS THE DB2PM COMMAND STREAM
//SYSIN   DD  *

  ⋮
  UTILITY
       REDUCE
          INCLUDE (PRIMAUTH(USER026))
       TRACE
          WORKLOAD (ALL)
          TYPE    (BIND)
       REPORT
  ⋮
  EXEC
```

Figure 413. Sample JCL for Requesting Utility Activity Functions

The DB2 PM command language shown in Figure 413 is not appropriate in all circumstances. You must modify it to meet your requirements.

Most of the DD statements with a SYSOUT destination do not have to be specified because they are dynamically allocated by DB2 PM. See the individual DD statement descriptions for more information.

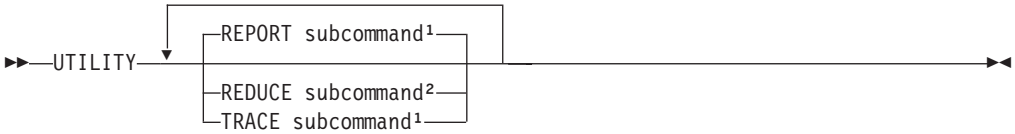
Notes:

1. There is an advantage in omitting DPMOUTDD from your JCL. For more information, see the description of DPMOUTDD on page “DPMOUTDD” on page 13.
2. The DB2 PM command stream is only processed if EXEC is included as the last command. If you omit the EXEC statement, no report is generated. DB2 PM checks the syntax of the job stream and writes it, together with any information, warning, or error messages generated to the job summary log.

Using the UTILITY Command

Use the UTILITY command to generate utility activity reports and traces. The subcommands are described in detail, together with their various options, in the following sections.

The command can be used once in a job step.



Notes:

1. You can specify both REPORT and TRACE up to 5 times.
2. You cannot specify REDUCE without specifying at least one REPORT. REDUCE can be specified only once.

Figure 414. Syntax of the UTILITY Command

Using the REDUCE Subcommand

You use the REDUCE subcommand to reduce the volume of data that is input to subsequent subcommands. REDUCE consolidates records with certain common characteristics into one record. REDUCE can be used once in a UTILITY command.

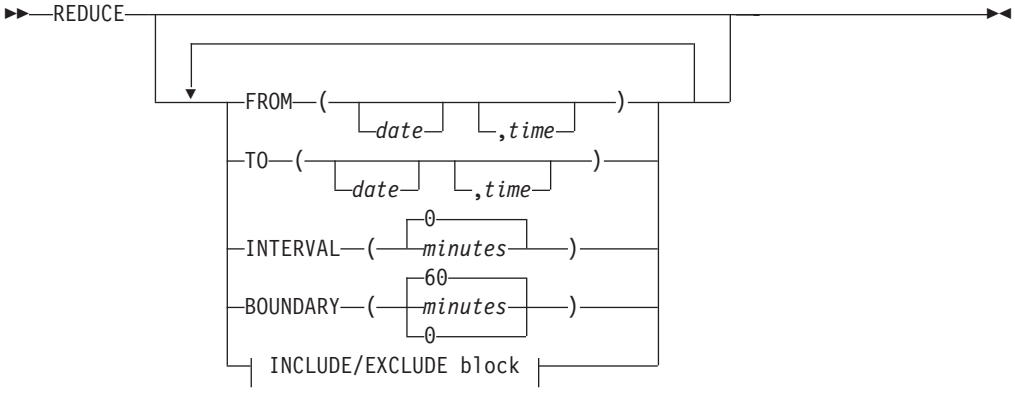


Figure 415. Syntax of the REDUCE Subcommand

The following options can be used with the REDUCE subcommand:

Refer to “Subcommand Options” on page 19 for information about the options used with this subcommand.

Example Using REDUCE

```
⋮
REDUCE
   FROM     (02/04/99,10:00:00.00)
   TO       (02/05/99,12:00)
   INTERVAL (60)
⋮
```

This example specifies that data is to be reduced between 10:00 a.m. on 4 February 1999 and noon on 5 February 1999. The records are to be reduced into 60-minute intervals.

Using the REPORT Subcommand

You use the REPORT subcommand to generate reports from records. Up to five REPORT subcommands can be specified within each UTILITY command.

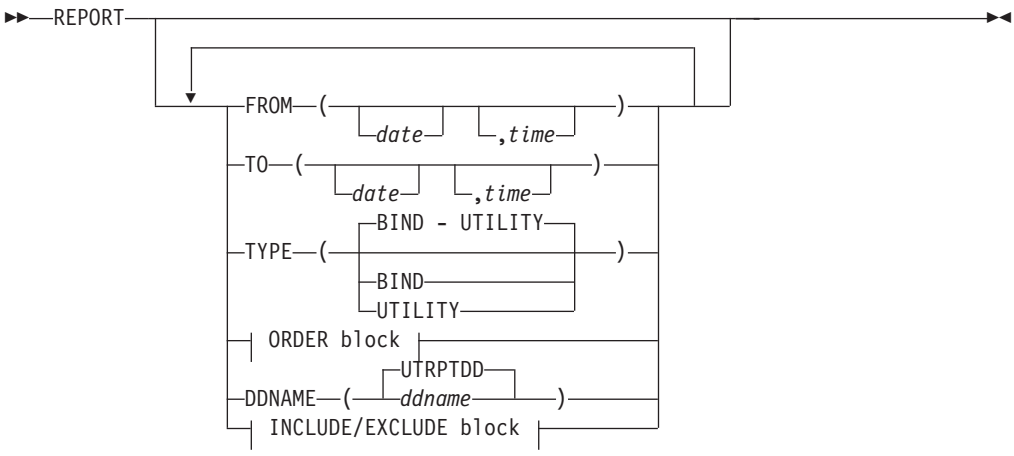


Figure 416. Syntax of the REPORT Subcommand

The following options can be used with the REPORT subcommand:

FROM/TO
Limits the range of records included in the reporting process by date and time.

TYPE Specifies the activity types. You can select one or both of these activity types with each REPORT subcommand:

BIND Gives the elapsed time for each occurrence of a bind event. This includes information on the number of bound and nonbound events and the distribution of the bind into various bind subevents.

UTILITY
Gives the elapsed time for each occurrence of a utility event, as well as information on the performance and resource usage of the various utility events.

If the TYPE option is omitted, both activity types are reported.

DDNAME
Specifies the data set to which the report is written.

ORDER
Specifies the DB2 PM identifiers and their sequence for sorting the report., and, in summary reports, which identifiers are used for aggregation. You can order by one, two, or three identifiers separated by a dash and specify up to five sets of the identifiers for each entry of ORDER separated by at least one blank. You can specify one entry of ORDER for each REPORT subcommand. The default for ORDER is PRIMAUTH-PLANNAME.

Refer to Table 4 on page 27 for DB2 PM identifiers that can be used with Utility.

ORDER Example

```
⋮
REPORT
   TYPE  (UTILITY)
   ORDER (PRIMAUTH-PLANNAME-REQLOC
          CONNECT-PLANNAME REQLOC-PRIMAUTH)
⋮
```

This command specifies that three utility reports are to be produced:

- The first is ordered by requesting location within plan name within primary authorization ID.
- The second is ordered by plan name within connection ID.
- The third is ordered by primary authorization ID within requesting location.

INCLUDE/EXCLUDE

Includes or excludes data associated with specific DB2 PM identifiers.

Refer to “Chapter 1. DB2 PM Identifiers” on page 3 for definitions of DB2 PM identifiers.

Refer to “INCLUDE/EXCLUDE” on page 28 for more information on how to use the INCLUDE/EXCLUDE option.

Example Using REPORT

