

# **Unicenter® CA-Insight™ Performance Monitor for DB2 for z/OS and OS/390**

## **User Guide**

**6.3**



Computer Associates®

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# Introduction

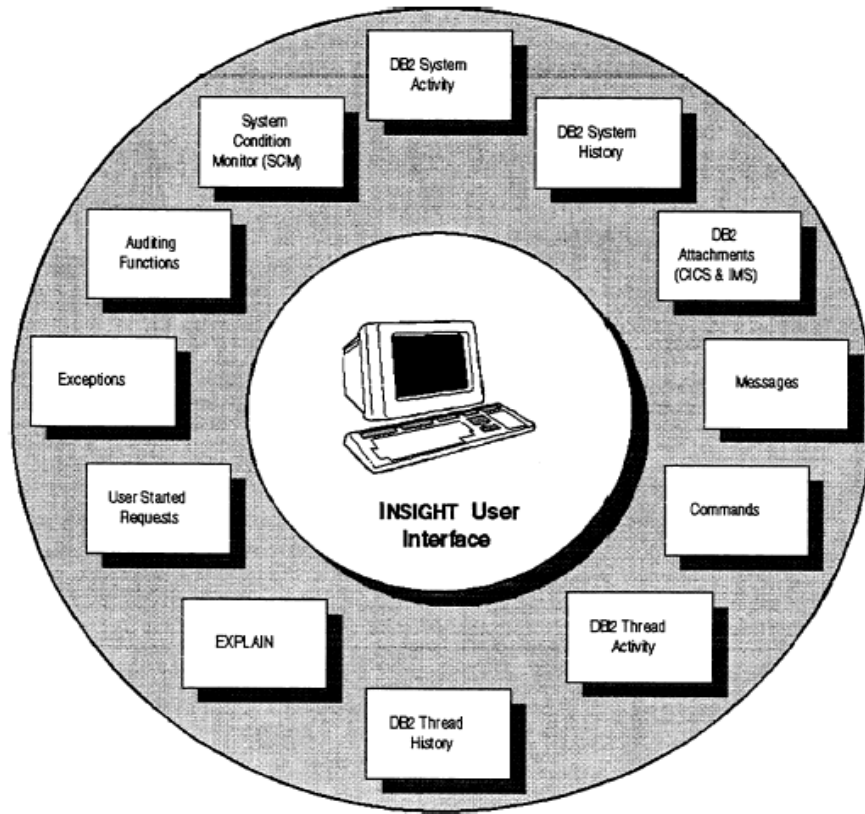
---

Unicenter CA-Insight Performance Monitor for DB2 for z/OS and OS/390 (also known as Unicenter CA-Insight) lets you monitor DB2 activity and performance. Its many components let you see DB2 activity from many different perspectives. You can use Unicenter CA-Insight to find areas in which performance can be improved and diagnose the reasons for DB2 problems.

**Note:** This guide assumes that all product components have been installed at your site. For more information about installing, see the *Software Delivery Manager Getting Started* and the *Post-Installation and Customization Guide*.

## Information Reported

Unicenter CA-Insight has online and batch user components. The batch components are described in the *Unicenter CA-Insight Batch Report Reference*. Examples of the kinds of information reported through the user interface, are shown in the following illustration:



Each of these items is represented as a chapter in this guide. You can find a brief description of each item in this chapter.

## Improved Performance

You can improve performance of your DB2 subsystem and related applications by supplying data from the following:

### DB2 System Activity

This includes information about general DB2 subsystem activity, including:

- Buffer Pool usage
- EDM Pool usage
- Log Activity
- Storage usage
- Locks
- SQL Counts
- System Parameters

See the “[Viewing Current System Statistics](#)” chapter for more information.

### DB2 System History

DB2 system history refers to recent-past DB2 subsystem activity collected by Unicenter CA-Insight. These are usually viewed within intervals of time (for example, every 5 minutes), and generally relate to the same data included under DB2 System Activity. See the “[Viewing System History](#)” chapter for more information.

### DB2 Attachments

In this context, attachments refers to CICS and IMS information. See the “[Viewing Attachments](#)” chapter for more information.

### Messages

DB2, z/OS or OS/390, Unicenter CA-Insight issued messages. See the “[Viewing Messages](#)” chapter for more information.

## Commands

Issuing DB2, console, and Unicenter CA-Insight commands from within Unicenter CA-Insight. See the “[Issuing Commands](#)” chapter for more information.

## DB2 Thread Activity

This is information about application (thread) activity within DB2, including SQL Text and Locks Held. See the “[Viewing DB2 Thread Activity](#)” chapter for more information.

## DB2 Thread History

This refers to recent-past DB2 thread activity collected by Unicenter CA-Insight. These are completed threads listed in chronological order, identified by Auth ID and Plan. See the “[Viewing DB2 Thread History](#)” chapter for more information.

## EXPLAIN

This is information about specific SQL text, which you can use to examine the access paths and methods that DB2 is using to satisfy your queries. Unicenter CA-Insight also includes a direct connection to PARITY, Computer Associates SQL code optimizer. See the “[EXPLAIN](#)” chapter for more information.

## User Started Requests

While the most commonly used reports are automatically started with Unicenter CA-Insight, there are many others available that are controlled by the user. These include probes (application traces) and reports with a high CPU overhead. In addition, users need a mechanism for controlling their own, customized reports. See the “[User Started Reports](#)” chapter for more information.

## Exceptions

Unicenter CA-Insight provides a powerful tool for determining when a DB2 processing limit has been exceeded. You can detect events for which you specify your own exceptions and their characteristics. See the “[Exceptions](#)” chapter for more information.



## Auditing Functions

Auditors require a special set of tools to examine system and application usage and performance. This includes DB2 commands issued, GRANT/REVOKE statements processed, authorization failures, and BINDs on dynamic SQL. See the “[Auditor Reports](#)” chapter for more information.

## System Condition Monitor (SCM)

The System Condition Monitor provides a single-point-of-view status for all DB2 subsystems across local and remote MVS images. You can also see information from other monitors, such as those for MVS, CICS, etc. (if configured with those options by your System Administrator). See the “[Thread and System Requirements](#)” chapter for more information.

# Components

This section describes the CA-Insight components.

## Data Collector

The data collector is the heart of the Unicenter CA-Insight system. It is the only component that is directly connected to DB2. It can operate continuously as a started task and can produce output at intervals you specify. It collects data from DB2 in the following ways:

- Samples DB2 statistics and control blocks to monitor DB2 performance with very little overhead
- Processes DB2 trace records
- Intercepts and displays DB2 operator console messages
- Gathers CICS and IMS control block information to monitor these attachments
- Issues DB2 commands and displays results
- EXPLAINs SQL and displays the results

Each data collector can support any number of interactive users running under the TSO or VTAM User Interface locally (on the same image) or remotely (on a different image).

## Requests

You can define the data being collected and the output format and destination using requests. Written using the Unicenter CA-Insight Query Language (IQL), requests are the code behind most panels and reports. You can modify requests or create your own. We provide a library of predefined requests, so you never have to spend time writing and debugging requests to operate the system. See the *Unicenter CA-Insight Writing Requests* guide for detailed information about IQL.

## Accessing from TSO and VTAM

You can access CA-Insight from a TSO or VTAM session. The panels and operation are the same. The user interface lets you view both collected DB2 statistics and real-time DB2 events as they happen. Display the formatted historical reports contained in data collector memory for a look at recent events. The interactive menu system allows rapid navigation between panels, and easy access to commonly used functions.

## Starting a TSO Session

To start a Unicenter CA-Insight session from within a TSO/ISPF session, select Unicenter CA-Insight from an ISPF Master Application Menu. The option code can differ from site to site, so check with your administrator.

## Stopping a TSO Session

Your Unicenter CA-Insight session continues until you perform one of the following steps:

- Press PF3 (End) from the Initial Menu
- Enter **EXIT** or **X** on the command line of any panel.

If you have reports or a probe running when you exit Unicenter CA-Insight, the Cleanup User Reports panel appears.

```

                                CA-Insight                SE19257                18:01:57
                                                DBV3 MVSBI

Cleanup                        Cleanup User Reports
You have reports active, on Subsystem DBV7 GC0IDB2DEVDBV3
Specify action:
                1 Cleanup the reports.
                2 Keep the reports for viewing later.
                3 Return to CA-Insight session.

Name      Status   Title
-----
ALBUFLST  ACTIVE   Buffer Pool List - 30 Seconds

Command ==>>> _____

```

You must specify whether you want to keep the reports for later viewing, or stop them when you exit.

- If you specify **1** or **2**, you return to the ISPF Master Applications menu.
- If you specify **3**, you return to the CA-Insight Initial Menu.

Stopping a Unicenter CA-Insight terminal session does not affect the execution of the data collector. The data collector continues to process any active requests started by terminal users.

## Starting a VTAM Session

Once the VTAM user interface job or started task is active, you can log on to Unicenter CA-Insight through VTAM. The actual logon can vary from site to site, but might be similar to the logon method described in the following (assuming the VTAM applid is IDB2USER):

1. From an MVS logon panel, enter **one** of the following:
  - LOGON APPLID=IDB2USER DATA=*userid/password*
  - LOGON APPLID(IDB2USER) DATA(*userid/password*)
  - CA-Insight

**Note:** The DATA= or DATA() field is optional.

2. Press Enter.

Unless you supplied both the User ID and correct password, the VTAM User Logon panel appears.

CA-Insight 13:34:00  
DBV3

LOGON            CA-Insight VTAM User Logon

  User ID . . . \_\_\_\_\_

  Password . . . \_\_\_\_\_

ENTER USERID AND PRESS ENTER

Command ==> \_\_\_\_\_

3=End

3. If you did **not** use the DATA= or DATA() parameter, enter your User ID and password (not displayed) and press enter. If you specified only the User ID in the logon, enter your password on this panel and press Enter.

The appropriate Unicenter CA-Insight initial menu appears.

## Stopping a VTAM Session

Your Unicenter CA-Insight session continues until you press PF3 from the Initial Menu, or enter **EXIT** or **X** on the command line of any panel.

If you have reports or a probe running when you exit Unicenter CA-Insight, the Cleanup User Reports panel appears. See the description in [Accessing from TSO and VTAM](#).

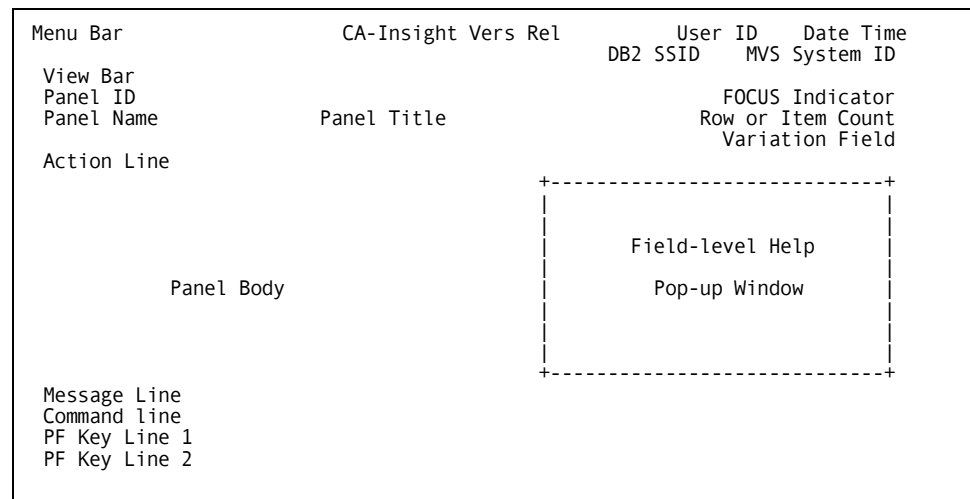
If you entered selection **1** or **2**, you return to the VTAM prompt.

## Interacting with Product Panels

This section discusses the components of a basic Unicenter CA-Insight panel.

### Panel Components

The following example shows the basic Unicenter CA-Insight panel layout. Most parts appear on every panel, giving you a consistent look and feel throughout the product.



## Field Descriptions

The following describes the panel components:

### **Menu Bar**

Provides an easy access to commonly used functions. Each item is a pull-down menu with a varying number of options. Enter the item's underlined letter on the command line and press Enter to display the pull-down options. See [Using the Menu Bar](#) for descriptions of the items in the Menu Bar, as well as more detail on its use.

### **User ID**

Specifies the user ID you logged on with through TSO or VTAM.

### **DB2 SSID**

Specifies the DB2 subsystem ID that you are monitoring.

### **MVS System ID**

Specifies the MVS system ID of the DB2 that you are monitoring. It can be blank.

### **View Bar**

(Only on some panels) A mini-menu that shows you all the choices available from a given panel. These usually represent different views of the same data. For example, the System Statistics panel has the following View Bar:

1 SnapShot 2 Buffer Pool 3 EDM Pool 4 Logs 5 Threads 6 More

The options are numbered, with the currently displayed option highlighted. You can enter the number of your selection in the field to the left of the View Bar or on the command line.

### **Panel ID**

(Only if PANELID ON is entered) Displays the ID of the panel. Do not confuse it with the Panel Name, which is the name of the request that produced the panel.

### **FOCUS Indicator**

(Only on some panels) Indicates whether FOCUS qualification is being used for the data displayed on this panel. The PF6 key (if displayed) brings up the Report Focus panel, which lets you specify filtering criteria for the current display.

### **Panel Name**

Name of the panel. Many panels are generated by requests. Request names are preceded by "R/" indicate that the panel is an IQL (Unicenter CA-Insight Query Language) based report.

### **Panel Title**

Name of the panel. On IQL-based requests, this value comes from the TITLE= parameter.

**Row or Item Count**

(Only on some panels) Shows the current rows or items you are viewing in a list. It is always shown as value x-y of z. Value is the unit of increment (rows or items). x is the number of the first row or item currently displayed. y is the number of the last row or item currently displayed. z is the total number of rows or items to display. These numbers are updated as you scroll forward or backward in the list.

**Variation Field**

(Only on some panels) Lets you change display parameters unique to the current panel. For example, the System Statistics panel can display performance data accumulated from DB2 startup (ACCUM) or the difference between the current and the previous time interval (DELTA). Whichever of these displays indicates what type of data you are viewing. You can enter the opposite value in the field to see a different unit of the information.

**Action Line**

(Only on some panels) Some list panels include an Action Line to display the command options available to take on the listed items. For example, the Threads Identified to DB2 (THRDACTV) panel includes the following Action Line:

Actions: S=Select, T=SQL Text, L=Locks Held, E=Exceptions, R=Remote, M=More

You can perform the appropriate command for a list item by entering its single-character mnemonic (such as **S** for **Select**) in the field preceding the list item and pressing Enter.

**Panel Body**

Displays the data applicable to the function being performed.

**Help Pop-up Window**

A pop-up window that overlays the current display to provide help information.

**Message Line**

The area where error, warning, or informational messages appear. If you need a more detailed explanation of the message, press the PF1 (Help) key and a pop-up window containing the cause and remedy for the message appears.

**Command line**

Enter Unicenter CA-Insight and TSO commands here, as well as Menu Bar and View Bar option selections.

**PF Key Line 1/PF Key Line 2**

All panels and pop-up windows display the function keys that are active for that panel or window.

## Using the Menu Bar

This section describes the choices available on the menu bar.

### Accessing Pull-down Menus

To access the pull-down Menu Bar items, perform **one** of the following:

- Enter the underlined character of the Menu Bar item on the command line.
- Place the cursor on the underlined character of the Menu Bar item.
- Press Enter to display the Menu Bar item options.

### How to Use Pull-down Menus

All Menu Bar choices present you with a pull-down window containing options you can select. You can enter the desired option number in the pull-down window or on the command line, and then press Enter.

In this example, we selected the Tools Menu Bar item. The pull-down window that appears shows your available options:

```

Menu Print Tools Help CA-Insight SE19257 12:58:04
                                DBV3
Copyright (C) 1 COMMANDS... Computer Associates International, Inc.
Systems      2 CONDITION...
             3 DBGPRINT...
DB2 System   4 LIST...
             5 PICK... Statistics
             6 PLOT... History
             7 PROFILE... MS Attachments
Threads      8 SHOW...
             9 24X7...
             10 EXCEPTION... Threads
             0 EXIT F3 History

                                8 User Started Requests
                                9 Exception Monitor
                                0 Permanent Exception Definitions

Command ==>
F1=Help      2=Split      3=End
              9=Swap

```



If you are not authorized to use a function, it does not appear in the pull-down list. This means that some of the examples used in this guide might not appear exactly as displayed at your site.

To exit a pull-down window, perform one of the following steps:

- Press PF3 (End)
- Select the Exit option from that window.

CUA standards do not allow for a function key area in a pull-down window, but the PF1 (Help) and PF3 (exit) keys are always available.

**Note:** Whenever you choose a pull-down Menu, the underlying panel is protected.

A pull-down window option can directly perform some action (such as printing a panel) or invoke another window. Options followed by an ellipse (...) indicate that another panel appears when you choose it.

## Menu Bar Choices

This section describes the Menu Bar choices and refers you to detailed descriptions of how to use the functions associated with the pull-down window options.

### Menu

This choice displays one of the following Initial Menu types from any panel.

- Systems
- DBA
- Operator
- Application
- Auditors

Once at the Initial Menu, you have several options to choose from (these vary depending on menu type and security constraints). To select an option, enter its corresponding number on the command line, or in the entry field to the left of the option list, and press Enter.

Explore... appears if you have CA-Explore products installed.

## Print

This choice lets you print Unicenter CA-Insight data as it appears on panels or reports. The Print choice has a pull-down window with the following options:

### Screen

Prints the screen you are viewing to the output or destination specified in the User Profile. You can also quickly execute this option by entering **P.1** or **SCREEN** on the command line of any panel.

### Report

Prints an entire report to the output or destination specified in the User Profile. No generic panel information (Menu Bar, Date/Time, PF Keys, etc.) is printed on the report. A report could be a scrollable list that extends beyond what you can see on the screen. You can also quickly execute this option by entering **P.2** on the command line of any panel.

### Exit

(PF3) Returns you to the underlying panel without performing the print function.

When the print operation has successfully completed, the following message appears on the Message Line:

```
DBG55058I - The report(s) have been printed
```

## Tools

The Tools choice provides access to many of Unicenter CA-Insight's functions and commands. This choice has a pull-down window with the following options:

### Commands

This option displays the panels that let you enter DB2, MVS Console, and Unicenter CA-Insight commands (Unicenter CA-Insight commands are described later in this chapter). In each of the options you can see the results of your command entry on the same panel.

### Condition

This option displays the System Condition Monitor (SCM), an optional component that integrates a single-image view of MVS network components into the Unicenter CA-Insight User Interface. For full details on how to use the SCM, see the "[System Condition Monitor \(SCM\)](#)" chapter.

### DBGPRINT

This option displays the current DBGPRINT output in a scrollable panel. DBGPRINT is the data collector's log of your user session. See the *Unicenter CA-Insight System Guide* for details on DBGPRINT.

**List**

This option displays a scrollable list of the requests in the requests library, ordered by request name. From the request list, you can browse and edit (ISPF only) the code, check the syntax, and start it. For a full description of the LIST panel, see [The LIST Panel](#) in the “User Status Reports” chapter.

**Pick**

This option displays the PICK panel from which you can select the DB2 subsystem you want to monitor. All DB2 subsystems defined to Unicenter CA-Insight (including those on other MVS images) display on this panel. See [Picking DB2 Subsystems to Monitor](#) for more information.

**Plot**

This option displays the 3270 Graphics panel from which you can display predefined and custom plots of subsystem statistics. See [Plotting on 3270 Terminals](#) in the “Viewing Current System Statistics” chapter for complete details on the plotting functions.

**Profile**

This option enhances your flexibility in using Unicenter CA-Insight. You use it to set your display parameters, print parameters, additional request data sets, user commands, and PF13-24 key assignments. See [Modifying Your User Profile](#) for more information.

**Show**

This option displays the SHOW panel which lists all of the requests in the data collector that you are allowed to view. You use the SHOW panel to display, start, freeze, resume, print, reset, and qualify a request. For a full description of the SHOW panel, see the “[User Started Reports](#)” chapter.

**CA-24X7**

This option is used to access Computer Associates Unicenter CA-24X7 product. If you have this product installed, the 24X7 Main Menu displays. Otherwise, a panel describing the features of Unicenter CA-24X7 and how to acquire it appears. See the “[Unicenter CA-24X7](#)” chapter for more information.

**Exception**

This option displays the Exception System Monitor panel which shows the current status of the Exception System. For a full description of this panel, see the “[Exceptions](#)” chapter.

**Exit**

(PF3) Returns you to the underlying panel.

## Help

This choice shows a menu-directed help facility, as well as the current Unicenter CA-Insight maintenance level. This choice has a pull-down window with the following options:

### Screen

This option displays a pop-up Help window with information about the current panel. You can also perform this function by placing the cursor on the command line and pressing PF1 (Help).

### Index

This option displays the Help Index panel. Use this panel to navigate to various Help topics.

### Tutorial

This option displays the various tutorials that are available, such as “Using CA-Insight for DB2 Requests,” “Using Batch Reporting,” etc.

### Fix Level Help Choice

This option documents the maintenance updates that have been applied to the Unicenter CA-Insight load library allocated by the User Interface. This information is usually needed when you contact Technical Support.

### Exit

(PF3) Returns you to the underlying panel.

## Navigating

This section describes the navigation choices available.

## Command Line

You can use the command line to enter the number, menu bar letter, or view bar number that corresponds to any option to access a specific function. In addition, you can enter any of the following commands on the command line (an asterisk (\*) denotes a subcommand, which can only be issued from certain panels):

Command	Operand	Function	Abbreviation
24x7		Access the Unicenter CA-24X7 product (if installed)	24x7
APPLS		Display the Application Developers' Menu	AP
APPLDEVL		Display the Application Developer's Menu	APPLDEVL
AUDITORS		Display the Auditor's Menu	AU

<b>Command</b>	<b>Operand</b>	<b>Function</b>	<b>Abbreviation</b>
BROWSE	<i>Request</i>	Browse a request from the request library	BR
CA-24X7		Access the Unicenter CA-24X7 product (if installed)	CA-24X7
CHECK	<i>request</i>	Check the syntax of a request	CH
COLOR	ON/OFF	Set color attributes on or off	COL
COMMANDS		Display the DB2 Commands panel	C
COND		Display the System Condition Monitor	COND
DBA		Display the DBA Menu	DBA
DB2CMDS	<i>command</i>	Issue DB2 commands	DB2
DISPLAY	<i>name, occurrence #</i>	Display the latest set of data for a request (see Note #1)	D
EDIT	<i>request</i>	Edit/Create a request member through TSO (ISPF)	ED
EXCDEF		Display the exception definition screen	EXCD
EXCEPT		Display the exceptions panel	EXCE
EXCMGR		Display the Exception System Manager	EXCMGR
EXIT		Exit Unicenter CA-Insight	X
EXPLAIN		Display the EXPLAIN Menu Options panel	E
FIND (*)	<i>string</i>	Find string in a displayed message or report	F
FIXLEVEL		Display the Unicenter CA-Insight Maintenance Level panel	FIX
FREEZE	<i>occurs</i>	Suspend data collection for a request	P
H		Display the Help pull-down menu	H
HELP		Display a panel's Help window	HELP
INDEX		Display the Unicenter CA-Insight Help Index	IND
INSCMDS	<i>command</i>	Issue Unicenter CA-Insight Console commands	INS
KEYS		Display the User Profile PF Key panel	KEYS
LAUNCH	<i>name, occurrence #</i>	Add a request to the data collector (see Note #3)	LAUNCH
LIST		List all available requests	L
M		Display the Menu pull-down menu	M

<b>Command</b>	<b>Operand</b>	<b>Function</b>	<b>Abbreviation</b>
MESSAGES		Display the Unicenter CA-Insight Message Facility	MSG/MES
MVSCMDS	<i>command</i>	View the MVS console and issue MVS commands	MVS
NEW		Display the “What’s new in this release” help panel	NEW
OBID		Refresh the OBID Table	OBID
OPERATOR		Display the Operators’ Menu	OP
OPTIONS		Display and update User Profile parameters	O
P		Display the Print pull-down menu	P
PANELID	ON/OFF	Set the display of the panel ID to on or off	PANELID
PAUSE	<i>name, occurrence #</i>	(See Note #2)	PAUSE
PICKDB2	<i>subsystem</i>	Select a DB2 to monitor	PIC
PLOT	<i>plotname</i>	Display the 3270 Graphics selection list	PLOT
PRINT (*)	<i>name, occurrence #</i>	Print a report to the print destination specified in your User Profile	PRINT
PROFILE		Display and update your User Profile parameters	O/PROF
RECALL		Retrieve the previous command to the command line	RECALL
REGS		Display debugging information	REGS
REOPEN		Reopens the IUIMAPS data set	REOPEN
REPEAT		Activate automatic display refresh	REPEAT
RESET	<i>name, occurrence #</i>	Reset a request’s accumulators to zero	RESE
RESUME	<i>name, occurrence #</i>	Resume data collection for a request (see Note #2)	RESU
RETRIEVE		Retrieve the previous command to the command line	RETRIEVE
REVIEW	<i>occurs</i>	Browse the REVIEW file of a request	REV
RFIND		Find the next occurrence from a previous FIND command	RFIND
SCREEN		Print the screen image	SCREEN

Command	Operand	Function	Abbreviation
SECURITY		Display the Security Refresh panel	SEC
SHOW		Show current requests in the data collector	S
SORT (*)	<i>column</i>	Sort column (Ascending/Descending), sort sortable reports	SORT
START	<i>name, occurrence #</i>	Add a request to the data collector (see Note #3)	STA
STOP	<i>name, occurrence #</i>	Delete a request from the data collector (see Note #2)	STO
SWITCH	ACCT   STAT   ALL	Switch history data sets	SW
SYSTEMS		Display the Systems Menu	SY
T		Display the Tools pull-down menu	T
TESTVERS	TESTVER setting	Change to another occurrence of a data collector with a different TESTVER (defined in SYSPARMS)	TESTV
TSO	<i>command</i>	Issue TSO commands	TSO
TUTORIAL		Display the Unicenter CA-Insight Tutorial	TU

Note #1

***name***

Specifies the name of a probe or the name of a request.

This name is first validated as a probe name using MGPROBES. If it is a probe, the display returns the first request named in the probe. If it is not a probe, the display returns the named request.

***occurrence#***

Specifies the occurrence to display. Valid values are 1 through 9.

- If a START-MULTIPLE=NO user does a display, the display terminates with an error message if the occurrence is specified. Otherwise, the display implicitly occurs with an occurrence number 1.
- If specified by a START-MULTIPLE=YES user, this occurrence displays.
- If not specified by a START-MULTIPLE=YES user, the occurrence number 1 displays.

Note #2

*name*

Specifies the name of a probe or the name of a request.

This name is first validated as a probe name using MGPROBES. If it is a probe, the probe is altered or printed. If it is not a probe, the request is altered or printed.

*occurrence#*

Specifies the occurrence to alter or print. Valid values are 1 through 9.

Note #3

*name*

Specifies the name of a probe or the name of a request.

This name is first validated as a probe name using MGPROBES. If it is a probe, the requests named in the probe are started. If it is not a probe, the request library is accessed for this member name.

*occurrence#*

Specifies the occurrence to start. Valid values are 1 through 9.

- If a START-MULTIPLE=NO user does a start, the start terminates with an error message if the occurrence is specified. Otherwise, the start implicitly occurs with an occurrence number 1.
- If specified by a START-MULTIPLE=YES user, this occurrence is started. If the occurrence has already started, the start continues with a free occurrence#.
- If not specified by a START-MULTIPLE=YES user, the first unused occurrence number is used.
- If there is at least one item currently in the data collector, the number of occurrences is indicated by an informational message.

## Using FastPath Commands

Unicenter CA-Insight navigation lets you stack commands by entering a period between the option numbers and/or letters. A stacked command string is known as a *FastPath*. You can enter any valid combination of options, including Menu Bar and View Bar options.

For example, by entering **h.1** on the command line, you can select a panel's general Help. This is the same as:

- Selecting the Help Menu Bar pull-down.
- Selecting Help Option 1 (Screen...).



You can precede the FastPath command with an equal sign (=) to start the command stack from your Initial Menu. For example, by entering =h.1 on the command line, you can select your Initial Menu's general Help. This is the same as entering = to go to the initial menu, then entering h.1 on the initial menu.

## Using Function (PF) Keys

Every panel in Unicenter CA-Insight includes a related set of function (or PF) keys. While the PF keys vary from panel to panel, the following PF keys appear on every panel:

### PF1 (Help)

If your cursor is placed on an enterable or display field, the Help pop-up window displays with field-level help. If a message is currently displayed in the message area, help regarding this message displays in the Help pop-up window. Otherwise, generalized help for the panel displays in the Help pop-up window.

### PF2 (Split)

Lets you use the TSO/ISPF split-screen option. If you have another application active, PF2 always swaps to the other application. Otherwise, it splits the screen. SPLIT is not cursor-sensitive.

### PF3 (End)

Returns you to the previous panel. From the Initial Menu, PF3 exits Unicenter CA-Insight.

### PF9 (Swap)

Lets you use the TSO/ISPF swap option. It only works if another application is active (see the previous description of PF2 (split)).

While the following PF keys do not appear on every panel, when they do appear they always have the same function.

### PF7 (Up)

Scrolls you up through the display. When you have reached the top, the following appears on the Message Line:

```
DBG55013I - Scroll limit reached
```

### PF8 (Down)

Scrolls you down through the display. When you have reached the bottom, the following appears on the Message Line:

```
DBG55013I - Scroll limit reached
```

### PF10 (Left)

Scrolls you left through the display. When you have reached the farthest left position, the following appears on the Message Line:

```
DBG55013I - Scroll limit reached
```

**PF11 (Right)**

Scrolls you right through the display. When you have reached the farthest right position, the following appears on the Message Line:

```
DBG55013I - Scroll limit reached
```

**PF Keys 13-24**

can have commands associated with them as well. See [Modifying Your User Profile](#) for details.

## Using Online Help

Each panel has two levels of Help available:

- **General** – Provides information about the current panel. To display general help, place your cursor on the command line or in a non-field area of the panel and press PF1 (Help). You can also enter **HELP** on the command line and press Enter. In the case of messages, press PF1 (Help) while the message is still displayed in the Message Area.

**Note:** As long as a message displays in the Message Area, PF1 continues to display help for that message.

- **Field** – Provides information about a particular field, entry (selectable fields) and non-enterable (data fields). To display field-level help, place your cursor anywhere on the field (description, data, or heading) and press PF1 (Help).

Help initially displays in the Help pop-up window. From there you can expand help to full-screen.

## Help Pop-up Window

In this example the cursor was placed in the Wait All DB2 I/O field and the PF1 key pressed:

```

Menu Print Tools Help CA-Insight SE19257 16:47:01
                        DB2E S074
  1 Detail  2 SQL Text  3 Locks Held  4 Exceptions  5 Remote  6 More...

R/THRDETL      Active Thread Detail
+-----+-----+-----+-----+-----+-----+
Auth ID STC          Plan          Corr ID | CA-Insight Field Level Help
Created 10:37:39 Isol Level .Acquire . Relea | Wait all DB2 I/O:
+-----+-----+-----+-----+-----+-----+
Program .....      Sect 0 Stmt # 0      T | The thread elapsed time in
Exceptions Crit 0    Warn 0 Info  0      S | DB2 that the thread spent
+-----+-----+-----+-----+-----+-----+
Times in HH:MM:SS.T Last Page Accesses | processing I/O requests or
Elapsed Time App 7:01.6 Max Pg Locks 0 | waiting for I/O requests
Elapsed Time DB2 0.0 Lock Suspnds 0 | performed for other
CPU Time App 0.0 Deadlocks 0 | threads.
CPU Time DB2 0.0 Escalations 0 | The accounting class 3
Wait All DB2 I/O 0.0 Timeouts 0 | trace must be active to
Wt All Lock/Ltch 0.0 L Prf No Stg 0 | collect this data.
Wait Log 0.0 Parallel Err 0 | Go to Excessive Read I/Os
DB2 Services 0.0 | for more information.
Wt Data Shr Msgs 0.0 | IQL Name: IO-WAIT-DB2,
Wt Stor Proc TCB 0.0 | WAIT-OTHER-READ,
| WAIT-OTHER-WRITE
| DB2 Name: QWACAWTI, QWACAWT
+-----+-----+-----+-----+-----+-----+

Command ==>>>
F1=Help      2=Split      3=End          5=Expand
F7=Up        8=Down       9=Swap        12=Return

```

When Help displays, the PF Key assignments are automatically changed to reflect functionality for the Help pop-up window. This includes PF5, which expands the help to full-screen, and PF7 and PF8 to scroll the information in the Help pop-up window.

To close the Help pop-up window, press PF3 (End). The PF Key assignments revert back to the underlying panel's functionality.

If there is more information than can fit into a window, a Row Count (Row *n-n/n*) displays in the lower right corner. Use PF8 to scroll forward and PF7 to scroll backward.

## Hypertext Links

Many Help windows include hypertext links. A hypertext link lets you view additional detail. Hypertext links are shown as selection fields in red on color terminals, highlighted on monochrome terminals.

To use the hypertext link, press the Tab key until the cursor appears on the link field in the Help window and press Enter. The Help pop-up window displays the information.

To return to the previous level Help window, press PF3 (End). To close the Help pop-up window and return to the underlying panel, press PF12.

## Help Full-screen Window

As mentioned earlier, you can see a full-screen display of help information by pressing PF5 from a Help pop-up window. Full-screen Help looks like this:

```

Menu Print Tools Help CA-Insight SE19257 16:49:57
DB2E 5074

CA-Insight Field Level Help
Wait all DB2 I/O: DBG0148D

The thread elapsed time in DB2 that the thread spent processing I/O
requests or waiting for I/O requests performed for other threads.

The accounting class 3 trace must be active to collect this data.

Go to Excessive Read I/Os for more information.

IQL Name: IO-WAIT-DB2, WAIT-OTHER-READ, WAIT-OTHER-WRITE
DB2 Name: QWACAWTI, QWACAWTR, QWACAWTW

Command ==>
F1=Help 2=Split 3=End 5=Rfind
9=Swap 12=Return

```

The same navigation and hypertext link facilities that apply to the Help pop-up Window also apply to full-screen Help. The only difference is that the PF5 (Expand) key becomes an RFIND function that lets you repeat a find for text in the Help panel (you must have already specified a FIND command prior to issuing an RFIND).

One advantage to full-screen Help is the ability to print the text of the Help by using the Print pull-down menu. It also reduces the amount of scrolling required with the Help pop-up window.

Help panels continue to be displayed in full-screen mode until you return to the underlying data or menu panel.

## Help Index

You can display an index of all Help topics, as well as Commands, Online Error Message explanations, and records and fields, by performing **one** of the following steps:

- Entering **INDEX** on the command line.
- Selecting Index... from the Help pull-down menu.

The Help Index contains a scrollable list of hypertext links, organized under topics:

```

Menu Print Tools Help CA-Insight SE19257 16:53:59
DBV3 S018

CA-Insight Help Index Row 1-15 of 19
DBGINDEX

Cursor select from the following:
About CA-Insight Vx.x
New in CA-Insight Vx.x
Batch
Batch Reporting
Online
Command Summary
Error Messages
Non-History Reports
History Reports
DB/Delivery Requests
3270 Graphics
Records and fields IFCIDs
Common CA-Insight Header CA-Insight 0
Accounting DB2 3

Command ==>
F1=Help 2=Split 3=End 5=Rfind
F7=Up 8=Down 9=Swap 12=Return

```

Use the Tab key to position the cursor at the desired topic and then press Enter.

A full-screen display of the topic appears. Hypertext links can be embedded within the display. Navigation is the same as for full-screen Help. Press PF3 to return to the previous panel or press PF12 to return to the underlying data panel.

## Tutorial

Another Help feature is the Tutorial, which describes the procedures for performing several key functions, such as “Starting a Request,” “Using Batch Reporting,” “Using CA-Insight for DB2 Menus,” etc.

To access the Tutorial menu, perform **one** of the following steps:

- Enter **TUTORIAL** on the command line,
- Select Tutorial from the Help pull-down menu

The Tutorial menu panel contains a list of hypertext links, organized under broad topics:

```

Menu Print Tools Help CA-Insight SE19257 16:57:27
DBV3 S018

Tutorial Row 1-13 of 16
DBGTUTOR

About CA-Insight
Introductory User Tutorial

Batch reporting from SMF or GTF:
Using Batch Reporting

Using CA-Insight from a terminal:
Menus
History

Using CA-Insight requests:
Starting a Request
Displaying a Request

Command ==>
F1=Help 2=Split 3=End 5=Rfind
F7=Up 8=Down 9=Swap 12=Return

```

Use the Tab key to position the cursor at the desired topic and then press Enter.

A full-screen display of the tutorial appears. Some of the tutorial material is presented in a step-by-step style to guide you through the procedure (such as “Starting a Request”), while other tutorials act as sub-menus to explanations of components (such as “Menus”).

Navigation is the same as for full-screen Help. Press PF3 to return to the previous panel or press PF12 to return to the underlying data panel.

## Picking DB2 Subsystems to Monitor

If you have more than one DB2 subsystem to monitor, you can use the Pick panel (shown in the following sample panel) to select which subsystem's performance data to display in Unicenter CA-Insight. These subsystems can be on the same MVS image or on a remote MVS image.

```

Menu Print Tools Help CA-Insight SE19257 10:58:32
                                      DBV3 S018
                                      Location GCOIDB2DEVDBV3

Pick                                Pick a DB2 Subsystem
                                      Y Y Statistics, N No Statistics

-----
Location      SSID Type  System  Status
-----
. GCOIDB2DEVDB23 DB23 LOCAL  S018   Active
. GCOIDB2DEVDSN  DSN              Inactive
. GCOIDB2DEVDB21 DB21              Inactive
. GCOIDB2DEVDB22 DB22              Inactive
. GCOIDB2DEVDBV3 DBV3 LOCAL  S018   Active
. GCOIDB2DEVDSN4 DSN4              Inactive

Command ==>
F1=Help      2=Split      3=End
              9=Swap
  
```

Access this panel by performing **one** of the following steps:

- Press PF6 on any of the Initial Menus,
- Enter **Pick** on the command line,
- Select Pick... from the Tools Menu Bar item

The default display includes a Statistics option. By default, if your site has fewer than six locations, statistics display for each location. Otherwise, statistics for each location do not appear (this value is saved in your User Profile).

You can pick the subsystem to monitor at any time. The current subsystem being monitored is shown highlighted, and the corresponding SSID and System display on every panel (DB2 SSID and MVS System ID).

To select a subsystem, place the cursor at the beginning of that row and press Enter.

**Note:** While you can choose any of the subsystems listed, most Unicenter CA-Insight functions require one that has an ACTIVE status.

## Modifying Your User Profile

The User Profile panels let you set session parameters that affect how you interact with Unicenter CA-Insight. These parameters take immediate effect and remain for subsequent sessions.

The panels are separated by general function:

- Display Parameters – Control aspects of the User Interface
- Print Parameters – Control the output format and destination of print requests
- Additional Request Data Sets – Specify concatenation for data sets containing requests other than those initially supplied with Unicenter CA-Insight
- User Commands – Links user-defined commands names with command strings
- PF Keys – Specify commands to be executed for PF Keys 13-24 (PF Keys 1-12 are pre-defined by Unicenter CA-Insight and cannot be modified)

Press PF8 to advance to the next profile and PF7 to return to the previous one.

Field-level help is available for parameters. Place the cursor on the field and press PF1.

### Display Parameters

This is the first panel displayed, and controls aspects of the User Interface.

The Initial Command and Operand fields let you specify the command to execute each time you enter Unicenter CA-Insight; the first field is for the command and the second is for an operand. For example, if you always wanted to see the MVS summary request when entering Unicenter CA-Insight, you would enter **D** in the first field, and **MVS** in the second.

The Current SQLID field is where you specify the ID to be used for Explain processing.



In the Explain plan tables to use field, specify whether you want to use the plan bound using the SYSIBM catalog tables or the one bound using shadow catalog tables. (If at installation time, only one plan was bound, and it was specified for both the EXPLAIN-PLAN-SYSIBM and EXPLAIN-PLAN-USERQUAL sysparms, then changing this display parameter has no effect.)

```

Menu Print Tools Help  CA-Insight          MATSAA2          11:27:13
Group AWORKSG  Menu  SYSTEM                    D71A CA31
Profile          User Profile                      Page 1 of 5
Display Parameters
Initial Command and Operand .
Scroll Amount . . . . . PAGE
Repeat Interval . . . . . 10      02 - 99  Seconds
Command to Stop Repeat . . . REPEAT
Current SQLID . . . . . MATSAA2
Explain action is EDIT . . . N      Y Edits SQL
                                      N Directly Explains the SQL
Explain plan tables to use . S      S SYSIBM  U User shadow
Explain - change " to ' . . . N      N For shops using std defaults
Mixed case corr ID qualify . N      N Upper case, Y Mixed case
Transpose blue-turquoise . . T      B Blue, T Turquoise, G Green

Command ==>
F1=Help      2=Split      3=End
F7=Up        8=Down      9=Swap
                                      12=Return
    
```

## Print Parameters

This panel specifies the output format and destination of print requests:

```

Menu Print Tools Help  CA-Insight          MATSA02          22:59:25
Group AWORKSG  Menu  SYSTEM                    DBV6 XE44
Profile          User Profile                      Page 2 of 5
Print Parameters
Print Method . . . . . D          D Destination O Output I ISPF List W Writer
Destination/Output . . USILDAVC USSEATP8
Output Class . . . . . A
Listing ID . . . . .
Lines Per Page . . . . . 55
Max LRECL (133-255) . .
Case . . . . . M          M Mixed, U Upper

Command ==>
F1=Help      2=Split      3=End
F7=Up        8=Down      9=Swap
                                      12=Return
    
```

## Additional Request Data Sets

Use this panel to control the request libraries allocated by the User Interface. Your administrator might have 0, 1, or 2 request libraries defined by default to your session. If your Administrator has provided at least one request library, you can concatenate your own libraries before the it (or them) by specifying values for First, Second, and/or Third User Data Set in this panel:

```

Menu Print Tools Help CA-Insight SE19257 17:28:26
Group MVS4 Menu SYSTEM DBV3 S018
Profile User Profile Page 3 of 5
Additional Request Datasets
First User Dataset . . . . .
Second User Dataset . . . . .
First Pre-defined . . . . . : GSW.IV42UNIT.REQUESTS
Second Pre-defined . . . . . : GSW.IV42INTG.REQUESTS

Command ==>
F1=Help 2=Split 3=End
F7=Up 8=Down 9=Swap 12=Return
    
```

## User Commands

Use this panel to link user-defined commands with command strings. For example, you might want to create a command for a commonly used function (as in ACTIVE for the D THRDACTV command). Then, you just have to enter **ACTIVE** on the command line to do the navigation.

```

Menu Print Tools Help CA-Insight SE19257 17:30:53
Group MVS4 Menu SYSTEM DBV3 S018
User-Cmds User Profile Page 4 of 5
User Commands The user string is executed when the command is entered.
Command User String
-----
ACTIVE D THRDACTV

Command ==>
F1=Help 2=Split 3=End
F7=Up 8=Down 9=Swap 12=Return
    
```

## PF Keys

This profile panel is used to assign a command or string to PF Keys 13 through 24.

```

Menu Print Tools Help CA-Insight SE19257 17:33:59
Group MVS4 Menu SYSTEM DBV3 S018
Prof-Keys User Profile Page 5 of 5
PF Key User String
-----
PF13 . . . User String is executed when
PF14 . . .SPLIT the function key pressed.
PF15 . . .
PF16 . . .
PF17 . . . PF Keys 1-12 cannot be modified.
PF18 . . .
PF19 . . .
PF20 . . .
PF21 . . .SWAP
PF22 . . .
PF23 . . .
PF24 . . .

Command ==>>
F1=Help 2=Split 3=End
F7=Up 8=Down 9=Swap 12=Return

```

## Auto-Refresh Display

On panels that have a short interval for gathering data (such as 30 seconds on the System Snapshot panel), you must press Enter to refresh the display. In some cases, you might want the display automatically refreshed. You can put your entire Unicenter CA-Insight online session into Repeat mode by entering the REPEAT command on the command line. This function simulates pressing Enter to refresh the report.

**Note:** Your ability to issue the REPEAT command is controlled by the REPEAT=User Interface Session parameter. See the *Unicenter CA-Insight System Guide* for more information. Consult your System Administrator to see if you have access to this command.

## Starting Auto-Refresh

To start auto-refresh, enter **REPEAT** on the command line and press Enter. On most panels, the word REPEAT appears on the fourth line. This indicates that you are in auto-refresh mode.

The repeat interval is set on the “User Profile - Display Parameters” panel.

Note the difference between this repeat interval and the data gathering interval coded into the Unicenter CA-Insight request and displayed on the SHOW panel. The *repeat interval* is the interval of time between successive refreshes of the data display. The *data gathering interval* in the request specifies how often the data collector polls DB2 and rebuilds the report. It is possible to have many repeat intervals between data gathering intervals. The current data gathering interval (when appropriate to the report) displays as part of the report title (such as System Snapshot - 30 seconds).

## Stopping Auto-Refresh

To stop repeat mode, you can again enter **REPEAT** on the command line and press Enter. You can also press a key to stop Repeat mode, depending on how you accessed the Online User Interface:

- TSO—Press ATTN, or any PA key to stop Repeat mode
- VTAM—Press any PA key to stop Repeat mode

You can define your own command to stop Auto-Refresh on the User Profile - Display Parameters panel.

With some session manager software, the ATTN key is redefined and not passed to the Unicenter CA-Insight application. If this happens, try a PA key or cancel your TSO session externally.

# Viewing Current System Statistics

---

*System Statistics data* provides information about the DB2 subsystem you are currently monitoring for the time interval shown next to the panel title (usually 30 seconds). The time interval can be changed by altering the time in the related request.

## Common Features

Many of the System Statistics panels share these common features:

### PF6 (History) Key

Press this key to see historical data for the same type of information (buffer pools, EDM pools, etc.) for the most recent history time interval (i.e., the last 30 minutes). This historical data (also known as *near-term* history) resides in Unicenter CA-Insight history files. You can find descriptions of the related history panels in this chapter.

### Accum/Delta Calculation

Many System Statistics panels can display data in one of two ways:

- **Accum**—Displays data representing total statistical accumulation since DB2 was started
- **Delta**—Displays the difference between values found at this interval and the last interval (current interval value - previous interval value).

You can easily change how the data is derived by entering **A** or **D** over the existing Accum/Delta indicator in the Variation Field on the sixth line of the panel and pressing Enter. The values displayed should increase if you've gone from a Delta to an Accum view and should decrease if you've gone from an Accum to a Delta view.

## Viewing Data for Other Subsystems

The System Statistics option displays information for one DB2 subsystem at a time. If you want to see information for a different DB2 subsystem (and you are authorized to see it), use the Pick function from the Initial Menu to select another DB2 subsystem. Pick is detailed in [Picking DB2 Subsystems to Monitor](#) in the “Introduction” chapter.

If you are interested in seeing high-level system information for multiple DB2 subsystems, use the System Condition Monitor (SCM). This feature is described in the [“System Condition Monitor \(SCM\)”](#) chapter.

### DB2 Group Members

To access an overview of all DB2 members within a DB2 group, select System Statistics from the Initial Menu. Note that this display is available only if you have data sharing enabled (DATASHR=YES in SYSPARMS). Otherwise, the System Snapshot panel appears. You can also enter D SYSPLEX on the command line to access this panel.

The DB2 Group Members panel appears first. This panel provides an overview of all DB2 members within a data sharing group. A data collector must be installed for each member and be enabled for data sharing for that member to be displayed.

Enter the **S** action code to display detailed statistics for a specific member, the **T** action code to display thread activity for that member, or the **X** action code to display exceptions for that member.

```

Menu Print Tools Help CA-Insight           MATSAA2           10:47:59
                                D420 XE44
  1 Sysplex  2 Data Collectors
R/SYSPLEX   DB2 Group Members           Item 1-1 of 1
Actions: S=Sys Stats, T=Threads, X=Exceptions
          Threads Thrds DB2 AS   BP
          TotCPU/ Tot1/ %CPU/ %ActPg/ <----- Status ----->
          ThdRate InDB2 PgRate RdEff  Subsys  Appl  Database
-----
- D420 =          16.26    5  0.67    7.2  CRIT   NORM   NORM
          1.25    3  0.00    21.3
- D51J =          1.26    3  0.02    3.1  CRIT   NORM   NORM
          0.00    1  0.00    0.0

Command ==>
  F1=Help      2=Split      3=End
                                9=Swap
                                12=Return
    
```

## System Snapshot Panel

To access system data, select System Statistics from the Initial Menu. If you are running with data sharing enabled, you must select the DB2 group member for which you want to display the System Snapshot display. Otherwise, the System Snapshot displays automatically. You can also access this panel as follows:

- Select View Bar Option 1 (SnapShot) from within the System Snapshot menus.
- Enter **D SYSSTATS** on the command line.

The System Snapshot is the first panel displayed. This panel provides a system status overview of the DB2 address space. The data displayed is Accum (from the time DB2 was started) or Delta (difference between the current and previous time). A sample panel (using Delta data) is shown in the following panel:

```

Menu Print Tools Help CA-Insight MATSA02 16:29:59
                                D420 XE44
  1 SnapShot  2 Buffer Pool  3 EDM Pool  4 Logs  5 Threads  6 More...

R/SYSSTATS      System Snapshot - 30 Seconds

EXCEPTIONS Crit Warn Info BUFFERS EDM POOL Delta
Subsystem      7   1   0 Warnings      0 Free Pg 1872 % Total 99.0
Database        0   0   0 Act Pools     1 DBD Lds   0 % Rqsts 0.0
Applicatn      0   0   0 % Act Pgs   0.0 CT Lds   0 % Rqsts 0.0
                                Getpages   0 PT Lds   0 % Rqsts 0.0
                                Sync Rds    0 Dyn Ins   0 % Rqsts 0.0
                                Read Eff   0.0

LIMITS Count % Max Buf Updts LOCKING LOGGING
Users      3   4   0 Pg Writes 0 Suspend  0 Dlyd Wrts 0
TSO         0   0   0 Write I/O 0 Escalate 0 Arch Read 0
Batch       3  15   0 RID POOL  Deadlock 0 Warnings  0
DDF Actv    0   0   0 Failures  0
DDF Inac    0   0   0
Datasets   18   0   0

SQL ADDRESS SPACES THREADS Active Complete
Dynamic      0 DBAS Pg/Sec 0.0 Count      3           0
Ins+Upd+Dlt  0 SSAS Pg/Sec 0.0 Commits    0           0
Open+Select  0 IRLM Pg/Sec 0.0 Aborts      0           0
                                DIST Pg/Sec 0.0 Tot DB2 CPU 6.26      0.00
STORED PROCEDURES DB2 Pct CPU 0.0
SQL CALLS      0 DB2 Wrk Set 1990656
Failures       0 DB2 Up Time 046:16:54

MISCELLANEOUS DATA SHARING
DDF ACTIVE Rel V6.1 Group .....
RLF INACTIVE SRC = Member .....

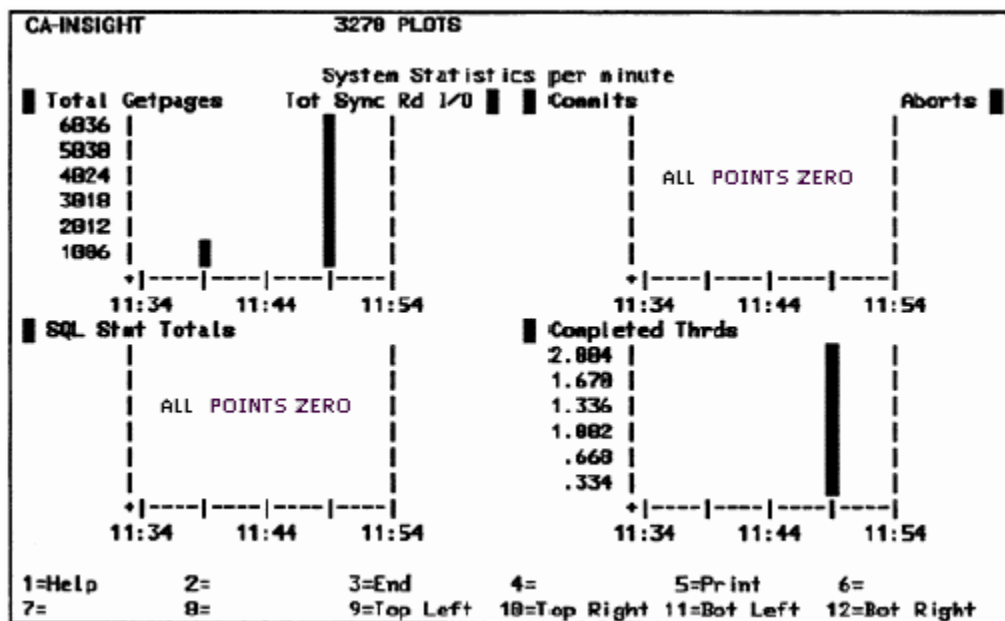
Command ==>
  F1=Help      2=Split      3=End      4=Plot      6=History
                9=Swap      12=Return

```

**Note:** In the previous sample panel, all 22 lines of display are shown. If you are using a terminal in MOD2 format, scroll down to see the data beyond line 14. This is true for most panels shown in this guide. However, most Unicenter CA-Insight panels fit in a MOD2 format.

## System Statistics per Minute Plots Panel

The System Snapshot panel includes a plot function, assigned to the PF4 Key. Press PF4 to display the System Statistics per Minute Plots panel:



Related pairs of data (such as Total Getpages and Total Synchronized Read I/Os) are shown as different colors on the plot. In the case of the bottom plots, there is only one data type being plotted. The time intervals (in minutes) are shown in the following each plot, while the data scales are shown to the left or right of each plot, below the name of the data type. The top right and lower left plots have no data to plot for the time interval shown, so no bars appear.

In color mode the displayed plots utilize blue for the left variable and yellow for the right variable. When both occur on the same block, the yellow block also has an asterisk (\*) to show that the left variable would also be in that position.

In non-color mode the displayed plots utilize x for the left variable and \* for the right variable. When both occur on the same block, an b\* is used to show that the other variable would also be in that position.

The colors of the bars are shown as two different shades of gray in the plots shown in this guide.

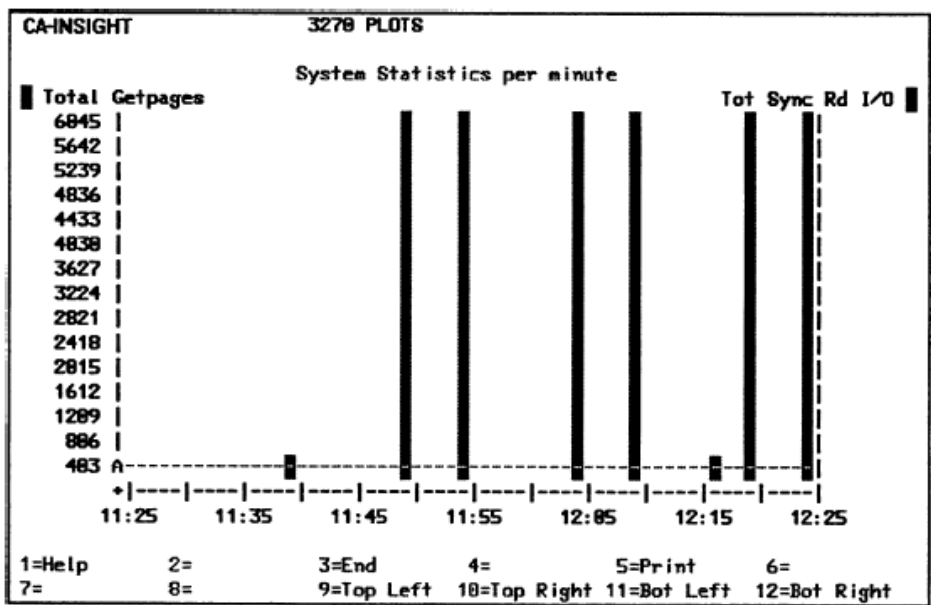


Plot panels appear differently than other panels within Unicenter CA-Insight. There is no command line, only PF keys can be used for navigation, and use PF keys are disabled. To *expand* a particular plot, press the appropriate PF key (9 through 12). To return to the System Snapshot panel, press PF3.

See [Plotting on 3270 Terminals](#) for full details on plots, including customization and creation.

### System Statistics per Minute Plots Panel - Expanded

When you use PF9 through 12 to expand a plot, the overview of plots is replaced with an expanded view of the selected plot. In the following sample panel we pressed the PF9 key to expand the Top Left plot:



When you expand a plot, the time frame changes to include statistics (by minute) for the data types for the last hour. The same colors are used, but this plot provides a more granular view of the data.

The dashed lines across the plot indicate the average value for the past hour. An A appears to the left of the line if the line refers to the average of the left data type, and appears to the right of the line if the line is the average of the right data type.

The scale is created by making even size intervals that would be large enough to hold the maximum value occurring in the current data. This means that the scale changes as larger values occur or when the largest variable no longer displays.

You can use the same PF9-12 keys to go directly to the expanded views of the other plots displayed on the System Statistic Per Minute Plot panel.

## Buffer Pools

This section discusses buffer pools.

### Buffer Pool List Panel

This panel displays a scrollable list of the buffer pools used during this interval (if Delta) or since DB2 was started (if Accum).

The Buffer Pool List panel appears when you:

- Select **2** (buffer pool) from the view bar in the System Statistics function
- Enter **D BUFLISTS** on the command line

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 23:42:27
DBV6 XE44
1 SnapShot 2 Buffer Pool 3 EDM Pool 4 Logs 5 Threads 6 More...
Actions: S=Select for more detail Accum
R/BUFLISTS Buffer Pool List - Accum

```

Pool	VPool Size	VPool Type	%Non Steal	HPool Size	%ESA Backd	Warn	Getpgs	Sync Rd	I/O	Rd Eff	%Getpgs From HP
. BP0	2000	P	0.2	0	0.0	0	2839	226		12.6	0.0
. BP1	500	D	0.0	0	0.0	0	0	0		0.0	0.0
. BP32K	24	P	0.0	0	0.0	0	0	0		0.0	0.0
. BP8K0	400	P	0.0	0	0.0	0	0	0		0.0	0.0
. BP16K0	400	P	0.0	0	0.0	0	0	0		0.0	0.0

```

Command ==>
F1=Help      2=Split      3=End      4=Plot      6=History
              9=Swap      10=Left    11=Right    12=Return

```

To see more detail for a particular buffer pool, enter **S** or cursor-select the field for that buffer pool and press Enter.

If the buffer pool you selected has no data for the interval, the Buffer Pool detail panel displays only the following message:

This buffer pool is defined but not active

## Buffer Pool Exception Counters Panel

Statistical information for each buffer pool is displayed on four different panels. The first is the Exception Counters panel.

The Buffer Pool Exception Counters panel appears when you:

1. Select a buffer pool from the Buffer Pool List panel.
2. Select View Bar Option 1 (Exception Counters) from within the Buffer Pool detail views.

The following is a sample of this panel:

Menu		Print	Tools	Help	CA-Insight	SE19257	12:32:07
1 Exception Counters		2 Thresholds	3 Read/Write	4 Workfiles		DBV3 5018	
R/BUFEXCPS	BP Exception Counters - 30 Seconds					Delta	
BUFFER POOL BP2	VP	HP			Data Management.....		Pct Count
Target Size (buffers).	100	50			Seq Prefetch Disabled		90 0
Allocated Size.....	100	0			Buffer Pool Full.....		0
Current Active Buffers	0	0			Expansion Failures.....		0
Percent Active Buffers	0.0	0.0	Read	Write	DFHSM Recall Timeouts.....		0
I/Os with Paging.....	0	0			Workfile Prefetch Aborted...		0
Unavailable I/O Engine.	0	0			Sync Reads for Sequential Access		0
Non-ADMF HP Pg Failures	0	0			Conditional Getpage Failures		0
ADMF HP Page Failures..	0	0			Parallel I/O Degrees Reduced....		0
Wrkfl Not Created - No Buffer..	0	0			Reduced Degree Parallel I/Os....		0
Sort Wrkfls Denied - No Buffer..	0	0			Average Degree Reduction.....		0.0
Inefficient Sorts - No Buffer..	0	0			Prefetch Quantity Reduced to 1/2		0
Command ==>						6=History	
F1=Help	2=Split	3=End			9=Swap		12=Return

This panel shows the DB2 subsystem's buffer pool exception counters for the selected buffer pool. It lets you see if there has been any significant buffer pool exception activity that might need to be addressed.

**Note:** The other three views (shown in [Buffer Pool Thresholds Panel](#), [Buffer Pool Read/Write Activity Panel](#), and [Buffer Pool Workfiles Panel](#)) can be selected from within the Buffer Pool detail panels. They cannot be accessed from anywhere else in the system, including command line entries.

## Buffer Pool Thresholds Panel

Statistical information for each buffer pool is displayed on four different panels. The second is Thresholds. The following is a sample of this panel:

```

enu Print Tools Help CA-Insight MATSAA2 23:55:09
DBV6 XE44
1 Exception Counters 2 Thresholds 3 Read/Write 4 Workfiles
R/BUFTHRES BP Thresholds - Accum
BUFFER POOL BP0
VP HP THRESHOLDS Pct Count
Allocated Size..... 2000 0 Data Management..... 95 0
Curr Non-Stealable Bfs 3 0 Seq Prefetch Disabled 90 0
% Non-Stealable Buffrs 0.2 0.0 Deferred Write..... 50 0
Size Changes..... 0 0 Dataset Deferred Wrt. 11 0
DS Def. Wrt. Buffers. 1
Castout (Is Storage Stealable) Y VP Sequential Steal.. 80 N/A
PGSTEAL Attribute (L=LRU F=FIFO) L VP Parallel Seq Steal 50 N/A
VP Type (P=Primary D=Data space) P VP Asst Parallel Seq 0 N/A
HP Sequential Steal.. 80 N/A

Command ==>
F1=Help 2=Split 3=End 6=History
9=Swap 12=Return
    
```

## Buffer Pool Read/Write Activity Panel

Statistical information for each buffer pool is displayed on four different panels. The third is Read/Write Activity. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 12:35:28
DBV3 5018
1 Exception Counters 2 Thresholds 3 Read/Write 4 Workfiles
R/BUFRDWRS BP Read/Write Activity - 30 Seconds
Delta
BUFFER POOL BP2
READ I/O WRITE I/O PREFETCH Reqsts Pages I/O
Open Datasets 2 Buffer Updates 0 Seq 0 0
Migrated DS Opnd 0 Pages Written 0 List 0 0
Getpage Requests 0 Buffer Upd Eff 0.0 Dynamic 0 0
Seq Accs Getpgs 0 Asynch Wrt I/O 0
% Getpgs From HP 0.0 Synch Writes 0 CACHE PAGE Sync Async ADMF
Synchronous Rds 0 Page Wrt Eff 0.0 Reads 0 0
Seq Accs Sync Rd 0 Writes 0 0
Asynchronous Rds 0 PARALLEL I/O
Getpgs/Sync Read 0.0 Requests 0
Max Streams 0

Command ==>
F1=Help 2=Split 3=End 6=History
9=Swap 12=Return
    
```

## Buffer Pool Workfiles Panel

Statistical information for each buffer pool is displayed on four different panels. The fourth is Workfiles. The following is a sample of this panel:

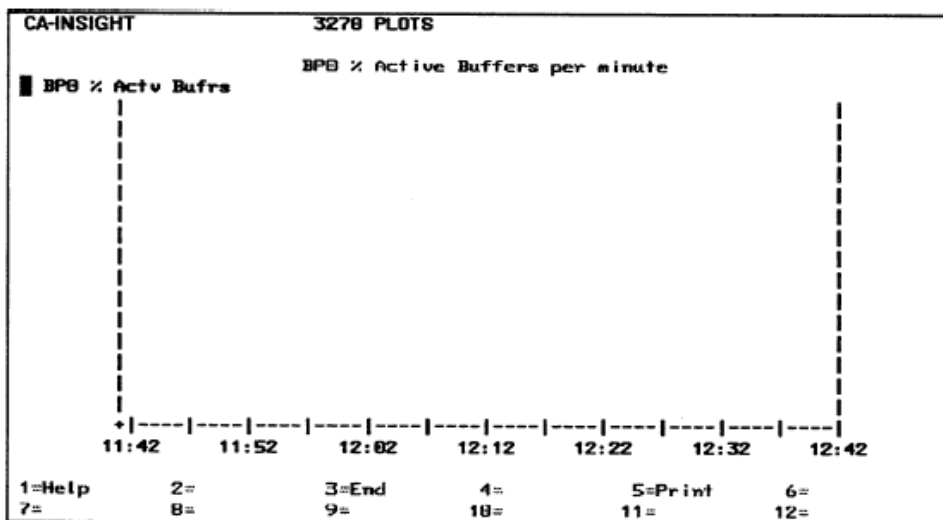
```

Menu Print Tools Help CA-Insight SE19257 12:39:21
DBV3 S018
 1 Exception Counters 2 Thresholds 3 Read/Write 4 Workfiles
R/BUFWKFLS BP Workfiles - 30 Seconds Delta
BUFFER POOL BP2
Maximum Workfiles Allocated 0
Sort Merge Passes Requested 0
Sort Workfiles Requested 0
Destructive Read Pages 0
Pg Wrt Bypassed - Destructive Rd 0
Wrkfl Not Created - No Buffer 0
Sort Wrkfls Denied - No Buffer 0
Inefficient Sorts - No Buffer 0
Workfile Prefetch Aborted 0

Command ==>
F1=Help 2=Split 3=End 6=History
9=Swap 12=Return
    
```

## Buffer Pool % Active Buffers Plot

The Buffer Pool List panel includes a plot function, assigned to the PF4 Key. Press PF4 to display the Buffer Pool % Active Buffer plot:



## EDM Pool Panel

This panel displays a current snapshot of the DB2 subsystem's EDM Pool utilization (Delta) or EDM Pool usage since the subsystem was initialized (Accum). It also displays a histogram of the percentages for each page component in the EDM Pool, as well as the percentages of requests that required a load from DASD.

The EDM Pool panel appears when you:

- Select View Bar Option 3 (EDM Pool) from within the System Statistics function.
- Enter **D EDMPOOL** on the command line.

The following is a sample of this panel:

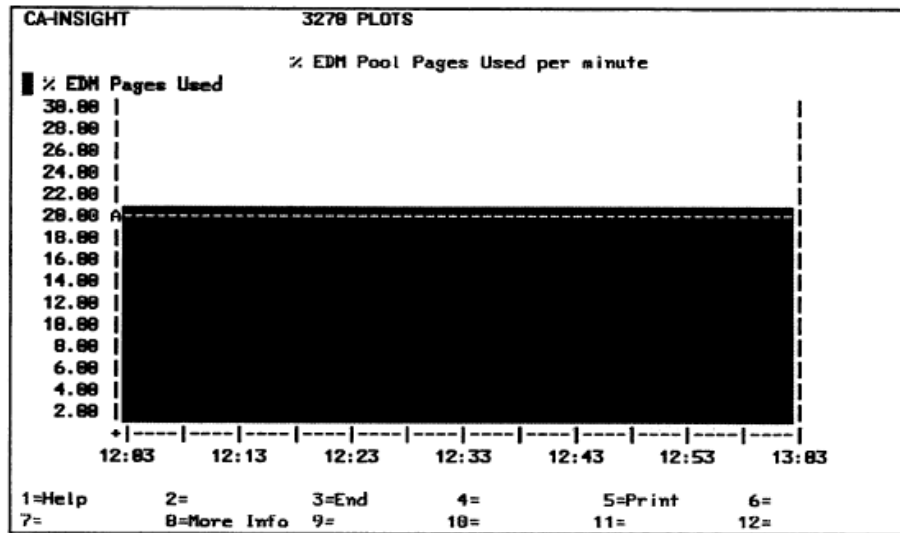
```

Menu Print Tools Help  CA-Insight           MATSAA2           23:58:37
_ 1 SnapShot 2 Buffer Pool 3 EDM Pool 4 Logs 5 Threads 6 More...           DBV6 XE44
R/EDMPOOL      EDM Pool - 30 Seconds           Item 29-30 of 30
                Delta_____
23:57:30      Size      Pages %of Size  1  3  5  7  9
EDM Pool      1828
  Full Fail 0  Free..... 1783   97.5  |=-----|
                DBD.....   31    1.7  |=
                SKCT.....  11    0.6  |=
                CT.....    1    0.1  |=
                SKPT.....   1    0.1  |=
                PT.....    1    0.1  |=
EDM Data Space Size      10240
  Full Fail 0  Free..... 10218   99.8  |=-----|
                Dynamic prep.  22    0.2  |=
Efficiency      Requests  Loads %Requests
  DBD.....      0      0      0.0  |=
  CT.....      0      0      0.0  |=
  PT.....      0      0      0.0  |=
  Dynamic prep.. 11      6     54.5  |=-----|

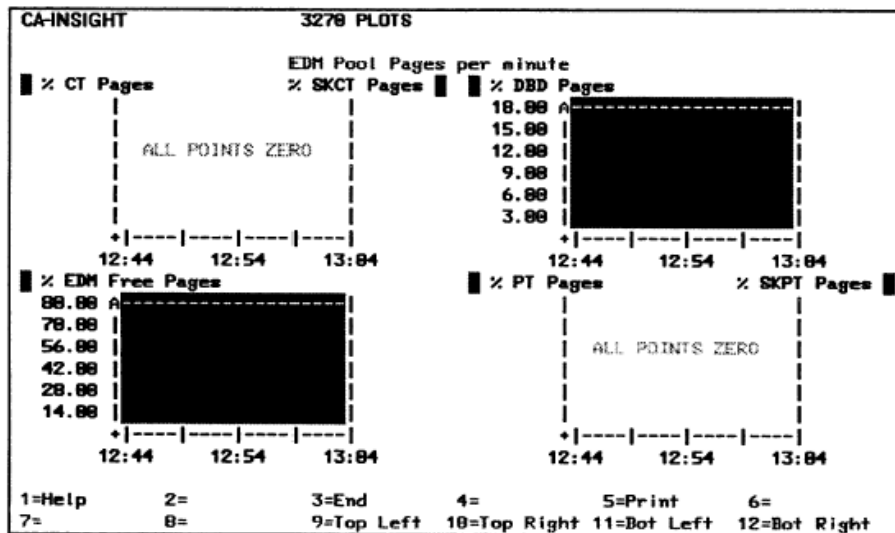
Command ==>>>
F1=Help      2=Split      3=End      4=Plot      6=History
F7=Up        8=Down       9=Swap    12=Return
    
```

## EDM Pool Plots

The EDM Pool panel includes a plot function, assigned to the PF4 Key. Press PF4 to display the % EDM Pages Used Plot panel:



Press PF8 (More Info) to display an overview of additional EDM Pool plots:



Use PF9-12 to expand on the plots shown in this overview panel.

## Log Status and Allocations Panel

This panel displays the DB2 subsystem's log data sets, their status, and related ZPARM values.

The Log Status and Allocations panel appears when you:

- Select View Bar Option 4 (Logs) from within the System Statistics function.
- Enter **D LOGALLOC** on the command line.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSA02 09:08:56
                                DBV6 XE44
  1 SnapShot  2 Buffer Pool  3 EDM Pool  4 Logs  5 Threads  6 More...

R/LOGALLOC      Log Status and Allocations

      Logging Mode      DUAL      Checkpoint Frequency 50000
      Logs Defined      6      Checkpoints Taken 1
      I/P Buffer (K)    0      Minutes/Checkpoint 2018
      O/P Buffer (K)   4000     Recs/Min Until Next 49859
      Archive Mode     DUAL     Type of Ckpt Freq LOGRECS

      STATUS              CURRENTLY ALLOCATED LOGS              % USED  BLOCKS
-----
CURRENT DSN610.LOGCOPY1.DS02              97      1080
AVAIL   DSN610.LOGCOPY1.DS03              0       1080
AVAIL   DSN610.LOGCOPY1.DS01              0       1080
CURRENT DSN610.LOGCOPY2.DS02              97      1080
AVAIL   DSN610.LOGCOPY2.DS03              0       1080
AVAIL   DSN610.LOGCOPY2.DS01              0       1080

Command ==>
F1=Help      2=Split      3=End
              9=Swap      10=Left      11=Right      12=Return
    
```

Not shown in the previous sample are the Start Time and End Time columns, which appear to the right of the Blocks column. To display this information, press PF11 to scroll right.



## Threads Identified to DB2 Panel

This panel is included as a System Statistics view to facilitate navigating to related thread information while viewing system information. It displays a scrollable list from which you can select a thread to view more detail.

The Threads Identified to DB2 panel appears when you:

- Select View Bar Option 5 (Threads) from within the System Statistics function
- Enter **D THRDACTV** on the command line

**Note:** This panel appears within the Active Threads function, not the System Statistics function.

The following is a sample of this panel:

Menu Print Tools Help CA-Insight MATSA02 16:43:13									
D420 XE44									
1 All 2 Connections 3 Curr Contn 4 Contn Hist 5 Lock Summary 6 More...									
FOCUS OFF									
R/THRDACTV Threads Identified to DB2 Item 1-3 of 3									
All									
Actions: S=Select, T=SQL, L=Locks, E=Except, R=Rmt, C=Cancel, M=More...									
Auth ID Corr ID Plan Conn DB2 Elap DB2 CPU									
-----									
Type Status HH:MM:SS MM:SS.TT Crit Warn Info									
-----									
_ WOLLL01 INSU5251 CAF ACTIVE-D 0 0.00 0 0 0									
_ WOLLL01 INSU5251 CAF ACTIVE-A 2:48 5.70 0 0 0									
_ WOLLL01 INSU5251 CAF ACTIVE-A 30 0.58 0 0 0									
Command ==>									
F1=Help 2=Split 3=End 4=SortCpu 6=Focus									
9=Swap 10=Left 11=Right 12=Return									

Not shown in the previous sample are the Application Duration, Application CPU, Get Pages, Read I/O, Read Eff, and CICS Task columns, which appear to the right of the Blocks column. To display this information, press PF11 to scroll right.

For a complete description of this panel, including all related functions, see the "[Viewing DB2 Thread Activity](#)" chapter.

## Address Spaces

Unicenter CA-Insight provides Address Space information associated with the current subsystem. This information is presented in six views:

- Snapshot
- Enqueues
- Programs
- Storage
- Tasks
- Files

All of the views include the following two input fields:

- **JOB** – The job name of the Address Space for which you are displaying data. You can type over this field to change the display to that of any other Address Space in the MVS system.

When you first select MVS Address Space Displays, the job name is either:

- The DBM1 if selected from System Statistics or displayed directly
- The Address Space of the selected thread if selected from the Active Threads panel

- **ASID** – The Address Space identifier (ASID) of the Address Space for which you are currently displaying data. The ASID is represented in hex notation. If there are multiple Address Spaces in the system with the same job name, you can type over this field to change the display to that of any other Address Space in the MVS system.

## Address Space Snapshot Panel

This panel displays a summary of the selected Address Space's activity including swap status, SRM specifications, CPU times, working set sizes, and various timing fields pertaining to that Address Space.

The Address Space Snapshot panel displays when you:

- Select Option **1** (MVS Address Space Displays) from the Additional System Statistics Displays menu.
- Enter **D MVS** on the command line.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SWASLOF 16:43:13
                                DBV3 S018
 1 Snapshot 2 Storage 3 Enqueues 4 Tasks 5 Programs 6 Files
R/MVS Address Space Snapshot
JOB . . DBV3DBM1 ASID . . 0053

AS Type . . . STC Perf Group . . . 261 Elapsed 008:59:14.83
Swap Status NON-SWAP Perf Grp Prd 1 CPU Time 1:49.39
Working Set 5508 K SRM Domain # 17 TCB Time 1:32.86
Samp Int . . . 0.00 Disp Priority 806B SRB Time 16.53
                                Trend Int 0.00
                                System Address Space Address Sp Trend
CPU Pct..... 98.0 xxxxxxxx 0.0 x 0.0 x
I/O Rate..... 0.0 x 0.0 x 0.0 x
Page In Rate 0.0 x 0.0 x 0.0 x
Page Out Rate 0.0 x 0.0 x 0.0 x
CSA Page Rate 0.0 x 0.0 x 0.0 x
LPA Page Rate 0.0 x 0.0 x 0.0 x
Swap Rate.... 0.0 x 0.0 x 0.0 x
UIC..... 159.0 xx 180.0 xx 180.0 xx

Command ==>
F1=Help 2=Split 3=End 4=SortCpu 6=Focus
          9=Swap 10=Left 11=Right 12=Return

```

This panel also displays a graphical representation of critical performance indicators at the system and Address Space levels. These appear as red and green bars on extended attribute terminals. In the previous example, the dark bar represents red (error condition) and the lighter bars represent green (normal condition).

Graphical data at the Address Space level is presented in two formats:

- On the Address Space graph, the interval is the time that has elapsed since you last pressed Enter.
- On the Address Space Trend graph, the interval is the elapsed time you have spent in the Address Space Snapshot display. The purpose of this graph is to provide a more normalized view of these critical performance indicators.

## Virtual Storage Snapshot Panel

This panel displays a virtual storage static map outlining all storage areas (both common and private) as well as the percent utilization for the areas where appropriate. In addition, the private area is presented in terms of region and non-region. The display also contains the working set size and the amount of fixed and expanded storage for the selected address space.

The Virtual Storage Snapshot panel appears when you:

- Select View Bar Option 2 (Storage) from within the Address Space Statistics function.
- Enter **D MVSSTOR** on the command line.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE12957 13:24:12
                                DBV3 5018
  1 Snapshot  2 Storage  3 Enqueues  4 Tasks  5 Programs  6 Files
R/MVSSTOR      Virtual Storage Snapshot
JOB . . DBV3DBM1 ASID . . 0053
          AREA          ADDRESS SIZE(K) % USED
PRIVATE AREA SUMMARY
          Size(K) % Used
Region   32768  21.4
Non-reg 1954816  2.1
----- 16M -----
Region   5000   2.4
Non-reg  4196   8.3
WSS....  1216
Fixed..   800
Estore.  1220
          Nucleus..... F7D000    524
          SQA.....      EBD000    768  44.5
          LPA.....      C5C000    2436
          CSA.....      900000    3440  41.0
          Private.....    5000    9196  5.1
          System Region... 1000    16   0.0
          PSA.....        0         4
Command ==>
          F1=Help          2=Split          3=End
                                9=Swap
                                12=Return
    
```

## Address Space Enqueues Panel

This panel displays a scrollable list of all resources currently owned by the selected address space as well as any existing contentions. If the address space is waiting for a resource, the owner of the resource is identified by system, job name, ASID, and TCB Address. If a contention exists at the system level, the panel identifies the resource owner and all address spaces that are waiting.

The Address Space Enqueues panel appears when you:

- Select View Bar Option 3 (Enqueues) from within the Address Space Statistics function.
- Enter **D MVSENQS** on the command line.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 13:26:53
DBV3 S018
1 Snapshot 2 Storage 3 Enqueues 4 Tasks 5 Programs 6 Files
R/MVSENQS Address Space Enqueues Row 1-14 of 52
JOB . . PRD ASID . . 0077 Type A (A=Adr Sp, S=Sys ,C=Conflicts)
CPU 100 UIC 80 PFR 0 TPR 61 PDT 0 STATUS RS
Qname Resource Name Scope Req Stat
-----
SYSDSN GSW.GFVUUU.LOADLIB SYSTEMSS SHR OWN
SYSDSN GSW.GFVUUU.EUS.ISPPLIB SYSTEMSS SHR OWN
SYSDSN PRD.S018.ISPPROF SYSTEMSS SHR OWN
SYSDSN SYS1.IBMENU.ISPTLIB SYSTEMSS SHR OWN
SYSDSN SYSOWN.VENDOR.LOAD SYSTEMSS SHR OWN
SYSDSN DSN230.DSNLOAD SYSTEMSS SHR OWN
SYSDSN DSN230.DSNSPFP SYSTEMSS SHR OWN
SYSDSN GSW.TSO.ISPCLIB SYSTEMSS SHR OWN
SYSDSN GSW.GFVUUU.RUNLIB SYSTEMSS SHR OWN
SPFUSER PRD SYSTEMSS EXC OWN
SYSDSN DSN230.DSNSPFM SYSTEMSS SHR OWN

Command ===>
F1=Help 2=Split 3=End
F7=Up 8=Down 9=Swap 12=Return

```

This panel has a third enterable field, Type. There are three options you choose from:

- A** Enqueues for this Address Space (shown in the previous sample).
- S** Enqueue conflicts for the MVS system.
- C** Enqueue conflicts with holders and waiters for the Address Space.