```
⋮
UTILITY
  REPORT
   FROM    (03/18/99,10:00:00.00)
   TO      (03/19/99,12:00:00.00)
   ORDER   (CORRNAME-PRIMAUTH-PLANNAME)
   EXCLUDE (LOCATION(LOCN10 LOCN12 LOCN15 LOCN20))
⋮
```

This example specifies the following:

- A report
- Sorted by plan name within primary authorization ID within correlation name
- Records are used with the time and date range of 10:00 a.m. on 18 March 1999 to noon on 19 March 1999
- Data is excluded that is associated with the following locations:
  - LOCN10
  - LOCN12
  - LOCN15
  - LOCN20

Using the TRACE Subcommand

You use the TRACE subcommand to produce traces with an entry for each DB2 utility or bind event.

Up to five traces can be requested in a job step.

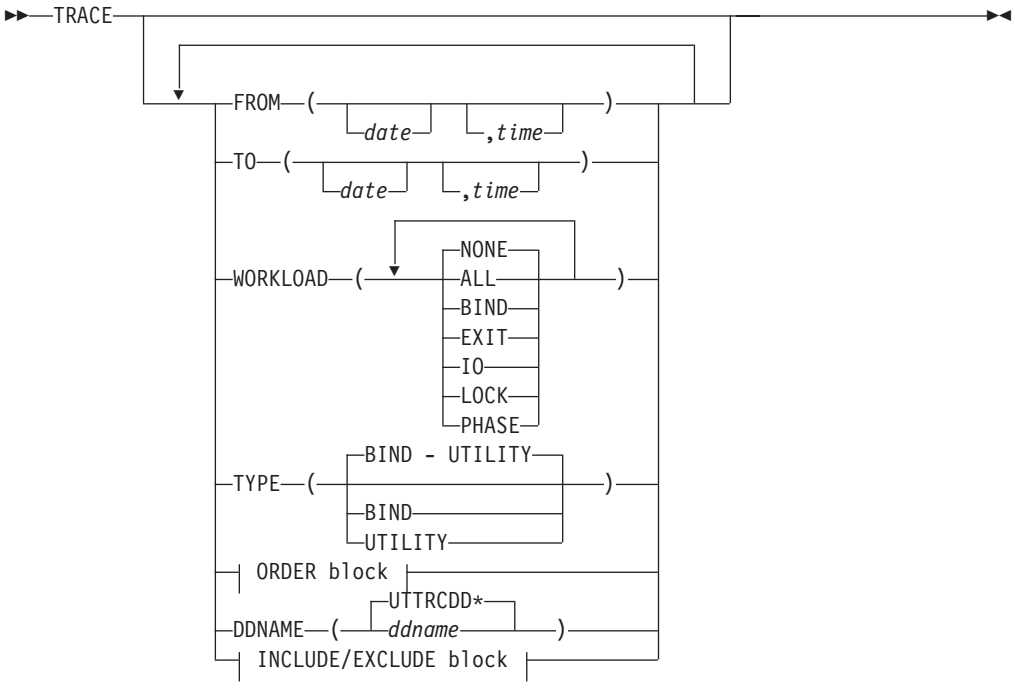


Figure 417. Syntax of the TRACE Subcommand

The following options can be used with the TRACE subcommand:

FROM/TO
Limits the range of records included in the trace by date and time.

Refer to "FROM/TO" on page 21 for more information on how to use the FROM/TO option.

WORKLOAD
Displays the workload detail for each event. The following detail can be specified:

- BIND (bind activity)
- EXIT (exit activity)
- IO (I/O activity)
- LOCK (lock suspension and page and row locking activity)
- PHASE (utility phases)
- ALL (all workload activity)
- NONE (no workload activity)

The default for WORKLOAD is NONE.

TYPE There are two activity types. You can select one or both of these activity types with each TRACE subcommand.

BIND Gives the elapsed time for each occurrence of a bind event for each trace entry. This includes information on the number of bound and nonbound events and the distribution of the bind into various bind subevents.

UTILITY
Gives the elapsed time for each occurrence of a utility event for

each trace entry, as well as information on the performance and resource usage of the various utility events.

If the TYPE option is omitted, both activity types are reported.

ORDER

Specifies the DB2 PM identifiers reported in the trace. You can specify up to three identifiers (separated by a dash (-)) for each entry of ORDER and one entry of ORDER for each TRACE subcommand. The default for ORDER is PRIMAUTH-PLANNAME.

Note: Traces are printed in the order in which the threads end and are not sorted by these identifiers.

Refer to “Chapter 1. DB2 PM Identifiers” on page 3 for definitions of DB2 PM identifiers.

DDNAME

Specifies the data set to which the trace is written.

INCLUDE/EXCLUDE

Includes or excludes data associated with specific DB2 PM identifiers. If you omit this option, all records are included.

Refer to “INCLUDE/EXCLUDE” on page 28.

Refer to “Chapter 1. DB2 PM Identifiers” on page 3 for definitions of DB2 PM identifiers.

Example Using TRACE

```
⋮
TRACE
   FROM  (,10:00)
   TO    (,10:15)
⋮
```

This example specifies:

- A trace with no workload
- Including records from 10:00 to 10:15 on the input data set regardless of the date, because it was not specified.
- Sent to UTTRCDD1 by default.

UTILITY Command Example

```
⋮
DISTRIBUTE       (FIELDID(TBBTOTAL))
UTILITY
     REDUCE
        INCLUDE  (PRIMAUTH(USER027))
        INTERVAL (15)
     TRACE
        FROM     (03/18/99,13:00:00.00)
        TO       (03/18/99,13:15:00.00)
     REPORT
⋮
```

This example requests the following:

- Generate frequency distribution information for field ID TBBTOTAL calculated over 15-minute intervals (using the default boundary) and include the primary

authorization ID USER027 (the interval and the primary authorization ID to be included are specified in the REDUCE subcommand).

- Create a trace, which is to present the bind and DB2 utility activity (by default) in the period between 13:00 and 13:15 on the specified date.

  Note: The trace is written to the data set defined by the default ddname UTTRCDD1.

- Create a utility activity report, which includes bind and DB2 utility activity (by default).

  Note: The utility activity report is written to the data set defined by the default ddname UTRPTDD.

Chapter 79. Single and Multisite Reports

Utility Activity reports and traces can process data originating at different locations. Data sets from several locations can be logically concatenated in the JCL, resulting in one data set containing mixed records.

When data comes from several locations, you can produce Utility Activity reports and time traces that present data from several DB2 locations consecutively, these are called multisite reports. Multisite reports are printed in the primary sequence of location. The location printed in the header is considered to be the local site.

Single-site reports include data from a single DB2 subsystem only. They are obtained by processing an input data set containing data from a single site or by specifying a single location using INCLUDE/EXCLUDE.

Chapter 80. The Utility Activity Reports

This chapter covers the Utility Activity report.

Figure 418 is an example of the Utility Activity report. The following command was used:

```
⋮
UTILITY
     REPORT
⋮
```

This command produces a report including both BIND and UTILITY activity types by default.