If no Address Space Enqueue conflicts exist, the data portion of the panel is blank except for the message:

– NO ENQUEUE CONFLICTS CURRENTLY EXIST –

## Address Space Tasks Panel

This panel shows a breakdown of the task structure of the selected address space. The panel also shows the address of the TCB, the total CPU time used by the task, and the status of the task, which indicates whether it is active on a CPU, waiting, or has abended.

The Address Space Tasks panel appears when you:

- Select View Bar Option 4 (Tasks) from within the Address Space Statistics function.
- Enter **D MVSTASKS** on the command line.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 13:28:20
DBV3 S018
1 Snapshot 2 Storage 3 Enqueues 4 Tasks 5 Programs 6 Files
R/MVSTASKS Address Space Tasks Item 1-9 of 9
JOB . . PRD ASID . . 0077
CPU 99 UIC 160 PFR 0 TPR 0 PDT 0 STATUS RS
Address CPU Time Status TCB Structure
-----
008FE240 0.20 WAIT-CPU IEAVAR00.....
008FDE88 1.35 WAIT-ECB . IEFSD060.....
008EECE8 0.01 WAIT-ECB . . GSVXTMCP.....
008EEE88 0.40 WAIT-ECB . . . IKJEFT01.....
008F93D0 0.07 WAIT-ECB . . . . IKJEFT02.....
008F90B8 0.01 WAIT-ECB . . . . IKJEFT09.....
008EE6E0 0.54 INPUT WT . . . . . ISPMAIN .
008EE3F0 1.73 WAIT-ECB . . . . . ISPTASK .
008FF158 0.00 SUSPEND . IEAVTSDT.....

Command ==>
F1=Help 2=Split 3=End 9=Swap 12=Return
    
```

The structure displays in a hierarchical manner in order to show the parent-child-sibling relationship between the various task control blocks (TCBs) in the Address Space. The parent-child-sibling relationship concept is commonly used to describe how tasks were created. In MVS, a new task is created using the ATTACH macro. The task that issues the ATTACH macro creates a subtask or *child* task. If the original task, the *parent* task, creates another subtask, it now has two children, referred to as *sibling* tasks.

## Address Space Programs Panel

This panel displays a scrollable list of all programs that have been loaded into the selected address space. The program name displays in addition to its virtual storage address, length, addressing mode, storage subpool and key, use count, and linkage editor attributes.

The Address Space Programs panel appears when you:

- Select View Bar Option 5 (Programs) from within the Address Space Statistics function.
- Enter **D MVSPGMS** on the command line.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight                SE19257                13:30:16
                                           DBV3 S018
  1 Snapshot  2 Storage  3 Enqueues  4 Tasks  5 Programs  6 Files
R/MVSPGMS      Address Space Programs                Item 1-11 of 13
JOB . . PRD      ASID . . 0077
  CPU 120  UIC 34  PFR 0      TPR 498  PDT 0      STATUS RS
  Name      Address  Length  AM  SP  Key  Use Cnt  Attributes
-----
FLMTABLE  00044340  80000CC0  24  251  8p  1      REUS APF
ISRNLENU  00040F40  800030C0  24  252  0   1      RENT REUS APF
ISPEXITS  06B00CE0  80000210  31  252  0   1      RENT REUS APF
ISPSUBX   00016C08  800013F8  24  252  0   1      RENT REUS APF
IKJEFT25  00009888  80000778  24  252  0   1      RENT REUS APF
IRXEFMVS  06B0EB20  800084E0  31  251  8p  4      REUS APF
IRXEFPCK  06B0EC68  800084E0  31   0   8p  0      REUS APF
IRXFLOC   06B086F8  80000108  31  251  8p  2      REUS APF
IRXFUSER  06B08800  80000108  31  251  8p  2      REUS APF
IRXANCHR  06B08908  800006F8  31  251  8p  3      REUS APF
GSVXTMCP  06B00EF0  80004110  31  252  0   1      RENT REUS APF AC=1

Command ==>>>
F1=Help      2=Split      3=End
F7=Up        8=Down       9=Swap
                                           12=Return

```

## Address Space Files Panel

This panel displays a scrollable list of all data sets currently allocated to the selected address space. It includes the DD name, I/O counts, volumes, and extent information for each data set.

The Address Space Files panel appears when you:

- Select View Bar Option 6 (Files) from within the Address Space Statistics function.
- Enter **D MVSFILES** on the command line.

The following is a sample of this panel:

Menu Print Tools Help CA-Insight		SE19257	13:34:23	
1 Snapshot 2 Storage 3 Enqueues 4 Tasks 5 Programs 6 Files			DBV3 S018	
R/MVSFILES	Address Space Files		Item 12-22 of 60	
JOB . . PRD	ASID . . 0077			
CPU 98	UIC 140	PFR 0	TPR 1	PDT 0
DDname	Data Set Name	Volume	Xtnts	IO Count
	GSW.TSO.ISPCLIB	MVS433	5	0
	MVS18.CMDPROC	S18CAT	6	0
	SYSOWN.VENDOR.CLIST	S18CAT	2	0
	SYS1.IBMENU.SYSPROC	SXXRS8	1	0
	DSN230.DSNCLIST	MSYS90	1	0
	GSW.GDBASE33.CLISTFB	MVS830	4	0
	GSW.GFVUUU.ISRCLIB	MVS830	1	0
SYSLBC	SYS1.BROADCAST	S18CAT	1	1
ISPWRK1	SYS94350.T085146.RA000.PRD.R0003079	VIO	0	0
ISPWRK2	SYS94350.T085146.RA000.PRD.R0003080	VIO	0	0
QQAUTH	GSW.PARITY.AUTH2	MVS430	1	0

Command ==>>>

F1=Help	2=Split	3=End	
F7=Up	8=Down	9=Swap	12=Return



## Data Sets Currently Open

You can display information about open DB2 data sets. The initial panel displayed is Datasets Currently Open. This panel displays a scrollable list of the DB2 data sets that are currently open and information about their use, allocation, and extents.

The Datasets Currently Open panel appears when you:

- Select Option 2 (Datasets Currently Open) from the Additional System Statistics Displays menu
- Enter **D DATASETS** on the command line

**Note:** Use PF4 (SortExt) to sort the data sets in descending order of extents used (that is, the data sets with the highest number of extents used display first). Enter **SORT OFF** to restore the original data set display order.

The following is a sample of this panel:

Menu Print Tools Help CA-Insight		SE19257	17:38:12	
			DBV3 S018	
Actions: S=Select for more detail			Item 1-4 of 158	
R/DATASETS Datasets Currently Open				
Dataset Name	Number Extents	High Formatted/ allocated	Error	Pg Low/ High
. DSN310.DSNDBC.DSNDB04.TGAFLOAD.I0001.A001	1	360 900		-1 0
. DSN310.DSNDBC.DLVYD337.IROARCON.I0001.A001	1	12		-1 0
. DSN310.DSNDBC.DLVYD337.IRTOOLRC.I0001.A001		12		-1 0
. CS1HH65.DSNDBC.CS1HHDB.X2RCUSTR.I0001.A001	1	10 12		-1 0

Command ==>  
 F1=Help      2=Split      3=End      4=SortExt  
 F7=Up        8=Down      9=Swap      12=Return

To see more detail for a particular data set, enter **S** or cursor-select the field for that data set and press Enter.

## Dataset Extents Panel

This panel shows the effects of the physical fragmentation of a table space from the extents. This report can also aid in Device Busy debugging.

The Dataset Extents panel appears when you:

- First select a data set from the Datasets Currently Open panel
- Select View Bar Option 1 (List) from within the Datasets detail views

The following is a sample of this panel:

Menu		Print	Tools	Help	CA-Insight	GINJ001	20:19:19				
1 List		2 Summary						DB41 XAE1			
R/EXTENTS		Dataset Extents				Item 1-1 of 1					
DB2V41.DSNDBC.DSNDB06.SYSDBASE.I0001.A001											
Extent	Volume	Type	Trks	Cyls	Beg Cyl	Trk	End Cyl	Trk	Low RBA	High RBA	
0	DB2004	3380	645	43.00	048A	0000	04B4	000E	00000000	01931FFF	
Command ==>											
F1=Help		2=Split		3=End		9=Swap		12=Return			

If there are more extents than can fit on one panel, then the PF7/PF8 keys are activated and display.

## Total DASD by Volume Panel

The other view within Dataset detail is the Total DASD by Volume. This panel presents the same data as the previous panel (Dataset Extents), but summarized by volume (the first line is the original data set allocation, with the extents shown on subsequent lines). To access this panel, select View Bar Option 2 (Summary) from within the Data Sets detail views. The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	GINJ001	20:21:25
						DB41 XAE1
1	List	2	Summary			
R/EXTENTSS	Total DASD By Volume					Item 1-1 of 1
	DB2V41.DSNDBC.DSNDB06.SYSDBASE.I0001.A001					
	Volume	Type	Trks	Cyls		
	-----	-----	-----	-----		
	DB2004	3380	645	43.00		
Command	====>					
F1=Help	2=Split	3=End				
		9=Swap				
			12=Return			

If there are more volumes than can fit on one panel, then the PF7/PF8 keys are activated and display.

## DB2 System Parameters

The following section discusses the different DB2 system parameter panels.

### Miscellaneous System Parameters Panel

The first DB2 System Parameters (DSNZPARMS) panel to display is the Miscellaneous System Parameters panel.

The Miscellaneous System Parameters panel appears when you:

- Select Option 3 (System Parameters) from the Additional System Statistics Displays menu.
- Enter **D SYSPARMS** on the command line.
- Select View Bar Option 1 (Miscellaneous) from within the System Parameters function.

The following is a sample of this panel:

Menu Print Tools Help CA-Insight		MATSAA2	13:20:07
1 Miscellaneous 2 Log Manager 3 Buffers (DB2 V3) 4 Grp Buffers (DB2 V4)			D71A CA31
R/SYSPARMS Miscellaneous System Parameters			Row 1-33 of 71
Parms Assembled 10/24/00 Member Name D71APARM		DB2 VSAM Catalog	D71A
<b>SYSTEM INIT PARAMETERS</b>			
Max Batch Connections	800	EDM Pool (K)	60625
Max TSO Connections	800	EDM Data Space	62M
Max Users	800	EDM Max DSpace	1074M
Max Remote Active	800	Sort Pool (K)	1000
Max Remote Cncurrent	800	RID Pool Blks	250
Max Page Locks/User	10000	Pkg Auth Cache	32768
Max Page Locks/Table	1000	Default TS BP	BP1
Max Datasets Open	3000	Default IDX BP	BP2
Use 3390-3 Seq Cache	NO		
DB Checking Enabled	NO	<b>APPL PROGRAM DEFAULTS</b>	<b>IRLM INIT PARAMETERS</b>
Cvt to R/O - Chkpts	5	Default SSID	D71A
Cvt to R/O - Minutes	10	Language	IBMC0B
Default Index Type	2	Decimal Point	PERIOD
MaxKeep Dynamic Stmt	5000	Min Div Scale	NO
Utility Cache Option	NO	String Delim	APOST
Max User LOB Stg(K)	4096	SQL Str Delim	APOST
Max System LOB Stg(M)	4096	Mixed Graphics	NO
Contract Thread Stg	NO	Coded Char Set	ALPHANUM
Max LE Tokens	20	Date Format	ISO
		Time Format	ISO
		Local Date Len	0
		Local Time Len	0
		Std SQL Lang	NO
<b>DDF PARAMETERS</b>		Decimal Arith	DEC15
DDF Startup	AUTO	Extend Dyn SQL	NO
DDF RLST Error	NOLIMIT	Cache Dyn SQL	NO
DDF Thread Status	INACT	Current Degree	ANY
Resync Interval	2	Encode Scheme	EBCDIC
Idle DDF Thd Timeout	300	OptimizerHints	YES
DRDA Change Password	YES	DECP Dyn Rules	YES
TCP/IP Already Ver.	YES	LC CTYPE	
3-Part Nm Protocol	DRDA	Max Degree	0
Max Server Query Blk	100	Upd Part Key	YES
Max Requestor Blks	100	NPAGE Thresh	0
Max Type 1 Inactive	0	Starjoin Ratio	-1
TCP/IP Keep Alive	0	Tblspce SMS DC	
Pool Thread Timeout	120	IX SMS Datacls	
		EDM Best Fit	NO
<b>DB2 TRACE PARAMETERS</b>		App Encode Sch	EBCDIC
Audit Trace	NO		
Trace Autostart	NO	<b>OPERATIONS PARAMETERS</b>	<b>DATA SHARING PARAMETERS</b>
Trace Size (K)	16	Auto Recall	YES
SMF Accounting	YES	Recall Wait	120
SMF Statistics	YES	RLF Autostart	NO
Statistics Time	30	RLF Tbl Creatr	SYSIBM
Monitor Trace	NO	RLF Tbl Suffix	01
Monitor Size	8192	AUTO BIND	ENABLED
Rollup Acct	YES	ABIND EXPLAIN	YES
D.S. Stats Time	5	Chng Data Capt	NO
Sync Stats Time	0	Dataprop Only	NO
		Site type	LOCAL
<b>SET SYSPARM UPDATE DATA</b>		Tracker site	NO
Online ZPARM Type	S	Index Varchar	NO
Auth ID of Upd MATSAA2		Outer Join Enh	YES
Corr ID of Upd MATSAA2		Ctlg Stats Hst	NONE
Time of Upd 00-11-03 12:32		Route Codes	1
<b>DDL CONTROL FACILITY</b>			
Installed	NO		
All Applications	NO		
Full Names	YES		
Unregistrd Deflt	ACCEPT		
ART/ORT Esc Char			
Owner	DSNRGCOL		
Database	DSNRGFDB		
Applicatn Table	DSN_REGISTER_APPL		

The previous sample shows parameters that display over several panels. Use PF7 (Up) and PF8 (Down) to scroll these fields.

## Log Manager Parameters Panel

The second view within System Parameters is the Log Manager Parameters panel. This panel displays the number of log data sets, the sizes of the log buffers, and other miscellaneous log parameters.

The Log Manager Parameters panel appears when you:

- Select View Bar Option 2 (Log Manager) from within the System Parameters function.
- Enter **D SYSPRLOG** on the command line.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 13:34:10
                                D71A CA31
  1 Miscellaneous  2 Log Manager  3 Buffers (DB2 V3)  4 Grp Buffers (DB2 V4)
R/SYSPRLOG      Log Manager Parameters
Checkpt Freq    50K          Device Type     SYSDA          Read Tape Units  1
Active Log      DUAL          Allocation Unit BLKS          Dealloc Dlay Min 0
I/P Buffer (K)  0            Primary Alloc  1440          Dealloc Dlay Sec 0
O/P Buffer (K)  4000         Secondary Alloc 180          Catalog Logs     NO
Write Threshold 20          Block Size     24576         RACF Protect     NO
Retention Period 90        2nd Copy Device Issue WTOR      YES
BSDS           DUAL          MSVGP Copy 1  Offload Option  YES
Max vols in BSDS 1000       MSVGP Copy 2  Archive Compactn NO
Archive Log     SINGLE          Timestmp Archves NO
Archive Prefix  D71A.ARCHLOG1  Ckpts/Lvl ID Upd 5
Copy 2 Prefix   D71A.ARCHLOG2  UR Check Freq.   0
Ext. Date Format NO          UR Log Rec Write 0
Use Copy 2 First NO

Command ==>>>
  F1=Help      2=Split      3=End
                9=Swap
                                12=Return

```

## Buffer Pool System Parameters Panel

The third view within System Parameters is the Buffer Pool System Parameters panel. This panel displays a list of the buffer pools defined to this DB2 subsystem, as well as the related buffer pool parameters.

The Buffer Pool System Parameters panel appears when you:

- Select View Bar Option **3 (Buffers)** from within the System Parameters function.
- Enter **D SYSPRMBP** on the command line.

The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	MATSAA2	00:18:45					
1 Miscellaneous			2 Log Manager	3 Buffers (DB2 V3)	4 Grp Buffers (DB2 V4)	DBV6 XE44					
R/SYSPRMBP		Buffer Pool System Parameters									
Pool	Type	VPSIZE	HPSIZE	VPSEQT	HPSEQT	VPPSEQT	VPXPSEQT	DWQT	VDWQT%	VDWQT#	
BP0	P	2000	0	80	80	50	0	50	11	1	
BP1	D	500	0	80	80	50	0	50	13	8K	
BP32K	P	24	0	80	80	50	0	50	10	0	
BP8K0	P	400	0	80	80	50	0	50	14	4	
BP16K0	P	400	0	80	80	50	0	50	9	9	
Command ==>											
F1=Help		2=Split		3=End		9=Swap		10=Left		11=Right	12=Return

If there are more buffer pools than can fit on one panel, then the PF7/PF8 keys are activated and display.

## Group Buffer Pool Parameters Panel

This panel shows which group buffer pools are used by the DB2 you are monitoring. It displays the size of each group buffer pool, the number of directory and data entries and fields that can be modified using the ALTER GROUPBUFFERPOOL DB2 command.

**Note:** This panel is used only for DB2 V4 subsystems.

The Group Buffer Pool Parameters panel appears when you:

- Select View Bar Option 4 (Grp Buffers) from within the System Parameters function.
- Enter **D SYSPRGBP** on the command line.

The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	MATSAA2	11:25:50
					D61E XE44	
1 Miscellaneous		2 Log Manager		3 Buffers (DB2 V3)		4 Grp Buffers (DB2 V4)
R/SYSPRGBP Group Buffer Pool Parameters						
Pool	Size in Dirctry 4K Pgs	Entries	Data Entries	Current Ratio	Pending Ratio	CLASST GBPOOLT GBPCHKPT Error Flag
GBP0	4608	18058	3610	5	5	9 50 8 0
Command ==>						
F1=Help		2=Split		3=End 9=Swap		10=Left 11=Right 12=Return

## Log Activity Panel

This panel displays Log Manager activity for the past 30 seconds (Delta) or since the current DB2 subsystem was initialized (Accum).

The Log Activity panel appears when you:

- Select Option 4 (Log Activity) from the Additional System Statistics Displays menu.
- Enter **D LOGSTATS** on the command line.

The following is a sample of this panel:

```

Menu Print Tools Help  CA-Insight           MATSAA2           11:30:12
                                                DBV6 XE44

R/LOGSTATS      Log Activity - Accum           Item 1-1 of 1
                                                Accum

11:30:00
DB2 CHECKPOINTS.....Taken      17  LOG RBA..... 0000193FE920
READS FROM..... Buffer 41830  WRITES..... Nowait 271428
                Active Log 7409  Force 1310
                Archive Log 0  ARCHIVE LOG.. Read Allocations 0
CONTROL INTERVALS... Created 17324  Write Allocations 32
                Offloaded 17280  CALLS..... Write Active Log 4865
DELAYED..... Writes 0  BSDS access 3552
                Reads - Resources 0  LOOK AHEAD TAPE MOUNT Attempts 0
                Reads - Tape Vol Contention 0  Failures 0
LOG WRITE.....Suspended 4299  LOG WRITE...Serial CI Requests 8260
                I/O Requests 16368  Scheduled - Write Threshold 566
                Control Intervals Written 42908  Buffers Paged-In 6863

Command ==>>
F1=Help      2=Split      3=End      4=Plot      6=History
              9=Swap              12=Return

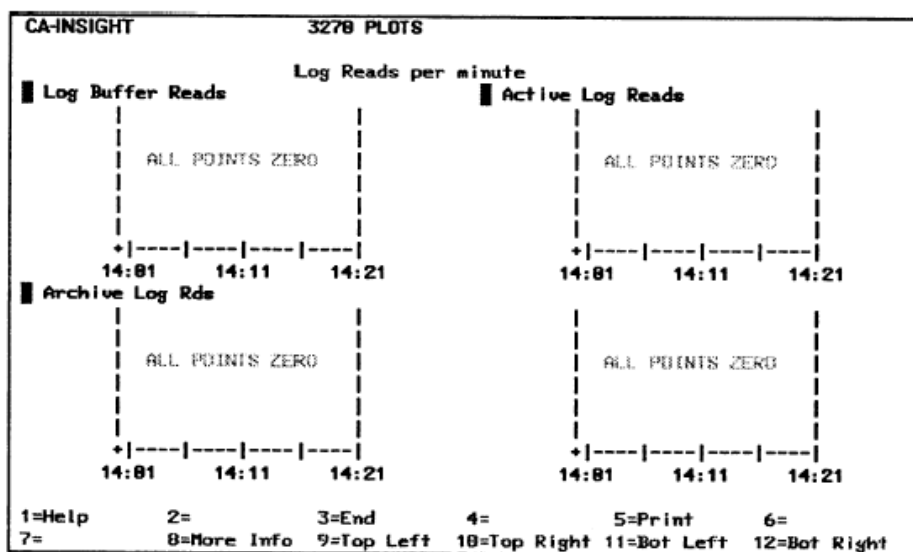
```

If the Delta calculation displays, the information previously shown appears as part of a scrollable format. Each block of information is repeated for each interval. The PF7/PF8 keys become activated and display so you can easily scroll through previous Log Activity information. ACCUM statistics show only one interval.



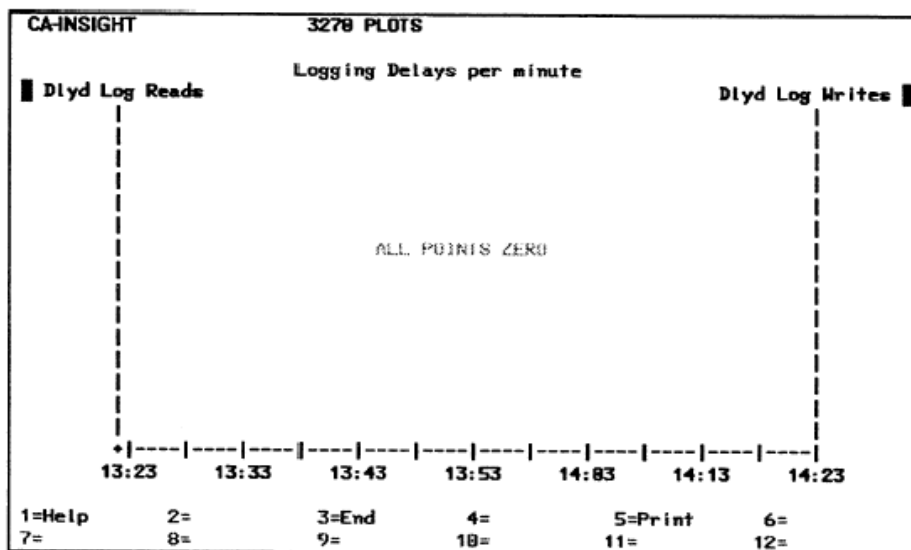
## Log Activity Plots

The Log Activity panel includes a plot function, assigned to the PF4 Key. Press PF4 to display the Log Reads per Minute Plots - Overview panel:



Use the PF9-12 keys to expand on any one of the displayed plots.

Press PF8 (More Info) to display the Logging Delays per Minute Plot panel:



## Multi-Site Update Exceptions Details Panel

This panel displays a scrollable list of exceptions that have occurred during updates to more than one remote site.

The Multi-Site Update Exception Details panel appears when you:

- Select Option 5 (Multi-site Update Exceptions) from the Additional System Statistics Displays menu.
- Enter **D MULTISYT** on the command line.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight          SE19257          18:58:26
                                           DBV3 S018
R/MULTISYT      Multi-site Update Exception Details      Row 1-24 of 24

12/16 18:57:41 HEURISTIC COMMIT by GCOIDB2DV2DBV3
Network.... GOONNET LU LUOFD2V3 Instance A57AC96E72FB LUW Seq # 0001
Local Token n/a
                                Recovery Log RBA 0000011A8C33
Coordinator GCOIDB2DEVDBV3
Downstream Participants: GCOIDB2DV2DBV3

12/16 18:57:41 COMM FAIURE AFTER PHASE 1 OF COMMIT with GCOIDB2DV2DBV3
Network.... GOONNET LU LUOFD2V3 Instance A57AC96E72FB LUW Seq # 0001
Local Token =50
                                Recovery Log RBA 0000011A8C33
Local DB2 ABORT                    Local DB2 is COORDINATOR

12/16 18:57:41 RESTART RESYNCHRONIZATION FAILURE at GCOIDB2DV2DBV3
Network.... GOONNET LU LUOFD2V3 Instance A57AC96E72FB LUW Seq # 0001
Local Token =50
                                Recovery Log RBA 0000011A8C33
Status..... ROLLBK                    Local DB2 is COORDINATOR
Resync Status Data Was RETAINED
Command ==>
F1=Help          2=Split          3=End
F7=Up            8=Down           9=Swap
                                           12=Return

```

Multi-site update increases the flexibility of distributed DB2 applications by permitting updates to more than one remote site within a commit scope. Multi-site update allows programs to update data in multiple database systems with coordinated recovery among all the systems. Network communication failures increase the likelihood of INDOUBT threads in a multi-site update environment. The MULTISYT request reports events that affect the recovery of these INDOUBT threads.

## Dataset Drain Panel

This panel displays data set open and drain processing activity for the past 30 seconds (Delta) or since the current DB2 subsystem was initialized (Accum). The information on this panel can help you diagnose problems in the following areas:

- Thrashing situations
- Data set open delays
- Data set open failures

The Dataset Drain panel appears when you:

- Select Option 6 (Dataset Drain) from the Additional System Statistics Displays menu.
- Enter **D SYSDRAIN** on the command line.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight          SE19257          14:32:56
                                          DBV3 S018

R/SYSDRAIN      Dataset Drain - 30 seconds

                                          %DSMAX      Delta
Datasets Currently Open.....          155          7.0
Maximum Datasets Concurrently Open.    155          7.8
  Datasets Open, But Not In Use....    155          7.8
Max Pagesets Available to DRAIN....    155
Datasets closed by DRAIN.....           0
Dataset opens bypassed due to DRAIN     0
Pagesets Converted to Read Only....     0

Command ==>>
  F1=Help      2=Split      3=End      6=History
                9=Swap      12=Return

```

## SQL Counts Panel

This panel displays the DB2 subsystem's SQL activity for the past 30 seconds (Delta) or since the current DB2 subsystem was initialized (Accum). The fields on this panel display the total number of statements that were issued for each SQL statement type.

The SQL Counts panel appears when you:

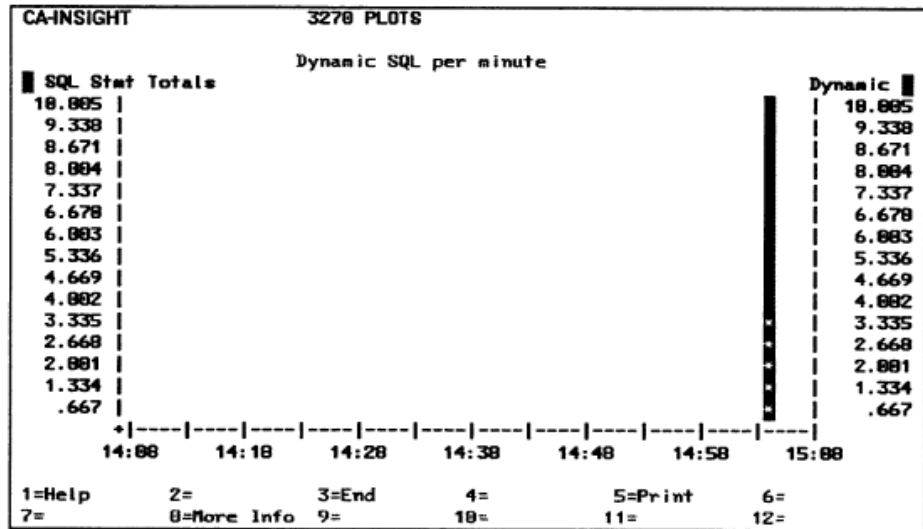
- Select Option **10** (SQL Counts) from the Additional System Statistics Displays menu.
- Enter **D SQLTOTAL** on the command line.

The following is a sample of this panel:

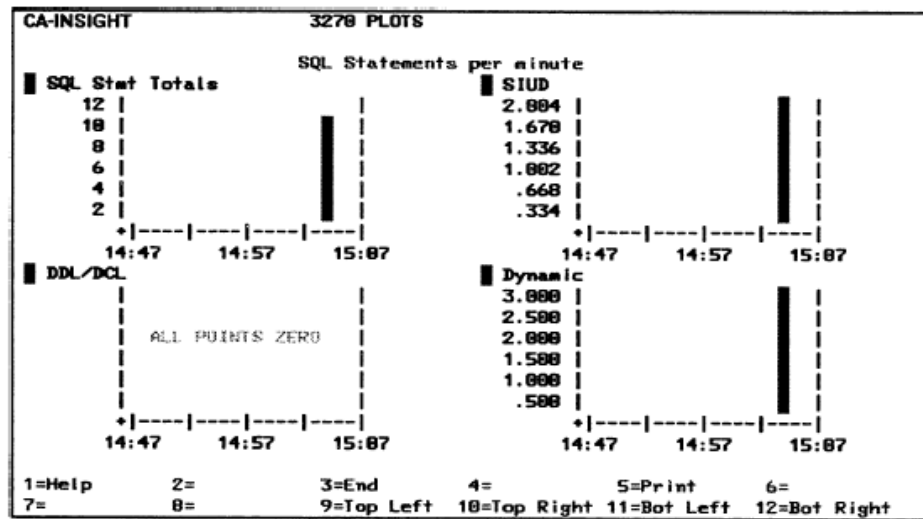
Menu Print Tools Help		CA-Insight		MATSAA2		13:35:48	
						D71A CA31	
R/SQLTOTAL		SQL Counts - Accum					
Total SQL	3356044	SET SQL ID	1187	CREATE		Accum	
		Incr Bind	5	STO GROUP	1	DROP	ALTER
SELECTS	16281	LOCK TABLE	2	DATABASE	6	0	0
INSERTS	105232	SET HOST VR	72	TABLESPACE	13	0	0
UPDATES	2365	COMMENT ON	0	TABLE	76	17	0
DELETES	962	LABEL ON	0	INDEX	85	0	0
PREPARES	694	GRANTS	1212	SYNONYM	0	0	
FETCHES	3100553	REVOKES	237	VIEW	2	0	
OPEN CSR	64272	CONN TYPE 1	0	ALIAS	0	0	
CLOSE CSR	62421	CONN TYPE 2	322	PACKAGE	0	0	
DESCRIBES	1	RELEASE	0	GBL TMP TB	0		
DESCR TBL	0	SET CONNECT	0	AUX TABLE	0		
		SET DEGREE	25	TRIGGER	0	0	
ASSOC LOC	0	SET RULES	0	FUNCTION	0	0	0
ALLOC CSR	0	SQL CALL	0	PROCEDURE	0	0	0
HOLD LOC	0	RENAME TBL	0	DISTINCT	0	0	
FREE LOC	0	SET PATH	0				
		SET PREC	0				
		DCL GBL TMP	0				
Command ==>							
F1=Help	2=Split	3=End	4=Plot			6=History	
		9=Swap				12=Return	

## SQL Count Plots

The SQL Counts panel includes a plot function, assigned to the PF4 Key. Press PF4 to display the Dynamic SQL per minute plot panel:



Press PF8 (More Info) to display an overview of additional SQL Count plots:



Use PF9-12 to expand on a particular plot.

## List Prefetch and Parallelism Panel

This panel displays detailed information of the DB2 subsystem's list prefetch and parallel I/O activity, as well as RID pool statistics.

The List Prf/Parallelism/LOB Storage - Accum panel appears when you:

- Select Option 7 (List Prefetch and Parallelism) from the Additional System Statistics Displays menu.
- Enter **D SYSLPRF** on the command line.

The following is a sample of this panel:

Menu Print Tools Help		CA-Insight	MATSAA2	13:37:58 D71A CA31
R/SYSLPRF	List Prf/Parallelism/LOB Storage - Accum			Accum
LIST PREFETCH			PARALLELISM	
Number of Times Used	27790		Parallel Groups Executed	116
Failed - No Storage	0		Groups Executed as Planned	65
Failed - RID Limit	0		Max Degree of Parallel IO	10
			Groups w/ Reduced Degree	0
RID POOL			Groups Failed - Cursor	29
RID Pool Current Blks	0		Groups Failed - ESA Sort	0
RID Failed RDS Limit	0		Groups Failed - Storage/BP	0
RID Failed DM Limit	0		Groups Failed - Enclave	0
RID Failed No Storage	0		Grps exec 1 DB2: COORD=NO	0
RID Failed Processes	0		Grps exec 1 DB2: ISO=RR/RS	0
			Number Intended Groups	0
LOB STORAGE			Members Bypassed BP Short	0
Max LOB Storage (MB)	0		Access Path Redone: Config	0
			Access Path Redone: BP	0
			Grps exec 1 DB2: DclTmpTbl	0
Command ==>				
F1=Help	2=Split	3=End		6=History
		9=Swap		12=Return

The information on this panel can help you diagnose problems due to multiple index, list prefetch, or RID processing storage failures. A multiple index, list prefetch, or RID processing storage failure results from a shortage of virtual storage in the database services (DBM1) Address Space. Statistics for parallel I/O queries are presented only on DB2 V3 subsystems.

You can also use [Virtual Storage Snapshot Panel](#) to display a view of the current breakdown of private storage used by the DBM1 Address Space.

## Locks Panel

This panel displays the DB2 subsystem's locking activity for the past 30 seconds (Delta) or since the subsystem was initialized (Accum). This panel can help you to diagnose problems in the following areas:

- Excessive lock/latch suspend time
- Shared and exclusive lock escalations
- Lock limits

The Locks panel appears when you:

- Select Option 8 (Locks) from the Additional System Statistics Displays menu.
- Enter **D SYSLOCKS** on the command line.

The following is a sample of this panel:

Menu Print Tools Help CA-Insight		SE19257	14:51:12
			DBV3 S018
R/SYSLOCKS	Locks - 30 seconds		Accum
Timeouts.....	0	Lock Escalation - Shr	0
Deadlocks.....	0	Lock Escalation - Exc	0
Lock Requests...	407120	Latch Suspensions....	279
Unlock Requests..	378805	Lock Suspensions.....	202
Query Requests..	0	Other Suspensions....	1
Change Requests..	0	Total Suspensions....	482
Other Requests..	2		
		Requests Failures	
		Claim 8463	0
		Drain 114	0
Command ==>			
F1=Help	2=Split	3=End	6=History
		9=Swap	12=Return

## Subsystem Services Panel

This panel displays the DB2 Subsystem Component's activity. This panel can help you to diagnose problems with queued threads.

The Subsystem Services panel appears when you:

- Select Option 9 (Subsystem Services) from the Additional System Statistics Displays menu.
- Enter **D SYSSVCS** on the command line.

The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	SE19257	14:55:09
						DBV3 S018
R/SYSSVCS	Subsystem Services - 30 seconds					Accum
Identify.....	235	Single Phase Commit	597			
Signon.....	0	Read Only Commit...	0			
Create Thread.....	360	Commit Phase 1.....	0			
Create Thread Queued	0	Commit Phase 2.....	0			
Thread Terminate...	581	Agent Indoubt.....	0			
Thread Terminate EOT	1	Indoubt Resolved...	0			
Thread Terminate EOM	0	Abort.....	30			
		DSN3EXIT Call.....	100			
		SSI Call.....	236			
Command ==>						
F1=Help	2=Split	3=End	6=History			
		9=Swap	12=Return			



## Remote Location List Panel

This panel displays a list of the remote locations connected to this DB2 subsystem. Statistics shown are for the most recent interval (Delta), or since DB2 was initialized (Accum).

The Remote Location List panel appears when you:

- Select Option **11** (Remote Locations) from the Additional System Statistics Displays menu.
- Enter **D SYSRMOTE** on the command line.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 11:42:49
DBV6 XE44

Actions: S=Select for more detail Delta
R/SYSRMOTE Remote Location List - 30 Seconds

DBATS
Queued 0 Active Current 0 Max 0 Conversatns Dealloc 0
Max Total 0 Inactive Type 1 0 0 Warm Start Connects 0
Queued Type 2 Inactive Type 2 0 0 Cold Start Connects 0
Inact RcvReq 0 Queued Type 2 0 0 Resynch Attempts 0
Max Type1 Lmt 0 Actv DBAT slots 0 0 Resynch Connections 0
Reqs Using Pool Thd 0

Location/ SQL Messages Rows Bytes Commits Aborts
Convrstns Queued Snt/Rcvd Snt/Rcvd Snt/Rcvd Snt/Rcvd Snt/Rcvd Snt/Rcvd
. D42GTS44 0 4 4 3 2234 0 0
0 4 4 0 1805 0 0

ommand ==>
F1=Help 2=Split 3=End 6=History
9=Swap 12=Return

```

If there are more locations than can fit on one panel, the PF7/PF8 scrolling keys activate and display. To see more detail on a remote location, enter **S** or cursor-select the field for that location and press Enter.

## Remote Location Detail Panel

This panel displays detailed information about the remote location that you selected on the previous panel. Statistics shown are for the most recent interval (Delta), or since DB2 was initialized (Accum).

The Remote Location Detail panel appears only when you select a Remote Location from the Remote Location List panel. The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	SE19257	16:18:47	
						DBV3 S018	
R/SYSRMDTL		Remote Location Detail - 30 Seconds				Row 1-22 of 22	
						Accum	
Location DRDA REMOTE LOCS						Sent	Received
				SQL	7865	2	
Requests Queued	0			Messages	7926	7925	
SQL Bound Remote	0			Blocks	1	10	
Block Mode Switches	0			Rows	0	7854	
Rows in Msg Buffer	1309			Bytes	1304210	1746010	
				Conversations	6	1	
				Transactions	6	1	
				Commits	51	1	
				Aborts	1	0	
TWO PHASE COMMIT OPERATIONS						Sent	Received
Remote Site as Coordinator				Prepare Requests	0	0	
Threads Indoubt	0			Last Agt Requests	0	0	
Commit Operations	1			Commit Requests	0	0	
Rollback Operations	0			Backout Requests	0	0	
				Forget Responses	0	0	
				Commit Responses	0	0	
				Backout Responses	0	0	
Command ==>							
F1=Help	2=Split	3=End				6=History	
F7=Up	8=Down	9=Swap				12=Return	

**Note:** In the previous sample, the Two Phase Commit Operations section is only displayed if you are monitoring a DB2 V3 subsystem.

## Bind and Authorization Checks Panel

This panel displays BIND/REBIND/FREE activity for Plans and Packages, as well as Authorization Check information. Statistics shown are for the most recent interval (Delta), or since DB2 was initialized (Accum).

The Bind/ Auth Check panel appears when you:

- Select Option **12** (Bind and Authorization Checks) from the Additional System Statistics Displays menu.
- Enter **D SYSBIND** on the command line.