```
   LOCATION: DSNAPC3                        DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-1
      GROUP: DSNCAT1                            UTILITY ACTIVITY REPORT                  REQUESTED FROM: NOT SPECIFIED
     MEMBER: SSDQ1                                                                                 TO: NOT SPECIFIED
  SUBSYSTEM: APC3                                ORDER: PRIMAUTH-PLANNAME                    ACTUAL FROM: 02/08/99 07:56:06.12
DB2 VERSION: V6                                                                                    TO: 02/08/99 08:26:11.45

 PRIMAUTH                          TOT. ELAPSED  TOT. CPUTIME                          TOT. ELAPSED  TOT. CPUTIME
  PLANNAME              OCCURRENCES  AVG. ELAPSED  AVG. CPUTIME  ACTIVITY TYPE   COUNT  AVG. ELAPSED  AVG. CPUTIME
 ---------------------  -----------  ------------  ------------  ---------------  -----  ------------  ------------
 U473289
  DSNUTIL                        17   5117.171717     48.484848  UTILITY
                                       301.010101     36.363636    RESTORE           12     12.121212      6.666666
                                                                                          1.111111      0.555556

                                                      15.151515    REORG              5      5.555555      4.444444
                                                      12.121212                          1.111111      0.888889
 U473289
  DSNBIND                         5    500.500500      6.666666  BIND
                                       100.100100      2.222222    BIND PLAN          3      3.333333      2.121210
                                                                                          1.111111      0.707070

                                                       4.444444    BIND PACK          2      2.222222      1.444444
                                                       2.222222                          1.111111      0.777778

UTILITY ACTIVITY REPORT COMPLETE
```

Figure 418. Utility Activity Report Example

Report Fields

The report contains the following fields:

DB2 PM identifiers
Up to three DB2 PM identifiers can be printed in this column. They are printed whenever they change. The second and third identifiers are indented. If the ORDER option is not used, the default of PLANNAME within PRIMAUTH is shown. See “ORDER” on page 26 for more information.

OCCURRENCES
The total number of bind or utility threads for the current combination of DB2 PM identifiers. A bind thread is identified by the presence of appropriate pairs of IFCIDs 108, 109, 110, 111, 177, and 183. A utility thread is identified by the presence of IFCIDs 23, 24, and 25.

TOT. ELAPSED
The time difference between the first bind or utility record and the last bind or utility record.

AVG. ELAPSED
The TOT. ELAPSED time divided by OCCURRENCES.

TOT. CPUTIME
The difference between the CPU time of the first bind or utility record and the CPU time of the last bind or utility record.

AVG. CPUTIME
The TOT. CPUTIME divided by OCCURRENCES.

ACTIVITY TYPE
The name of the activity type and event. The activity type can only be BIND for bind events including remote bind activity, or UTILITY for utility events. All events are indented.

The bind events are as follows:

BIND PLAN
BIND PLAN subcommand issued

BIND PACK
BIND PACKAGE subcommand issued

BIND R-PACK
BIND PACKAGE subcommand issued for a remote location

RBND PLAN
REBIND PLAN subcommand issued

RBND PACK
REBIND PACKAGE subcommand issued

RBND R-PACK
REBIND PACKAGE subcommand issued for a remote location

FREE PLAN
FREE PLAN subcommand issued

FREE PACK
FREE PACKAGE subcommand issued

FREE R-PACK
FREE PACKAGE subcommand issued for a remote location

CONNECT
BIND CONNECT or CONNECT RESET subcommand issued for a remote location.

The utility events are as follows:

CHECKDAT
Identifies the utility as CHECK DATA.

CHECKIDX
Identifies the utility as CHECK INDEX.

COPY Identifies the utility as COPY.

DIAGNOSE
Identifies the utility as DIAGNOSE.

LOAD Identifies the utility as LOAD.

MERGECOP
Identifies the utility as MERGECOPY.

MODIFY
Identifies the utility as MODIFY.

QUIESCE
Identifies the utility as QUIESCE.

RECOVER
Identifies the utility as RECOVER TABLESPACE.

RECOVERI
Identifies the utility as RECOVER INDEX. Used for DB2 Versions 4 and 5.

REBUILDI
Identifies the utility as REBUILD INDEX.

REORG
Identifies the utility as REORG.

REPAIR
Identifies the utility as REPAIR.

REPORT
Identifies the utility as REPORT.

RUNSTATS
Identifies the utility as RUNSTATS.

STOSPACE
Identifies the utility as STOSPACE.

Refer to “Types of Utility Activity Reported” on page 1233 for more information about the relevant events for BIND and UTILITY.

COUNT
The number of occurrences of a single bind or utility event.

TOT. ELAPSED
The time difference between the first and last occurrence of a specific bind or utility event.

AVG. ELAPSED
The TOT. ELAPSED time divided by COUNT.

TOT. CPUTIME
The difference between the CPU time of the first occurrence of a specific bind or utility event and the CPU time of the UTILEND of the last occurrence of this bind or utility event.

AVG. CPUTIME
The TOT. CPUTIME divided by COUNT.

Chapter 81. The Utility Activity Trace

This chapter covers the Utility Activity trace.

Traces are presented in the order in which the threads complete. Start times might not be shown in ascending order if other threads finished prior to completion of a thread which started earlier.

Figure 419 on page 1251 is an example of the Utility Activity trace. The following command was used:

```
⋮
UTILITY
     TRACE
        ORDER (PRIMAUTH-PLANNAME-INSTANCE)
⋮
```

This command procudes a trace including both BIND and UTILITY activity types but excluding any workload detail by default.

```
   LOCATION: DSNAPC3                        DB2 PERFORMANCE MONITOR (V6)                          PAGE: 1-1
      GROUP: DSNCAT1                            UTILITY ACTIVITY TRACE                REQUESTED FROM: NOT SPECIFIED
     MEMBER: SSDQ1                                                                              TO: NOT SPECIFIED
  SUBSYSTEM: APC3                                                                     ACTUAL FROM: 02/08/99 07:56:06.12
DB2 VERSION: V6                                                                         PAGE DATE: 02/08/99
                                        IDENTIFIED BY PRIMAUTH/PLANNAME/INSTANCE

 PRIMAUTH
  PLANNAME                          ELAPSED TIME
   INSTANCE             START TIME      CPU TIME ACTIVITY TYPE   OBJECT
 ---------------------- ----------- ------------ --------------- ------------------------------------------------------------------------
 U473298
  DSNUTIL
   X'A704BD75ECF8'      08:26:45.42    20.766267 UTILITY
                                       10.345678   LOAD          DSNDB041.TS111111
                                                                 DSNDB04 .TS222222
                                                                 DSNDB04 .TS33

 U473298
  DSNBIND
   X'A704BD75ECF8'      08:26:45.42    20.766267 BIND
                                       10.345678   BIND PLAN     PLANNAME: PLN22135

 U473298
  DSNBIND
   X'A704BD75ECF8'      08:26:45.42    20.766267 BIND
                                       10.345678   BIND PACK     LOCN: DSNAPC3
                                                                 COLL: WERTEST
                                                                 PKID: PARALC01
                                                                 VRID: NUMBER01
                                                                 CONS: X'15C7A6331A688408'