The following is a sample of this panel:

Menu Print Tools Help		CA-Insight		MATSAA2		11:48:18	
						DBV6 XE44	
R/SYSBIND		Bind/Auth Check - 30 Seconds		Delta			
	PLAN	PACKAGE		PLAN	PACKAGE	ROUTINE	
Autobind Attempts	0	0	Allocate Attempts	0	0	N/A	N/A
Autobinds	0	0	Allocations	0	0	N/A	N/A
BIND ADD Subcmds	0	0	Invalid Rsrce IDs	0	N/A	N/A	N/A
BIND REPL Subcmds	0	0	Authorization Cks	0	0	N/A	N/A
Test Binds	0	N/A	Success Auth Chks	0	N/A	N/A	N/A
BINDs	0	0	Cache Auth Checks	0	0	0	0
REBIND Subcmds	0	0	EXEC PUBLIC Chks	0	0	0	0
REBIND Attempts	0	0	Repl Cache Authid	N/A	0	0	0
REBINDs	0	0	Repl Cache Entry	N/A	0	0	0
FREE Subcommands	0	0	Add Cache Fail	N/A	N/A	0	0
FREE Attempts	0	0	Cache Not Used	N/A	N/A	0	0
FREEs	0	0					
				Invalid SELECT Procs	0		
Command ==>							
F1=Help		2=Split		3=End		6=History	
				9=Swap		12=Return	

## Storage Panel

This panel displays information about short-on-storage (SOS) conditions, pool and segment information, as well as the number of GETMAINS and FREEMAINS issued. A short-on-storage condition is caused by a shortage of virtual storage in the database services (DBM1) Address Space. Statistics shown are for the most recent interval (Delta) or since DB2 was initialized (Accum).

The Storage panel appears when you:

- Select Option 13 (Storage) from the Additional System Statistics Displays menu.
- Enter **D SYSSTRG** on the command line.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight          SE19257          16:42:46
                                          DBV3 S018

R/SYSSTRG          Storage - 30 Seconds

                                Accum
SOS Contractions          0          Pools Created          Fixed Variable
SOS Bit Set              0          Pools Deallocated      153   740
SOS Abends              0          Segments Freed          5     1329
Getmains Issued          832          Segments Expanded      176  1684
Freemains Issued        703          Segs Contracted        114   128
Nonzero Return Codes    0

Command ==>>>
F1=Help          2=Split          3=End          6=History
                  9=Swap          12=Return
    
```

## Group Buffer Pool List for this DB2 Panel

This panel shows which group buffer pools are used by the DB2 you are monitoring. This panel displays a scrollable list of group buffer pools used during this interval (if Delta) or since DB2 was started (if Accum).

The Group Buffer Pool List for this DB2 panel appears when you:

- Select option **14** (Group Buffer Pool) from the Additional System Statistics Displays Menu and then select view 1 (This DB2).
- Enter **D SYSGBUFL** on the command line.

The following is a sample of this panel:

```
Menu Print Tools Help CA-Insight GINJ001 18:35:56
_ 1 This DB2 2 All DB2s DB2E HP92
Actions: S=Select for more detail Accum_____
R/SYSGBUFL Group BP List This DB2 - Accum
Rds Data Rds No Data Hit Pages Rd Fail Wr Fail Unavail Unavail
Pool Returned Returned Ratio Written Storage Storage Wr Eng C/O Eng
-----
. GBP0 0 9 0 163 0 0 0 0 0
Command ==>
F1=Help 2=Split 3=End 6=History
9=Swap 12=Return
```

To see more detail for a particular group buffer pool, enter **S** or cursor-select the field for that group buffer pool and press Enter.

## Group Buffer Pool Detail for this DB2 Panel

This panel shows information on how this DB2 utilized the primary group buffer pool you selected from the list panel. Depending on what version of DB2 you are running, two panels might be available.

Group buffer pool detail for this DB2 appears only when you select a group buffer pool from the Group Buffer List for this DB2 panel. The following is a sample of this panel.

```

Menu Print Tools Help CA-Insight MATSAA2 11:38:03
D61D XE44
  1 Primary 2 Secondary
R/SYSGBUFD Group BP Detail This DB2 - Accum Accum
GROUP BUFFER POOL GBP0
READS
Hit Ratio 0.500 Buf Inv Pg Gone Async Total STORAGE FAILURES
Data Returned 4 2 0 6 Reads 0
Data Not Returned 2 4 0 6 Writes 0
Storage Stats 6 Changed Pages 0 CASTOUT
Clean Pages 0 Castout Class 0 Class 0
Castout Stats 0 Directory Info 0 Pages 0
WRITES Chgd Pgs Cln Pgs Total OTHER UNAVAIL ENGINES
Sync 3 0 3 Checkpts 0 Castout 0
Async 0 0 0 Rebuilds 0 Write 0
Total 3 0 3 Del Pset 0
CrossInv 0
IXLCACHE Req 0
Command ==>
F1=Help 2=Split 3=End 6=History
9=Swap 12=Return
    
```

The following panel shows information on how this DB2 used the secondary group buffer pool you selected from the list panel.

```

Menu Print Tools Help CA-Insight MATSAA2 11:38:33
D61D XE44
  1 Primary 2 Secondary
R/SYSGBUFS Group BP Detail This DB2 - Accum Accum
GROUP BUFFER POOL GBP0
Changed page write requests 0
Changed page write failed - storage 0
Suspended write completion checks 0
Delete page list requests (castout) 0
Delete page requests (orphaned ent) 0
Read castout statistics 0
Async IXLCACHE requests 0
Command ==>
F1=Help 2=Split 3=End 6=History
9=Swap 12=Return
    
```

## Group Buffer Pool List for all DB2s Panel

This panel shows which group buffer pools are used by all the DB2s in the data sharing group. It displays a scrollable list of group buffer pools used during this interval (if Delta) or since DB2 was started (if Accum). The data shown is for all DB2s in the data sharing group.

The Group Buffer Pool List for all DB2s displays when you:

- Select option **14** (Group Buffer Pool) from the Additional System Statistics Displays Menu and then select view 2 (All DB2s).
- Enter **D SYSGBUFL** on the command line.

The following is a sample of this panel:

Pool	Rds Data Returned	Rds No Data Returned	Hit Ratio	Strg Fail	Cross Invalid	Reclms	C-outs	Dirctry Entries	Data Entries
. GBP0	7	1434	0	0	0	0	121	0	0

Menu Print Tools Help CA-Insight GINJ001 19:35:05  
DB2E HP92

1 This DB2 2 All DB2s

Actions: S=Select for more detail Accum\_\_\_\_\_

R/SYSAGBFL Group BP List All DB2s - Accum

Command ==> \_\_\_\_\_

F1=Help 2=Split 3=End 12=Return  
9=Swap

To see more detail for a particular group buffer pool, enter **S** or cursor-select the field for that group buffer pool and press Enter.

## Group Buffer Pool Detail for All DB2s Panel

Starting with DB2 version 6 there are two panels for group buffer pool detail to show activity to both the primary and secondary group buffer pool. For DB2 subsystem prior to DB2 version 6, there is only one display for the primary group buffer pool. These panels show detail group buffer pool utilization.

The Group Buffer Pool Detail for all DB2s panel appears only when you select a group buffer pool from the Group Buffer List for all DB2s panel.

This panel shows information on how all DB2s in the data sharing group utilized the primary group buffer pool you selected from the list panel. The following is a sample of this panel:

```

Menu Print Tools Help  CA-Insight          MATSAA2          12:02:39
                                     D61D XE44
      1 Primary  2 Secondary
R/SYSAGBFD      Group BP Detail All DB2s - 30 Secs
                                     Delta
GROUP BUFFER POOL GBP0
READS
  Hit Ratio      0.000
  Data Returned      0
  Data Not Returned
  Page Not Found    0
  X-DB2 R/W        0
  No X-DB2 R/W     0
  Tot Not Returned  0
CURRENT
  Dir Entries      10
  Data Entries     4
WRITES
  Chgd Pgs        0
  Cln Pgs         0
  Total           0
  Cur Chgd Pgs   0
STORAGE FAILURES
  Reads           0
  Writes          0
RECLAIMS
  X Invalid       0
  Directory       0
  Data            0
OTHER
  Castouts       0
  CrossInv       0

Command ==>>
  F1=Help      2=Split      3=End      9=Swap
                                     12=Return
    
```

The following panel shows information on how all DB2s in the data sharing group utilized the secondary group buffer pool you selected from the list panel.

```

Menu Print Tools Help  CA-Insight          MATSAA2          12:04:16
                                     D61D XE44
      1 Primary  2 Secondary
R/SYSAGBFS      Group BP Detail All DB2s - 30 Secs
                                     Delta
GROUP BUFFER POOL GBP0
  Changed page write requests      0
  Changed page write failed - storage 0
  Directory entries                 0
  Data entries                       0
  Data entries in "changed" state   0

Command ==>>
  F1=Help      2=Split      3=End      9=Swap
                                     12=Return
    
```



## Global Locks Panel

This panel shows statistics relating to data sharing environments.

The Global Locks panel appears when you:

- Select option **15** (Global Locks) from the Additional System Statistics Displays Menu.
- Enter **D SYSGBUFL** on the command line.

The following is a sample of this panel:

Menu Print Tools Help CA-Insight		GINJ001		18:06:33	
				DB2E HP92	
R/SYSGLOCK	Global Locks - Accum				
CONTENTIONS		REQUESTS	PROPAGATIONS	Accum	_____
False.....	17	Lock....	25	1736	
IRLM.....	58	Change..	0	0	
XES.....	0	Unlock..	1	1787	
ENGINES		Denied..	0	N/A	
Max Available...	10	Resource	N/A	75	
Unavailable....	0	NEGOTIATIONS			
NOTIFYs		Pgset or Part.	0		
Sent.....	3	Page.....	0		
Received.....	2	Other.....	0		
		Chg Req Issued	0		
Command ==>					
F1=Help	2=Split	3=End	6=History		
		9=Swap	12=Return		

## Dynamic Prepare and Direct Row Access Panel

This panel shows statistics relating to the use of the dynamic prepare function and direct row access.

The Dynamic Prepare/Direct Row Access panel appears when you:

- Select option **16** (Dynamic Prepare/Direct Row Access) from the Additional System Statistics Displays Menu.
- Enter **D SYSDYNP** on the command line.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 13:41:12
D71A CA31

R/SYSDYNP Dynamic Prepare / Direct Row Access - Acc Accum

DYNAMIC PREPARE DIRECT ROW ACCESS
 Stmt found in cache 0 Number of Times Successful 0
 Stmt not found in cache 0 Reverted to Using Index 0
 Implicit prepare performed 0 Reverted to Using TS Scan 0
 Prepare avoided 0
 Stmts discarded - MAXKEEPD 0
 Stmts purged - dep. object 0

Command ===>
 F1=Help 2=Split 3=End 6=History
 9=Swap 12=Return
    
```

## DB2 Routine Counts Panel

This panel shows statistics relating to the use of DB2 routines including stored procedures, user defined functions, and triggers.

The DB2 Routine Counts panel appears when you:

- Select option **17** (DB2 Routine Counts) from the Additional System Statistics Displays Menu.
- Enter **D SYSRTN** on the command line.

The following is a sample of this panel:

Menu		Print	Tools	Help	CA-Insight	MATSAA2	12:13:36
							D61D XE44
R/SYSRTN	DB2 Routine Counts - 30 Seconds					Delta	
	STORED	USER DEFINED	TRIGGERS				
	PROCEDURES	FUNCTIONS					
Executions	0	0	Statement Triggers Activated	0			
Abends	0	0	Row Triggers Activated	0			
Timeouts	0	0	SQL Errors During Execution	0			
Rejects	0	0					
Maximum Cascading Level (all types)			0				
Command ==>							
F1=Help	2=Split	3=End	6=History				
							12=Return

## Dynamic SQL Statements in Cache Panel

This panel shows the current SQL statements being cached and the statistics relating to the use of these statements.

The Dynamic SQL Statements in Cache panel appears when you:

- Select option **18** (Dynamic Stmt Cache Usage) from the Additional System Statistics Displays Menu.
- Enter **D DYNSQLST** on the command line.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSA02 12:23:03
                                         D420 XE44

Actions: S=Select for complete dynamic SQL statement
R/DYNSQLST Dynamic SQL Statements in Cache

          SQL          Current Active
          Text          Users  Copies
-----
- SELECT * FROM SYSIBM.SYSTABLES WHERE TSNAME = 'TSBILL2'          1      0
- SELECT * FROM SYSIBM.SYSTABAUTH          1      0
- SELECT S.BPOOL, T.NAME, T.CREATOR, S.NAME, S.DBNAME          1      0
- SELECT * FROM SYSIBM.SYSSTMT          1      0

Command ==>>
F1=Help      2=Split      3=End      10=Left      11=Right      12=Return
9=Swap
    
```

You can scroll the display right and left to display a variety of statistical information related to the usage of each SQL statement. Many of the statistical counters require that IFCID 318 be started. By default this IFCID is not started. To start IFCID318 you can manually start request DYNSTATS or add this request to the request start-up list (see the *Unicenter CA-Insight System Guide* for details on adding requests to be automatically started). Note that IFCID 318 might add a significant amount of overhead to the dynamic cache usage.

Select any of the display lines to see the complete SQL statement text.

```

Menu Print Tools Help CA-Insight MATSAA2 13:45:04
DBV6 XE44

R/DYNSQLTX Selected Dynamic SQL Statement in Cache Row 1-33 of 75

Users 0 Stmt num 116 Pgm name DSNESM68
Active copies 0 Bind SQLID WOLLL01 Transaction .....
Executions 21 Table qual WOLLL01 Owner user ID WOLLL01
Stmt status 00 Current data Y Dynamic rules R Current degree 1
Isolation CS Current rules D Cur precision N Csr with hold N

Time inserted 11/09/00 18:56:39 Rid list fail - limit 0
Stats started 11/09/00 20:20:48 Rid list fail - storage 0
Total Average %Elp Total Average
Elapsed time 3.144 0.149 N/A Getpages 22704 1081.1
CPU time 0.448 0.021 14.3 Rows examined 141240 6725.7
Sync I/O time 0.000 0.000 0.0 Rows processed 1188 56.6
Other read 0.000 0.000 0.0 Sorts 0 0.0
Other write 0.000 0.000 0.0 Index scans 0 0.0
Lock suspend 0.000 0.000 0.0 Tblspace scans 22 1.0
Global lock 0.000 0.000 0.0 Parallel grps 0 0.0
Exec unit sw 0.000 0.000 0.0 Sync reads 0 0.0
Sync writes 0 0.0

Enter E to EXPLAIN the following SQL =====> _

SELECT S.BPOOL, T.NAME, T.CREATOR, S.NAME, S.DBNAME
FROM SYSIBM.SYSTABLES T, SYSIBM.SYSTABLESPACE S
WHERE T.TSNAME = S.NAME AND T.DBNAME = S.DBNAME
AND S.BPOOL ^= 'BPO'

>>

Command =====>
F1=Help 2=Split 3=End 12=Return
9=Swap
    
```

Use **E** to perform a dynamic explain of the SQL statement shown.

## DB2 Storage Utilization Panel

This panel shows storage utilization for the DB2 subsystem as recorded in IFCID 225 record. This information is collected when the request is first started and at every statistics interval. The records from the last 10 intervals are available.

The DB2 Storage Utilization panel appears when you :

- Select option **19** (Storage Utilization) from the Additional System Statistics Displays menu.
- Type **D SYSSTG** on the command line.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 17:00:17
D71A CA31

R/SYSSTG DB2 Storage Utilization Row 1-33 of 55

<----- STORAGE BREAKDOWN -----> <-- SYSTEM ACTIVITY -->
Agent Local Pool 84521K RID Pool 102400 Active Threads 4
Agent System Stg 3572K Stmt Cache Blk 1036K Castout Engines 0
Compression Dict 831M Thrd Copy Cache 0 Deferred Wrt Eng 24
Rsvd - Must Cmpl 32788K BM/DM Trace Tbl 1974K GBP Write Eng 0
Getmained Stg 80339K Variable Stg 19878K Prefetch Engines 12
Getm Stack Stg 2920K Fixed Storage 2488 P-lk/Notify Exit 0
MVS Stg Usage 3685K
Pipe Mgr Subpool 102400 Storage Avail 1665M
RDS OP Pool 6476K Stg Cushion Warn 32788K
03/07/01 15:37:50
<----- STORAGE BREAKDOWN -----> <-- SYSTEM ACTIVITY -->
Agent Local Pool 84629K RID Pool 102400 Active Threads 5
Agent System Stg 3490K Stmt Cache Blk 1036K Castout Engines 0
Compression Dict 831M Thrd Copy Cache 0 Deferred Wrt Eng 24
Rsvd - Must Cmpl 32788K BM/DM Trace Tbl 1974K GBP Write Eng 0
Getmained Stg 80381K Variable Stg 19943K Prefetch Engines 12
Getm Stack Stg 2920K Fixed Storage 2488 P-lk/Notify Exit 0
MVS Stg Usage 3685K
Pipe Mgr Subpool 102400 Storage Avail 1665M
RDS OP Pool 6476K Stg Cushion Warn 32788K

Command ===>
F1=Help 2=Split 3=End
F7=Up 8=Down 9=Swap 12=Return
    
```

## Plotting on 3270 Terminals

You can graphically display some subsystem statistics on your 3270 terminal. You have already seen the predefined plots for the System Snapshot and for the buffer pools. You can choose from a list of predefined plots, or create your own using a series of “plot builder” panels.

Plots can only be built from data collected in a Monitor request.

### The 3270 Graphics Panel

Enter **PLOT** on the command line and press Enter to start the plotting function. The 3270 Graphics panel appears:

```

Menu Print Tools Help CA-Insight          SE19257          16:44:52
                                                DBV3 S018

PlotList          3270 Graphics          Row 1-7 of 46

Four custom plots
a . Custom plot - A          c . Custom plot - C
b .                          d .

Predefined plots
Plotname Request Title
-----
. PDCRETHD DCMSTATL Threads Created per 1/2 hour
. PDDDB2CPU DCMSTATL DB2 CPU (in seconds) per 1/2 hr
. PDDYNSQL DCMSTATL Dynamic SQL per 1/2 hour
. PDGPSSYN DCMSTATL Getpages & Read I/O per 1/2 hour
. PDLOGDLY DCMSTATL Logging Delays per 1/2 hour
. PDSUSPEN DCMSTATL Suspensions per 1/2 hour
. PDTIMDLK DCMSTATL Timeouts & Deadlocks per 1/2 hr

Command ==>>>
F1=Help      2=Split      3=End
F7=Up        8=Down       9=Swap
                                                12=Return

```

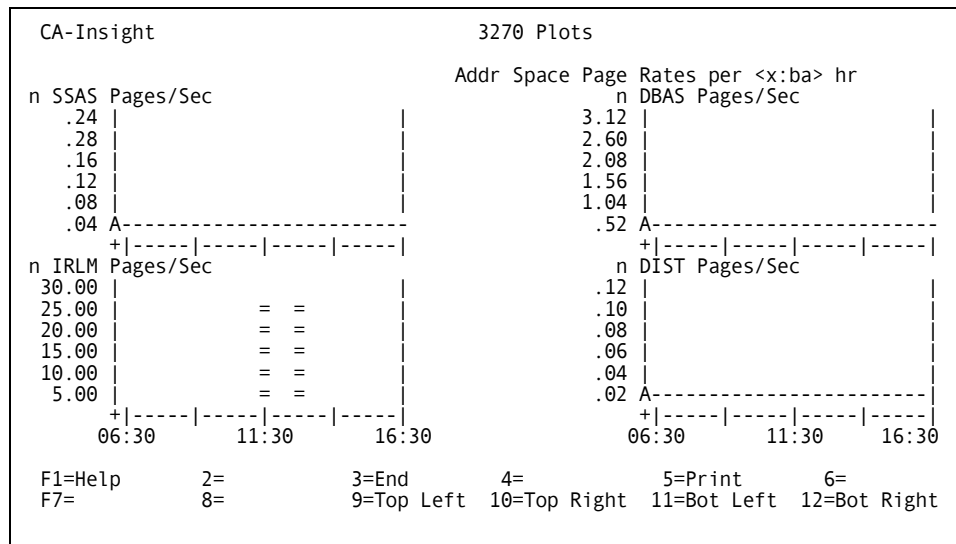
The panel is divided into two sections:

- **Four custom plots** – displays custom plots that have been created with the Plot Builder
- **Predefined plots** – you can cursor-select any of the listed pre-defined plots. Use the PF7/PF8 keys to scroll through the list of pre-defined plots. Note that PF7 and PF8 only scroll beneath the dashed line while the upper portion remains constant.

### Example of a Predefined Plot

Plots created on a 3270 differ in appearance from those created specifically for a more graphically-oriented environment, such as Windows® or Presentation Manager®.

In this example, PD4WPAG (Address Space Page Rates per 1/2 hour) has been chosen from the 3270 Graphics panel:



In this example, four different plots display, each representing a different Address Space (SSAS, DBAS, IRLM, DIST). The dashed line at the .02 level of the lower-right plot (with an A at its left-most point) indicates the average DIST pages per second per half-hour.

In these types of multiple-plot settings, PF Keys 9 - 12 let you expand on each of the four plots. When only one plot displays on this panel, these keys are de-activated and not shown.



## Creating a Customized Plot

As mentioned earlier, you can create up to four plots using the data in two specified Unicenter CA-Insight requests: DCMSTATL (System Statistics for the Past 30 Hours) and DCMSTATS (System Statistics for the Past 60 Minutes). The plot definitions are saved into your User Profile for future sessions.

If you have already created one or more plots, their titles displays on the upper portion of the 3270 Graphics panel. To create a custom plot, cursor-select one of the blank entries (a, b, c, or d) in the upper portion of the 3270 Graphics panel and press Enter. To modify an existing custom plot, cursor-select that plot and press Enter. The 3270 Plot Builder panel appears:

```

Menu Print Tools Help CA-Insight          SE19257          17:31:21
                                         DBV3 S018

PlotBuiler          3270 Plot Builder

Title ==> Custom plot - B          Based on request ==> DCMSTATL

+-----+-----+-----+-----+
| .           Quadrant 1           . | | .           Quadrant 2           . |
+-----+-----+-----+-----+
| .           Quadrant 3           . | | .           Quadrant 4           . |
+-----+-----+-----+-----+

Requests for plotting
-----
DCMSTATL  System Statistics for the Past 30 Hours
DCMSTATS  System Statistics for the Past 60 Minutes

Command ==>
  F1=Help      2=Split      3=End      4=Plot      5=PlotTyp1
                9=Swap      10=PlotTyp2 11=PlotTyp3 12=Return

```

This panel displays a model plot (one with four quadrants). Each quadrant allows selection of one pair of fields from the requests indicated on the lower portion of the panel.

- Enter one of the valid request names in the Based on request ==> field.
- Enter a name for your plot in the Title ==> field.

To establish field names for each quadrant, cursor-select the first plot's first field and press Enter. Field names can be deleted from the quadrant by positioning the cursor on the field name and pressing ERASE EOF or by blanking out the field name.

## Selecting Plot Data

If you do not know the name of the fields you wish plotted, cursor-select the appropriate field in the quadrant and press Enter. The Choose a Field to Plot panel appears:

```

Menu Print Tools Help CA-Insight                SE19257                17:34:33
                                                    DBV3 S018

PlotField                Choose a field to plot                Row 1-14 of 97
-----
. Identifies                . SQL Stmt Totals
. Signons                    . SIUD
. Threads Created            . Open/Close Cursr
. Terminates                . DDL/DCL
. Commits                    . Dynamic
. Aborts                      . Fetches
. Synchs                      . Updates
. Threads Queued            . Escalations
. Completed Thrds            . Suspensions
. DB2 CPU Sec                . Deadlocks
. DB2 Pages/Sec              . Timeouts
. SSAS CPU Sec                . Total Getpages
. SSAS Pages/Sec            . Tot Sync Rd I/O
. DBAS CPU Sec                . Total BP Read Ef

Command ==>>>
  F1=Help          2=Split      3=End
  F7=Up            8=Down       9=Swap
                                                    12=Return
    
```

Use the PF7/PF8 keys to scroll through the list.

Cursor-select one of the listed field names. The 3270 Plot Builder panel re-displays with the selected field name placed in the plot field name. Continue the process until all desired fields have been entered for as many plots as you are creating.

## Displaying Your New Plot

From the 3270 Plot Builder panel, press PF4 to display your new plot.

If you wish to see more detail or expand on a particular plot, press the PF Key appropriate to that plot (PF9-12).

When you have finished reviewing your plots, press PF3 to return to the original Unicenter CA-Insight panel from which you started.

## Viewing System History

The following chapter discusses viewing subsystem historical data.

### System History Selection Panel

This panel lets you specify values to limit the amount of subsystem history data displayed or to specify the time interval for the subsystem history summarized. To access subsystem historical data, select System History from the Initial Menu. The System History Selection panel is the first to display. The following is a sample of this panel:

```

Menu Print Tools Help  CA-Insight          SE19257          18:31:25
                                DBV3 S018

  1 Select by PF Key  2 List all Intervals

SysHist                System History Selection

Specify time range then List or Summary PF Key

Time Range
Begin Time (HHMMSS) . . . 000000          End Time (HHMMSS) . . . 183125
Begin Date (MMDDYY) . . . 121694          End Date (MMDDYY) . . . 121694

Command ==>>>
F1=Help          2=Split          3=End          5=List          6=Summary
                  9=Swap                12=Return
  
```

Specify the date and time span for which you want to limit or summarize in military format (0 to 24 hours). The default interval is set for viewing the current day's data from midnight.

Unicenter CA-Insight must find at least two records in the data collector (for a beginning and ending point) within the time interval you specify. If you receive the following message, then Unicenter CA-Insight could not find enough records to satisfy your request. Try increasing the interval between the begin and end date/time.

```
DBG550C1W - Selected records not found
```

Unicenter CA-Insight collects data from the first record it encounters with an end time after your specified begin date/time and ends with the first record it encounters up to (but not including) your specified end date/time. For example, if you choose to select data from 8:00AM until 10:00AM, the actual returned data can be from 8:00AM to 9:30AM. If you wanted to see the 10:00 data as well, you would specify an end time of 10:01AM.

### Where to Go From Here

You have several options to choose from:

- To View Selected Detail Data – press PF5 (List)
- To View All Detail Data – View Bar Option 2 (List all Intervals)
- To View Summarized Data – press PF6 (Summarize)

The first two options are discussed in [Viewing Detailed Historical Data](#).

The third option is discussed in [Viewing Summarized Historical Data](#).

## Viewing Detailed Historical Data

This section describes the series of panels that display detailed subsystem historical data.

One commonality of these panels is the use of the PF5/PF6 keys:

- PF5 (Previous) – displays the same fields for the prior interval
- PF6 (Next) – displays the same fields for the subsequent interval

### Selecting an Interval to Display

The information is for only one interval, which you can select or default to the latest interval.

## System History List Panel

If you have specified selection criteria and pressed PF5 or selected View Bar Option 2 from the System History Selection panel, the System History List panel appears. The following is a sample of this panel:

Menu		Print	Tools	Help	CA-Insight	SWASLOF	11:02:58			
							DBV3 S018			
Actions:		S=Select for more detail								
R/HSLIST		System History List					Item 1-9 of 44			
From		MM/DD/YY	00:00:00	To	MM/DD/YY	11:00:00				
End	Time	Excptns	Thread	Terms	Commits	Aborts	SQL	Total	DB2	CPU
							Stmts	Getpages	I/O	H:MM:SS
.	00:15:00	15	45	91	7	0	8	89064	12650	20
.	00:30:00	4	12	6	0	0	0	18204	13	8
.	00:45:00	2	12	6	0	0	0	18051	2	6
.	01:00:00	1	12	6	0	0	0	18050	0	6
.	01:15:00	1	12	6	0	0	0	18050	0	6
.	01:30:00	1	12	6	0	0	0	18050	0	6
.	01:45:00	1	20	10	0	0	0	30130	0	10
.	02:00:00	1	16	8	0	0	0	24120	0	8
.	02:15:00	1	22	11	0	0	0	24140	0	8
Command ==>										
F1=Help		2=Split		3=End						
F7=Up		8=Down		9=Swap		12=Return				

This panel displays a scrollable list of the System Statistics intervals maintained in the history file. The data included depends on how you got here:

- If you specified selection criteria on the previous panel, then only those dates/times are available. The range of dates and times reflects your selection criteria. In addition, an item count (Item *n-n* of *n*) displays so you know how many intervals you can scroll through. This is shown in the previous example.
- If you chose the List All Intervals view, then all intervals maintained in the history file display, the most recent range displayed first (scroll up to see prior intervals). The range of dates and times reflects the current panel's list of intervals. No item count displays.

To see more detail for a particular time interval, enter **S** or cursor-select the field for that interval and press Enter.

**Note:** If you pressed PF5 to arrive at this panel (meaning *use selection criteria*), then the View Bar (showing Views 1 and 2) does not display.

### About the Exceptions Column on the Panel

Each record of the history file is run through the exception system prior to display to see if it qualifies as an exception, based on the way that the exception is defined at the time of the display, not as it was defined when the thread was run.

If you modify your active exception definition to a different threshold value, all history records are then evaluated against that new threshold value.

This represents a good way to use historical data to establish valid threshold values for your shop. Just have the exception active, adjust the values, and see the desired effect in the history system.

## System Overview History Panel

This panel displays a high-level view of the subsystem performance for the selected interval (shown in the From/To field).

The System Overview History panel appears when you:

- Select an interval from the System History List panel and press Enter.
- Press PF6 (History) from the System Snapshot panel.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 09:34:41
D420 XE44
1 Overview 2 Exceptions 3 Buffers 4 EDM Pool 5 Locks 6 Logs 7 More...
R/HSSNAP System Overview History
From MM/DD/YY 08:30:00 To MM/DD/YY 09:00:00
EXCEPTIONS Crit Warn Info
Subsystem 0 0 0
EDM POOL
Free Pg 1872 % Total 99.0
DBD Lds 0 % Rqsts 0.0
CT Lds 0 % Rqsts 0.0
PT Lds 0 % Rqsts 0.0
Dyn Ins 0 % Rqsts 0.0
BUFFERS
Warnings 0
Act Pools 1
%NStl Pgs 0.0
Getpages 0
Sync Rds 0
Read Eff 0.0
Buf Updts 0
Pg Writes 0
Write I/O 0
LOCKING LOGGING
Suspend 0 Dlyd Wrts 0
Escalate 0 Arch Read 0
Timeout 0 Min/Ckpt *****
Deadlock 0 Warnings 0
RID POOL
Failures 0
THREADS SQL
Created 0 Dynamic 0
Terminated 0 In+Up+Dl 0
Aborts 0 Open+Sel 0
Commits 0
DATA SHARING STORED PROCS
Group ..... CALLS 0
Member ..... Fails 0
Command ==>
F1=Help 2=Split 3=End 5=Previous 6=Next
9=Swap 12=Return
    
```

This panel displays the same information as the System Snapshot panel (See [System Snapshot](#) in the “Viewing Current System Statistics” chapter), but only the delta values for the time interval indicated (From/To) display. Detailed information is shown in other Views. Also, review the discussion of exceptions in [About the Exceptions Column on the Panel](#) in the “Viewing System History” chapter.

## Exceptions List Panel

This panel displays a list of exceptions for the subsystem activity that occurred during the interval shown in the From/To times. This panel appears only when you select View Bar Option 2 (Exceptions) from within the Subsystem History function. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 11:07:40
DBV3 S018
 1 Overview 2 Exceptions 3 Buffers 4 EDM Pool 5 Locks 6 Logs 7 More..
Exceptions Exception List Item 1-6 of 15
From MM/DD/YY 00:00:00 To MM/DD/YY 00:15:00
WARN 00:15:00 Average number of pages written per write I/O is
low for BP4. Ratio value is 3
CRIT 00:15:00 Average number of updates per page written is low
for BP4. Ratio value is 2
WARN 00:15:00 DB2 is taking too many checkpoints. The average
number of minutes between checkpoints is 4
CRIT 00:15:00 Average number of pages written per write I/O is
low for buffer pool 2. Ratio value is 2
CRIT 00:15:00 Average number of updates per page written is low
for buffer pool 2. Ratio value is 1
CRIT 00:15:00 Average number of pages written per write I/O is
low for buffer pool 1. Ratio value is 2

Command ==>
F1=Help 2=Split 3=End 5=Previous 6=Next
F7=Up 8=Down 9=Swap 12=Return
    
```

These exceptions are based on Unicenter CA-Insight’s current set of exception definitions. See the “[Exceptions](#)” chapter for explanations of how to define exceptions.

The first part of the exception line indicates the level of severity of the exception, Critical, Warning, or Informational. The remaining portion of the exception contains the message text. An Item Count (Item n-n of n) indicates the number of exceptions that have occurred during the interval. You can use the scroll keys to view the entire list of exceptions for this interval.

Be sure to review the discussion on exceptions in [About the Exceptions Column on the Panel](#) in the “Viewing System History” chapter.

## Buffers

This section describes the series of panels that display detailed buffer pool data.

### Buffer Pool History List Panel

When you select the Buffers View, a list displays of the buffer pools that were in use for the indicated interval. An item count (Item *n-n* of *n*) indicates the number of buffer pools that were in use during the interval.

The Buffer Pool History List panel appears when you:

- Select View Bar Option 3 (Buffers) from within the Subsystem History function.
- Press PF6 (History) from the Buffer Pool List panel.

The following is a sample of this panel:

Menu Print Tools Help CA-Insight SE19257 11:09:43											
1 Overview 2 Exceptions 3 Buffers 4 EDM Pool 5 Locks 6 Logs 7 More.. DBV3 S018											
Actions: S=Select for more detail											
R/HSBUFL Buffer Pool History List Item 1-8 of 8											
From MM/DD/YY 00:00:00 To MM/DD/YY 00:15:00											
Pool	VPool Size	%Non-Steal	HPool Size	%ESA Backd	Warn	Getpgs	Sync Rd	I/O Rd	Eff	%Getpgs From HP	Buffer Updts
. BP0	2000	1.2	0	0.0	6	34338	168	204.4	0.0	1275	
. BP1	2000	0.0	0	0.0	10K	20305	10481	1.9	0.0	50	
. BP2	100	0.0	50	0.0	3	161	10	16.1	0.0	2	
. BP3	100	0.0	0	0.0	4	963	23	41.9	0.0	10	
. BP4	100	0.0	0	0.0	7	1950	28	69.6	0.0	25	
. BP5	100	0.0	0	0.0	190	710	229	3.1	0.0	451	
. BP10	400	0.0	0	0.0	29	30559	57	536.1	0.0	132	
. BP20	1000	12.5	0	0.0	0	78	0	*****	0.0	146	
Command ==>											
F1=Help 2=Split 3=End 9=Swap 10=Left 5=Previous 11=Right 6=Next 12=Return											

To see more detail for a particular buffer pool, enter *s* or cursor-select the field for that buffer pool and press enter.



## Buffer Pool Exception Counter History Panel

Each buffer pool history record contains information in four general areas. The first is Exception Counters. This panel shows the DB2 subsystem's buffer pool exception counters during the interval you selected (or specified). The purpose of this panel is to provide an overview of the exception counters so that you can easily see if there has been significant buffer pool exception activity that might need to be addressed.

The Buffer Pool Exception Counter History panel appears when you:

- First select a buffer pool from the Buffer Pool History List panel.
- Press PF6 (History) from the Buffer Pool Exception Counters panel.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight          SE12957          11:11:42
                                         DBV3 S018
      1 Exception Counters  2 Thresholds  3 Read/Write  4 Workfiles
R/HSBXCPT          BP Exception Counter History          Row 1-15 of 15
From MM/DD/YY 00:00:00 To MM/DD/YY 00:15:00

BUFFER POOL BP0
                VP  HP          Data Management.....  0
Allocated Size..... 2000  0          Seq Prefetch Disabled      5
Curr Non-Stealable Bfs  23  0  Buffer Pool Full.....  0
% Non-Stealable Buffrs  1.2  0.0  Expansion Failures.....  0
                Read Write  DFHSM Recall Timeouts.....  0
I/Os with Paging.....  245  16  Workfile Prefetch Aborted.....  0
Unavailable I/O Engine.  0  0  Sync Reads for Sequential Access  1
Non-ADMF HP Pg Failures  0  0  Conditional Getpage Failures...  0
ADMF HP Page Failures..  0  0  Parallel I/O Degrees Reduced...  0
Wrkfl Not Created - No Buffer..  0  0  Reduced Degree Parallel I/Os...  0
Sort Wrkfls Denied - No Buffer..  0  0  Average Degree Reduction.....  0.0
Inefficient Sorts - No Buffer..  0  0  Prefetch Quantity Reduced to 1/2  0
                                         Prefetch Quantity Reduced to 1/4  0

Command ==>
  F1=Help          2=Split          3=End
  F7=Up            8=Down           9=Swap
                                         12=Return
  
```

## Buffer Pool Thresholds History Panel

Each buffer pool history record contains information in four general areas. The second area is Thresholds.

The Buffer Pool Thresholds History panel appears when you:

- Select View Bar Option 2 (Thresholds).
- Press PF6 (History) from the BP Thresholds panel, select the desired buffer pool from the Buffer Pool History List panel, and select View Bar Option 2 (Thresholds).

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight                SE19257                11:13:00
                                      DBV3 S018
  1 Exception Counters  2 Thresholds  3 Read/Write  4 Workfiles
R/HSBTHRS          BP Thresholds History
From MM/DD/YY 00:00:00 To MM/DD/YY 00:15:00

BUFFER POOL BP0
      VP      HP      THRESHOLDS
Allocated Size..... 2000      0      Data Management.....  0
Curr Non-Stealable Bfs  23      0      Sequential Prefetch..  5
% Non-Stealable Buffrs  1.2    0.0    Deferred Write.....  0
Size Changes.....      0      0      Dataset Deferred Wrt.  0

Command ==>
  F1=Help      2=Split      3=End
                                      9=Swap
                                      12=Return
    
```

## Buffer Pool Read/Write History Panel

Each buffer pool history record contains information in four general areas. The third area is Read/Write activity.

The Buffer Pool Read/Write History panel appears when you:

- Select View Bar Option 3 (Read/Write).
- Press PF6 (History) from the BP Read/Write Activity panel, select the desired buffer pool from the Buffer Pool History List panel, and select View Bar Option 3 (Read/Write).

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight          SE19257          11:15:24
                                DBV3 S018
  1 Exception Counters  2 Thresholds  3 Read/Write  4 Workfiles
R/HSBRDWR          BP Read/Write History
From MM/DD/YY 00:00:00 To MM/DD/YY 00:15:00

BUFFER POOL BP0
READ I/O          WRITE I/O          PREFETCH Reqsts  Pages  I/O
Seq              2              45              2
Datasets Opened  0  Buffer Updates 1275 List         0         0
Migrated DS Opnd 0  Pages Written 83 Dynamic      562        32         1
Getpage Requests 34338 Buffer Upd Eff 15.4
Seq Accs Getpgs  72  Asynch Wrt I/O 25 CACHE PAGE Sync Async  ADMF
% Getpgs From HP 0.0 Synch Writes 3 Reads         0         0
Synchronous Rds  168 Page Wrt Eff 3.0 Writes        0         0
Seq Accs Sync Rd  1
Asynchronous Rds 3  PARALLEL I/O
Getpgs/Sync Read 204.4 Requests          0
Max Streams          0

Command ==>
  F1=Help          2=Split          3=End
                                9=Swap
                                12=Return
  
```

## Buffer Pool Workfiles History Panel

Each buffer pool history record contains information in four general areas. The fourth area is Workfiles activity. This panel displays a DB2 subsystem's buffer pool workfile activity for the interval you selected or specified.

The Buffer Pool Workfiles History panel appears when you:

- Select View Bar Option 4 (Workfiles).
- Press PF6 (History) from the BP Workfiles Activity panel, select the desired buffer pool from the Buffer Pool History List panel, and select View Bar Option 4 (Workfiles).

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight                SE19257                11:16:30
                                      DBV3 S018
  1 Exception Counters  2 Thresholds  3 Read/Write  4 Workfiles
R/HSBWKFL          BP Workfiles History
From MM/DD/YY 00:00:00 To MM/DD/YY 00:15:00
BUFFER POOL BP0
                Maximum Workfiles Allocated           0
                Sort Merge Passes Requested           0
                Sort Workfiles Requested              0
                Destructive Read Pages                0
                Pg Wrt Bypassed - Destructive Rd      0
                Wrkfl Not Created - No Buffer          0
                Sort Wrkfls Denied - No Buffer         0
                Inefficient Sorts - No Buffer          0
                Workfile Prefetch Aborted             0

Command ==>
  F1=Help      2=Split      3=End
                                   9=Swap
                                   12=Return
    
```

## EDM Pool History Panel

This panel displays the average use of the DB2 subsystems EDM pool that occurred during the interval shown in the From/To times. It also displays a histogram of the percentages for each page component in the EDM Pool for that interval, as well as the percentages of requests that are loads.