UTILITY TRACE COMPLETE
```

Figure 419. Utility Activity Short Trace Example

Trace Fields

The trace contains the following fields:

DB2 PM identifiers
The DB2 PM identifiers specified in the ORDER option. They are printed whenever they change. The second and third identifiers are indented.

START TIME
The timestamp of the first bind or utility record encountered for that thread.

ELAPSED TIME
The time difference between START TIME and the timestamp of the ENDUTIL of the last bind or utility record of the originating task.

CPU TIME
The CPU time of the bind or utility event, including the CPU time of any parallel tasks.

ACTIVITY TYPE
The name of the activity type and event. The activity type can only be BIND for bind events including remote bind activity, or UTILITY for utility events. All events are indented.

For a detailed description, of Activity Type, see page 1248.

OBJECT
The description depends on whether it is a utility event, a bind event referring to a plan, a bind event referring to a package, or a BIND CONNECT:

- In the case of a utility, it is the *database name.object name* for each object worked on by the utility. Each *database name.object name* is shown only once.
- In the case of a BIND PLAN, RBND PLAN, or FREE PLAN event, it is the plan name.
- In the case of a BIND PACK, RBND PACK, FREE PACK, BIND R-PACK, RBND R-PACK, or FREE R-PACK event, the following information is shown:

  LOCN The location of the package.

  COLL The collection to which the package belongs.

  PKID The package ID.

  VRID The first 53 characters of the version name.

  CONS The consistency token for the package.
- In the case of a CONNECT, it is LOCN, the location of the package.

Chapter 82. Workload Detail

Workload detail blocks are only printed in Utility Activity traces.

The workload detail blocks are displayed beneath the thread events. Data is gathered for the following:

- I/O ACTIVITY
- LOCK SUSPENSION ACTIVITY
- PAGE & ROW LOCKING
- EXIT
- BIND
- PHASE

I/O Activity

This block shows the I/O activity for each object performed by the event.

```
--- I/O ACTIVITY ------------------------------------------------------------------------------------------------------------------------------------
      DATABASE  PAGESET  - I/O REQUEST -  ------- READ REQUEST  (WITH OR WITHOUT I/O) -------  ------------ WRITE REQUEST ----------
      MEMBER    BP       TOTAL     AET    TOTAL  TYPE   AET/WITH    %WITH PAGE/WITH  %WITHOUT  TOTAL  TYPE  CAST      AET  PAGE/WRIT
      DBPARALL  TSPARALL
      SE12      BP4          3  0.1296        3  SYNCH  0.129597   100.00      1.00      0.00
      WRKSE12   DSN4K01
      SE12      BP0        102  0.0164      102  SYNCH  0.016358   100.00      1.00      0.00
```

Figure 420. I/O Activity Workload Block Example

The following table describes the fields in the I/O activity workload block:

Field	Description
DATABASE	The database name. If the name is not available, the decimal DBID/OBID is printed.
PAGESET	The page set name. If the name is not available, the decimal DBID/OBID is printed.
MEMBER	The name of the DB2 member within the DB2 data sharing group. This field shows N/P in a non-data-sharing environment or N/A if the DB2 release is earlier than DB2 Version 4.
BP	The buffer pool name.
I/O REQUEST TOTAL	The total number of I/O requests.
I/O REQUEST AET	The average elapsed time for each I/O request.
READ REQUEST TOTAL	The number of read I/O requests of a specific type.
READ REQUEST TYPE	The type of read request: **SYNCH** Synchronous read request **SEQPF** Sequential prefetch request **DYNPF** Dynamic prefetch request **LSTPF** List prefetch request
READ REQUEST AET/WITH	The average elapsed time for a read with I/O of a specific type.

Field	Description
READ REQUEST %WITH	The percentage of total read requests with I/O for a particular type.
READ REQUEST PAGE/WITH	The pages read for each read request with I/O of a particular type.
READ REQUEST %WITHOUT	The percentage of total read requests without I/O for a particular type. This can occur because all the pages requested by a prefetch read were already in the buffer pool.
WRITE REQUEST TOTAL	The number of write I/O requests.
WRITE REQUEST TYPE	The type of write request.
WRITE REQUEST CAST	Indicates whether the write operations were initiated due to a coupling facility castout. For DB2 releases prior to DB2 Version 4, N/A is printed.
WRITE REQUEST AET	The average elapsed time for each write.
WRITE REQUEST PAGE/WRITE	The number of pages written.

Lock Suspension Activity

This block shows the lock suspension activity for each object performed by the event.

```
--- LOCK SUSPENSION ACTIVITY ------------------------------------------------------------------------------------------
                                                 ---------- SUSPEND REASON ----------  NORML  RESUME TIMEO  RESUME DEADL  RESUME
RESOURCE NAME                TYPE       REQUEST  LOCAL LATCH IRLMQ GROUP NOTIF OTHER COUNT     AET COUNT     AET COUNT     AET
MEMBER
DBPARALL            TSPARALL DATAPAGE   NOTIFY       0     0     0    24    24     0    24 0.74382     0     N/C     0     N/C
SE11
DBPARALL            TSPARALL DATAPAGE   LOCK         0     3     0     0     0     0     3 0.04096     0     N/C     0     N/C
SE11
DBPARALL            TSPARALL DATAPAGE   LOCK         0     5     0     0     0     0     5 0.06957     0     N/C     0     N/C
SE12
DBPARALL            TSPARALL DATAPAGE   UNLOCK       0     1     0     2     2     0     3 0.59058     0     N/C     0     N/C
SE21
```

Figure 421. Lock Suspension Activity Workload Block Example

The following table describes the fields in the lock suspension activity workload block:

Field	Description
RESOURCE NAME	The name of the resource on which the suspended request is made. The content of the field depends on the resource type: • The plan name for SKCT • The collection and package IDs for SKPT • The collection ID for COLLECT • The database name for DATABASE, CDB PLK, DBD PLCK • The buffer pool ID for ALTERBUF, GBP S/S, P/P PLCK, PAGEPLCK, GBP CAST, P/P CAST • The anchor point ID for HASH-ANC • The row ID for ROW • N/A for MASS, UTILITY, BINDLOCK, ALTERBUF, CATM MIG, CATM CAT, CATM DIR • The database and page set names for all others The database and page set names are translations obtained from the IFCIDs 105 and 107. If these records are unavailable, the decimal DBIDs and OBIDs are printed.
MEMBER	The name of the DB2 member within the DB2 data sharing group. This field shows N/P in a non-data-sharing environment or N/A if the DB2 release is earlier than DB2 Version 4.

Field	Description
TYPE	The type of the locked resource: **DATAPAGE** Data page lock **DATABASE** Locking of the DBD **PAGESET** Page set locking **PARTITION** Partitions of partitioned table spaces and indexes. Applies to DB2 Version 4 and later releases. **DATASET** Partitions of partitioned table spaces and indexes. Applies to releases prior to DB2 Version 4. **SKCT** Skeleton cursor table locking **INDEXPAGE** Index page locking **OPENLOCK** Page set or data set open lock **DBALLOC** Start and stop lock on database allocation table **SYSLGRNG** Buffer manager SYSLGRNG recording lock **UTILSER** Utility serialization lock **MASSDEL** Mass delete lock. A mass delete is a delete without a WHERE clause, which deletes all the records in a table. **TABLE** Table locking **HASH-ANC** Hash anchor lock **SKPT** Skeleton package table lock **COLLECT** Collection ID lock **BINDLOCK** Autobind and remote bind serialization lock for the serialization of local autobinds of packages, remote binds and remote rebinds of packages **ALTERBUF** Alter buffer pool lock **ROW** Data row locking **INDEXEOF** Index end of file lock **GBP S/S** Group buffer pool start and stop lock **TREEPLCK** Index tree P-lock

Field	Description
	P/P PLCK Page set or partition P-lock **PAGEPLCK** Page P-lock **CDB PLCK** DDF CDB P-lock **GBP CAST** Group buffer pool level castout P-lock **P/P CAST** Page set or partition level castout P-lock **RLF PLCK** RLF P-lock **DBD PLCK** DBD P-lock **CATM MIG** CATMAINT migration lock **CATM CAT** CATMAINT convert catalog lock **CATM DIR** CATMAINT convert directory lock **LPL/GREC** Database group exception LPL and GRECP lock **UTIL UID** Utility UID lock **UTIL EXC** Utility exclusive execution lock **SCA ACCS** SCA access for restart or redo information **EXCP UPD** Database group exception update lock **RPR_DBD** Repair DBD test and diagnose lock **DBCMD SER** Database command serialization

Field	Description
REQUEST	The type of request that has been suspended: **LOCK** IRLM lock request **UNLOCK** IRLM unlock request **CHANGE** IRLM change request **QUERY** IRLM query request **NOTIFY** IRLM notify request **DRAIN** Drain request **LATCH** Latch request
SUSPEND REASON LOCAL	The number of suspensions due to local resource contentions.
SUSPEND REASON LATCH	The number of suspensions due to IRLM latch contentions.
SUSPEND REASON IRLMQ	The number of suspensions due to IRLM queued requests.
SUSPEND REASON GROUP	The number of suspensions due to global contention.
SUSPEND REASON NOTIFY	The number of suspensions due to intersystem message sending.
SUSPEND REASON OTHER	The number of suspensions due to reasons other than those listed previously. **Note:** For drain suspensions, the suspension reason is always "waiting for the claim count to reach zero" and is categorized as OTHER.
NORML RESUME COUNT	The number of suspensions that ended in the task, resuming normal processing after the lock request has completed.
NORML RESUME AET	The normal resume average elapsed time. This is the normal resume elapsed time divided by the NORML RESUME COUNT.
TIMEO RESUME COUNT	The number of suspensions that ended in a timeout.
TIMEO RESUME AET	The average elapsed timeout time. This is the elapsed timeout time divided by the TIMEO RESUME COUNT.
DEADL RESUME COUNT	The number of suspensions that ended in a deadlock. **Note:** Drain suspensions do not end in a deadlock.
DEADL RESUME AET	The average elapsed deadlock time. This is the elapsed deadlock time divided by the DEADL RESUME COUNT.

Page and Row Locking Activity

This block shows the page locking, row locking, and lock avoidance activity for each object, performed by the event.

The page and row locking activity block is only printed if a commit occurred or a thread terminated.

In summary by occurrence, page and row locking activity information generated for explicit commits is shown on the relevant commit events.

In summaries by cursor or program, any explicit commits occurring during the life of that cursor or program are counted. Page and row locking activity caused by those commits is shown on the relevant cursor or program.

In summaries by statement number or statement type, commits are not counted. Because page and row locking activity is not relevant for these summary levels, it is not printed.

Any page or row locking activity occurring when a thread terminated is shown in the summary by thread. This activity is added to any page or row locking which took place in the body of the thread. Therefore, page and row locking figures in summary by thread can be greater than the sum of page locking figures shown in the body of the thread. The difference is the page and row locking activity occurring at thread termination.

An example of the page and row locking workload block is shown in the following figure.