The EDM Pool History panel appears when you:

- Select View Bar Option 4 (EDM Pool) from within the Subsystem History function.
- Press PF6 (History) from the EDM Pool panel.

The following is a sample of this panel:

Menu Print Tools Help CA-Insight		MATSAA2		13:12:59	
1 Overview 2 Exceptions 3 Buffers 4 EDM Pool 5 Locks 6 Logs 7 More...		DBV6 XE44			
R/HSEDM	EDM Pool History				
From MM/DD/YY 11:30:00 To MM/DD/YY 12:00:00					
EDM Pool	Size	Pages	%of Size	1	3 5 7 9
Full Fail 0	Free.....	1793	98.1	.0...0...0...0...0..	
	DBD.....	31	1.7	=====	
	SKCT.....	2	0.1	=	
	CT.....	0	0.0	=	
	SKPT.....	2	0.1	=	
	PT.....	0	0.0	=	
EDM Data Space	Size	0	0.0	=	
Full Fail 0	Free.....	0	0.0	=	
	Dynamic prep.	0	0.0	=	
Efficiency	Requests	Loads	%Requests		
	DBD.....	31	0.0	=	
	CT.....	4	50.0	=====	
	PT.....	4	50.0	=====	
	Dynamic prep..	5	40.0	=====	
Command ==>					
F1=Help	2=Split	3=End	5=Previous	6=Next	
		9=Swap		12=Return	

## Lock History Panel

This panel displays the average use of the DB2 subsystems EDM pool that occurred during the interval shown in the From/To times.

The Lock History panel appears when you:

- Select View Bar Option 5 (Locks) from within the Subsystem History function.
- Press PF6 (History) from the Locks panel.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 11:22:42
DBV3 S018
1 Overview 2 Exceptions 3 Buffers 4 EDM Pool 5 Locks 6 Logs 7 More...
R/HSLock Lock History
From MM/DD/YY 00:00:00 To MM/DD/YY 00:15:00
      Timeouts..... 0 Lock Escalation - Shr 0
      Deadlocks..... 0 Lock Escalation - Exc 0
      Lock Requests... 36655 Latch Suspensions.... 4
      Unlock Requests. 34883 Lock Suspensions.... 0
      Query Requests.. 0 Other Suspensions.... 0
      Change Requests. 0 Total Suspensions.... 4
      Other Requests.. 0
                                Requests Failures
      Claim 1196 0
      Drain 81 0

Command ==>
F1=Help 2=Split 3=End 5=Previous 6=Next
9=Swap 12=Return
    
```

## Log Activity History Panel

This panel displays the DB2 subsystems log activity that occurred during the interval shown in the From/To times.

The Log Activity History panel appears when you:

- Select View Bar Option 6 (Logs) from within the Subsystem History function.
- Press PF6 (History) from the Log Activity panel.

The following is a sample of this panel:

```

Menu Print Tools Help  CA-Insight          MATSAA2          11:51:20
                                D61D XE44
  1 Overview  2 Exceptions  3 Buffers  4 EDM Pool  5 Locks  6 Logs  7 More...
R/HSLOG          Log Activity - History
From MM/DD/YY 07:30:00 To MM/DD/YY 08:00:00
DB2 CHECKPOINTS.....Taken          0  LOG RBA..... 000003E4357E
READS FROM..... Buffer          0  WRITES..... Nowait          0
                                Active Log          0  Force          449
                                Archive Log          0  ARCHIVE LOG.. Read Allocations          0
CONTROL INTERVALS... Created          4  Write Allocations          0
                                Offloaded          0  CALLS..... Write Active Log          449
DELAYED..... Writes          0  BSDS access          0
                                Reads - Resources          0  LOOK AHEAD TAPE MOUNT Attempts          0
                                Reads - Tape Vol Contention          0  Failures          0
LOG WRITE.....Suspended          449  LOG WRITE...Serial CI Requests          898
                                I/O Requests          906  Scheduled - Write Threshold          0
                                Control Intervals Written          906  Buffers Paged-In          4

Command ==>>>
F1=Help          2=Split          3=End          5=Previous          6=Next
                                9=Swap                                12=Return

```

## Bind and Authorization Check History Panel

This panel displays BIND/REBIND/FREE data, as well as authorization check information, for plans and packages during the selected interval shown in the From/To times.

The Log Activity History panel appears when you:

- Select View Bar Option 7 (More...) from within the Subsystem History function, then select Menu Option 1 (Binds and Authorizations).

You can also enter 7.1 from within the Subsystem History function and press Enter.

- Press PF6 (History) from the Bind/Auth Check panel.

The following is a sample of this panel:

Menu Print Tools Help		CA-Insight		MATSAA2		13:17:47	
						DBV6 XE44	
R/HSBIND	Bind/Auth Check History						
From	MM/DD/YY	11:30:00	To	MM/DD/YY	12:00:00		
	PLAN	PACKAGE		PLAN	PACKAGE	ROUTINE	
Autobind Attempts	0	0	Allocate Attempts	5	4	N/A	
Autobinds	0	0	Allocations	5	4	N/A	
BIND ADD Subcmds	0	0	Invalid Rsrce IDs	0	N/A	N/A	
BIND REPL Subcmds	0	0	Authorization Cks	46	0	N/A	
Test Binds	0	N/A	Success Auth Chks	46	N/A	N/A	
BINDs	0	0	Cache Auth Checks	2	0	0	
REBIND Subcmds	0	0	EXEC PUBLIC Chks	0	0	0	
REBIND Attempts	0	0	Repl Cache Authid	N/A	0	0	
REBINDs	0	0	Repl Cache Entry	N/A	0	0	
FREE Subcommands	0	0	Add Cache Fail	N/A	N/A	0	
FREE Attempts	0	0	Cache Not Used	N/A	N/A	0	
FREEs	0	0	Invalid SELECT Procs		0		
Command ==>							
F1=Help		2=Split		3=End		5=Previous	
				9=Swap		6=Next	
						12=Return	



## Command History Panel

This panel displays counts of the number of DB2 commands that have been issued during the selected time interval. This differs from the topic of seeing the results of the commands entered, which is covered in the “[Viewing Attachments](#)” chapter.

The Commands History panel appears when you:

- Select View Bar Option 7 (More...) from within the Subsystem History function, then select Menu Option 2 (Commands).
- You can also enter 7.2 from within the Subsystem History function and press Enter.

The following is a sample of this panel:

Menu Print Tools Help CA-Insight				MATSAA2	13:18:18
					DBV6 XE44
R/HSCMD	Command History				
From MM/DD/YY 11:30:00 To MM/DD/YY 12:00:00					
	DISPLAY	START	STOP/TERM		
DATABASE	4	0	0	RECOVER BSDS	0
TRACE	0	0	0	MODIFY TRACE	0
RLIMIT	0	0	0	RECOVER INDOUBT	0
UTILITY	0	n/a	0	RESET INDOUBT	0
DDF	n/a	1	0	RESET GENERICLU	0
DB2	n/a	0	0	ARCHIVE LOG	0
THREAD	0	n/a	n/a	CANCEL DDF THREAD	0
LOCATION	0	n/a	n/a		
BUFFERPOOL	0	n/a	n/a	ALTER BUFFERPOOL	0
GRP BUF PL	0	n/a	n/a	ALTER GRP BUF PL	0
ARCHIVE	0	n/a	n/a	SET ARCHIVE	0
PROCEDURE	0	0	0	ALTER UTILITY	0
GROUP	0	n/a	n/a	Unrecognized Cnds	0
FUNCTION	0	0	0		
LOG	0	n/a	n/a	SET LOG	0
Command ==>					
F1=Help		2=Split		3=End	
		9=Swap		5=Previous	
				6=Next	
				12=Return	

## DB2 CPU Times and Agent Services History Panel

This panel displays TCB, SRB, and total CPU times for various DB2 services during the selected interval shown in the From/To times.

The DB2 CPU & Agent Services History panel appears when you:

- Select View Bar Option 7 (More...) from within the Subsystem History function, then select Menu Option 3 (DB2 CPU Times and Agent Services).
- Enter 7.3 from within the Subsystem History function and press Enter.

The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	SE19257	11:39:26
						DBV3 S018
R/HSCPU		DB2 CPU & Agent Services History				
From MM/DD/YY 00:00:00 To MM/DD/YY 00:15:00						
DB2 CPU TIMES						
	Proc	TCB Time	SRB Time	Total CPU		
	Name	HH:MM:SS.TTT	HH:MM:SS.TTT	HH:MM:SS.TTT		
System Services Adr Space	MSTR	1.546	0.628	2.174		
Database Servcs Adr Space	DBM1	13.307	5.283	18.591		
Lock Services Adr Space	IRLM	0.000	0.024	0.024		
Distrib Data Svcs Adr Sp	DIST	0.013	0.003	0.016		
ALLOCATION SERVICES			EXECUTION UNIT SWITCHES			
Physical Suspends	22896		SRB	TCB		
Unavail Resource	0	Sync Unrel	140	23		
Alloc Deadlocks	0	Async Unrel	1	10		
Invalid Resource	0	Sync Rel	281	2671		
Command ==>						
F1=Help	2=Split	3=End	5=Previous	6=Next		
		9=Swap		12=Return		

## Dataset Drain History Panel

This panel displays information related to the effects of deferred data set close processing (drains) during the selected interval shown in the From/To times.

The Dataset Drain History panel appears when you:

- Select View Bar Option 7 (More...) from within the Subsystem History function, then select Menu Option 4 (Dataset Drain).
- Enter 7.4 from within the Subsystem History function and press Enter.
- Press PF6 (History) from the Dataset Drain panel.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight          SE19257          11:41:14
                                                DBV3 S018

R/HSDRAIN      Dataset Drain History
From MM/DD/YY 00:00:00 To MM/DD/YY 00:15:00

                Datasets Currently Open..... 104
                Maximum Datasets Concurrently Open. 104
                Datasets Open, But Not In Use.... 104
                Max Pagesets Available to DRAIN... 104
                Datasets closed by DRAIN..... 0
                Dataset opens bypassed due to DRAIN 510
                Pagesets Converted to Read Only.... 6

Command ==>
F1=Help      2=Split      3=End          5=Previous    6=Next
              9=Swap          12=Return
  
```

## IFI Counts and Data Capture History Panel

This panel displays statistics for the Instrumentation Facility Interface (IFI) as well as Data Capture information from IFCID 185 that was recorded during the selected interval shown in the From/To times.

The IFI Counts and Data Capture History panel appears when you:

- Select View Bar Option 7 (More...) from within the Subsystem History function, then select Menu Option 5 (IFI Counts and Data Capture).
- Enter 7.5 from within the Subsystem History function and press Enter.

A sample panel (which includes data that you would see after scrolling) is shown in the following panel:

```

Menu Print Tools Help CA-Insight          SE19257          11:42:26
                                          DBV3 S018

R/HSIFI          IFI Counts and Data Capture History          Row 1-13 of 48
From MM/DD/YY 00:00:00 To MM/DD/YY 00:15:00

          IFI Abends          0          IFI READA Requests          55
          IFI Unrecognized          0          IFI READS Requests          362
          IFI COMMANDs          0          IFI WRITE Requests          0

Dest Unique  Records  Rcds Not  Buffer  Not  Not  Writer
Seq Nbrs  Written  Written  Errors  Active  Accepted  Failures
SMF 3406 34 0 0 0 0 0
RES 0 0 0 0 0 0 0
GTF 0 0 0 0 0 0 0
SRV 0 0 0 0 0 0 0
SR1 1515521 32248 2 0 2 0 0
SR2 423313 1105 2 0 2 0 0
OP1 22334 626 0 0 0 0 0
OP2 10390 0 0 0 0 0 0
OP3 9822 246 0 0 0 0 0
OP4 5295 246 0 0 0 0 0
OP5 0 0 0 0 0 0 0
OP6 0 0 0 0 0 0 0
OP7 0 0 0 0 0 0 0
OP8 0 0 0 0 0 0 0

IFCID Unique  Records  Rcds Not  Rcds Not  Buffer  Rcds Not
Seq Nbrs  Written  Written  Wanted  Unavail  Collected
1 390 92 1 0 0 0
2 390 136 1 0 0 0
3 2354 128 0 0 0 0
4 55 0 0 0 0 0
5 52 0 0 0 0 0
106 14654 45 0 0 0 0
140 0 0 0 0 0 0
141 0 0 0 0 0 0
142 0 0 0 0 0 0
143 0 0 0 0 0 0
144 0 0 0 0 0 0
145 0 0 0 0 0 0
146 0 0 0 0 0 0
202 217 0 0 0 0 0

:
          DATA CAPTURE
          Log Records Captured          0
          Log Extractions          0
          Data Rows Read          0
          Log Records Read          0
          Data Descriptions Read          0

Command ==>
F1=Help          2=Split          3=End          5=Previous          6=Next
F7=Up          8=Down          9=Swap          12=Return
    
```

The information on this panel is divided into four general areas:

- IFI Information
- Information by Destination
- Information by IFCID
- Data Capture Information

## SQL Counts History Panel

This panel displays counts of SQL statements by type for the entire subsystem during the interval shown in the From/To times.

The SQL Counts History panel appears when you:

- Select View Bar Option 7 (More...) from within the Subsystem History function, then select Menu Option 9 (SQL Counts).
- Enter 7.9 from within the Subsystem History function and press Enter.
- Press PF6 (History) from the SQL Counts panel.

The following is a sample of this panel:

Menu Print Tools Help CA-Insight				MATSAA2		13:49:11 D71A CA31	
R/HSSQL	SQL Counts History						
From MM/DD/YY	11:00:00 To MM/DD/YY		11:30:00				
Total SQL	124						
SELECTS	14	SET SQL ID	0	CREATE	DROP	ALTER	
INSERTS	46	Incr Bind	0	STO GROUP	0	0	0
UPDATES	0	LOCK TABLE	0	DATABASE	0	0	0
DELETES	1	SET HOST VR	0	TABLESPACE	0	0	0
PREPARES	1	COMMENT ON	0	TABLE	0	0	0
FETCHES	41	LABEL ON	0	INDEX	0	0	0
OPEN CSR	11	GRANTS	0	SYNONYM	0	0	
CLOSE CSR	8	REVOKES	0	VIEW	0	0	
DESCRIBES	0	CONN TYPE 1	0	ALIAS	0	0	
DESCR TBL	0	CONN TYPE 2	2	PACKAGE		0	
SQL CALL	0	RELEASE	0	GBL TMP TB	0		
ASSOC LOC	0	SET CONNECT	0	AUX TABLE	0		
ALLOC CSR	0	SET DEGREE	0	TRIGGER	0	0	
HOLD LOC	0	SET RULES	0	FUNCTION	0	0	0
FREE LOC	0	RENAME TBL	0	PROCEDURE	0	0	0
		SET PATH	0	DISTINCT	0	0	
		SET PREC	0				
		DCL GBL TMP	0				
Command ==>							
F1=Help	2=Split	3=End	5=Previous	6=Next	12=Return		
		9=Swap					

## List Prefetch and Parallelism History Panel

This panel displays list prefetch, RID pool, and parallel I/O statistics during the interval shown in the From/To times. This information panel can help you diagnose problems due to multiple index, list prefetch, or RID processing storage failures. A multiple index, list prefetch, or RID processing storage failure results from a shortage of virtual storage in the database services address space (DBM1).

The List Prefetch and Parallel I/O History panel appears when you:

- Select View Bar Option 7 (More...) from within the Subsystem History function, then select Menu Option 7 (List Prefetch and Parallelism).
- Enter 7.7 from within the Subsystem History function and press Enter.
- Press PF6 (History) from the List Prefetch and Parallel I/O panel.

The following is a sample of this panel:

```

Menu Print Tools Help    CA-Insight                MATSAA2                13:56:50
                          D71A CA31

R/HSLPRF          List Pref/Parallelism/LOB Storage History
From MM/DD/YY 11:00:00 To MM/DD/YY 11:30:00

LIST PREFETCH
Number of Times Used      3
Failed - No Storage       0
Failed - RID Limit       0

RID Pool
RID Pool Current Blks    0
RID Failed RDS Limit     0
RID Failed DM Limit     0
RID Failed No Storage    0
RID Failed Processes     0

LOB STORAGE
Max LOB Storage (MB)     0

PARALLELISM
Parallel Groups Executed  0
Groups Executed as Planned 0
Max Degree of Parallel IO 10
Groups w/ Reduced Degree  0
Groups Failed - Cursor   0
Groups Failed - ESA Sort  0
Groups Failed - Storage/BP 0
Groups Failed - Enclave  0
Grps exec 1 DB2: COORD=NO 0
Grps exec 1 DB2: ISO=RR/RS 0
Number Intended Groups   0
Members Bypassed BP Short 0
Access Path Redone: Config 0
Access Path Redone: BP   0
Grps exec 1 DB2: DclTmpTbl 0

Command ==>>>
F1=Help      2=Split      3=End        5=Previous   6=Next
              9=Swap              12=Return

```

# Remote Locations List History Panel

This panel displays the remote locations in the history file that were active during the interval shown in the From/To times.

The Remote Locations List History panel appears when you:

- Select View Bar Option 7 (More...) from within the Subsystem History function, then select Menu Option 8 (Remote Locations).
- Enter 7.8 from within the Subsystem History function and press Enter.
- Press PF6 (History) from the Remote Location List panel.
- Press PF6 (History) from the Remote Location Detail panel.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 13:23:22
DBV6 XE44

Actions: S=Select for more detail
R/HSRMOTE Remote Location List History

From MM/DD/YY 11:30:00 To MM/DD/YY 12:00:00
DBATS Current Max Conversatns Dealloc 0
Queued 0 Active 1 1 Warm Start Connects 0
Max Total 0 Inactive 0 0 Cold Start Connects 0
Queued Type 2 Inactive Type 2 0 0 Resynch Attempts 0
Inact RcvReq 0 Queued Type 2 0 0 Resynch Connections 0
Max Type1 Lmt 0 Actv DBAT slots 0 0 Requests Using DBAT 0
Reqs Using Pool Thd 0

Location/ SQL Messages Rows Bytes Commits Aborts
Convrstns Queued Snt/Rcvd Snt/Rcvd Snt/Rcvd Snt/Rcvd Snt/Rcvd Snt/Rcvd
. D420T544 0 4 4 3 2234 0 0
0 4 4 0 1805 0 0

Command ==>
F1=Help 2=Split 3=End 5=Previous 6=Next
9=Swap 12=Return

```

To see more detail on a remote location, enter S or cursor-select the field for that location and press Enter.

## Remote Location Detail History Panel

This panel displays the detailed information on the remote location that you selected on the previous panel for the interval period shown in the From/To times. This panel appears only when you select a Remote Location from the Remote Location List History panel. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 11:54:28
DBV3 S018

R/HSRMTDTL Remote Location Detail History
From MM/DD/YY 00:00:00 To MM/DD/YY 00:15:00

Location GCOIDB2DEVDSN
Requests Queued 0 SQL 2 Received 0
SQL Bound Remote 0 Messages 4 2
Block Mode Switches 0 Blocks 0 0
Rows in Msg Buffer 0 Rows 0 0
Bytes 2558 820
Conversations 2 0
Transactions 2 0
Commits 0 0
Aborts 2 0

Command ==>
F1=Help 2=Split 3=End 12=Return
9=Swap
    
```



## Latch Manager History Panel

This panel displays latch statistics counters maintained by the latch manager during the interval shown in the From/To times. The counters are incremented each time a latch suspend occurs. Typically, latch effects are small in comparison with lock suspensions.

The Latch Manager History panel appears when you:

- Select View Bar Option 7 (More...) from within the Subsystem History function, then select Menu Option 6 (Latches).
- Enter 7.6 from within the Subsystem History function and press Enter.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight          SE19257          11:50:29
                                                DBV3 S018

R/HSLATCH          Latch Manager History          Row 1-17 of 17
From MM/DD/YY 00:00:00 To MM/DD/YY 00:15:00

Test Latch 1              0      Synonym Chain 2 Latch 17      0
Unassigned Latch 2        0      Unassigned Latch 18           0
Unassigned Latch 3        0      Log Write Funct Latch 19      0
Unassigned Latch 4        0      Unassigned Latch 20           0
Service Cntl Task Latch 5  0      Log BSDS Access Latch 21      4
Unassigned Latch 6        0      Unassigned Latch 22           0
Unassigned Latch 7        0      Buf Mgr Exclusive Latch 23     1
Unassigned Latch 8        0      Unassigned Latch 24           0
Unassigned Latch 9        0      Data Mgr Hash Tbl Latch 25     0
SSSC Allied Agnt Latch 10  0      Data Manager Latch 26         0
Connect/Disconct Latch 11  0      Addr Space Active Latch 27     0
DB Alloc Control Latch 12  0      Service Queue Latch 28        0
Buffer Mgr SHR Latch 13    0      Addr Space System Latch 29     0
Buffer Mgr EXC Latch 14    89     Trace Table Latch 30          0
Rcvry Mgr St Tbl Latch 15  0      SMP Vector Table Latch 31      0
Synonym Chain 1 Latch 16   0      SMP Header Block Latch 32      0
Command ==>>
  F1=Help          2=Split          3=End              5=Previous        6=Next
  F7=Up            8=Down          9=Swap             12=Return

```

## Storage History Panel

This panel displays information about “short on storage” (SOS) conditions, pool and segment information, as well as the number of GETMAINS and FREEMAINS issued during the interval shown in the From/To times. A short on storage condition is caused by a shortage of virtual storage in the database services (DBM1) address space.

The Storage History panel appears when you:

- Select View Bar Option 7 (More...) from within the Subsystem History function, then select Menu Option 10 (Storage).
- Enter 7.10 from within the Subsystem History function and press Enter.
- Press PF6 (History) from the Storage panel Subsystem Services.

The following is a sample of this panel:

Menu Print Tools Help CA-Insight		SE19257	12:08:03	
			DBV3 S018	
R/HSSTRG	Storage History			
From MM/DD/YY 00:00:00 To MM/DD/YY 00:15:00				
SOS Contractions	0	Pools Created	Fixed	Variable
SOS Bit Set	0	Pools Deallocated	1	30
SOS Abends	0		1	30
Getmains Issued	136	Segments Freed	0	87
Freemains Issued	136	Segments Expanded	2	91
Nonzero Return Codes	0	Segs Contracted	2	4
Command ==>				
F1=Help	2=Split	3=End	5=Previous	6=Next
		9=Swap		12=Return

## Subsystem Services History Panel

Depending on your intentions, queued threads might indicate a problem.

This panel appears when you:

- Select View Bar Option 7 (More...) from within the Subsystem History function, then select Menu Option 11 (Subsystem Services).
- Enter 7.11 from within the Subsystem History function and press Enter.
- Press PF6 (History) from the Subsystem Services panel.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight          SE19257          12:09:16
                                                DBV3 S018

R/HSSVCS          Subsystem Services History
From MM/DD/YY 00:00:00 To MM/DD/YY 00:15:00

Identify..... 13      Single Phase Commit      91
Signon.....    0      Read Only Commit...     0
Create Thread..... 32      Commit Phase 1.....    0
Create Thread Queued 0      Commit Phase 2.....    0
Thread Terminate... 45      Agent Indoubt.....     0
Thread Terminate EOT 0      Indoubt Resolved...    0
Thread Terminate EOM 0      Abort.....              7
                                                DSN3EXIT Call.....     1
                                                SSI Call.....          13

Command ==>
F1=Help      2=Split      3=End      5=Previous  6=Next
              9=Swap              12=Return

```

## Group Buffer Pool List for this DB2 Panel

This panel shows which group buffer pools are used by the DB2 you are monitoring during the indicated interval. To access this panel, select option **12** (Group Buffer Pool) from the Additional System Statistics Displays Menu. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight GINJ001 18:39:51
DB2E HP92

R/HSGBUFL Group BP History List This DB2
From MM/DD/YY 15:30:00 To MM/DD/YY 15:45:00
  Rds Data Rds No Data Hit Pages Rd Fail Wr Fail Unavail Unavail
  Pool Returned Returned Ratio Written Storage Storage Wr Eng C/O Eng
-----
. GBP0 0 4 0 66 0 0 0 0

```

Command ==>>>  
 F1=Help 2=Split 3=End 5=Previous 6=Next  
 9=Swap 12=Return

To see more detail for a particular group buffer pool, enter **S** or cursor-select the field for that group buffer pool and press Enter.

## Group Buffer Pool History Detail for this DB2

Starting with DB2 version 6 there are two panels for group buffer pool detail to show activity to both the primary and secondary group buffer pool. For DB2 subsystems prior to DB2 version 6, there is only one display for the primary group buffer pool. These panels show detail group buffer pool utilization.

This panel appears only when you select a group buffer pool from the Group Buffer History List for this DB2 panel. It shows information about how this DB2 utilized the primary group buffer pool you selected from the list panel. The following is a sample of this panel:

Menu Print Tools Help		CA-Insight		MATSAA2		12:17:55		
						D61D XE44		
1 Primary		2 Secondary						
R/HSGBUFD Group BP History Detail This DB2								
From MM/DD/YY 11:30:00 To MM/DD/YY 12:00:00								
GROUP BUFFER POOL GBP0								
READS								
Hit Ratio	0.571	Buf Inv	Pg Gone	Async	Total	STORAGE FAILURES		
Data Returned		6	2	0	8	Reads	0	
Data Not Returned		2	4	0	6	Writes	0	
Storage Stats		135	Changed Pages		0	CASTOUT		
Clean Pages		0	Castout Class		11	Class	0	
Castout Stats		0	Directory Info		0	Grp BP	0	
						Pages	3	
WRITES								
Chgd Pgs	Cln Pgs	Total	OTHER			UNAVAIL ENGINES		
Sync	7	0	7	Checkpts	0	Castout	0	
Async	1	0	1	Rebuilds	0	Write	0	
Total	8	0	8	Del Pset	11			
				CrossInv	0			
				IXLCACHE Req	0			
Command ==>								
F1=Help	2=Split	3=End	9=Swap					12=Return

The following panel shows information on how this DB2 utilized the secondary group buffer pool you selected from the list panel.

```

Menu Print Tools Help CA-Insight MATSAA2 12:19:44
                                D61D XE44
  1 Primary 2 Secondary
R/HSGBUFS      Group BP History Detail This DB2
From MM/DD/YY 11:30:00 To MM/DD/YY 12:00:00
GROUP BUFFER POOL GBP0

Changed page write requests          0
Changed page write failed - storage  0
Suspended write completion checks    0
Delete page list requests (castout)  0
Delete page requests (orphaned ent)  0
Read castout statistics               0
Async IXLCACHE requests              0

Command ==>>
  F1=Help      2=Split      3=End      12=Return
                9=Swap
    
```

## Global Locks History Panel

This panel shows statistics relating to data sharing environments. To access this panel, select option **13** (Global Locks) from the Additional System Statistics Displays Menu. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight GINJ001 18:53:47
                                DB2E HP92
R/HSGLOCK      Global Locks History
From MM/DD/YY 15:30:00 To MM/DD/YY 15:45:00
CONTENTIONS
  False..... 32      Lock.... 113      PROPAGATIONS
  IRLM..... 29      Change.. 16         4
  XES..... 0       Unlock.. 53      1311
                                Denied.. 0         N/A
                                Resource N/A      62
ENGINES
  Max Available... 10
  Unavailable..... 0
NEGOTIATIONS
  Pgset or Part. 1
  Page..... 0
  Other..... 0
  Chg Req Issued 0
NOTIFYS
  Sent..... 131
  Received..... 5

Command ==>>
  F1=Help      2=Split      3=End      5=Previous  6=Next
                9=Swap                                12=Return
    
```

## Dynamic Prepare/Direct Row Access History Panel

The dynamic prepare and direct row access panel shows statistics relating to the use of the dynamic prepare function and direct row access. To access this panel, select option **14** (Dynamic Prepare/Direct Row Access) from the Additional System Statistics Displays Menu. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 13:32:26
D61D XE44

R/HSDYNP Dynamic Prepare/Direct Row Access History
From MM/DD/YY 11:30:00 To MM/DD/YY 12:00:00

DYNAMIC PREPARE                                DIRECT ROW ACCESS
 Stmt found in cache                            0      Number of Times Successful      0
 Stmt not found in cache                        0      Reverted to Using Index         0
 Implicit prepare performed                    0      Reverted to Using TS Scan      0
 Prepare avoided                               0
 Stmts discarded - MAXKEEPD                    0
 Stmts purged - dep. object                    0

Command ==>
  F1=Help          2=Split          3=End          5=Previous    6=Next
                  9=Swap                               12=Return

```

## DB2 Routine Counts History

This panel shows statistics relating to the use of DB2 routines including stored procedures, user defined functions, and triggers. To access this panel, select option **15** (DB2 Routine Counts) from the Additional System Statistics Displays Menu. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 13:34:28
D61D XE44

R/HSRTN DB2 Routine Counts History
From MM/DD/YY 11:30:00 To MM/DD/YY 12:00:00

          STORED   USER DEFINED
          PROCEDURES FUNCTIONS      TRIGGERS
Executions      0         0      Statement Triggers Activated  0
Abends          0         0      Row Triggers Activated        0
Timeouts        0         0      SQL Errors During Execution   0
Rejects         0         0

Maximum Cascading Level (all types)      0

Command ==>
  F1=Help          2=Split          3=End          5=Previous    6=Next
                  9=Swap                               12=Return

```

## Viewing Summarized Historical Data

This section describes the series of panels that display summarized subsystem historical data. Summarized means that the information is for only the specified interval, which you must enter on the Subsystem History Selection panel. Press PF6 to display the first summarized data panel.

You **cannot** get to summarized subsystem historical data from any current subsystem statistic panel.

The time period being summarized is shown on every panel in the From/To fields.

### System Overview History Summary Panel

This panel displays a high-level view of the subsystem performance, summarized for the selected interval.

The System Overview History Summary panel appears when you:

- Choose to view summarized subsystem history data.
- Select View Bar Option 1 (Overview) from within the summarized Subsystem History function.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 10:05:45
D51J HP92
 1 Overview 2 Buffer Pool 3 EDM Pool 4 Locks 5 Logs 6 More...

R/HSUSNAP System Overview History Summary
From MM/DD/YY 00:00:03 To MM/DD/YY 09:30:01

ADDRESS SPACE CPU BUFFERS EDM POOL
DBAS 15.35 Warnings 0 Free Pg 3402 % Total 99.5
SSAS 3:50.10 Act Pools 1 DBD Lds 0 % Rqsts 0.0
IRLM 1:08.63 %NStl Pgs 0.0 CT Lds 1 % Rqsts 100.0
DIST 1.10 Getpages 72 PT Lds 1 % Rqsts 100.0
Sync Rds 36 Dyn Ins 0 % Rqsts 0.0
Read Eff 2.0

THREADS
Created 1 Buf Updts 10 LOCKING LOGGING
Terminated 0 Pg Writes 3 Suspend 160 Dlyd Wrts 0
Aborts 0 Write I/O 3 Escalate 0 Arch Read 0
Commits 1 Timeout 0 Min/Ckpt 569
Deadlock 0 Warnings 0

RID POOL SQL DATA SHR STORED PROCS
Failures 0 Dynamic 2 Group DB2V5192 CALLS 0
In+Up+Dl 0 Member D51J Fails 0
Open+Sel 0

Command ==>
F1=Help 2=Split 3=End 9=Swap 12=Return
    
```



## Buffer Pools

This section describes the series of panels that display detailed buffer pool data.

### Buffer Pool History List Summary Panel

This panel displays a scrollable list of the buffer pools maintained in the history file for this interval. An item count (Item n-n of n) indicates the number of buffer pools that were in use during the interval.

To access this panel, select View Bar Option **2** (Buffer Pool) from within the summarized Subsystem History function. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight          SE19257          12:15:27
          1 Overview 2 Buffer Pool 3 EDM Pool 4 Locks 5 Logs 6 More...
          DBV3 S018
Actions: S=Select for more detail
R/HSUBUFL          Buffer Pool History List Summary          Item 1-9 of 10
From MM/DD/YY 00:00:00 To MM/DD/YY 11:00:00
Pool      VPool %Non-  HPool %ESA   Sync      %Getpgs Buffer
          Size Steal  Size Backd Warn  Getpgs Rd I/O Rd Eff From HP  Updts
-----
. BP0      2000  0.0    0  0.0  168 1006416   188 5353.3   0.0 1281
. BP1      2000  0.0    0  0.0  10K  20305   10481  1.9   0.0  50
. BP10     400   0.0    0  0.0  29  30559    57 536.1   0.0  132
. BP2      100   0.0    50  0.0   3   161     10  16.1   0.0   2
. BP20     1000 12.5    0  0.0   0    84     0  ***** 0.0  150
. BP3      100   0.0    0  0.0   4   963     23 41.9   0.0  10
. BP4      100   0.0    0  0.0   7  1950     28 69.6   0.0  25
. BP5      100   0.0    0  0.0  190   710     229  3.1   0.0  451
-----
Command ==>
F1=Help      2=Split      3=End
F7=Up        8=Down      9=Swap      10=Left     11=Right    12=Return

```

Use the PF11 key to see additional information beyond the view of the original panel. To see more detail for a particular buffer pool, enter **S** or cursor-select the field for that buffer pool and press Enter.

## BP Exception Counter History Summary Panel

Each buffer pool history record contains information in four general areas. The first is Exception Counters. This panel shows the DB2 subsystem's summarized buffer pool exception counters during the interval you specified. The purpose of this panel is to provide an overview of the exception counters so that you can easily see if there has been significant buffer pool exception activity that might need to be addressed.

The Buffer Pool Exception Counter History Summary panel appears when you:

- Initially select a buffer pool from the Buffer Pool History List Summary panel.
- Select View Bar Option 1 (Exception Counters) from within this function.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight          SE19257          12:16:52
                                      DBV3 S018
  1 Exception Counters  2 Thresholds  3 Read/Write  4 Workfiles
R/HSUBXCPT      BP Exception Counter History Summary      Row 1-15 of 15
From MM/DD/YY 00:00:00 To MM/DD/YY 11:00:00

BUFFER POOL BP0
                VP      HP      Data Management.....      Count
Allocated Size..... 2000      0      Seq Prefetch Disabled... 166
Curr Non-Stealable Bfs      0      0      Buffer Pool Full.....      0
% Non-Stealable Buffrs      0.0      0.0      Expansion Failures.....      0
                Read  Write DFHSM Recall Timeouts.....      0
I/Os with Paging..... 955      40      Workfile Prefetch Aborted.....      0
Unavailable I/O Engine.      0      0      Sync Reads for Sequential Access      2
Non-ADMF HP Pg Failures      0      0      Conditional Getpage Failures...      0
ADMF HP Page Failures..      0      0      Parallel I/O Degrees Reduced...      0
Wrkfl Not Created - No Buffer..      0      0      Reduced Degree Parallel I/Os...      0
Sort Wrkfls Denied - No Buffer..      0      0      Average Degree Reduction.....      0.0
Inefficient Sorts - No Buffer..      0      0      Parallel Quantity Reduced to 1/2      0
                                      Parallel Quantity Reduced to 1/4      0

Command ==>
  F1=Help      2=Split      3=End
  F7=Up        8=Down      9=Swap
                                      12=Return
    
```

## BP Thresholds History Summary Panel

Each buffer pool history record contains information in four general areas. The second area is Thresholds. To access this panel, select View Bar Option 2 (Thresholds) from within this function. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight                SE19257                12:19:30
                                                DBV3 S018
      1 Exception Counters  2 Thresholds  3 Read/Write  4 Workfiles

R/HSUBTHRS      BP Thresholds History Summary

From MM/DD/YY 00:00:00 To MM/DD/YY 11:00:00

BUFFER POOL BP0
      VP      HP      THRESHOLDS
Allocated Size..... 2000      0      Data Management.....      0
Curr Non-Stealable Bfs      0      0      Sequential Prefetch..      166
% Non-Stealable Buffrs  0.0      0.0      Deferred Write.....      0
Size Changes.....      0      0      Dataset Deferred Wrt.      0

Command ==>
F1=Help      2=Split      3=End
                                                9=Swap
                                                12=Return

```

## BP Read/Write History Summary Panel

Each buffer pool history record contains information in four general areas. The third area is Read/Write activity. To access this panel, select View Bar Option 3 (Read/Write) from within this function. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight                SE19257                12:23:02
                                                DBV3 S018
      1 Exception Counters  2 Thresholds  3 Read/Write  4 Workfiles

R/HSUBRDWR      BP Read/Write History Summary

From MM/DD/YY 00:00:00 To MM/DD/YY 11:00:00

BUFFER POOL BP0
READ I/O      WRITE I/O      PREFETCH Reqsts  Pages  I/O
Datasets Opened      0  Buffer Updates 1281 List      2      3      1
Migrated DS Opnd      0  Pages Written 111 Dynamic 17467 92      7
Getpage Requests 1006K Buffer Upd Eff 11.5
Seq Accs Getpgs 1884 Asynch Wrt I/O 33 CACHE PAGE Sync Async ADMF
% Getpgs From HP 0.0 Synch Writes 7 Reads      0      0      0
Synchronous Rds 188 Page Wrt Eff 2.8 Writes      0      0      0
Seq Accs Sync Rd 2
Asynchronous Rds 45 PARALLEL I/O
Getpgs/Sync Read 5353.3 Requests      0
Max Streams      0

Command ==>
F1=Help      2=Split      3=End
                                                9=Swap
                                                12=Return

```

## BP Workfiles History Summary Panel

Each buffer pool history record contains information in four general areas. The fourth area is Workfiles activity. This panel displays a DB2 subsystem's summarized buffer pool workfile activity for the interval you specified.

To access this panel, select View Bar Option 4 (Workfiles) from within this function. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight          SE19257          12:38:28
                                         DBV3 S018
  1 Exception Counters  2 Thresholds  3 Read/Write  4 Workfiles
R/HSUBWKFL          BP Workfiles History Summary
From MM/DD/YY 00:00:00 To MM/DD/YY 11:00:00
BUFFER POOL BP0
      Maximum Workfiles Allocated          0
      Sort Merge Passes Requested          0
      Sort Workfiles Requested             0
      Destructive Read Pages               0
      Pg Wrt Bypassed - Destrctve Rd      0

      Wrkfl Not Created - No Buffer         0
      Sort Wrkfls Denied - No Buffer       0
      Inefficient Sorts - No Buffer        0
      Workfile Prefetch Aborted           0

Command ==>
  F1=Help      2=Split      3=End
                                     9=Swap
                                     12=Return
  
```

## EDM Pool History Summary Panel

This panel displays a histogram of the percentages for each page component in the EDM Pool for that interval, as well as the percentages of requests that are loads.