```
--- PAGE & ROW LOCKING ------------------------------------------------------------------------
                                      LOCK   MAXIMUM PAGE   # LOCK   HIGHEST   TS      LOCK AVOID
MEMBER     DATABASE   PAGESET    COUNT    SIZE   OR ROW LOCKS    ESCAL      LOCK   TYPE    SUCCESSFUL
SE11       DBPARALL   TSPARALL       1   PAGE              1        0              SPL           YES
SUMMARY : MAX PAGE OR ROW LOCKS HELD         1  LOCK ESCALATIONS : SHARED      0  EXCLUSIVE         0

SE12       DBPARALL   TSPARALL       2   PAGE              5        0              SPL           YES
SUMMARY : MAX PAGE OR ROW LOCKS HELD         5  LOCK ESCALATIONS : SHARED      0  EXCLUSIVE         0

SE21       DBPARALL   TSPARALL       1   PAGE              2        0              SPL           YES
SUMMARY : MAX PAGE OR ROW LOCKS HELD         2  LOCK ESCALATIONS : SHARED      0  EXCLUSIVE         0

TOTAL                                 4                                0
```

Figure 422. Page and Row Locking Workload Block Example

Notes:

1. The DBID and OBID are obtained from IFCID 20.
2. The values in MAX PAGE OR ROW LOCKS HELD, LOCK ESCALATIONS SHARED, and LOCK ESCALATIONS EXCLUSIVE are accumulated within a subsystem. They are reset only at thread deallocation or when a new user signon occurs.
3. The values in MAXIMUM PAGE OR ROW LOCKS, HIGHEST LOCK, and # LOCK ESCAL are reset at commit time for dynamic BINDs and for static BINDs for which release (commit) is specified. Otherwise, these values accumulate until thread deallocation or until a new user signon occurs.
4. IFCID 218 is an additional lock summary record, written for lock avoidance. It indicates whether a successful lock avoidance test occurred during a given unit of work. The record is externalized for the agent at each commit or rollback.
5. For each event, the relevant IFCID 20 and 218 records are processed. If there is a DBID/OBID combination present for IFCID 218 but not for IFCID 20, the IFCID 20 fields show N/P. If there is a DBID/OBID combination present for IFCID 20 but not for IFCID 218, the IFCID 218 field (LOCK AVOID SUCCESSFUL) shows N/P.

The following table describes the fields in the page and row locking workload block:

Field	Description
MEMBER	The name of the DB2 member within the DB2 data sharing group. This field shows N/P in a non-data-sharing environment or N/A if the DB2 release is earlier than DB2 Version 4.
DATABASE	The database name, if available. If the name is not available, the decimal DBID is printed instead.
PAGESET	The page set name, if available. If the name is not available, the decimal OBID is printed instead.
COUNT	The number of page locking or row locking occurrences for each page set. • Specific database and page set: – At commit time: always 1 – At thread termination: the number of times this database and page set occurred on a commit record • TOTAL – At commit time: the total number of page sets listed – At thread termination: the sum of the values for all page sets
LOCK SIZE	The lock size used: **PAGE** Page lock **ROW** Row lock **TABLE** Table space or table lock **LOB** LOB lock **UNKN** Unknown lock ***** Multiple lock sizes
MAXIMUM PAGE OR ROW LOCKS	The maximum number of either page locks or row locks held at one time against this object.
# LOCK ESCAL	The number of lock escalations: • 0 if no escalations occur • For simple table spaces and partitioned table spaces not using selective partition locking (SPL): 1 if any escalation occurred for this table space in this logical unit of work • For segmented table spaces: the number of tables within the table space that have experienced lock escalations • For partitioned table spaces using SPL: the number of partitions for which locks escalated within the table space The TOTAL contains the sum of all values in this column.

Field	Description
HIGHEST LOCK	The highest table space lock state. If the table space is simple or partitioned not using SPL, it is the highest lock state for this database or page set. At trace end, it is the largest value from any commit for this object. The following values are possible: **IS** Intent share **IX** Intent exclusive **S** Share **U** Update share **SIX** Share with intent exclusive **X** Exclusive If the table space is segmented or partitioned using SPL, this field is blank.
TS TYPE	The table space type: **SIMPL** Simple table space **SEG** Segmented table space **PARTI** Partitioned table space **SPL** Partitioned table space using selective partition locking (SPL) **LOB** LOB table space
LOCK AVOID SUCCESSFUL	Indicates whether there was a successful lock avoidance test during the unit of work.
MAX PAGE OR ROW LOCKS HELD	The maximum number of page locks and row locks held at one time across all objects.
LOCK ESCALATIONS: SHARED	The total of shared lock escalations.
LOCK ESCALATIONS: EXCLUSIVE	The total of exclusive lock escalations.

Exit Activity

This block shows the exits performed by the event.

An example of the exits workload block is shown in Figure 423.