To access this panel, select View Bar Option **3** (EDM Pool) from within the summarized Subsystem History function. The following is a sample of this panel:

Menu Print Tools Help CA-Insight		MATSAA2		13:38:01	
		D61D XE44			
1 Overview 2 Buffer Pool 3 EDM Pool 4 Locks 5 Logs 6 More...					
R/HSUEDM		EDM Pool History Summary			
From MM/DD/YY 11:30:00 To MM/DD/YY 13:00:00					
EDM Pool	Size	Pages	%of Size	1	3 5 7 9
Full Fail 0	Free.....	3703	99.3	.0..0..0..0..0..0..	
	DBD.....	21	0.6	=====	
	SKCT.....	1	0.0	=	
	CT.....	1	0.0	=	
	SKPT.....	1	0.0	=	
	PT.....	1	0.0	=	
EDM Data Space	Size	0	0.0	=	
Full Fail 0	Free.....	0	0.0	=	
	Dynamic prep.	0	0.0	=	
Efficiency	Requests	Loads	%Requests		
	DBD.....	0	0.0	=	
	CT.....	0	0.0	=	
	PT.....	0	0.0	=	
	Dynamic prep..	0	0.0	=	
Command ==>					
F1=Help		2=Split	3=End	9=Swap	
				12=Return	

## Lock History Summary Panel

This panel displays the summarized lock manager activity that occurred during the interval shown in the From/To times.

To access this panel, select View Bar Option 4 (Locks) from within the summarized Subsystem History function. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 13:02:04
DBV3 S018
  1 Overview  2 Buffer Pool  3 EDM Pool  4 Locks  5 Logs  6 More...
R/HSULOCK      Lock History Summary
From MM/DD/YY 00:00:00 To MM/DD/YY 11:00:00

Timeouts.....      0      Lock Escalation - Shr      0
Deadlocks.....      0      Lock Escalation - Exc      0

Lock Requests... 1088412      Latch Suspensions....    13
Unlock Requests. 1092470      Lock Suspensions.....    0
Query Requests..      0      Other Suspensions....    0
Change Requests.      0      Total Suspensions....    13
Other Requests..      0

                                Requests Failures
                                Claim      3059      0
                                Drain       88      0

Command ==>
F1=Help      2=Split      3=End
                                9=Swap
                                12=Return
    
```

## Log Activity - History Summary Panel

This panel displays the summarized DB2 subsystems Log activity that occurred during the interval shown in the From/To times.

To access this panel, select View Bar Option 5 (Logs) from within the summarized Subsystem History function. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 11:49:35
                                D61D XE44
  1 Overview  2 Buffer Pool  3 EDM Pool  4 Locks  5 Logs  6 More...

R/HSULOG          Log Activity - History Summary
From MM/DD/YY 00:30:00 To MM/DD/YY 11:30:00

DB2 CHECKPOINTS.....Taken          0  LOG RBA..... 000003E60792
READS FROM..... Buffer              0  WRITES..... Nowait          0
                                Active Log          0  Force          9855
                                Archive Log          0  ARCHIVE LOG.. Read Allocations  0
CONTROL INTERVALS... Created        92  Write Allocations          0
                                Offloaded         0  CALLS..... Write Active Log  9855
                                Writes              0  BSDS access          2
DELAYED..... Reads - Resources      0  LOOK AHEAD TAPE MOUNT Attempts  0
                                Reads - Tape Vol Contention  0  Failures           0
LOG WRITE..... Suspended            9855 LOG WRITE...Serial CI Requests 19710
                                I/O Requests    19894  Scheduled - Write Threshold    0
                                Control Intervals Written 19894  Buffers Paged-In          88

Command ==>>
F1=Help      2=Split      3=End
                                9=Swap
                                12=Return
    
```

## Bind/Auth Check History Summary Panel

This panel displays summarized BIND/REBIND/FREE data, as well as authorization check information, for plans and packages during the interval shown in the From/To times.

The Bind/ Auth Check History Summary panel displays when you:

- Select View Bar Option 6 (More...) from within the summarized Subsystem History function, then select Menu Option 1 (Binds and Authorizations).
- Enter 6.1 from within the summarized Subsystem History function and press Enter.

The following is a sample of this panel:

Menu Print Tools Help		CA-Insight		MATSAA2		13:40:07	
R/HSUBIND		Bind/Auth Check History Summary				D61D XE44	
From MM/DD/YY 11:30:00		To MM/DD/YY 13:00:00					
		PLAN	PACKAGE		PLAN	PACKAGE	ROUTINE
Autobind Attempts	0	0	Allocate Attempts	0	0	N/A	N/A
Autobinds	0	0	Allocations	0	0	N/A	N/A
BIND ADD Subcmds	0	0	Invalid Rsrce IDs	0	N/A	N/A	N/A
BIND REPL Subcmds	0	0	Authorization Cks	0	0	N/A	N/A
Test Binds	0	N/A	Success Auth Chks	0	N/A	N/A	N/A
BINDs	0	0	Cache Auth Checks	0	0	0	0
REBIND Subcmds	0	0	EXEC PUBLIC Chks	0	0	0	0
REBIND Attempts	0	0	Repl Cache Authid	N/A	0	0	0
REBINDs	0	0	Repl Cache Entry	N/A	0	0	0
FREE Subcommands	0	0	Add Cache Fail	N/A	N/A	0	0
FREE Attempts	0	0	Cache Not Used	N/A	N/A	0	0
FREEs	0	0	Invalid SELECT Procs		0		
Command ==>		2=Split		3=End		12=Return	
F1=Help				9=Swap			



## Command History Summary Panel

This panel displays summarized counts of the number of DB2 commands that have been issued during the time interval. This differs from seeing the results of the commands entered, which is covered in the [“Viewing Attachments”](#) chapter.

The Command History Summary panel appears when you:

- Select View Bar Option 6 (More...) from within the summarized Subsystem History function, then select Menu Option 2 (Commands).
- Enter 6.2 from within the summarized Subsystem History function and press Enter.

The following is a sample of this panel:

Menu Print Tools Help CA-Insight				MATSAA2	13:40:39
					D61D XE44
R/HSUCMD	Command History Summary				
From MM/DD/YY 11:30:00 To MM/DD/YY 13:00:00					
	DISPLAY	START	STOP/TERM		
DATABASE	0	0	0	RECOVER BSDS	0
TRACE	0	0	0	MODIFY TRACE	0
RLIMIT	0	0	0	RECOVER INDOUBT	0
UTILITY	0	n/a	0	RESET INDOUBT	0
DDF	n/a	0	0	RESET GENERICLU	0
DB2	n/a	0	0	ARCHIVE LOG	0
THREAD	0	n/a	n/a	CANCEL DDF THREAD	0
LOCATION	0	n/a	n/a		
BUFFERPOOL	0	n/a	n/a	ALTER BUFFERPOOL	0
GRP BUF PL	0	n/a	n/a	ALTER GRP BUF PL	0
ARCHIVE	0	n/a	n/a	SET ARCHIVE	0
PROCEDURE	0	0	0	ALTER UTILITY	0
GROUP	0	n/a	n/a	Unrecognized Cmds	0
FUNCTION	0	0	0		
LOG	0	n/a	n/a	SET LOG	0
Command ==>					
F1=Help	2=Split	3=End	9=Swap	12=Return	

## DB2 CPU Times & Agent Services History Summary Panel

This panel displays summarized TCB, SRB, and total CPU times for various DB2 services during the interval shown in the From/To times.

The DB2 CPU & Agent Services History Summary panel appears when you:

- Select View Bar Option 6 (More...) from within the summarized Subsystem History function, then select Menu Option 3 (DB2 CPU Times and Agent Services).
- Enter 6.3 from within the summarized Subsystem History function and press Enter.

The following is a sample of this panel:

Menu Print Tools Help CA-Insight		SE19257	13:13:05	
			DBV3 S018	
R/HSUCPU	DB2 CPU & Agt Services History Summary			
From MM/DD/YY 00:00:00 To MM/DD/YY 11:00:00				
DB2 CPU TIMES				
	Proc Name	TCB Time	SRB Time	Total CPU
		HH:MM:SS.TTT	HH:MM:SS.TTT	HH:MM:SS.TTT
System Services Adr Space	MSTR	0.603	0.035	31.016
Database Servcs Adr Space	DBM1	6.018	0.445	5:50.556
Lock Services Adr Space	IRLM	0.000	0.025	1.044
Distrib Data Svcs Adr Sp	DIST	0.013	0.001	0.766
ALLOCATION SERVICES		EXECUTION UNIT SWITCHES		
Physical Suspend	1710		SRB	TCB
Unavail Resource	0	Sync Unrel	138	6
Alloc Deadlocks	0	Async Unrel	0	0
Invalid Resource	0	Sync Rel	18	609
Command ==>				
F1=Help	2=Split	3=End	12=Return	
		9=Swap		

## Dataset Drain History Summary Panel

This panel displays summarized information related to the effects of deferred data set close processing (drains) during the interval shown in the From/To times.

The Dataset Drain History Summary panel appears when you:

- Select View Bar Option 6 (More...) from within the summarized Subsystem History function, then select Menu Option 4 (Dataset Drain).
- Enter 6.4 from within the summarized Subsystem History function and press Enter.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight          SE19257          13:15:11
                                          DBV3 S018

R/HSUDRAIN      Dataset Drain History Summary
From MM/DD/YY 00:00:00 To MM/DD/YY 11:00:00

          Datasets Currently Open..... 104
          Maximum Datasets Concurrently Open. 104
          Datasets Open, But Not In Use.... 104
          Max Pagesets Available to DRAIN.... 104
          Datasets closed by DRAIN..... 0
          Dataset opens bypassed due to DRAIN 2437
          Pagesets Converted to Read Only.... 13

Command ==>
F1=Help      2=Split      3=End
              9=Swap
              12=Return
  
```

## IFI Counts and Data Capture History Summary Panel

This panel displays summarized statistics for the Instrumentation Facility Interface (IFI) as well as Data Capture information from IFCID 185 that was recorded during the interval shown in the From/To times.

The IFI and Data Capture History Summary panel appears when you:

- Select View Bar Option 6 (More...) from within the summarized Subsystem History function, then select Menu Option 5 (IFI Counts and Data Capture).
- Enter 6.5 from within the summarized Subsystem History function and press Enter.

A sample panel (which includes data that you would see after scrolling) is shown in the following sample panel:

```

Menu Print Tools Help CA-Insight SE19257 13:17:14
DBV3 5018

R/HSUIFI IFI and Data Capture History Summary Row 1-48 of 48
From MM/DD/YY 00:00:00 To MM/DD/YY 11:00:00

IFI Abends 0 IFI READA Requests 891
IFI Unrecognized 0 IFI READS Requests 18074
IFI COMMANDs 15 IFI WRITE Requests 0

Dest Unique Records Rcds Not Buffer Not Not Writer
Seq Nbrs Written Written Errors Active Accepted Failures
GTF 0 0 0 0 0 0 0
OP1 1015375 2036 0 0 0 0 0
OP2 473232 587 0 0 0 0 0
OP3 456428 1299 0 0 0 0 0
OP4 257240 1299 0 0 0 0 0
OP5 0 0 0 0 0 0 0
OP6 0 0 0 0 0 0 0
OP7 0 0 0 0 0 0 0
OP8 0 0 0 0 0 0 0
RES 0 0 0 0 0 0 0
SMF 160322 490 0 0 0 0 0
SRV 0 0 0 0 0 0 0
SR1 70991331 114416 192 0 192 0 0
SR2 19958376 58321 139 0 139 0 0

IFCID Unique Records Rcds Not Rcds Not Buffer Rcds Not
Seq Nbrs Written Written Wanted Unavail Collected
1 18440 4680 54 0 0 0
2 18440 6968 54 0 0 0
3 111398 1662 0 0 0 0
4 2754 10 0 0 0 0
5 2602 10 0 0 0 0
106 695965 2290 10 0 0 0
140 0 0 0 0 0 0
141 0 0 0 0 0 0
142 0 0 0 0 0 0
143 0 0 0 0 0 0
144 0 0 0 0 0 0
145 0 0 0 0 0 0
146 0 0 0 0 0 0
202 10087 11 21 0 0 0

DATA CAPTURE
Log Records Captured 0
Log Extractions 0
Data Rows Read 0
Log Records Read 0
Data Descriptions Read 0
Tables Returned 0
Describes Performed 0

Command ==>
F1=Help 2=Split 3=End
F7=Up 8=Down 9=Swap 12=Return
    
```

The information on this panel is divided into four general areas:

- IFI Information
- Information by Destination
- Information by IFCID
- Data Capture Information

# SQL Counts History Summary Panel

This panel displays summarized counts of SQL statements by type for the entire subsystem during the interval shown in the From/To times.

The SQL Counts History Summary panel appears when you:

- Select View Bar Option 6 (More...) from within the summarized Subsystem History function, then select Menu Option 9 (SQL Counts).
- Enter 6.9 from within the summarized Subsystem History function and press Enter.

The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	MATSAA2	13:59:12
						D71A CA31
R/HSUSQL	SQL Counts History Summary					
From MM/DD/YY	00:30:00	To MM/DD/YY	13:30:00			
Total SQL	1102					
		SET SQL ID	24	CREATE	DROP	ALTER
SELECTS	117	Incr Bind	0	STO GROUP	0	0
INSERTS	47	LOCK TABLE	0	DATABASE	0	0
UPDATES	0	SET HOST VR	0	TABLESPACE	0	0
DELETES	1	COMMENT ON	0	TABLE	1	0
PREPARES	14	LABEL ON	0	INDEX	0	0
FETCHES	759	GRANTS	0	SYNONYM	0	0
OPEN CSR	78	REVOKES	0	VIEW	0	0
CLOSE CSR	50	CONN TYPE 1	0	ALIAS	0	0
DESCRIBES	0	CONN TYPE 2	11	PACKAGE	0	0
DESCR TBL	0	RELEASE	0	GBL TMP TB	0	0
SQL CALL	0	SET CONNECT	0	AUX TABLE	0	0
		SET DEGREE	0	TRIGGER	0	0
ASSOC LOC	0	SET RULES	0	FUNCTION	0	0
ALLOC CSR	0	RENAME TBL	0	PROCEDURE	0	0
HOLD LOC	0	SET PATH	0	DISTINCT	0	0
FREE LOC	0	SET PREC	0			
		DCL GBL TMP	0			

## List Prefetch and Parallelism History Summary Panel

This panel displays summarized list prefetch, RID pool, and parallel I/O statistics during the interval shown in the From/To times.

The List Prefetch and Parallelism History Summary panel appears when you:

- Select View Bar Option 6 (More...) from within the summarized Subsystem History function, then select Menu Option 7 (List Prefetch and Parallelism).
- Enter 6.7 from within the summarized Subsystem History function and press Enter.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 14:00:49
D71A CA31

R/HSULPRF List Prf/Parallelism/LOB Stg History Summ
From MM/DD/YY 00:30:00 To MM/DD/YY 13:30:00

LIST PREFETCH
Number of Times Used 11
Failed - No Storage 0
Failed - RID Limit 0

RID Pool
RID Pool Current Blks 0
RID Failed RDS Limit 0
RID Failed DM Limit 0
RID Failed No Storage 0
RID Failed Processes 0

LOB STORAGE
Max LOB Storage (MB) 0

PARALLELISM
Parallel Groups Executed 0
Groups Executed as Planned 0
Max Degree of Parallel IO 10
Groups w/ Reduced Degree 0
Groups Failed - Cursor 0
Groups Failed - ESA Sort 0
Groups Failed - Storage/BP 0
Groups Failed - Enclave 0
Grps exec 1 DB2: COORD=NO 0
Grps exec 1 DB2: ISO=RR/RS 0
Number Intended Groups 0
Members Bypassed BP Short 0
Access Path Redone: Config 0
Access Path Redone: BP 0
Grps exec 1 DB2: Dc1TmpTbl 0

Command ==>
F1=Help 2=Split 3=End 12=Return
9=Swap
    
```

## Remote Location List History Summary Panel

This panel lists the remote locations that were active during the interval shown in the From/To times.

The Remote Location List History Summary panel appears when you:

- Select View Bar Option 6 (More...) from within the summarized Subsystem History function, then select Menu Option 8 (Remote Locations).
- Enter 6.8 from within the summarized Subsystem History function and press Enter.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 13:46:11
DBV6 XE44

Actions: S=Select for more detail
R/HSURMOTE Remote Location List History Summary

From MM/DD/YY 09:30:08 To MM/DD/YY 13:30:00
DBATS
  Queued          0 Active          Current    1    Max    1 Conversatns Dealloc    0
  Max Total      0 Inactive          0    0 Warm Start Connects    0
  Queued Type 2  0 Inactive Type 2    0    0 Cold Start Connects    0
  Inact RcvReq   0 Queued Type 2    0    0 Resynch Attempts       0
  Max Type1 Lmt  0 Actv DBAT slots  0    0 Resynch Connections    0
                                     Requests Using DBAT    0
                                     Reqs Using Pool Thd    0

Location/
Convrstns Queued  SQL Snt/Rcvd  Messages Rows Bytes Commits Aborts
. D420TS44      0      0      8      6      4468      0      0
                0      8      8      0      2987      0      0

Command ==>
F1=Help      2=Split      3=End      12=Return
              9=Swap
    
```

To see more detail on a remote location, enter **S** or cursor-select the selection field (a "." before the location) for that location and press Enter.

## Remote Location Detail History Summary Panel

This panel displays the summarized detail information on the remote location that you selected on the previous panel for the interval shown in the From/To times. This panel appears only when you select a Remote Location from the Remote Location List History Summary panel. The following is a sample of this panel:

Menu Print Tools Help CA-Insight		SE19257	13:41:09	
			DBV3 5018	
R/HSURMTD	Remote Location Detail History Summary		Row 1-22 of 22	
From MM/DD/YY 00:00:00 To MM/DD/YY 11:00:00				
Location GCOIDB2DEVDSN			Sent	Received
Requests Queued	0	SQL	3	2886
SQL Bound Remote	0	Messages	2911	2909
Block Mode Switches	0	Blocks	6	0
Rows in Msg Buffer	480	Rows	2880	0
		Bytes	628619	485297
		Conversations	2	1
		Transactions	2	1
		Commits	1	19
		Aborts	1	0
TWO PHASE COMMIT OPERATIONS			Sent	Received
Remote Site as Coordinator		Prepare Requests	0	0
Threads Indoubt	0	Last Agt Requests	0	0
Commit Operations	1	Commit Requests	0	0
Rollback Operations	0	Backout Requests	0	0
		Forget Responses	0	0
		Commit Responses	0	0
		Backout Responses	0	0
Command ==>				
F1=Help	2=Split	3=End		
F7=Up	8=Down	9=Swap	12=Return	

**Note:** The Two Phase Commit Operations section of the display is only applicable to DB2 V3 subsystems.



## Latch Manager History Summary Panel

This panel displays summarized latch statistics counters maintained by the latch manager during the interval shown in the From/To times. The counters are incremented each time a latch suspend occurs. Typically, latch effects are small in comparison with lock suspensions.

The Latch Manager History Summary panel appears when you:

- Select View Bar Option 6 (More...) from within the summarized Subsystem History function, then select Menu Option 6 (Latches).
- Enter 6.6 from within the summarized Subsystem History function and press Enter.

The following is a sample of this panel:

Menu Print Tools Help CA-Insight		SE19257	13:21:32
			DBV3 S018
R/HSULATCH	Latch Manager History Summary		Row 1-17 of 17
From MM/DD/YY 00:00:00 To MM/DD/YY 11:00:00			
Test Latch 1	0	Synonym Chain 2 Latch 17	0
Unassigned Latch 2	0	Unassigned Latch 18	0
Unassigned Latch 3	0	Log Write Funct Latch 19	0
Unassigned Latch 4	0	Unassigned Latch 20	0
Service Cntl Task Latch 5	0	Log BSDS Access Latch 21	4
Unassigned Latch 6	0	Unassigned Latch 22	0
Unassigned Latch 7	0	Buf Mgr Exclusive Latch 23	6
Unassigned Latch 8	0	Unassigned Latch 24	0
Unassigned Latch 9	0	Data Mgr Hash Tbl Latch 25	2
SSSC Allied Agnt Latch 10	0	Data Manager Latch 26	0
Connect/Disconct Latch 11	0	Addr Space Active Latch 27	0
DB Alloc Control Latch 12	0	Service Queue Latch 28	0
Buffer Mgr SHR Latch 13	0	Addr Space System Latch 29	0
Buffer Mgr EXC Latch 14	1449	Trace Table Latch 30	28
Rcvry Mgr St Tbl Latch 15	0	SMP Vector Table Latch 31	1
Synonym Chain 1 Latch 16	0	SMP Header Block Latch 32	20
Command ==>			
F1=Help	2=Split	3=End	
F7=Up	8=Down	9=Swap	12=Return

## Storage History Summary Panel

This panel displays summarized information about *short on storage* (SOS) conditions, pool and segment information, as well as the number of GETMAINs and FREEMAINs issued during the interval shown in the From/To times. A short on storage condition is caused by a shortage of virtual storage in the database services (DBM1) address space.

The Storage History Summary panel appears when you:

- Select View Bar Option **6** (More...) from within the summarized Subsystem History function, then select Menu Option **10** (Storage).
- Enter **6.10** from within the summarized Subsystem History function and press Enter.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight                SE19257                13:51:10
                                                    DBV3 S018

R/HSUSTRG      Storage History Summary
From MM/DD/YY 00:00:00 To MM/DD/YY 11:00:00

SOS Contractions          0          Pools Created          Fixed Variable
SOS Bit Set                0          Pools Deallocated      7        1054
SOS Abends                 0          Segments Freed          0        1793
Getmains Issued           474        Segments Expanded      71       2056
Freemains Issued          474        Segs Contracted        71        236
Nonzero Return Codes      0

Command ==>>>
F1=Help          2=Split          3=End
                  9=Swap          12=Return
    
```

## Subsystem Services History Summary Panel

This panel displays summarized information about various DB2 subsystem events that occurred during the interval shown in the From/To times.

The Storage History Summary panel appears when you:

- Select View Bar Option **6** (More...) from within the summarized Subsystem History function, then select Menu Option **11** (Subsystem Services).
- Enter **6.11** from within the summarized Subsystem History function and press Enter.

The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	SE19257	13:54:09
						DBV3 S018
R/HSUSVCS          Subsystem Services History Summary						
From MM/DD/YY 00:00:00 To MM/DD/YY 11:00:00						
Identify.....	351	Single Phase Commit	432			
Signon.....	0	Read Only Commit...	0			
Create Thread.....	370	Commit Phase 1.....	0			
Create Thread Queued	0	Commit Phase 2.....	0			
Thread Terminate....	721	Agent Indoubt.....	0			
Thread Terminate EOT	2	Indoubt Resolved...	0			
Thread Terminate EOM	0	Abort.....	9			
		DSN3EXIT Call.....	7			
		SSI Call.....	353			

## Group Buffer Pool List for this DB2 Panel

This panel shows which group buffer pools are used by the DB2 you are monitoring during the indicated interval.

To access this panel, select option **12** (Group Buffer Pool) from the Additional System Statistics Displays Menu. The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	GINJ001	19:21:41
						DB2E HP92
R/HSUGBUFL          Group BP History Summary List This DB2						
From MM/DD/YY 00:00:00 To MM/DD/YY 18:45:00						
Pool	Rds Data Returned	Rds No Data Returned	Hit Ratio	Pages Written	Rd Fail Storage	Wr Fail Unavail Eng C/O Eng
-----	-----	-----	-----	-----	-----	-----
. GBP0	0	4	0	98	0	0

To see more detail for a particular group buffer pool, enter s or cursor-select the field for that group buffer pool and press enter.

## Group Buffer Pool Detail for this DB2 Panel

Starting with DB2 version 6 there are two panels for group buffer pool detail to show activity to both the primary and secondary group buffer pool. For DB2 subsystem prior to DB2 version 6, there is only one display for the primary group buffer pool. These panels show detail group buffer pool utilization.

This panel appears only when you select a group buffer pool from the Group Buffer History List for this DB2 panel. It shows information on how this DB2 utilized the primary group buffer pool you selected from the list panel. The following is a sample of this panel:

```

Menu Print Tools Help  CA-Insight          MATSAA2          12:20:39
                                     D61D XE44
      1 Primary  2 Secondary
R/HSUGBUFD      Group BP History Summary Detail This DB2
From MM/DD/YY 00:30:00 To MM/DD/YY 12:00:00
GROUP BUFFER POOL GBP0
READS
Hit Ratio 0.571  Buf Inv  Pg Gone  Async  Total  STORAGE FAILURES
Data Returned 1      6      2      0      8      Reads      0
Data Not Returned 2      4      0      6      Writes     0

Storage Stats      135  Changed Pages      0  CASTOUT
Clean Pages      0  Castout Class      11  Class      0
Castout Stats      0  Directory Info      0  Grp BP      0
Pages      3

WRITES      Chgd Pgs  Cln Pgs  Total  OTHER
Sync      7      0      7  Checkpts      0  UNAVAIL ENGINES
Async      1      0      1  Rebuilds      0  Castout      0
Total      8      0      8  Del Pset      11  Write      0
CrossInv      0
IXLCACHE Req      0

Command ==>>>
F1=Help      2=Split      3=End      12=Return
9=Swap
    
```

The following panel shows information on how this DB2 utilized the secondary group buffer pool you selected from the list panel:

```
Menu Print Tools Help CA-Insight MATSAA2 12:22:17
D61D XE44
1 Primary 2 Secondary
R/HSUGBUF5 Group BP History Summary Detail This DB2
From MM/DD/YY 00:30:00 To MM/DD/YY 12:00:00
GROUP BUFFER POOL GBP0
Changed page write requests 0
Changed page write failed - storage 0
Suspended write completion checks 0
Delete page list requests (castout) 0
Delete page requests (orphaned ent) 0
Read castout statistics 0
Async IXLCACHE requests 0
```

## Global Locks History Summary Panel

This panel shows statistics relating to data sharing environments. To access this panel, select option 13 (Global Locks) from the Additional System Statistics Displays Menu. The following is a sample of this panel:

```
Menu Print Tools Help CA-Insight GINJ001 19:31:31
DB2E HP92
R/HSUGLOCK Global Locks History Summary
From MM/DD/YY 00:00:00 To MM/DD/YY 18:45:00
CONTENTIONS REQUESTS PROPAGATIONS
False..... 55 Lock.... 164 12866
IRLM..... 72 Change.. 60 15
XES..... 4 UnLock.. 90 12870
Denied.. 0 N/A
ENGINES Resource N/A 132
Max Available... 750
Unavailable..... 0
NEGOTIATIONS
NOTIFYYS Pgset or Part. 3
Sent..... 142 Page..... 0
Received..... 5 Other..... 1
Chg Req Issued 2
```

## Dynamic Prepare and Direct Row Access

This panel shows statistics relating to the use of the dynamic prepare function and direct row access. To access this panel, select option **14** (Dynamic Prepare / Direct Row Access) from the Additional System Statistics Displays Menu. The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	MATSAA2	13:50:55
						DBV6 XE44
R/HSUDYNP      Dyn Prep/Dir Row Access History Summary						
From MM/DD/YY 09:30:08 To MM/DD/YY 13:30:00						
DYNAMIC PREPARE				DIRECT ROW ACCESS		
Stmnt found in cache		1		Number of Times Successful		0
Stmnt not found in cache		5		Reverted to Using Index		0
Implicit prepare performed		0		Reverted to Using TS Scan		0
Prepare avoided		0				
Stmts discarded - MAXKEEPD		0				
Stmts purged - dep. object		0				

## DB2 Routine Counts

This panel shows statistics relating to the use of DB2 routines including stored procedures, user defined functions, and triggers. To access this panel, select option **15** (DB2 Routine Counts) from the Additional System Statistics Displays Menu. The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	MATSAA2	13:51:48
						DBV6 XE44
R/HSURTN      DB2 Routine Counts History Summary						
From MM/DD/YY 09:30:08 To MM/DD/YY 13:30:00						
		STORED	USER DEFINED			
		PROCEDURES	FUNCTIONS	TRIGGERS		
Executions	0	0		Statement Triggers Activated		0
Abends	0	0		Row Triggers Activated		0
Timeouts	0	0		SQL Errors During Execution		0
Rejects	0	0				
Maximum Cascading Level (all types)				0		

# Viewing Attachments

## CICS Connections Panel

This panel shows summarized Resource Control Table (RCT) information for all CICS subsystems with attachments to the DB2 subsystem being monitored. In CICS, the Resource Control Table is used to define the transactions and their associated threads that can be used to access DB2. You can use this panel to determine if a shortage of dedicated threads could be responsible for slowing DB2's processing.

The CICS Connections panel appears when you:

- Select CICS/IMS Attachments from the Initial Menu
- Select View Bar Option 1 (CICS) from within the CICS/IMS Attachments function
- Enter **D CICSCONN** on the command line

The following is a sample of this panel:

Connect/ RCTname	Jobname/ Authid	Max Thrds	Actv %	Thd/ Max Thd	Max Allowed	Indoubt Count	TXID Cnt	Grp Cnt/ Entry Cnt	Purge/ Resignon
. B1ADAS DSNCRCTF	CICS21S B1ADAS	20		1 5.0	20	0	12	0 12	30

If more connections exist than can be displayed on one panel, then the PF7/PF8 scrolling keys activate and display.

To see more detail for a connection, enter **S** or cursor-select the field for that connection and press Enter.

### CICS RCT Entries Panel

This panel lists all transaction definitions in a Resource Control Table (RCT) for a CICS subsystem currently attached to this DB2. Threads are defined as ENTRY or POOL threads.

The CICS RCT Entries panel appears when you:

- Select a CICS Connection from the CICS Connections panel.
- Enter **D CICSTRAN** on the command line.

The following is a sample of this panel:

Menu Print Tools Help		CA-Insight		MATSA02		09:03:54		DBV6 XE44	
R/CICSTRAN		CICS RCT Entries for A44ICJA2						Row 1-29 of 53	
Tran Plan	Auth	THRDM THRDA	Max Prot Thds	Peak Actv Thds % THRDA	Thds Oflw Cnt	Auths Calls	R/O Cmts Commits Aborts	DPMODE ROLLB	TOKEN
DSNC	USID	12	0	1	POOL	1	0	HIGH	NO
	NULL	1		0	0	1	0	NO	
	NULL			0.0			0		
CEPL	USID	12	0	0	WAIT	0	0	HIGH	YES
	NULL	3		0	0	0	0	YES	
	NULL			0.0			0		
D8CS DSN8CC0	USID	12	0	0	ABND	0	0	EQU	YES
	NULL	3		0	0	0	0	NO	
	NULL			0.0			0		
D8C1, D8C2, D8C3									
D8PP DSN8CQ0	USID	12	0	0	WAIT	0	0	HIGH	YES
	NULL	1		0	0	0	0	YES	
	NULL			0.0			0		
D8PS DSN8CP0	USID	12	0	0	WAIT	0	0	HIGH	YES
	NULL	1		0	0	0	0	YES	
	NULL			0.0			0		
D8P* DSN8CH0	USID	12	0	0	WAIT	0	0	HIGH	YES
	NULL	2		0	0	0	0	YES	
	NULL			0.0			0		
SKM SKM8CC0	USID	12	0	0	ABND	0	0	EQU	YES
	NULL	3		0	0	0	0	NO	



## IMS Regions Panel

The IMS Regions panel displays a scrollable list of IMS regions currently attached to this DB2 subsystem.

The IMS Regions panel appears when you:

- Select View Bar Option **2 (IMS)** from within the CICS/IMS Attachments function.
- Enter **D IMSREGN** on the command line.

The following is a sample of this panel:

Menu Print Tools Help CA-Insight										SE19257	14:15:12
_ 1 CICS 2 IMS											DB23 MVS81
Actions: S=Select for more detail											
R/IMSREGN IMS Regions											Item 1-3 of 4
System/ Jobname	V	R	DB2/ Type	Corr ID/ Plan	Rg No/ Class	Tran ID/ Queued	PSB/ LTERM	Regn Accum CPU/IO/DLI			
. SIMS GSW3123	3	1	DB23 CTL	GSW3123	0 0	0 0		13:27.10 3150 0			
. SIMS GSWU41DC	3	1	DB23 MPP	GSWU41DC	243 16	R2TRANID 2	P2PROGNM TERM1	3:12.37 5041 72			
. SIMS GSW41DC	3	1	DB23 MPP	GSW41DC	3 23	R3TRANID 0	P3PROGNM TERM3	9:41.50 4658 104			

If more regions exist than can be displayed on one panel, then the PF7/PF8 scrolling keys activate and display.

To see more detail for a thread currently running in an IMS region, enter **S** or cursor-select the field for that region and press Enter.

## Active Thread Detail Panel

This panel appears when you select an IMS Region. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 14:16:32
_ 1 Detail 2 SQL Text 3 Locks Held 4 Exceptions 5 Remote 6 More...
DB23 MVSB1
R/THRDETL Active Thread Detail
Auth ID IBMUSER Corr ID GSW41DC Plan Conn Type CAF
Created 18:19:16 Isol Level .. Acquire . Release . Commits 0 Aborts 0
-----
Program ..... Sect 0 Stmt # 0 Type ..... Thread Type ALLIED-N
Exceptions Crit 0 Warn 0 Info 0 Status
-----
Times in HH:MM:SS.T Last Page Accessed Page 0000000
Elapsed Time App 45:15:03.8 Max Pg Locks 0 Select 0 Getpage 0
Elapsed Time DB2 1.2 Lock Suspnds 0 Fetch 0 Read I/O 0
CPU Time DB2 0.0 Deadlocks 0 I/U/D 0 Read Eff 0.0
Wait All DB2 I/O 0.0 Escalations 0 Dynamic 0 Pref Reqs 0
Wt All Lock/Ltch 0.0 Timeouts 0 DDL/DCL 0 Buf updts 0
Wait Log 0.0 L Prf No Stg 0 Write I/O 0
DB2 Services 1.1 Avg I/O 0.0000
    
```

See [Active Thread Detail Panel](#) in the “Viewing DB2 Thread Activity” chapter for more information.

# Viewing Messages

## Messages Panel

This section describes the different message views.

### DB2 Messages

This panel displays DB2 WTO messages, which are WTOs written to DB2 tasks or are DSN messages written to user jobs and started tasks. This is the first view displayed when you select Messages from the Initial Menu. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 13:02:49
      1 DB2  2 All  3 Exception  4 Utility  5 DB2 Command  6 DB-Delivery
      DBV3 S018
Messages
Messages
Date (MM/DD) . . MM/DD Time (HH.MM.SS) . . 04.39.55
-----
MM/DD 04.39.55 DBV3MSTR DSN3201I ! ABNORMAL EOT IN PROGRESS FOR USER=CS1HH65
CONNECTION-ID=DB2CALL CORRELATION-ID=CS1HH65$ JOBNAME=CS
TCB=008E1588
MM/DD 04.39.55 DBV3MSTR DSN3201I ! ABNORMAL EOT IN PROGRESS FOR USER=CS1HH65
CONNECTION-ID=DB2CALL CORRELATION-ID=CS1HH65$ JOBNAME=CS
TCB=008E12F8
MM/DD 04.39.55 DBV3MSTR DSN3201I ! ABNORMAL EOT IN PROGRESS FOR USER=CS1HH65
CONNECTION-ID=DB2CALL CORRELATION-ID=CS1HH65$ JOBNAME=CS
TCB=008D5B88
MM/DD 08.35.37 DBV3MSTR DSN3201I ! ABNORMAL EOT IN PROGRESS FOR USER=CS1HH65
CONNECTION-ID=DB2CALL CORRELATION-ID=CS1HH65 JOBNAME=CS
TCB=008EE318

```

## All Messages

This panel displays messages for all types (DB2, Utility, etc.). To access this panel, select View Bar Option 2 (All) on the Messages panel . The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 13:06:20
DBV3 S018
 1 DB2  2 All  3 Exception  4 Utility  5 DB2 Command  6 DB-Delivery

Messages          Messages
Date (MM/DD) . . MM/DD          Time (HH.MM.SS) . . 12.53.04
-----
MM/DD 12.53.04 GSWV42V3 DBV3 - MM/DD/YY 12:53:01 IBMUSER INTERNAL END
MM/DD 12.58.50 GSWV42V3 DBV3 - MM/DD/YY 12:58:43 IBMUSER INTERNAL END
MM/DD 12.58.50 GSWV42V3 DBV3 - MM/DD/YY 12:58:41 IBMUSER INTERNAL ISS
                                     -DISPLAY DATABASE(*) SPACENAM(*) RESTRICT LIMIT
-----
MM/DD 12.58.50 GSWV42V3 DBV3 - MM/DD/YY 12:58:43 IBMUSER INTERNAL ISS
                                     -DISPLAY DATABASE(*) RESTRICT LIMIT(*)
-----
MM/DD 12.58.50 GSWV42V3 DBV3 - MM/DD/YY 12:58:44 IBMUSER INTERNAL END
MM/DD 12.59.05 GSWV42V3 DBV3 - >>> CRIT: HIGH NO. OF TIMES SEQUENTIAL REFE
    
```

## Exception Messages

This panel displays exception messages produced by the Exception Processor. Exception definitions are described in the “[Exceptions](#)” chapter.

To access this panel, select View Bar Option 3 (Exceptions) on the Messages panel. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 13:07:46
DBV3 S018
 1 DB2  2 All  3 Exception  4 Utility  5 DB2 Command  6 DB-Delivery

Messages          Messages
Date (MM/DD) . . MM/DD          Time (HH.MM.SS) . . 11.58.28
-----
MM/DD 11.58.28 GSWV42V3 DBV3 - BEG CRIT: AVERAGE NUMBER OF PAGES WRITTEN PER W
MM/DD 11.58.28 GSWV42V3 DBV3 - BEG CRIT: AVERAGE NUMBER OF UPDATES PER PAGE WR
MM/DD 11.58.28 GSWV42V3 DBV3 - BEG CRIT: AVERAGE NUMBER OF GETPAGE REQUESTS PE
MM/DD 11.58.28 GSWV42V3 DBV3 - BEG WARN: THE RESOURCE LIMIT FACILITY IS INACTI
MM/DD 11.58.28 GSWV42V3 DBV3 - BEG CRIT: HIGH PERCENTAGE OF PACKAGE TABLE REQU
MM/DD 11.58.28 GSWV42V3 DBV3 - BEG CRIT: HIGH PERCENTAGE OF CURSOR TABLE REQUE
MM/DD 11.58.28 GSWV42V3 DBV3 - BEG CRIT: HIGH NUMBER OF TIMES SEQUENTIAL PREFE
MM/DD 12.02.29 GSWV42V3 DBV3 - >>> CRIT: HIGH NUMBER OF TIMES SEQUENTIAL PREFE
MM/DD 12.07.49 GSWV42V3 DBV3 - >>> CRIT: HIGH NUMBER OF TIMES SEQUENTIAL PREFE
MM/DD 12.13.34 GSWV42V3 DBV3 - BEG WARN: DATABASE, ABDBTS02, AND PAGESET, ABTS
MM/DD 12.13.36 GSWV42V3 DBV3 - BEG WARN: DATABASE, ABDBFA , AND PAGESET, ABTSF
MM/DD 12.13.36 GSWV42V3 DBV3 - BEG WARN: DATABASE, ABDBN4IV, AND PAGESET, ABTS
    
```

## Utility Messages

This panel displays messages generated by DB2 utility executions. To access this panel, select View Bar Option 4 (Utility) on the Messages panel. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 13:10:42
      1 DB2  2 All  3 Exception  4 Utility  5 DB2 Command  6 DB-Delivery
      DBV3 S018
Messages
Date (MM/DD) . . MM/DD Time (HH.MM.SS) . . 00.01.54
-----
MM/DD 00.01.54 GSWV42V3 DBV3 - MM/DD/YY 00:01:45 GSWV4A23 GSWTECDB IN
MM/DD 00.01.54 GSWV42V3 DBV3 - MM/DD/YY 00:01:46 GSWV4A23 GSWTECDB IN
MM/DD 00.01.54 GSWV42V3 DBV3 - MM/DD/YY 00:01:47 GSWV4A23 GSWTECDB IN
MM/DD 00.01.54 GSWV42V3 DBV3 - MM/DD/YY 00:01:47 GSWV4A23 00000000 00
MM/DD 00.01.54 GSWV42V3 DBV3 - MM/DD/YY 00:01:48 GSWV4A23 GSWTECDB IN
MM/DD 00.01.54 GSWV42V3 DBV3 - MM/DD/YY 00:01:48 GSWV4A23 GSWTECDB IN
MM/DD 00.01.54 GSWV42V3 DBV3 - MM/DD/YY 00:01:49 GSWV4A23 GSWTECDB IN
MM/DD 00.01.54 GSWV42V3 DBV3 - MM/DD/YY 00:01:49 GSWV4A23 00000000 00
MM/DD 00.01.54 GSWV42V3 DBV3 - MM/DD/YY 00:01:50 GSWV4A23 GSWTECDB IN
MM/DD 00.01.54 GSWV42V3 DBV3 - MM/DD/YY 00:01:50 GSWV4A23 GSWTECDB IN
MM/DD 00.01.54 GSWV42V3 DBV3 - MM/DD/YY 00:01:50 GSWV4A23 00000000 00
MM/DD 00.01.54 GSWV42V3 DBV3 - MM/DD/YY 00:01:52 GSWV4A23 00000000 00

```

## DB2 Command Messages

This panel displays the results of DB2 commands that were issued to the current DB2 subsystem. To access this panel, select View Bar Option 5 (DB2 Command) on the Messages panel. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 13:12:05
      1 DB2  2 All  3 Exception  4 Utility  5 DB2 Command  6 DB-Delivery
      DBV3 S018
Messages
Date (MM/DD) . . MM/DD Time (HH.MM.SS) . . 13.07.44
-----
MM/DD 13.07.44 GSWV42V3
MM/DD 13.07.44 GSWV42V3 DBV3 - MM/DD/YY 13:07:38 DXB151 INTERNAL END
MM/DD 13.08.05 GSWV42V3 DBV3 - MM/DD/YY 13:08:03 IBMUSER INTERNAL ISS
      -DISPLAY DATABASE(*) SPACENAM(*) RESTRICT LIMIT
-----
MM/DD 13.08.16 GSWV42V3 DBV3 - MM/DD/YY 13:08:05 IBMUSER INTERNAL END
MM/DD 13.08.16 GSWV42V3 DBV3 - MM/DD/YY 13:08:05 IBMUSER INTERNAL ISS
      -DISPLAY DATABASE(*) RESTRICT LIMIT(*)
-----
MM/DD 13.08.16 GSWV42V3 DBV3 - MM/DD/YY 13:08:05 IBMUSER INTERNAL END

```

## DB-Delivery Messages

This panel displays messages issued by Computer Associates integrated product, DB-Delivery for DB2, that automates the management and support of DB2 environments. The panel appears when you select View Bar Option 6 (DB-Delivery) on the Messages panel. The following is a sample of this panel:

Menu		Print	Tools	Help	CA-Insight	DD1TB29	13:15:07
_ 1 DB2		2 All	3 Exception	4 Utility	5 DB2 Command	6 DB-Delivery	DBV3 S018
Messages		Messages					
Date (MM DD)	. . MM/DD	Time (HH MM SS) . . 12.29.07					
MM/DD	12.15.49	DD1TB29	DLVYA02	BATC	/CLONPROO/	/ INIT	93334
MM/DD	12.15.54	DD1TB29	DLVYA03	BATC	/CLONPROO/	/ INIT	93334
MM/DD	12.15.59	DD1TB29	DLVYA04	BATC	/CLONPROO/	/ INIT	93334
MM/DD	12.16.09	DD1TB29	DLVYA05	BATC	/CLONPROO/	/ INIT	93334
MM/DD	12.16.14	TROBERD	DLVXX01	ONLN	/TROBERD /	/ INIT	93334
MM/DD	12.16.19	TROBERD	DLVXX02	ONLN	/TROBERD /	/ INIT	93334
MM/DD	12.16.24	TROBERD	DLVXX03	ONLN	/TROBERD /	/ INIT	93334
MM/DD	12.22.24	TROBERD	DLVXX04	ONLN	/TROBERD /	/ INIT	93334
MM/DD	12.27.59	TROBERD	DLVXX05	ONLN	/TROBERD /	/ INIT	93334
MM/DD	12.28.00	TROBERD	DLVXX06	ONLN	/TROBERD /	/ INIT	93334
MM/DD	12.28.06	TROBERD	DLVXX07	ONLN	/TROBERD /	/ INIT	93334
MM/DD	12.28.11	TROBERD	DLVXX08	ONLN	/TROBERD /	/ INIT	93334

## DB2 Commands Panel

Use this panel to issue a DB2 command and view the result. The DB2 Commands Panel appears when you:

- Select Option 1 (Commands...) from the Tools drop-down menu.
- Enter **DB2 -commandsyntax** on the command line.
- Enter **-commandsyntax** on the command line.