```
--- EXITS ----------------------------------------------------------------
MEMBER     VALIDATION  TOTAL   AET/EXIT   EDIT TOTAL  AET/EXIT
SE11                      1    N/C                0  0.000060
```

Figure 423. Exits Workload Block Example

The following table describes the fields in the exits workload block:

Field	Description
MEMBER	The name of the DB2 member within the DB2 data sharing group. This field shows N/P in a non-data-sharing environment or N/A if the DB2 release is earlier than DB2 Version 4.
VALIDATION TOTAL	The number of results of a validation exit call written for every validation row.
VALIDATION AET/EXIT	The summarized elapsed validation time divided by the value in VALIDATION TOTAL.
EDIT TOTAL	The summary of results of an edit exit call to encode a record written for every row edited and the results of an edit exit call to decode a record written for every row decoded.
EDIT AET/EXIT	The summarized elapsed edit time divided by the value in EDIT TOTAL.

Bind Activity

This block shows the bind activity for:

- BIND PACK
- BIND R-PACK
- RBND PACK
- RBND R-PACK
- BIND PLAN
- RBND PLAN

The layout depends on whether it is a package or a plan for which bind activity is shown.

An example of the bind activity workload block for packages is shown in Figure 424. An example of the bind activity workload block for plans is shown in Figure 425.

```
--- BIND ACTIVITY ----------------------------------------------------------------------------------------------------
      ISOLATION   : CS          TYPE        : AUTOMATIC     ACQUIRE : ALLOCATION      DEGREE     : ANY          VALIDATE  : BIND
      OWNER       : MANFREDW    CURRENTDATA : YES           RELEASE : DEALLOCATION    KEEPDYNAMIC: YES          EXPLAIN   : YES
      DYNAMICRULES: BIND        DISCONNECT  : CONDITIONAL   PREPARE : NODEFER         QUALIFIER  : HUGOPAUL     REOPTIMIZE: YES
      ACTION      : REPLACE     SQLERROR    : NOPACKAGE     SQLRULES: DB2             PROTOCOL   : NOT_SPEC     OPTHINT   : YES
      SENT        :   123456    ELAPSED_TIME: 1234.123456   CPU_TIME: 1234.12345656
      STMT.  BOUND:   123456    ELAPSED_TIME: 1234.123456   CPU_TIME: 1234.12345656
      STMT. ^BOUND:   123456    ELAPSED_TIME: 1234.123456   CPU_TIME: 1234.12345656
```

Figure 424. Bind Activity Workload Block Example for Packages

```
      --- BIND ACTIVITY ----------------------------------------------------------------------------------------------------
      ISOLATION   : CS          TYPE        : AUTOMATIC     ACQUIRE : ALLOCATION      DEGREE     : ANY        VALIDATE  : BIND
      OWNER       : MANFREDW    CURRENTDATA : YES           RELEASE : DEALLOCATION    KEEPDYNAMIC: YES        EXPLAIN   : YES
      DYNAMICRULES: BIND        DISCONNECT  : CONDITIONAL   PREPARE : NODEFER         QUALIFIER  : HUGOPAU    REOPTIMIZE: YES
      ACTION      : REPLACE     CACHESIZE   : 4096          SQLRULES: DB2             PROTOCOL   : NOT_SPEC   OPTHINT   : YES
```

Figure 425. Bind Activity Workload Block Example for Plans

The following table describes the fields in the bind activity workload block for both packages and plans:

Field	Description
ISOLATION	Indicates the isolation level of the plan or package.
TYPE	The type of bind.
ACQUIRE	Indicates when to acquire the locks: **ALLOCATION** Acquire the locks when the plan or package is allocated. **USE** Acquire the locks when the application first accesses them.
DEGREE	Indicates whether DB2 is to attempt to run a query using parallel processing. **1** Parallelism is prohibited **ANY** Parallelism is allowed
VALIDATE	The time of validation: **RUN** Validate at run time. **BIND** Validate at bind time.
OWNER	The plan or package owner.
CURRENTDATA	Controls the data currency for ambiguous cursors: **NO** Data currency is not required for ambiguous cursors. Blocking for ambiguous cursors is allowed. **YES** Data currency is required for ambiguous cursors. Blocking for ambiguous cursors is inhibited. **ALL** Data currency is required for all cursors. Applicable to packages only.
RELEASE	Indicates when to release the locks: **COMMIT** Release locks at commit time. **DEALLOCATION** Release locks at deallocation time. For packages only: **DEFAULT** Release locks at run time, which is the default.
KEEPDYNAMIC	Indicates whether the prepared dynamic SQL statements are preserved past a commit: **NO** The prepared dynamic SQL statements are destroyed at each commit. **YES** The prepared dynamic SQL statements are preserved past a commit. Any subsequent OPEN, EXECUTE, or DESCRIBE assumes that the previous SQL statement is to be executed.
EXPLAIN	Indicates whether EXPLAIN was specified for the bind request.

Field	Description
DYNAMICRULES	The value of the DYNAMICRULES option on the BIND/REBIND command: **RUN** Runtime rules apply to a dynamic SQL statement for authorization checking and object qualification at run time. **BIND** Bind-time rules apply to a dynamic SQL statement for authorization checking and object qualification at run time. **N/P** DYNAMICRULES was not specified.
DISCONNECT	Indicates which remote connections are terminated during commit operations: **EXPLICIT** Only connections in the release state are terminated. **AUTOMATIC** All remote connections are terminated. **CONDITIONAL** All remote connections are terminated provided that an open WITH HOLD cursor is not associated with the connection.
PREPARE	Indicates whether the preparation of dynamic SQL statements was deferred: **DEFER** The preparation of the dynamic SQL statements that refer to remote objects was deferred until run time. **NODEFER** The dynamic SQL statements were prepared at bind time.
QUALIFIER	The qualifier used for unqualified object names.
REOPTIMIZE	Indicates whether reoptimization was requested: **YES** REOPT(VARS) was specified to reoptimize the access path of the SQL statement at run time. **NO** NOREOPT(VARS) was specified to optimize the access path of the SQL statement only at bind time.
ACTION	Specifies whether the plan or package replaces an existing plan or package with the same name or is new: **REPLACE** The existing plan or package is replaced. **ADD** A new plan or package is added. This field only applies to BIND activities. For all other activities, N/P is printed.
SQLERROR	Indicates whether a package is created if SQL errors are encountered: **CONTINUE** A package is created even when SQL errors are encountered. **NOPACKAGE** No package is created if SQL errors are encountered.
CACHE SIZE	The size (in bytes) of the authorization cache specified for the CACHESIZE keyword. A value of 0 indicates that DB2 determines the size of the authorization cache.

Field	Description
SQLRULES	Indicates whether a type-2 CONNECT statement was executed according to the rules of DB2 or the ISO/ANS SQL2 standard: **DB2** An error does not occur if CONNECT identifies an existing SQL statement. **STD** An error occurs if CONNECT identifies an existing SQL statement.
PROTOCOL	Valid values are: **DRDA** Protocol is DRDA. **PRIVATE** Protocol is a private protocol **NOT_SPEC** Protocol was not specified. This is only valid for packages.
OPTHINT	Indicates whether optimizations hints are to be used. This can be: • YES • NO
SENT	The number of SQL statements sent to be bound at the server, and the elapsed and CPU times spent for that event at the requester site. This field is only shown for remote events.
STMT. BOUND	The number of SQL PARSER events and one or more minibind events that occur between matched BIND or REBIND begin/end record pairs, and the elapsed and CPU times spent for those events. When a statement is bound, DB2 chooses an access path for the DB2 statement. The only bound DB2 statements are SELECT, UPDATE, INSERT, and DELETE. The other DB2 statements do not require an access path to be generated. This field shows N/P if the CPU header is not present in the trace data. It is not shown if the IFCIDs 22 and 63 are not available.
STMT. ^BOUND	The number of SQL PARSER events without corresponding minibind events that occur between matched record pairs (BIND or REBIND begin/end), and the elapsed and CPU times spent for those events. A statement is not bound if DB2 does not calculate an access path. DECLARE CURSOR and CLOSE CURSOR are examples of statements that are not bound. This field shows N/P if the CPU header is not present in the trace data. It is not shown if the IFCIDs 22 and 63 are not available.

Utility Phases

This block shows the utility phases for each object performed by the event. Its layout depends on whether the utility produces parallel tasks.

An example of the phases workload block without parallel tasks is shown in Figure 426 on page 1266. An example of the phases workload block with parallel tasks is shown in Figure 427 on page 1266.

```
--- UTILITY PHASES ------------------------------------------------------------
PHASE      DATABASE  PAGESET    PARTNO  TYPE   COUNT   ELAPSED TIME      CPU TIME
RESTORE    EMILPAUL  TSP11111      007  I          1       0.111111      0.111111
RESTORE    EMILPAUL  TSP22222      007  I          1       0.111111      0.111111
RESTORE    EMILPAUL  TSP33333      007  I          1       0.111111      0.111111
RESTORE    ** TOTAL **                                    0.333333      0.333333

LOGAPPLY   EMILPAUL  TSP11111      007  P         22      22.222222     22.222222
LOGAPPLY   EMILPAUL  TSP22222      007  P        333     333.333333    333.333333
LOGAPPLY   EMILPAUL  TSP33333      007  P       4444    4444.444444   4444.444444
LOGAPPLY   ** TOTAL **                               4799.999999   4799.999999
```

Figure 426. Phases Workload Block Example without Parallel Tasks

```
--- UTILITY PHASES ------------------------------------------------------------
PHASE      DATABASE  PAGESET   PARTNO    TYPE   COUNT   ELAPSED TIME       CPU TIME
UNLOAD     FIJ1DB32  FIJS0001       0    R       4882      15.113114       0.909225
RELOAD     FIJ1DB32  FIJS0001       0    R       4882    2:53.093668       1.418892
SORT       FIJ1DB32  ********       0    R       4882       1.030223       0.076304
BUILD      FIJ1DB32  ********       0    I       4882       0.000440       0.000241
SORT_PHASES : 12345  BUILD_PHASES :  12345  MAX_DEGREE_PARALLELISM : 12345
```

Figure 427. Phases Workload Block Example with Parallel Tasks

Notes:

1. In LOAD and REORG utility parallelism, the calculation of the elapsed and CPU times for the SORT phase only takes into account the parallel sort, not the originating task.
2. Although not a phase of the LOAD or REORG utility, COPY is reported as a phase when a concurrent COPY was requested for the LOAD or REORG.
3. If the utility runs on several objects or partitions, a TOTAL is shown for each phase.

The following table describes the fields in the phases workload blocks:

Field	Description
PHASE	The name of the phase used by the utility. **SORT** The sort phase of the maintask or the summary of sort subtasks. **BUILD** The build phase of the maintask or the summary of build subtasks.
DATABASE	The database name of the object.
PAGESET	The table space name or index name of the object. When the sort or build phase, or both, are running in parallel as part of a subtask, ******** is printed if the number of objects is greater than one.
PARTNO	The number of the partition or data set if the utility is operating on a single partition or data set. Otherwise, the value in this field is 0.
TYPE	The item type for the individual phases. For more information, refer to Table 141 on page 1234.
COUNT	The number of item types processed by the phase for one object.

Field	Description
ELAPSED TIME	The elapsed time of the phase. The elapsed time shown in the trace header is not equal to the sum of the elapsed times in the phases block because the phases can run in parallel.
COUNT	The CPU time of the phase.

Part 17. Appendixes

Appendix A. The DPMOUT Record

The externalized DPMOUT data is a sequential data set with variable-length records. The following table outlines the format of the DPMOUT record. This record layout is not intended to be used as programming interface. Use these terms to interpret the table:

Offset The length from the beginning of the record to the start of the field.

Length
The length of the field, in bytes.

Data Type
The format of the value in the field:

CHAR Character

INTEGER
Integer

SMALLINT
Small integer

BINARY
Binary

POINTER
Pointer

Layout of the DPMOUT Record

Table 142. Layout of the DPMOUT Record

Offset	Length	Data Type	Field Description
DPMOUT Header			
N/A	2	SMALLINT	Record length (LL)
N/A	2	SMALLINT	Binary zeros (ZZ)
0	3	CHAR	Literal identifier DPM
3	1	BINARY	DB2 PM release number
4	16	CHAR	Location. If the location name is not available, this field contains either the data sharing group name, if available, or the DB2 subsystem ID.
20	8	CHAR	Data sharing group name
28	4	CHAR	Subsystem ID
32	8	CHAR	DB2 member name
40	8	CHAR	Sort timestamp
48	1	CHAR	Destination code
49	4	CHAR	Destination sequence number
53	11	CHAR	Reserved (zeros)
64	4	BINARY	Reserved
68	8	CHAR	Timezone adjusted timestamp
76	8	CHAR	Correlation name (translated)
84	8	CHAR	Correlation number (translated)

Table 142. Layout of the DPMOUT Record (continued)

Offset	Length	Data Type	Field Description
92	8	CHAR	Connection type (translated)
100	1	CHAR	Record type flag
101	1	CHAR	Correlation data present flag
102	1	CHAR	CPU data present flag
103	1	CHAR	DDF data present flag
DPMOUT Header DBID/OBID Translation Section Definition			
104	4	POINTER	Offset of first DBID/OBID translation section
108	2	SMALLINT	Length of each DBID/OBID translation section
110	2	SMALLINT	Number of DBID/OBID translation sections
Product Section Instrumentation Header			
112	3	CHAR	Reserved
115	1	BINARY	Resource manager ID
116	2	SMALLINT	IFCID
118	1	BINARY	Number of self-defining areas
119	1	BINARY	DB2 release number
120	4	POINTER	ACE address
124	4	CHAR	Subsystem name (DB2ID)
128	8	CHAR	Store clock value of header
136	4	INTEGER	IFCID sequence number
140	4	INTEGER	Destination sequence number
144	4	INTEGER	Active trace number mask
148	16	CHAR	The name of the local location. If the location name is not available, this field contains the DB2 subsystem ID.
164	8	CHAR	Network ID
172	8	CHAR	LUNAME
180	6	CHAR	Instance number
186	2	CHAR	Commit count
Product Section Correlation Header			
188	8	CHAR	Authorization ID
196	12	CHAR	Correlation ID
208	8	CHAR	Connection ID
216	8	CHAR	Plan name
224	8	CHAR	Original authorization ID
232	4	INTEGER	Connecting system type code
236	22	CHAR	Accounting token
258	2	CHAR	Reserved
Product Section CPU Header			
260	8	CHAR	CPU time
268	4	CHAR	Reserved
Product Section DDF Header			

Table 142. Layout of the DPMOUT Record (continued)

Offset	Length	Data Type	Field Description
272	16	CHAR	Requesterlocation
288	8	CHAR	Store clock for DBAT trace records
296	16	CHAR	Server name
312	8	CHAR	EXCSAT PRDID parameter
320	8	CHAR	Reserved
Product Section Data Sharing Header			