A sample panel (showing the results of a command execution) is shown in the following:

```

Menu Print Tools Help      CA-Insight                SE19257                15:51:27
                               DBV3 S018
  1 DB2 Commands  2 MVS Console  3 CA-Insight Commands
DB2CMDS                DB2 Commands                Row 1-6 of 18
DB2 Command                Location GC0IDB2DEVDBV3
====> -display thread(*)
====>
====>
====>

-----

DSNV401I ! DISPLAY THREAD REPORT FOLLOWS -
DSNV402I ! ACTIVE THREADS -
NAME      ST  A   REQ ID          AUTHID  PLAN    ASID
DB2CALL   T    1266  DXB151$3         DXB151
DB2CALL   T    23701  DXB151$3         DXB151  003F
DB2CALL   T         1  DXB151$3         DXB151  003F

```

The upper portion of the panel includes four command entry lines (command input area) and the lower portion displays the results of your command (response area).

Only **one** DB2 command at a time can be entered in the command input area, but it can include as much text as can fit in the amount of enterable space available on the panel. Press Enter to execute the command.

If the result of your command does not fit on one panel, then the PF7/PF8 scrolling keys are activated and displayed (as in the previous sample). In addition, the Row Indicator (Row n-n of n) displays above the Location.

## MVS Console Panel

Use this panel to view the current MVS Master Console display and issue MVS console commands. The MVS Console panel appears when you:

- Select Option 1 (Commands...) from the Tools drop-down menu and select View Bar Option 2 (MVS Console).
- Enter **MVS** *commandsyntax* on the command line.
- Enter **MVS** on the command line to just display the MVS Console.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 15:54:59
      1 DB2 Commands 2 MVS Console 3 CA-Insight Commands DBV3 S018
MVSConsole MVS Console Row 1-12 of 39

          MASTER CONSOLE
DEV# 009 CONID : 01 DEL = RD SEG = 39 CON = N RUNM = 20 RTME = 010
*15.29.00 S018 STC03400 *TRACWARN - JOB DANN01 FLUSHED, DID NOT EXECUTE.
*          VERS=1222.0001
*15.33.02 S018 STC03400 *TRACWARN - JOB DANN01 FLUSHED, DID NOT EXECUTE.
*          VERS=1222.0001
*15.42.53 S018 STC03400 *TRACWARN - JOB DANN01 FLUSHED, DID NOT EXECUTE.
*          VERS=1222.0001
*15.53.21 S018 STC03482 *TRACWARN - JOB DANN01 FLUSHED, DID NOT EXECUTE.
*          VERS=1222.0002
15.54.02 S018 STC08302 OPS1098I >L> 2
15.54.02 S018 STC08302 OPS1098I >F> -
15.54.02 S018 STC08302 OPS1098I >>> JUNK=-
15.54.02 S018 STC08302 OPS1098I *- * 5:ADDRESS 'TSO'

```

MVS console commands can be entered only on the command line, and must be preceded by **MVS**.



## Unicenter CA-Insight Commands Panel

Use this panel to issue (and view the results of) of the **USERS**, **IFI**, and **HISTORY** commands. To access this panel, select Option **1** (Commands...) from the Tools drop-down menu and select View Bar Option **3** (CA-Insight Commands). The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE191257 15:57:36
DBV3 S018
  1 DB2 Commands  2 MVS Console  3 CA-Insight Commands
InsCmds          CA-Insight Commands
Commands: Users, IFI, History
CA-Insight Console Command
===> users
-----
          CA-Insight USERS CONNECTED TO DBV3 DATA COLLECTOR
        USER  ASID  USER  ASID  USER  ASID  USER  ASID
PBOJKOT>  119  JBG2   233  SWASLOF  110

```

The upper portion of the panel includes the CA-Insight Console command entry line and the lower portion displays a scrollable list of the results of your command (response area).

### USERS Command

The **USERS** command displays users attached to the data collector. Users are identified by their TSO Userid or their VTAM LUNAME. The CA-Insight Commands panel appears when you:

- Select Option 1 (Commands...) from the Tools drop-down menu and select View Bar Option 3 (CA-Insight Commands)
- Enter **INS U** on the command line

A typical output of this command is shown in the previous sample panel.

## IFI Command

The IFI command displays data collector-maintained OP and SRV buffer sizes and IFI and IFCID statistics. The CA-Insight Commands panel appears when you:

- Select Option 1 (Commands...) from the Tools drop-down menu and select View Bar Option 3 (CA-Insight Commands)
- Enter **INS I** on the command line

A typical output of this command is shown on the following sample panel:

```

Menu Print Tools Help CA-Insight SE19257 15:59:50
DBV3 S018
  1 DB2 Commands  2 MVS Console  3 CA-Insight Commands
InsCmds          CA-Insight Commands
Commands: Users, IFI, History
CA-Insight Console Command
===> ifi
-----
                IFI STATISTICS FOR DBV3 DATA COLLECTOR
MONSZ  PRVSZ  BY TIME  POSTED  TOTAL  RECORDS  LOST
512K  1024K  490      0      490    2450      0
IFCID  NUMBER  IFCID  NUMBER  IFCID  NUMBER  IFCID  NUMBER
   3     738    4      2      5      1     23     19
  24     28    25     19     44     33     45     33
   90    714    91     715    96      4     105    26
  107    118

```

## HISTORY Command

The HISTORY command displays online history statistics. The Commands panel appears when you:

- Select Option 1 (Commands...) from the Tools drop-down menu and select View Bar Option 3 (CA-Insight Commands)
- Enter **INS H** on the command line

A typical output of this command is shown on the following sample panel:

```

Menu Print Tools Help CA-Insight SE19257 16:02:25
DBV3 S018
  1 DB2 Commands  2 MVS Console  3 CA-Insight Commands
InsCmds          CA-Insight Commands
Commands: Users, IFI, History
CA-Insight Console Command
===> history
-----
DBG40020I MM/DD/YY 16:02:25 DB2SUB=DBV3 STATS INTVL=015, ACCT=FILTER
-----ACCOUNTING----- ---STATISTICS---
RECEIVED  SELECTED  LOST SWITCHES  RETRIEVED SWITCHES
INTERVAL   1         1         0         0         2         0
TOTAL      739       739         0         0         184       1
HSTACCTA IS 27% FULL          HSTSTATB IS 37% FULL

```

## SWITCH Command

The history file SWITCH command can be issued from anywhere in Unicenter CA-Insight. The format of the command is as follows:

- SWITCH ACCT – switches the accounting history file.
- SWITCH STAT – switches the statistics history file.
- SWITCH ALL – switches both history files.

To use this command, you must set the following in your security profile:

HISTORY-SWITCH=YES



# Viewing DB2 Thread Activity

---

## Understanding Threads

A *thread* is a fundamental execution unit for DB2. An active user corresponds to an active thread. A batch job or TSO user is a single thread. In IMS, each message processing region is a thread. CICS has a more complex structure, where many users can serially use the same thread. Unfortunately, when CICS thread reuse is achieved, DB2 might be unaware of any change of user of a thread, so accounting data cannot be written when the user of thread changes.

Application or thread activity has perhaps the greatest impact on DB2 performance. Getting accurate and timely information on individual threads is therefore extremely important. DB2 accounting data provides that information.

Along with system statistics data, the accounting data forms the core of the performance data available to DB2 analysts. Accounting data includes information about the execution of a single DB2 thread. It contains timing information, SQL counts, buffer pool activity, lock activity, DDF data, Resource Limit Facility (RLF) data, IFI (Instrumentation Facility Interface) data, Data Propagation data, and package-specific timing and SQL counts.

A single accounting record does not always correspond to a single transaction. The accounting record does not track individual transactions: it tracks DB2 threads. Because threads can be used by multiple transactions, one accounting record can contain data for more than one transaction. If the transaction is a CICS pool thread, the DB2 thread is terminated when a COMMIT (or ROLLBACK) is issued, causing an accounting record to be written. However, this cannot be the end of the transaction, so one transaction can span multiple accounting records.

## Monitoring Threads Online

With Unicenter CA-Insight, the control block data that DB2 accumulates is available online in the Unicenter CA-Insight THD-STATS record, so you can see the activity totals for active threads. Once the thread terminates, you can view the accounting data online using the Thread History option (detailed in “Viewing DB2 Thread History”). Unicenter CA-Insight manages the DB2 transactions required to gather this information online.

## Thread Destination

Accounting records (Accounting Class 1) are written to SMF as SMF Type 101. Commonly, the accounting trace is automatically started when DB2 starts.

When you start Classes 2 and 3, DB2 starts internal traces to destinations known as SR1 and SR2. The effect is that SMF Type 101 records are larger: that is, each record includes more sections of data. Overhead for Class 2 depends on how much work is being done by the program. An extremely pessimistic estimate for Class 2 might be as much as 25% overhead. More typical measurements are 2-3% for Class 1 and 5-10% for Classes 2 and 3. Overhead for Classes 5, 7, and 8 are unknown at this time.

## Recommendations

Always start Accounting Class1 to SMF, and if in testing mode, start Classes 2 and 3. If you require DB2 CPU and elapsed time, start Class 2. If you also need I/O Wait and Lock Wait times, start Class 3. If you need IFI statistics, start Class 5. If you need Package Accounting Data, start Classes 7 and 8.

## Elapsed Times, CPU Times, and Wait Times

DB2 provides several measures of thread time. These measures differ in the amount of detail provided, and in the amount of overhead needed to provide the data. You control the types of time measurements you see with the Class parameter of the accounting trace. You monitor this information to determine how long the thread is active, how much of that time is spent in DB2, and how much time is spent waiting for DB2 resources.

The following fields allow a breakdown of “transit time” for a given thread. If you see an application that is having problems, this is a good place to check if the problem is too much I/O or Lock contention.

### Class 1 Times (Thread time)

When Class 1 is active, DB2 provides the elapsed and CPU times for the Allied Agent Address Space. These times are also known as Class 1 times.

Class 1 Elapsed time measures the amount of time between the end of thread creation to the beginning of thread termination. For QMF, SPUFI, ISPF, or other types of threads active during an interactive terminal session, this can include significant amounts of “think” time, where the thread is active while the online user responds to prompts. For CICS or IMS threads where thread reuse is occurring, Class 1 elapsed time includes the time the thread is active but waiting for a transaction.

### Class 2 Times (In-DB2 time)

When Accounting Class 2 is active, DB2 collects elapsed and CPU times for the time the thread is *in DB2*, that part of the application program spent in DB2 code. Class 2 times are subsets of Class 1 times.

Class 2 Elapsed time begins with the call to DB2 and ends with the return from DB2 to the application program with an SQLCODE.

Class 2 CPU time measures the CPU time spent in DB2.

## Viewing DB2 Thread Activity

There is a wealth of data available for monitoring DB2 threads. The primary ways to view this data are by viewing Thread History online, by viewing active threads and summary thread reports online, and by activating the DB2 accounting trace and having DB2 write accounting records to SMF for batch reports.

### Focusing a Report

Many of the Active Threads panels use the PF6 (Focus) key. The Focus facility is a filtering mechanism that lets you view only the data you are interested in without changing the characteristics of the active request. The data collector continues to collect information about threads as they complete, but while you are FOCUSed, you only see information about selected threads. Once you have set FOCUS to ON, the FOCUS qualifications are used for all applicable panels until you set FOCUS to OFF.

If FOCUS is available from a panel, the PF6=FOCUS key activates and appears. When you press PF6, the Report Focus panel appears. A sample (with FOCUS ON) is shown in the following:

```

Menu Print Tools Help CA-Insight SE19257 16:38:48
                                DBV3 5018
THRDACTV started by STARTUP with the following qualifications.

Focus                                Report Focus

Status . . . . . : NO                . . Y          Y or N
-----
Plan . . . . . :                      . . D331DYNS
Auth ID . . . . . :                    . . AHB2
Operator ID . . . . . :                 . .
Connection ID . . . . . :                . .
Correlation ID . . . . . :              . .
Location . . . . . :                    . .
Network ID . . . . . :                  . .
LU Name . . . . . :                     . .
    
```

The FOCUS variables are not used until you enter a Y in the field below the Focus column title. Variables are retained from session to session.

Focus can also be turned on and off from the Active Threads panels by entering **FOCUS ON** or **FOCUS OFF** on the command line and pressing Enter. The Focus Indicator on the fourth line of the panel indicates whether Focus filtering is being used for this report.

Your installation can enforce an Auth ID Focus. If it does, Focus is set to ON and the Focus variables are set accordingly. Auth ID enforcement can force the Auth ID to be your user ID or a leading portion of your user ID.

For those reports that were started with Start Qualifications (all User Started Requests), the Focus panel shows the Start Qualifications currently in place in addition to the Focus variables being used.

## Sorting Active Threads Reports

Many of the Active Threads reports are column-formatted. These reports can be sorted by one column in ascending (default) or descending order. Once you have sorted a report, the report display in that order when you display it again. In TSO, the sort's memory is augmented by the ISPF profile, so that your last sort command is retained for future Unicenter CA-Insight sessions.

For example, if you wanted to sort the Threads Identified to DB2 panel by Connection Type, enter the following command and press Enter.

```
SORT 4
```

The columns are counted from left to right: Connection Type is the fourth column displayed.



If you wanted to sort in descending sequence by Connection Type, enter the following command and press Enter:

```
SORT 4 D
```

Remember that the sort order remains this way until you change it.

To disable the sort, enter the following command and press Enter:

```
SORT OFF
```

The sort is also disabled by any invalid sort parameters.

## Active Threads List

### Threads Identified to DB2 Panel

This panel displays all of the threads currently active, their current status, and how long they have been active. Unicenter CA-Insight uses control block sampling to get the data for this report.

The Threads Identified to DB2 panel appears when you:

- Select Active Threads from the Initial Menu.
- Select the Threads option (5) from the System Snapshot View Bar.
- Enter **D THRDACTV** on the command line.

The following is a sample of this panel:

Auth ID	Corr ID	Plan	Conn Type	Status	DB2 Elap HH:MM:SS	DB2 CPU MM:SS.TT	Crit	Warn	Inf
MATSA02	MATSA02	DSNESPCS	DBAT VTAM		1	0.01	0	0	0
MATSA02	INSU61V6		CAF	ACTIVE-D	0	0.00	0	0	0
MATSA02	INSU61V6		CAF	ACTIVE-A	14	0.83	0	0	0
MATSA02	INSU61V6		CAF	ACTIVE-A	0	0.01	0	0	0

CICS protected threads and IMS WFI transactions should show a large number of commits (shown on this panel as the column labeled Cmt +Ab) as threads are reused. Check CICS thread definitions if this is not happening.

For threads using DB2's CPU Parallelism the parent and active child threads are shown. The parent thread reports activity of the parent plus all terminated child threads.

If there are more items than can fit on one panel, the PF7/PF8 scrolling keys activate and display.

Explanations for each column can be found by placing the cursor on any line within that column and pressing PF1 (Help).

## Unique PF Key Assignment

The PF4 (SortCPU) key is used to sort the thread list by DB2 CPU time in descending order. This is useful if you want to see those active threads that have used the highest amount of CPU time in the system.

This sorting remains in effect until you issue a **SORT OFF** command from the command line.

## Filtering the List of Displayed Threads

You can filter the threads displayed on the Threads Identified to DB2 panel by changing the Variation field (located just below the Item Count on the upper right portion of the panel).

The possible values for this field are:

**ALL**

Displays every thread (default).

**ACTIVE**

Displays every thread except those with a status of IDENTIFY and INACTIVE.

**INACTIVE**

Displays only INACTIVE threads.

**NON-DISTRIB**

Displays only non-distributed agents.

**REQUESTORS**

Displays only requestor agents.

**DBATS**

Displays only server agents.

If the filtering you select has no data to report, then a message panel appears informing you that no threads of that type exist. For example, you can have specified DBATs and there are no DBATs currently running.

## Selecting Threads Using Header Selection Fields

An additional facility to filter which threads display is through the header selection fields indicated by solid underscores under certain of the column headers. Those fields for which filter criteria can be specified are the AuthID, CorrID and Plan. If data sharing is enabled, an additional column for DB2 subsystem ID displays and can be used for the filter criteria. The selection specification allows for wildcards to be entered. The ? is used as a column wildcard, while the \* is used as the rest of the field wildcard. If data sharing is enabled and the DB2 subsystem selection is changed, all DB2 subsystems in the data sharing group which meet the subsystem criteria are searched for threads which meet the rest of the criteria specified. All threads which meet the criteria display with the appropriate DB2 subsystem identified. A data collector enabled for data sharing **must** be active for all members in the group which are to be interrogated.

## Viewing Detailed Thread Information

The underscore to the left of each thread is a selection field you can use to see more detail about a thread. There are two ways to do this:

- Enter **S** or cursor-select the thread and press Enter. The Thread Detail panel appears. Additional displays are available as View Bar options.
- The same Thread Detail View Bar options can also be selected from within the Threads Identified to DB2 panel by entering the equivalent Action Line command option. For example, if you enter **L** next to a thread in the list and press Enter, it has the same effect as entering **S** next to the thread, pressing Enter, selecting View Bar Option 3 (Locks Held), and pressing Enter again.

If you use the second method, and the thread has terminated or there is no data to report, then the Threads Identified to DB2 panel continues to display, and the following error message displays on the Message Line:

```
DBG55028I No data for selected report
```

## Connections

### Active Threads by Connection Panel

This panel shows the distribution of work across DB2 connections. You can see at a glance where the heaviest workload is in your system. The # Threads column indicates how many threads have completed in that connection.

The Active Threads by Connection panel appears when you:

- Select View Bar Option **2** (Connections).
- Enter **D CONNACTV** from the command line.

The following is a sample of this panel:

Menu Print Tools Help CA-Insight SE19257 17:14:12											
1 All 2 Connections 3 Curr Contn 4 Contn Hist 5 Lock Summary 6 More..											
R/CONNACTV Active Threads by Connection FOCUS OFF											
Item 1-1 of 1											
Connection #	Threads	Iden	Actv DB2	Actv Appl	DB2 Elap	DB2 CPU	Crit	Warn	Info	Cmt +Ab	Get Pages
DB2CALL	12	0	1	11	16:32	1:28	0	0	0	0	0

Command ===>  
 F1=Help      2=Split      3=End      9=Swap      10=Left      11=Right      6=Focus      12=Return

You can view an additional column not shown in this sample, Read I/O, by pressing PF11 (scroll right).

## Contentions

### Current Lock Timeouts and Deadlocks Panel

This panel shows the contention information for threads currently involved in any deadlock or timeout.

The Current Lock Timeouts and Deadlocks panel appears when you:

- Select View Bar Option 3 (Curr Contn).
- Enter **D IRLMCONT** from the command line.

The following is a sample of this panel:

Menu		Print	Tools	Help	CA-Insight	MATSA02	13:11:59
1 All	2 Connections	3 Curr Contn	4 Contn Hist	5 Lock Summary	6 More..	DB23 S018	
R/IRLMCONT Current Lock Timeouts and Deadlocks							FOCUS OFF
Row 1-14 of 15							
LOCK HOLDER							
Task ID	Auth	MATSA02	Corr	MATSA02	Plan	DSNESPRR	Conn TSO
Lock	Type	PAGESET	Dur	COMMIT	Mode	X	Dbid 4
Resource	JBG	.JBGTBL01		.PAGE X'000003'			Obid 149
Physical/Logical LOGICAL							
WAITER Time 33.739 Seconds							
Task ID	Auth	MATSAA2	Corr	MATSAA2	Plan	IDB2V51	Conn DB2CALL
Lock	Type	PAGESET	Dur	COMMIT	Mode	IX	Dbid 4
Resource	DSNDB04	.PLAN1G06					Obid 149
Physical/Logical LOGICAL							
WAITER Time 56.612 Seconds							
Task ID	Auth	MATSAA2	Corr	MATSAA2	Plan	DSNESPRR	Conn TSO
Lock	Type	PAGESET	Dur	COMMIT	Mode	X	Dbid 4
Resource	JBG	.JBGTBL01		.PAGE X'000003'			Obid 149
Physical/Logical LOGICAL							

Whenever a deadlock occurs or a user is timed-out while waiting for a lock, you see details organized into two groups of data:

- Task Terminated – Identifies the user that was rolled back.
- Lock Contention – Identifies the type of contention.

In the previous sample panel, the information is Lock Contention oriented. In the following sample, the information is both Task Terminated and Lock Contention.

## Lock Timeouts and Deadlocks Panel

This panel shows the contention information for completed threads involved in deadlocks and timeouts.

The Lock Timeouts and Deadlocks panel appears when you:

- Select View Bar Option 4 (Contn Hist).
- Enter **D LOCKCONT** from the command line.

The following is a sample of this panel:

Menu Print Tools Help CA-Insight SE19257 12:41:53							
1 All 2 Connections 3 Curr Contn 4 Contn Hist 5 Lock Summary 6 More..							
R/LOCKCONT Lock Timeouts and Deadlocks							
Date	Time	Description	Plan	Auth ID	Conn	Corr	Type
MM/DD	12:41:22	TIMEOUT	RADIO23	JBG	BATCH	GSWJBG1	DATAPAGE
MM/DD	12:41:22	TIMEOUT	RADIO23	JBG	BATCH	GSWJBG2	DATAPAGE
		Task Waiting	RADIO23	JBG	BATCH	GSWJBG2	
		Task Holding	RADIO23	JBG	BATCH	GSWJBG3	
		Task Waiting	RADIO23	JBG	BATCH	GSWJBG1	
		Task Holding	RADIO23	JBG	BATCH	GSWJBG3	

# Lock Summary

## Plan Suspension Summary Panel

This panel shows the degree to which plans are waiting on locks. The information displays in ascending order by plan.

The Plan Suspension Summary panel appears when you:

- Select View Bar Option 5 (Lock Summary).
- Enter **D PLANLOCK** from the command line.

The following is a sample of this panel:

```

Menu Print Tools Help  CA-Insight          GINJ001          19:42:01
_  1 All  2 Connections  3 Curr Contn  4 Contn Hist  5 Lock Summary  6 More...
R/PLANLOCK      Plan Suspension Summary
From MM/DD/YY 17:34:38 To MM/DD/YY 19:15:30

```

Plan	-Object-	-Locked-	Scope	P/L	Type	Count	Avg Duration
	BP0		GLOBAL	LOGICAL	SS GPOOL	1	0.0063
	DSNDB06	.DSNADH01	00000001	LOCAL	PHYSICAL INDXPAGE	1	0.0002
	DSNDB06	.DSNAUH01	00000001	LOCAL	PHYSICAL INDXPAGE	1	0.0005
ENNSYNC	DSNDB06	.DSNATX02	00000001	LOCAL	PHYSICAL INDXPAGE	1	0.0014

## Catalog Exclusive Locks Currently Held Panel

This panel shows the current exclusive locks in database DSNDDB06 or in table spaces SPT01, SCT02 or DBD01 in database DSNDDB01. Exclusive locks are important because they can prevent DBDs, SKPTs, or SKCTs from being loaded into the EDM Pool to run a job.

The Catalog Exclusive Locks Currently Held panel appears when you:

- Select View Bar Option 6 (More...) from within the Active Threads by Connection function, and select Menu Option 1 (Catalog Exclusive Locks) from the Thread Menu.
- Enter 6.1 on the command line within the Active Threads by Connection function.
- Enter **D CATLLOCK** from the command line.

The following is a sample of this panel:

Menu		Print	Tools	Help	CA-Insight	SE19257	13:09:30
							DB23 5018
R/CATLLOCK		Catalog Exclusive Locks Currently Held					
Object	Locked		Auth-id	Corr-id	Plan	Lock	
DSNDB01	.DBD01		JBG	JBG	DSNESPCS	IX	
DSNDB01	.DBD01		JBG	JBG	DSNESPCS	X	
DSNDB06	.DSNDXX01	00000001	JBG	JBG	DSNESPCS	X	
DSNDB06	.DSNDXX02	00000001	JBG	JBG	DSNESPCS	X	
DSNDB06	.SYSDBASE	00000001	JBG	JBG	DSNESPCS	IX	
DSNDB06	.SYSDBASE	00000001	JBG	JBG	DSNESPCS	X	
DSNDB06	.SYSDBAUT	00000001	JBG	JBG	DSNESPCS	IX	
DSNDB06	.SYSPKAGE	00000001	JBG	JBG	DSNESPCS	IX	
DSNDB06	.SYSPLAN	00000001	JBG	JBG	DSNESPCS	IX	



## Current Thread Summaries

### Current Threads by Connect and Plan Panel

This panel is the first view for displaying summarized current thread information. This view displays the thread statistics for active threads.

The Current Threads by Connect and Plan panel appears when you:

- Select View Bar Option 1 (By Plan) from within the Current Thread Summaries function.
- Select View Bar Option 6 (More...) from within the Active Threads by Connection function, then select Menu Option 2 (Summary By Plan, Corr-ID, or Auth-ID) from the Thread Menu.
- Enter 6.2 on the command line within the Active Threads by Connection function.
- Enter D PLANACTV on the command line.

The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	SE19257	17:38:23					
1 by Plan 2 by Correlation 3 by Auth ID						DBV3 S018					
R/PLANACTV	Current Threads by Connect and Plan					FOCUS OFF					
						Item 1-3 of 3					
Conn	Plan	# Threads	Iden	Actv DB2	Actv Appl	DB2 Elap HH:MM:SS	DB2 CPU HH:MM:SS	Crit	Warn	Info	Cmt +Ab
DB2CALL		12	0	1	11	16:40	1:28	0	0	0	0
=====	=====	12	0	1	11	16:40	1:28	0	0	0	0
Command ==>											
F1=Help		2=Split		3=End		9=Swap		10=Left		11=Right	
										6=Focus	
										12=Return	

The data is grouped by Plan name within Connection name. The last line displays totals for all threads currently running in this DB2 subsystem.

## Current Threads by Connect and Corr-ID Panel

This panel is the second view for displaying summarized current thread information. This view displays the distribution of work across DB2 correlation IDs within each connection.

The Current Threads by Connect and Corr ID panel appears when you:

- Select View Bar Option **2** (By Correlation) from within the Current Thread Summaries function.
- Select View Bar Option **6** (More...) from within the Active Threads by Connection function, and select Menu Option **2** (Summary By Plan, Corr-ID, or Auth-ID) from the Thread Menu, and then select View Bar Option **2** (By Correlation).
- Enter **6.2.2** on the command line within the Active Threads by Connection function.
- Enter **D CORRACTV** on the command line.

The following is a sample of this panel:

Menu Print Tools Help CA-Insight SE19257 17:34:51											
DBV3 S018											
1 by Plan 2 by Correlation 3 by Auth ID											
R/CORRACTV Current Threads by Connect & Corr ID FOCUS OFF											
Item 1-6 of 6											
Conn	Corr-id	Count	Iden	Actv DB2	Actv Appl	DB2 Elap HH:MM:SS	DB2 CPU HH:MM:SS	Crit	Warn	Info	Cmt +Ab
DB2CALL	DXB151\$3	3	0	0	3	5:36	26	0	0	0	0
DB2CALL	G5WV41V3	3	0	0	3	7:59	49	0	0	0	0
DB2CALL	G5WV42V3	3	0	1	2	2:55	12	0	0	0	0
DB2CALL	WOLF2	3	0	0	3	8	0	0	0	0	0
=====	=====	12	0	1	11	16:39	1:28	0	0	0	0

The data is grouped by Correlation ID within Connection. The last line displays totals for all threads currently running in this DB2 subsystem.

## Current Threads by Connect and Auth-ID Panel

This panel is the third view for displaying summarized current thread information. This view displays the distribution of work across DB2 authorization IDs within each connection.

The Current Threads by Connect and Auth-ID panel appears when you:

- Select View Bar Option 3 (By Auth ID) from within the Current Thread Summaries function.
- Select View Bar Option 6 (More...) from within the Active Threads by Connection function, and select Menu Option 2 (Summary By Plan, Corr-ID, or Auth-ID) from the Thread Menu, and then select View Bar Option 3 (By Auth ID).
- Enter **6.2.3** on the command line within the Active Threads by Connection function.
- Enter **D AUTHACTV** on the command line.

The following is a sample of this panel:

Conn	Auth-id	# Threads	Iden	Actv DB2	Actv Appl	DB2 HH:MM:SS	Elap HH:MM:SS	DB2 CPU HH:MM:SS	Crit	Warn	Info	Cmt +Ab
DB2CALL	DXB151	3	0	0	3	5:36		26	0	0	0	0
DB2CALL	IBMUSER	6	0	1	5	10:56		1:01	0	0	0	0
DB2CALL	WOLF2	3	0	0	3	9		0	0	0	0	0
=====	=====	12	0	1	11	16:41		1:29	0	0	0	0

The data is grouped by Authorization ID within Connection. The last line displays totals for all threads currently running in this DB2 subsystem.

## Thread Detail Panels

The remaining panels explained are the detail panels for the threads shown in the earlier portion in this chapter. If you select a View or Option and the thread is no longer active, you return to the previous level panel.

### Active Thread Detail Panel

This panel shows snapshot information for an active thread.

The Active Thread Detail panel appears when you:

- Select a thread from the Threads Identified to DB2 list panel.
- Select View Bar Option 5 (Threads) from the System Snapshot panel.
- Select View Bar Option 1 (Detail) from within the Thread Detail function.
- Enter **D THRDDETL** from the command line.

If you choose this last method, a scrollable list appears showing you Thread Detail statistics for all currently active threads.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 14:10:19
DBV6 XE44
  1 Detail  2 SQL Text  3 Locks Held  4 Exceptions  5 Remote  6 More...
R/THRDDETL Active Thread Detail
Auth ID MATSA02 Plan DSNEPCPS Corr ID MATSA02
Created 11:42:24 Isol Level .. Acquire . Release . Commits 0 Aborts 0
-----
Program DSNE68 Sect 1 Stmt # 193 Type DYNAMIC Thread Type DBAT
Exceptions Crit 0 Warn 0 Info 0 Status VTAM
-----
Times in HH:MM:SS.T Last Page Accessed DSNDB06 SYSDDF Page 00000001
Elapsed Time App 02:27:55.0 Max Pg Locks 1 Select 0 Getpage 12
Elapsed Time DB2 1.1 Lock Suspnds 0 Fetch 6 Read I/O 0
CPU Time App 0.0 Deadlocks 0 I/U/D 0 Read Eff *****
CPU Time DB2 0.0 Escalations 0 Dynamic 2 Pref Reqs 0
Wait All DB2 I/O 0.0 Timeouts 0 DDL/DCL 0 Buf Updts 0
Wt All Lock/Ltch 0.0 L Prf No Stg 0 Calls 0 BP Warn 0
Wait Log 0.0 Parallel Err 0 CallFail 0 Avg I/O 0.0000
DB2 Services 0.0
Wt Data Shr Msgs 0.0 Thd Token 44
Wt Stor Proc TCB 0.0 Log Write 0
Routine Elapsed 0.0 WLM Name

_ E Explain T SQL Text Program DSNE68 Stmt 193 Collection

```

The first section of this panel identifies the thread. The second line of this section shows the thread's creation time and plan BIND options. It also shows the number of commits and aborts performed. If this is a protected CICS thread or an IMS Wait-for-Input (WFI) transaction, the sum of these two fields equals the number of transactions that have used this thread.

The second section identifies the program (DBRM) and precompiler-generated statement number associated with the current or most recent SQL statement. A tally of exceptions that have been generated by this thread displays on the next line, as well as the thread's current status.

The third section is divided into four columns:

- The first column displays accumulated statistics for the thread.
- The second column displays lock, list prefetch, and query parallelism information.
- The third column displays counts of selected groups of SQL statements issued by this thread.
- The fourth columns display Buffer Pool activity and other miscellaneous information.

The fourth section can optionally appear if the thread has executed an SQL statement. If present, enter **E** to view existing EXPLAIN data for a plan or package, or **T** to retrieve the SQL statement text from the DB2 catalog for the current or most recently executed SQL statement.

## CICS Threads - Additional Detail

If you have selected detail for a CICS thread, the following four lines are added within the first section described previously:

CICS information	Times in seconds: Elapsed	348.699	CPU	0.039
Tran D8CS	Jobname CICS21S		SUSPEND	345.163
Type T	Term L44A	Network	IOWAIT	0.001
Task 499	Token	LU H05L44A	DISPATCH	0.364

These additional lines display information and statistics related to the CICS transaction.

## Currently Executing SQL Statement Panel

This panel shows the text of the dynamic SQL statement that is currently executing (if status is ACTIVE-D or LOCKWAIT), or if the thread is active but not in DB2, the SQL statement that most recently executed (if status is ACTIVE-A). This panel can help you identify SQL statements that perform poorly.

The Currently Executing SQL Statement panel appears when you:

- Select View Bar Option 2 (SQL Text).
- Enter T in the selection field of the desired thread on the Threads Identified to DB2 panel and press Enter.

If the thread has no SQL statement to display, the following message displays on the Message Line of the Threads Identified to DB2 panel:

```
DBG55028I No data for selected report
```

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 14:16:51
DBV6 XE44
 1 Detail 2 SQL Text 3 Locks Held 4 Exceptions 5 Remote 6 More...
R/SQLTEXT Currently Executing SQL Statement for the
Auth ID MATSA02 Plan DSNESPCS Corr ID MATSA02
Derivation IFI Thrd Status VTAM Con TSO
Pkg Location SQL Program DSNE6M8 Iso .. Acq .....
Collection Stmt Number 193 Deg 1 Rel .....
Path "SYSIBM","SYSFUN","SYSPROC","MATSAA02"
SQL RC 0 ASU Limit 0
Stmt Type OPEN Elapsed 0.00 Cur Rlimit Used 0
Stmt Class DYNAMIC DB2 CPU 0.00 Pct Rlimit Used 0.0
Enter E to EXPLAIN the following SQL =====> _
SELECT * FROM TS44DBV6.SYSIBM.LOCATIONS
>>
    
```

From this panel, you can EXPLAIN the text shown in the lower section of the panel. Use of the EXPLAIN mechanism is described in the “[EXPLAIN](#)” chapter.

## Locks Currently Held Panel

This panel displays summary information for locks held for a thread.

The Locks Currently Held panel appears when you:

- Select View Bar Option **3** (Locks Held).
- Enter **L** in the selection field of the desired thread on the Threads Identified to DB2 panel and press Enter.

If the thread has no locks currently holding, the following message displays on the Message Line of the Threads Identified to DB2 panel:

```
DBG55028I No data for selected report
```

The following is a sample of this panel:

Menu Print Tools Help CA-Insight				MATSA02		13:14:34		
						DB41 XAE1		
R/IRLMENQS Locks Currently Held				Item 1-5 of 5				
Auth ID	MATSA02	Plan	DSNESP RR	Corr	ID MATSA02	St	P/L	Count
		Object	Locked	Type	Duration			
		-----			-----			-----
		DSNDB04		DATABASE	COMMIT	S	L	1
		DSNDB04 .PLAN1G06		PAGESET	COMMIT	X	L	1
		DSNDB06 .SYSDBASE		PAGESET	COMMIT	IS	L	1
		DSNESP RR		SKCT	PLAN	S	L	1
		DSNSEP RR	.DSNESM68	SKPT	COMMIT	S	L	1
Command ==>>								
F1=Help		2=Split		3=End		9=Swap		
								12=Return

Information is summarized by Lock Type, Database, Page Set (table space or index), Lock Duration, and Lock Status.

## Exception List Panel

This panel displays the exceptions that were generated by the Exception system for this thread.

The Exception List panel appears when you:

- Select View Bar Option 4 (Exceptions).
- Enter E in the selection field of the desired thread on the Threads Identified to DB2 panel and press Enter.