328	8	CHAR	DB2 member name
336	8	CHAR	DB2 data sharing group
Product Section Original Authorization Header			
344	8	CHAR	Correlation name (translated)
352	8	CHAR	Correlation number (translated)
360	8	CHAR	Connection type (translated)
368	1	CHAR	Correlation data present flag
369	1	CHAR	DDF data present flag
370	2	CHAR	Reserved
372	8	CHAR	Network ID
380	8	CHAR	LUNAME
388	6	CHAR	Instance number
394	2	CHAR	Commit count
Product Section Original Correlation Header			
396	8	CHAR	Authorization ID
404	12	CHAR	Correlation ID
416	8	CHAR	Connection ID
424	8	CHAR	Plan name
432	8	CHAR	Original authorization ID
440	4	INTEGER	Connecting system type code
444	22	CHAR	Accounting token
466	2	CHAR	Reserved
Product Section Original DDF Header			
468	16	CHAR	Requester location
484	8	CHAR	Store clock for DBAT trace records
492	16	CHAR	Server name
508	8	CHAR	EXCSAT PRDID parameter
516	8	CHAR	Reserved
Self-Defining Sections			
524	4	POINTER	Offset to data section 1
528	2	SMALLINT	Length of each item
530	2	SMALLINT	Number of items
532	4	POINTER	Offset to data section 2
536	2	SMALLINT	Length of each item

Table 142. Layout of the DPMOUT Record (continued)

Offset	Length	Data Type	Field Description
538	2	SMALLINT	Number of items
540	4	POINTER	Offset to data section 3
544	2	SMALLINT	Length of each item
546	2	SMALLINT	Number of items
548	4	POINTER	Offset to data section 4
552	2	SMALLINT	Length of each item
554	2	SMALLINT	Number of items
556	4	POINTER	Offset to data section 5
560	2	SMALLINT	Length of each item
562	2	SMALLINT	Number of items
564	4	POINTER	Offset to data section 6
568	2	SMALLINT	Length of each item
570	2	SMALLINT	Number of items
572	4	POINTER	Offset to data section 7
576	2	SMALLINT	Length of each item
578	2	SMALLINT	Number of items
580	4	POINTER	Offset to data section 8
584	2	SMALLINT	Length of each item
586	2	SMALLINT	Number of items
588	4	POINTER	Offset to data section 9
592	2	SMALLINT	Length of each item
594	2	SMALLINT	Number of items
596	4	POINTER	Offset to data section 10
600	2	SMALLINT	Length of each item
602	2	SMALLINT	Number of items
604	4	POINTER	Offset to data section 11
608	2	SMALLINT	Length of each item
610	2	SMALLINT	Number of items
612	4	POINTER	Offset to data section 12
616	2	SMALLINT	Length of each item
618	2	SMALLINT	Number of items
620	4	POINTER	Offset to data section 13
624	2	SMALLINT	Length of each item
626	2	SMALLINT	Number of items
628	4	POINTER	Offset to data section 14
632	2	SMALLINT	Length of each item
634	2	SMALLINT	Number of items
636	4	POINTER	Offset to data section 15
640	2	SMALLINT	Length of each item
642	2	SMALLINT	Number of items

Table 142. Layout of the DPMOUT Record (continued)

Offset	Length	Data Type	Field Description
Data sections-variable number and length			
DBID/OBID translation section-variable number			
0	2	SMALLINT	DBID number
2	2	SMALLINT	OBID number
4	8	CHAR	Database name
12	8	CHAR	Table space name

Appendix B. DB2 PM VSAM Data Sets

DB2 PM uses the following VSAM data sets:

- Save data sets are written when the job stream contains a SAVE subcommand.
- Job summary data sets are written when new data is processed.
- Distribute data sets are written when the job stream contains a DISTRIBUTE command.

All VSAM data sets used in a DB2 PM job must exist before DB2 PM is executed. Preallocate the data sets using the IDCAMS command. You can run IDCAMS as an initial step in the DB2 PM job. The required attributes for VSAM data sets are shown in Table 143. An example of the required IDCAMS commands is shown in Figure 428. The job deletes the cluster if it already exists, then defines a new cluster with the specified attributes.

Refer to the *DFSMS/MVS Access Method Services for ICF* and the *DFSMS/MVS Access Method Services for VSAM* for more information about IDCAMS.

Notes:

1. When the SAVE subcommand is specified, the save data set should be empty. If it is not empty, all existing records are deleted. If save and restore use the same physical data set, the restored data is rewritten during save.
2. You do not need to prime DB2 PM VSAM data sets.

Table 143. Attributes for DB2 PM VSAM Data Sets

Data Set	Key Length (bytes)	Record Length (bytes)		Buffer Space (bytes)	Control Interval Size (bytes)	
		Maximum	Average		Data	Index
Accounting SAVE (ACSAVDD)	284	3000	1500	40 960	8192	4096
Statistics SAVE (STSAVDD)	92	5500	2000	40 960	8192	4096
DISTRIBUTE (DISTDD)	158	234	234	40 960	8192	4096
Job Summary (JSSRSDD)	52	2462	160	40 960	8192	4096

Note: Buffer space and control interval size are suggestions only. You can modify them to suit the requirements of your installation.

```
//ALCVSAM  EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//SYSIN    DD *
  DELETE (cluster.name)
  DEFINE -
    CLUSTER ( -
      NAME (cluster.name) -
      TRACKS (as required) -
      VOLUMES (as required) -
      KEYS (keylength 0) -
      RECORDSIZE (average maximum) -
      BUFFERSPACE (40960) -
      REUSE -
      ) -
   DATA ( -
      CONTROLINTERVALSIZE (8192) -
      ) -
   INDEX ( -
      CONTROLINTERVALSIZE (4096) -
      )
/*
```

Figure 428. IDCAMS Commands

Appendix C. Correlation Translation Record

This record layout is not intended to be used as programming interface.

Table 144. Correlation Translation Record

Offset	Length	Description
0	8	Connection ID
8	2	Correlation name offset
10	2	Correlation name length
12	2	Correlation number offset
14	2	Correlation number length
16	64	Reserved

Appendix D. Location Information Record

Table 145. Location Information Record Format

Offset	Length	Data Type	Field Description
0	16	CHAR	Location
16	2	CHAR	Reserved
18	1	CHAR	Local time relativity (E or W)
19	5	CHAR	Difference between local time and GMT (HH:MM)
24	1	CHAR	CPU time relativity (E or W)
25	5	CHAR	Difference between CPU time and GMT (HH:MM)
30	50	CHAR	Reserved

Appendix E. MAINPACK Definitions Record

This record layout is not intended to be used as programming interface.

Table 146. MAINPACK Definitions Record Format

Offset	Length	Data Type	Field Description
0	16	CHAR	Requester location
16	8	CHAR	Connection ID
24	8	CHAR	Plan name
32	1	CHAR	Code

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