If the thread has no exceptions, the following message displays on the Message Line of the Threads Identified to DB2 panel:

```
DBG55028I No data for selected report
```

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 19:17:24
      1 Detail 2 SQL Text 3 Locks Held 4 Exceptions 5 Remote 6 More...
      DBV3 S018
Exceptions Exception List Item 1-1 of 1
Auth ID JBG Plan CATQRY Corr ID JBGD
WARN 19:17:11 High avg. "IN DB2" time per unit of work: 14:45.74

```

Exceptions are defined using the Exception system, which is detailed in the “[Exception](#)” chapter. Highlighting or coloring differentiates critical messages from warnings and informational messages.

## Another Way to View Application Exceptions

The Exception Monitor menu option (for details, see [All Exceptions Panel](#) in the “Exceptions” chapter) includes a View Bar option to display current exceptions for all applications (threads) in this MVS system. You can view the thread details for these exceptions by using a “go-to” command, which displays the Active Thread Detail panel (described earlier in this chapter).



## Remote Locations

The processing of threads remotely is known as *distributed processing*. This is accomplished through the Distributed Data Facility (DDF). Distributed processing involves two (or more) DB2 subsystems: one that has a program that needs data and one (or more) that has the data. For this discussion, suppose that you have a program that needs data on a different subsystem. Your SQL statements see the table on the remote (from your point of view) system, but you bind the program on the local (from your point of view) system.

### Identifying Threads

When you run the program, DB2 creates a distributed allied thread for you on the local, or requesting system, and a database access thread on the remote, or serving system. (If your SQL accesses only local data, you would have an “allied thread” on the local system).

DB2 creates additional identifying data for distributed threads, assigning an *instance number* (a hexadecimal number that uniquely identifies this and all other work done in the network on your behalf), and a *logical unit of work ID* for each thread that identifies the threads in the VTAM network. The other identifying fields (authorization ID, plan name, connection name, correlation ID) are the same for the database access thread as for the distributed allied thread (except if authorization ID translation occurs, in which case the database access thread has the new ID). You now have a requesting thread on the local system and a serving (or responding) thread on the remote system.

### How Distributed Processing Works

When the distributed allied thread runs the SQL, DB2 sends the SQL statement from the requesting to the serving system. The serving system executes the SQL statement dynamically and passes rows back to the requesting system. If the data is read-only, DB2 can use “block fetch” to return the rows to the requesting system. Block fetch allows DB2 to send many rows in one message (as many rows as can fit into a 32K block), eliminating unnecessary overhead of transmitting rows one at a time. The requesting system, finally, processes the rows returned from the serving system. At the end of the program, commits are coordinated between the two threads, and when the local thread terminates, the database access thread terminates.

## Distributed Processing Statistics

Distributed processing creates two sets of thread statistics; actually, you have two accounting records, one for the requesting thread written to the trace destination at the local site, and one for the serving thread at the remote site. The requesting thread has multiple sets of statistics that describe the DDF activity, one for each remote location it might have accessed. The database access thread has one set of statistics that describe the DDF activity with its requester site. Use the Instance number to determine the records that identify the same unit of work.

## How Times Are Calculated

For the requester, the Accounting time fields have the same meaning as the non-DDF thread: Class 1 elapsed and CPU times are measured from the end of the create thread to the start of the terminate thread. Class 2 in-DB2 times show the accumulated elapsed times and CPU time. This would include time in-DB2 during remote processing, although during remote processing, DB2 CPU for the requester is very small, because the local DB2 system is not doing any work.

For the server, there is no difference between Class 1 and Class 2 times. All time is considered in-DB2 time. Elapsed time is measured from end of create thread to start of terminate thread, and CPU time is the amount of CPU used by the DDF address space for this thread. SRB time is not applicable for database access threads.

There are three additional times to consider when using DDF:

- First is the amount of time on the requester system spent waiting for remote work to complete. This time begins when the remote SQL is sent, and ends when the first data is returned to the local DB2 for processing.
- Second is the accumulated elapsed time in the server spent processing the SQL, measured from the time the SQL is received to the time the final result is sent. When block fetch is used, this time might be more than the elapsed time described in the previous item. This is because the requester can stop waiting for a response and start processing rows before the server is finished sending.
- Last is the CPU time in the server processing the SQL. This is the amount of DB2 processor time used by the database access thread to process the SQL.

## Thread Remote Location List Panel

This panel displays a list of locations where distributed threads are currently executing.

The Thread Remote Location List panel appears when you:

- Select View Bar Option 5 (Remote).
- Enter **R** in the selection field of the desired thread on the Threads Identified to DB2 panel and press Enter.

If the thread has no remote processing, the Thread Remote Location List panel displays with no locations listed.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 19:30:16
DBV3 S018
 1 Detail 2 SQL Text 3 Locks Held 4 Exceptions 5 Remote 6 More...
Actions: G=Goto Location, S=Select for more detail
R/THRDLOCS
Auth ID JBG Plan CATQRY Corr ID JBGD Connect TSO
Date MM/DD/YY Started 19:19:44 Thd Type ALLIED-D
-----
_ Location GCOIDB2DEVDB23 Sent Recvd Remote Site Coordinator
Requests Queued 0 Messages 5 5 Thds Indoubt 0
SQL 3 0 Rollbacks 0

```

You can perform two actions on the listed locations by entering one of the following entries in the selection field for the desired location:

- Enter **G** to display the Threads Identified to DB2 panel for threads running at the remote location (the Threads Identified to DB2 panel is described on earlier in this chapter).

All the DB2 Thread Activity panels described in this chapter are available for viewing. When you end, you are automatically switched back to the original subsystem you were monitoring.

- Enter **S** to view more detail for the distributed allied thread.

A description of the Thread Remote Location Detail panel follows.

## Thread Remote Location Detail Panel

This panel displays details of the distributed allied thread on the local system. The only way to display this panel is to enter **S** in the selection field for the location listed on the Thread Remote Location List panel (described previously).

The following is a sample of this panel:

Menu		Print	Tools	Help	CA-Insight	MATSAA2	14:51:26
							DBV6 XE44
R/THDRMTD	Thread Remote Location Detail						
Auth ID	MATSA02	Plan	DSNESPCS	Corr ID	MATSA02	Thd Type DBAT	
Date	MM/DD/YY	Started	11:42:24	Instance	B26E00F5468B		
Network	USILDA01	LU Name	A44ID420				
-----							
Location D420TS44							
Requests Queued	0	Sent	Recved	Sent	Recved		
SQL Bound Remote	0	SQL	0	8	Cnvrstns	0	1
Block Mode Switch	0	Messages	8	8	Trans	0	1
Rows in Msg Buffer	0	Blocks	0	0	Commits	0	0
Cnverstn Allocated	0	Rows	6	0	Aborts	0	0
Cnversations Ended	0	Bytes	4468	2987			
Max Conversations	0						
Two Phase Commit Operations							
Times in HH:MM:SS.TTTT		Requests	Sent	Recved	Responses	Sent	Recved
Elpsd Local	0.0000	Prepare	0	0	Forget	0	0
Elpsd Remote	0.0000	Last Agt	0	0	Commit	0	0
CPU Remote	0.0000	Commit	0	0	Backout	0	0
Wait MaxDBAT	0.0000	Backout	0	0			
Operations with Remote Site as Coordinator							
Threads Indoubt	0	Commits	0	Rollbacks	0		

# Thread Locks/Resource Limit Panel

This panel lists the locks held by this active thread.

The Thread Locks/Resource Limit panel appears when you:

- Select Option 1 (Thread Lock Summary/Resource Limit Facility) from the Thread Detail Menu, Option 6 (More...), from the Active Thread Detail panels).
- Enter M in the selection field for a thread on the Threads Identified to DB2 panel and then select Option 1 (Thread Lock Summary/Resource Limit Facility).

The following is a sample of this panel:

Menu Print Tools Help		CA-Insight	SE19257	19:47:02
				DBV3 S018
R/THRDLCK	Thread Locks/Resource Limit			Row 1-14 of 14
Auth ID JBG	Plan CATQRY	Corr ID JBGD		
Timeouts.....	0	Lock Escalation - Shr		0
Deadlocks.....	0	Lock Escalation - Exc		0
Lock Requests..	181811	Cur Page Locks Held..		3
Unlock Requests	181805	Max Page Locks Held..		6
Query Requests.	0	Latch Suspensions....		19
Change Requests	18	Lock Suspensions.....		0
Other Requests.	0	Other Suspensions....		0
		Total Suspensions....		19
Resource Limit Table .....				
ASU Limit.....	0	% of	Requests	Failures
CPU Limit.....	0.000	Limit	Claim	12
Maximum CPU Resource Used....	0.000	0.0	Drain	0
Current/Last CPU Resource Used	0.000	0.0		0
How ASU value was determined..				

When the DB2 Resource Limit Facility (RLF) is active, DB2 can terminate a thread that has used a large amount of CPU time.

## Thread Response Time Panel

This panel displays vital response time indicators for an active thread in a graphical format.

The Thread Response Time panel appears when you:

- Select Option 2 (Response Time Summary) from the Thread Detail Menu (Option 6 More... from the Active Thread Detail panels).
- Enter M in the selection field for a thread on the Threads Identified to DB2 panel and then select Option 2 (Response Time Summary).

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight DXB164 14:20:25
DB2E S074

R/THRDRESP Thread Response Time

Auth ID DXB151 Plan DSNESPRR Corr ID DXB151
Times in HH:MM:SS.TTTT % App % DB2
Elapsed Time App 3:35.8160 Evnts Elpsd Elpsd .0...0...0...0...0..
CPU Time Appl 0.0213 N/A 0.0 |
SRB Time Appl 0.0213 N/A 0.0 |
Elapsed Time DB2 9.2951 479 4.2 |=
CPU Time DB2 0.6671 N/A 7.2 ==
TCB Time DB2 0.6615 N/A 7.1 |=
SRB Time DB2 0.0055 N/A 0.1 |
Wait for DB2 I/O 0.4287 70 4.6 |=
Wait Lock/Latch 0.0028 8 0.0 |
Wait Other Read 0.0029 2 0.0 |
Wait DB2 Service 5.0804 94 54.7 =====
Wt Data Shr Msgs 0.0222 6 0.2 |
Wait Global Cont 1.0081 52 10.8 ==
Other DB2 Time 2.0827 N/A 22.4 =====
    
```

Use the PF7/PF8 keys to scroll up and down to see additional fields. The histogram to right of the statistics provides a “quick glance” status of the various response time indicators. If the values exceed 100%, the bar turns red (on color terminals).

Only events with non-zero data display. As a result, the display might change as new non-zero events are added to the display.

## Thread Buffer Detail Panel

This panel lists buffer pool accesses for the selected thread.

The Thread Buffer Detail panel appears when you:

- Select Option 3 (Buffer Pool) from the Thread Detail Menu (Option 6 More... from the Active Thread Detail panels).
- Enter **M** in the selection field for a thread on the Threads Identified to DB2 panel and then select Option 3 (Buffer Pool).

The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	SE19257	19:55:05
						DBV3 S018
R/THRDBUFD      Thread Buffer Detail						
Auth ID	JBG	Plan	CATQRY	Corr ID	JBGD	
BUFFER POOL	BP0					
Getpages	18434K	Seq Pref	Reqsts	559365	HP Read	Failures    0
Sync Reads	5292	Lst Pref	Reqsts	361	Cond Getpg	Failures    0
Read Eff	3483.3	Dyn Pref	Reqsts	5835	HP Wrt	Requests    0
Bufr Updates	0	Pref Pages	Read	26266	HP OK	Writes      0
Immed Writes	0	Pref Pgs	From HP	0	HP Wrt	Failures    0
Command ==>>>						
F1=Help	2=Split	3=End	9=Swap			12=Return

Information on this panel is grouped by each buffer pool used. Use the PF7/PF8 keys to scroll forward and backward in the list, if applicable.

## Thread SQL Counts Panel

This panel displays counts of SQL statements by type and stored procedure usage for the selected thread.

The Thread SQL Counts panel appears when you:

- Select Option 4 (SQL Counts) from the Thread Detail Menu (Option 6 More... from the Active Thread Detail panels).
- Enter M in the selection field for a thread on the Threads Identified to DB2 panel and then select Option 4 (SQL Counts).

The following is a sample of this panel:

Menu Print Tools Help CA-Insight		MATSAA2		14:17:12		
				D71A CA31		
R/SQLCOUNT	Thread	SQL Counts				
Auth ID MATSA02		Plan DSNESPCS	Corr ID MATSA02			
Total SQL	17	SET SQL ID	0	CREATE	DROP	ALTER
		Incr Bind	0	STO GROUP	0	0
SELECTS	0	LOCK TABLE	0	DATABASE	0	0
INSERTS	0	SET HOST VR	0	TABLESPACE	0	0
UPDATES	0	COMMENT ON	0	TABLE	0	0
DELETES	0	LABEL ON	0	INDEX	0	0
PREPARES	2	GRANTS	0	SYNONYM	0	0
FETCHES	13	REVOKES	0	VIEW	0	0
OPEN CSR	1	CONN TYPE 1	0	ALIAS	0	0
CLOSE CSR	1	CONN TYPE 2	0	PACKAGE		0
DESCRIBES	0	RELEASE	0	GBL TMP TB	0	
DESCR TBL	0	SET CONNECT	0	AUX TABLE	0	
Reopt Var	0	SET DEGREE	0	TRIGGER	0	0
ASSOC LOC	0	SET RULES	0	FUNCTION	0	0
ALLOC CSR	0	SET PATH	0	PROCEDURE	0	0
RENAME TB	0	SET PREC	0	DISTINCT	0	0
HOLD LOC	0	DCL GBL TMP	0			
FREE LOC	0					



## Authorization IDs Panel

This panel lists all of the authorization IDs associated with the selected thread.

The Authorization IDs panel appears when you:

- Select Option 5 (Authorization IDs) from the Thread Detail Menu (Option 6 More... from the Active Thread Detail panels).
- Enter **M** in the selection field for a thread on the Threads Identified to DB2 panel and then select Option 5 (Authorization IDs).

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 19:59:57
DBV3 S018

R/THRDAUTH Authorization IDs
Auth ID JBG Plan CATQRY Corr ID JBGD
Primary Auth ID JBG
Original Auth ID JBG
Current SQL ID JBG
Secondary Auth ID list
-----
DSN310 MVS4 MVS43
    
```

If the list of authorization IDs spans several pages, the PF7/PF8 scrolling keys activate and display.

## List Prefetch/Query Parallelism Panel

This panel displays the list prefetch and query parallelism statistics for the selected thread. The information on this panel can help you diagnose problems with storage failures resulting from a shortage of virtual storage in the database services DBM1 address space.

The List Prefetch/Query Parallelism panel appears when you:

- Select Option 6 (List Prefetch/Query Parallelism) from the Thread Detail Menu (Option 6 More... from the Active Thread Detail panels).
- Enter M in the selection field for a thread on the Threads Identified to DB2 panel and then select Option 6 (List Prefetch/Query Parallelism).

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 14:18:05
D71A CA31

R/THRDLPF List Pref/Parallelism/LOB Stg/Savepoints
Auth ID MATSA02 Plan DSNESPCS Corr ID MATSA02

LIST PREFETCH
Number of Times Used 0
Failed - No Storage 0
Failed - RID Limit 0

LOB STORAGE
Max LOB Storage (KB) 0

SAVEPOINTS
Number of requests 0
Release requests 0
Rollback requests 0

QUERY PARALLELISM
Parallel Groups Executed 0
Groups Executed as Planned 0
Max Degree of Parallelism 0
Groups w/ Reduced Degree 0
Groups Failed - Cursor 0
Groups Failed - ESA Sort 0
Groups Failed - Storage/BP 0
Groups Failed - Enclave 0
Grps exec 1 DB2: COORD=NO 0
Grps exec 1 DB2: ISO=RR/RS 0
Number Intended Groups 0
Members Bypassed BP Short 0
Access Path Redone: Config 0
Access Path Redone: BP 0
Grps exec 1 DB2: DclTmpTbl 0

Command ==>
F1=Help 2=Split 3=End 9=Swap 12=Return
    
```

## MVS Address Spaces

Just as the Threads View Bar option on the System Snapshot panel allows a connection from system to thread information, the MVS Address Spaces option on the Thread Detail Menu allows a connection from thread to system information.

### Address Space Snapshot Panel

This panel displays a summary of the selected thread's address space activity, including swap status, SRM specifications, CPU times, working set sizes, and various timing fields pertaining to that address space.

The Address Space Snapshot panel appears when you:

- Select Option 7 (MVS Address Spaces) from the Thread Detail Menu (Option 6 More... from the Active Thread Detail panels).
- Enter **M** in the selection field for a thread on the Threads Identified to DB2 panel and then select Option 7 (MVS Address Spaces).

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight          SWASLOF          20:04:52
_ 1 Snapshot 2 Storage 3 Enqueues 4 Tasks 5 Programs 6 Files      DBV3 S018

R/MVS          Address Space Snapshot
JOB . . JBGD  ASID . . 0010

AS Type . . . JOB          Perf Group . . . 1      Elapsed 001:04:23.75
Swap Status IN           Perf Grp Prd 1      CPU Time 31:24.91
Working Set 336 K       SRM Domain # 1      TCB Time 31:17.96
Samp Int . . . 0.00     Disp Priority 0010  SRB Time 6.94
                                     Trend Int 0.00
                                     System      Address Space
CPU Pct..... 100.0 ===== 0.0 =      0.0 =
I/O Rate..... 0.0 =          0.0 =      0.0 =
Page In Rate 0.0 =          0.0 =      0.0 =
Page Out Rate 0.0 =          0.0 =      0.0 =
CSA Page Rate 0.0 =          0.0 =      0.0 =
LPA Page Rate 0.0 =          0.0 =      0.0 =
Swap Rate.... 0.0 =          0.0 =      0.0 =
UIC..... 8.0 =             0.0 =      0.0 =

```

The JOB and ASID fields can be altered to see address space information for other address spaces.

## Thread Buffer Pool Trace Panel

This panel lists the most recent buffer pool accesses for the selected thread.

The Thread Buffer Pool Trace panel appears when you:

- Select Option 8 (Buffer Pool Trace) from the Thread Detail Menu (Option 6 More... from the Active Thread Detail panels).
- Enter **M** in the selection field for a thread on the Threads Identified to DB2 panel and then select Option 8 (Buffer Pool Trace).

The following is a sample of this panel:

Auth ID	CD1JK19	Correlation ID	CD2JK19I	Plan Name	CATQRY
	SEQUENCE	DATABASE	PAGESET	PAGE #	I/O TYPE
	1017227	GSWTECDB	TBLCOL	00000020	UPDATE REQST
	1017226	GSWTECDB	CATQTBL	000001EB	UNLATCH
	1017225	GSWTECDB	CATQTBL	000001EB	UPDATE REQST
	1017224	GSWTECDB	CATQTBL	000001EB	LATCH
	1017223	GSWTECDB	TBLCOL	00000002	RELEASE PAGE
	1017222	GSWTECDB	TBLCOL	00000020	GETPAGE
	1017220	GSWTECDB	TBLCOL	0000000B	RELEASE PAGE
	1017219	DSNDB06	SYSDBASE	0000001A	UNLATCH
	1017218	DSNDB06	SYSDBASE	0000001A	LATCH
	1017217	DSNDB06	SYSDBASE	00000019	RELEASE PAGE

As you can see by the item count, this panel can include quite a long list to scroll through. Use the FIND command to search for a particular character string.

## Current Package/DBRM Detail Panel

This panel lists the package or DBRM information for the selected thread. This information is useful for determining where the currently executing package or DBRM is spending its time.

The Current Package/DBRM Detail panel appears when you:

- Select Option 9 (Package/DBRM Detail) from the Thread Detail Menu (Option 6 (More...) from the Active Thread Detail panels).
- Enter M in the selection field for a thread on the Threads Identified to DB2 panel and then select Option 9 (Package/DBRM Detail).

The following is a sample of this panel:

Menu Print Tools Help CA-Insight		MATSAA2	14:20:10
			D71A CA31
R/THRDPKGD Current Package/DBRM Detail			
Auth ID MATSA02	Plan DSNESPCS	Corr ID MATSA02	
Coll ID DSNESPCS			
Program DSNESM68			
		ALL USES	Count HHH:MM:SS.TTT Pkg Thrd
DB2 TIMES	HHH:MM:SS.TTT	DB2 TCB.....	36 0.021 2.2 2.2
Elapsed All Uses	1.012	I/O.....	66 0.652 64.4 64.4
Elapsed This Use	0.000	Lock/Latch...	0 0.000 0.0 0.0
TCB This Use	0.000	Other Rd I/O.	4 0.099 9.8 9.8
% Elap This Use	0.0	Other Wr I/O.	0 0.000 0.0 0.0
		DB2 Services.	0 0.000 0.0 0.0
		Log Quiesce..	0 0.000 0.0 0.0
SQL Statements	20	Drain Lock...	0 0.000 0.0 0.0
StorProc Executed	0	Claim Release	0 0.000 0.0 0.0
UDFs Scheduled	0	Arch Log Read	0 0.000 0.0 0.0
		Pg Latch Cont	0 0.000 0.0 0.0
Schema Name .....		Wt DS Msgs	0 0.000 0.0 0.0
Routine Name .....		Wt S-Proc TCB	0 0.000 0.0 0.0
Routine Type ....		Wt Glbl Cont	0 0.000 0.0 0.0
		Wt UDF TCB	N/A 0.000 0.0 0.0
		Glb Chld L-Lk	0 0.000 0.0 0.0
		Glb Othr L-Lk	0 0.000 0.0 0.0
		Glb Pset P-Lk	0 0.000 0.0 0.0
		Glb Page P-Lk	0 0.000 0.0 0.0
		Glb Othr P-Lk	0 0.000 0.0 0.0
		Other DB2....	N/A 0.000 0.0 0.0

## Thread IFI/Data Capture History Panel

This panel displays the IFI (Instrumentation Facility Interface) activity for the selected thread. This information is useful for determining the overhead of data collector threads or threads that invoke the Data Propagator.

The Thread IFI/Data Capture History panel appears when you:

- Select Option **10** (IFI Counts/Data Capture Facility) from the Thread Detail Menu (Option **6** More... from the Active Thread Detail panels).
- Enter **M** in the selection field for a thread on the Threads Identified to DB2 panel and then select Option **10** (IFI Counts/Data Capture Facility).

The following is a sample of this panel:

Menu		Print	Tools	Help	CA-Insight	SE19257	12:04:34
							DBV3 S018
R/HTIFI		Thread IFI / Data Capture History					
Auth ID	CD1JK19	Plan	DLVYRSQL	Corr ID	CD1JK198	Connect	BATCH
Date	MM/DD/YY	Started	11:28:58				
IFI CALLS				HHH:MM:SS.TTT	%DB2	Elap	%DB2 CPU
Events.....			Elapsed		0.0	N/A	0.0
			TCB		0.0		0.0
DATA CAPTURE							
Log Records Captured..			Elapsed		0.0		
Log Extractions.....							
Data Rows Read.....							
Log Records Read.....							
Data Descriptions Read							
Tables Returned.....			Elapsed		0.0		
Describes Performed...							

## Thread Group Buffer Pool Panel

This panel displays the group buffer pool activity for the selected thread. This information is useful for determining the usage for group buffer pools.

The Thread Group Buffer Pool panel appears when you:

- Select option **11** (Group Buffer Pools) from the Thread Detail Menu (Option **6** More... from the Active Thread Detail panels).
- Enter **M** in the selection field for a thread on the Threads Identified to DB2 panel and then select Option **11** (Group Buffer Pools)

The following is a sample of this panel:

Menu Print Tools Help CA-Insight				MATSAA2		11:41:06		
						D61D XE44		
R/THRDGBP		Thread Group Buffer Pool						
Auth ID MATSA02		Plan DSNEPRR		Corr ID MATSA02				
GROUP BUFFER POOL GBP0								
READS				OTHER				
Hit Ratio 0.500		Buf Inv	Pg Gone	Total	Unregister page			0
Data Returned		2	1	3	Explicit X-Inv			0
Data Not Returned					Pri IXLCACHE Rq			0
X-DB2 R/W		1	2	3	SECONDARY			
No X-DB2 R/W		N/A	0	0	Writes Chng Pgs			0
Tot Not Returned		1	2	3	Wrt Check Susp			0
WRITES		Chgd Pgs	Cln Pgs	Total	IXLCACHE Req			0
Sync		0	0	0				

Information on this panel is grouped by each group buffer pool used. Use the PF8/PF7 keys to scroll forward and backward in the list, if applicable.

## Thread Global Locking Panel

This panel displays the global locking activity for the selected thread. This information is useful for determining the number of global lock contentions.

The Thread Global Locking panel appears when you:

- Select option **12** (Global Locking) from the Thread Detail Menu (Option **6** More... from the Active Thread Detail panels).
- Enter **M** in the selection field for a thread on the Threads Identified to DB2 panel and then select Option **12** (Global Locking).

The following is a sample of this panel:

Menu Print Tools Help		CA-Insight	SE19257	20:17:30
				DBV3 S018
R/THRDGLK	Thread Global Locking			
Auth ID DXB151	Plan DSNEspr	Corr ID DXB151	REQUESTS	PROPAGATIONS
CONTENTIONS				
False.....	14	Lock....	49	130
IRLM.....	10	Change..	8	11
XES.....	2	Unlock..	0	59
		Denied..	0	N/A
NOTIFYs				
Sent.....	3			



## Dynamic Prepare/Direct Row Access Panel

This panel shows statistics relating to the use of the dynamic prepare function and direct row access for the selected thread.

The Dynamic Prepare/Direct Row Access panel appears when you:

- Select option **13** (Dynamic Prep/Dir Row Acc) from the Thread Detail Menu (Option **6** MORE from the Active Thread Detail panels).
- Enter **M** in the selection field for the thread on the Threads Identified to DB2 panel and then select option **13** (Dynamic Prep/Dir Row Acc).

The following is a sample of this panel:

Menu Print Tools Help CA-Insight		MATSAA2	14:22:00
			D71A CA31
R/THRDDYNP	Dynamic Prepare / Direct Row Access		
Auth ID MATSA02	Plan DSNESPCS	Corr ID MATSA02	
DYNAMIC PREPARE		DIRECT ROW ACCESS	
Stmt found in cache	0	Number of Times Successful	0
Stmt not found in cache	0	Reverted to Using Index	0
Implicit prepare performed	0	Reverted to Using TS Scan	0
Prepare avoided	0		
Stmts discarded - MAXKEEPD	0		
Stmts purged - dep. object	0		

## Thread DB2 Routine Counts Panel

This panel shows statistics relating to the use of DB2 routines including stored procedures, user defined functions, and triggers for the selected thread.

The Thread DB2 Routine Counts panel appears when you:

- Select option **14** (DB2 Routine Counts) from the Thread Detail Menu (Option **6** (MORE) on the Active Thread Detail panels).
- Enter **M** in the selection field for the read on the Threads Identified to DB2 panel and then select option **14** (DB2 Routine Counts).

**Note:** Option 14 only appears on the Thread Detail Menu when a DB2 V6 or higher subsystem is being monitored.

The following is a sample of this panel:

Menu		Print	Tools	Help	CA-Insight	MATSAA2	15:14:25
							D61D XE44
R/THRDRTN	Thread DB2 Routine Counts						
Auth ID	MATSAA2	Plan	DSNESPRR	Corr ID	MATSAA2		
	STORED	USER	DEFINED				
	PROCEDURES	FUNCTIONS		TRIGGERS			
Executions	0	0		Statement Triggers Activated	0		
Abends	0	0		Row Triggers Activated	0		
Timeouts	0	0		SQL Errors During Execution	0		
Rejects	0	0					
Maximum Cascading Level (all types)				0			

# Viewing DB2 Thread History

## Thread History Selection Panel

The initial display is the first page of the Thread History Selection panels. A series of four panels lets you specify values to limit the amount of thread history data displayed and specify the time interval for the thread history summarize.

To access thread history data, select Thread History from the Initial Menu.

The following is a sample of this panel:

```

Menu Print Tools Help  CA-Insight          DXB164          12:27:25
                        DB2E S074
_ 1 Select by PF Key  2 List all Threads  3 Quick Summaries...
THstSel1              Thread History Selection          Page 1 of 4
Specify selection criteria then List or Summary PF Key
  Begin Time (HHMMSS) . . . 130438          End Time (HHMMSS) . . . 140438
  Begin Date (MMDDYY) . . . 121895         End Date (MMDDYY) . . . 121895
_ Plan Names . . . _____
_ Auth IDs . . . _____
_ Connections . _____
_ Correlation IDs . _____
_ Packages . . . . . _____
_ Remote Locations . _____
_ CPU Parallelism . _ P for cpu parallelism or blank otherwise

```

Use the PF7/PF8 scrolling keys to display the other three selection criteria panels.

The selection criteria is retained on pages two through four and the time range fields on page one until you press PF3 from one of the selection panels or select view two or view three. The other selection criteria on page one are maintained in the user profile data set and are retained even after you exit Unicenter CA-Insight. The next time you access Thread History, these saved criteria display as default settings on the first panel. This might be useful to you. If it is not useful, use PF11 to clear the criteria.

When retrieving selected thread history accounting records, Unicenter CA-Insight, by default, returns all qualifying non-CPU parallelism records plus the qualifying CPU parallelism summary records. The CPU parallelism summary records are records generated by Unicenter CA-Insight that are a summary of the parent and all child records generated by a thread utilizing CPU parallelism. You can use the CPU Parallelism selection field to include or exclude just the CPU parallelism summary records. In either case, the individual parent/child records are not reflected in the resulting list or summary. For thread history detail for a selected CPU Parallelism summary accounting record, there is a new "More..." screen option that lets you display and select the parent/child records individually.

**Note:** Some selection criteria might not be displayed depending on the DB2 subsystem you are running.

### Specifying Time Range Criteria

This first panel includes the basic selection criteria of Time Range. Specify the date and time span for which you want to limit or summarize in military format (0 to 24 hours). The default interval is set for viewing the current day's data for the past one hour.

At least one accounting record must be found in the history file within the time interval you specify. If you receive the following message:

```
DBG550C1W - Selected records not found
```

no records were found to satisfy your request. Try increasing the interval between the begin and end date/time.

### Specifying Additional Selection Criteria

Additional thread history filtering can be specified by entering values that select only particular thread history records. The other Page 1 selection criteria fields (Plan Names, Auth IDs, etc.) allow entry of multiple selection criteria. The criteria are OR'd together. That is, any record that matches one criterion is included.

If the data you enter is meant to be *everything-except-these-values*, then you must enter an X in the selection field on the leftmost portion of the line. For example, if you wanted to view all thread history except those with the authorization ID "IBMUSER," the selection line would be entered as:

```
X Auth IDs . . . IBMUSER _____
```

Leave the selection field blank to include the specified values.

## Wildcard Characters

In alphanumeric selection fields, you can use the asterisk (\*) wildcard character to ignore information from that position onward. For example, if you specify an Auth ID selection of **AH\***, all authorization IDs beginning with AH would be selected. (For example, "AH," "AHB," "AHB2," "AHZ," etc.)

## Where to Go From Here

You have several options to choose from:

- To View Selected Detail Data – press PF5 (List).
- To View All Detail Data – View Bar Option 2 (List all Intervals).
- To View Summarized Data collected since the data collector was last started – View Bar Option 3 (Quick Summaries...).
- To View Selected Summarized Data – press PF6 (Summarize).

These options are discussed in the following sections:

- The first two options are discussed in [Viewing Detailed Thread History Data](#).
- The third option is discussed in [Viewing Recent Historical Data](#).
- The last option is discussed in [Viewing Summarized Thread History Data](#).

## Viewing Detailed Thread History Data

This section describes the series of panels that display detailed thread history data. *Detailed* means that the information is for only one thread (that is, one thread termination record), which must be selected from the Thread History list panel.

For threads using DB2's CPU Parallelism feature, the Unicenter CA-Insight reports show the total work by the parent and all children threads. From the More... panel, you can select a list of all the individual threads.

One commonality of these panels is the use of the PF5/PF6 keys:

- PF5 (Previous) – displays the same fields for the prior selected thread.
- PF6 (Next) – displays the same fields for the next selected thread.

## Selecting a Thread to Display

### Thread History List Panel

This panel displays a scrollable list of the thread history records maintained in the history file.

The Thread History List panel appears when you:

- Specify selection criteria and press PF5 (List)
- Select the View Bar Option 2 (List all Threads) from one of the Thread History Selection panels.

The following is a sample of this panel:

Menu Print Tools Help CA-Insight SE19257 13:42:12									
DBV3 S018									
1 Select by PF Key 2 List all Threads 3 Quick Summaries...									
Actions: S=Select for more detail									
R/HTLIST Thread History List									
From MM/DD/YY 13:22:44 To MM/DD/YY 13:38:15									
Time	Auth ID	Plan	Connect	Correlation	Exceptns	HHH:MM:SS	MM:SS.TTT	DB2	CPU
. 13:22:44	DXB151		DB2CALL	INTERNAL	0	0	0	0	0.010
. 13:23:09	IBMUSER		DB2CALL	INTERNAL	0	1	0	1	0.011
. 13:23:10	IBMUSER		DB2CALL	INTERNAL	0	0	0	0	0.009
. 13:27:47	DXB151		DB2CALL	INTERNAL	0	1	0	1	0.012
. 13:27:47	DXB151		DB2CALL	INTERNAL	0	0	0	0	0.010
. 13:28:51	IBMUSER		DB2CALL	INTERNAL	0	1	0	1	0.011
. 13:28:52	IBMUSER		DB2CALL	INTERNAL	0	0	0	0	0.009
. 13:38:14	IBMUSER		DB2CALL	INTERNAL	0	1	0	1	0.012
. 13:38:15	IBMUSER		DB2CALL	INTERNAL	0	0	0	0	0.010

Additional information for each line can be viewed by using the PF10/PF11 horizontal scrolling keys.

The information displayed depends on how you got there:

- If you specified selection criteria on the previous panels, then only those threads that met the criteria are available. An item count (Item *n-n* of *n*) displays so you know how many threads you can scroll through (this is not shown in the sample panel). The range of dates and times reflects your selection criteria.
- If you chose the List All Threads view, then all threads maintained in the history file display, the most recent ones first (scroll up to see previous threads). The range of dates and times reflects the current panel's list of threads. No item count displays.

To see more detail for a particular thread, enter **S** or cursor-select the field for that thread and press enter.

**Note:** If you pressed PF5 to arrive at this panel (meaning 'use selection criteria'), then the View Bar (showing Views 1, 2, and 3) does not display.

## About the Exceptions Column on the Panel

Each record of the history file is run through the exception system prior to display to check if it qualifies as an exception, based on the way that the exception is defined at the time of the display, not as it was defined when the thread was run.

If you modify your active exception definition to a different threshold value, all history records are evaluated against that new threshold value. See [Changing Existing Exceptions](#) for more information.

This represents a good way to use historical data to establish valid threshold values for your shop. Just have the exception active, adjust the values, and see the desired effect in the history system.

## Thread History Overview Panel

This panel displays an overview of activity for the selected thread (detailed in the area above the dashed line).

The Thread History Overview panel appears when you:

1. Select a thread from the Thread History List panel.
2. Select View Bar Option 1 (Overview) from within the Thread History Detail function.

The following is a sample of this panel:

Menu Print Tools Help		CA-Insight		MATSAA2		15:18:13	
						D61D XE44	
1 Overview		2 Exceptions		3 Resp Time		4 Locks	
						5 Buffers	
						6 More...	
R/HTDETL				Thread History Overview			
Auth ID	MATSAA2	Plan	DSNESPRR	Corr ID	MATSAA2	Connect	TSO
Date	06/21/99	Started	11:24:56	RecType		ThdType	ALLIED-N
Term Cd	NORMAL	Ended	15:16:42	Commits	1	Aborts	0
						Excptns	1
-----							
Times in HH:MM:SS.T							
Elapsed Time App	03:51:45.6	Max Pg Locks	8	Select	0	Getpage	68
Elapsed Time DB2	8.7	Lock Suspnds	0	Fetch	0	Read I/O	34
CPU Time DB2	0.1	Deadlocks	0	I/U/D	0	Read Eff	2.0
Wait All DB2 I/O	0.3	Timeouts	0	Dynamic	1	Pref Reqs	0
Wt All Lock/Ltch	0.3	Escalations	0	DDL/DCL	2	Buf Updts	3
Wait Log	0.0	L Prf No Stg	0	Calls	0	BP Warn	0
DB2 Services	6.2	Parallel Err	0	CallFail	0	Avg I/O	0.0093
Wt Data Shr Msgs	0.0	Para. Tasks	0				
Wt Stor Proc TCB	0.0					Log Write	12
Routine Elapsed	0.0					WLM Name	.....

The portion of the panel below the dashed line displays the same information as the Active Thread Detail panel.

Detailed information is shown in the other views. Also, review the discussion on history and exceptions in [About the Exceptions Column on the Panel](#).



## Exception List Panel

This panel displays a list of exceptions that were generated by the exception system for the selected thread. This panel appears only when you select View Bar Option 2 (Exceptions) from within the Thread History Detail function.

The following is a sample of this panel:

```
Menu Print Tools Help CA-Insight SE19257 13:51:40
DBV3 5018
1 Overview 2 Exceptions 3 Resp Time 4 Locks 5 Buffers 6 More...
Exceptions Exception List Item 1-1 of 1
CRIT High avg. "IN DB2" time per unit of work: 4:39.73
```

These exceptions are based upon Unicenter CA-Insight's current set of exception definitions. See [Exception](#) for explanations of how to define exceptions. Also review the discussion on history and exceptions in [About the Exceptions Column on the Panel](#).

The first part of the exception line indicates the level of severity of the exception, Critical, Warning, or Informational. The remaining portion of the exception contains the message text. An Item Count (Item *n-n* of *n*) indicates the number of exceptions that have occurred during the interval. You can use the scroll keys to view the entire list of exceptions for this thread.

## Response Time History Panel

This panel displays DB2 response times and CPU used for the selected thread. This panel appears only when you select View Bar Option 3 (Resp Time) from within the Thread History Detail function. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight DXB164 12:30:39
DB2E S074
_ 1 Overview 2 Exceptions 3 Resp Time 4 Locks 5 Buffers 6 More...

R/HTRESP Response Time History

Auth ID DXB151 Plan DSNESPRR Corr ID DXB151 Connect TSO
Date MM/DD/YY Started 14:16:49 RecType ThdType ALLIED-N
Times in HH:MM:SS.TTTT % App % DB2 1 3 5 7 9
Elapsed Time App 02:58:57.6766 Evnts Elpsd Elpsd .0...0...0...0...0..
CPU Time Appl 1.3985 N/A 0.0
TCB Time Appl 1.0996 N/A 0.0
SRB Time Appl 0.2988 N/A 0.0
Elapsed Time DB2 12.5196 483 0.0
CPU Time DB2 0.6691 N/A 5.2 |=
TCB Time DB2 0.6636 N/A 5.2 |=
SRB Time DB2 0.0055 N/A 0.0
Wait for DB2 I/O 0.4287 70 3.4 |=
Wait Lock/Latch 0.0028 8 0.0
Wait Other Read 0.0029 2 0.0
Wait DB2 Service 8.1734 96 65.2 |======
Wt Data Shr Msgs 0.0222 6 0.2
Wait Global Cont 1.0081 52 8.1 |=
Other DB2 Time 2.2121 N/A 17.7 |=
    
```

Use the PF7/PF8 keys to scroll up and down. The panel displays the same information as the Thread Response Time panel; see [Response Time](#) for more information.

Only events that have non-zero data display. As a result, the display might change from one thread to another, as non-zero events might be different.

## Thread Locks/RLF History Panel

This panel displays the locking activity for the selected thread. This information is useful to determine if excessive lock escalations occurred while this thread was running. This panel appears only when you select View Bar Option 4 (Locks) from within the Thread History Detail function. The following is a sample of this panel:

Menu		Print	Tools	Help	CA-Insight	DXB164	12:30:39
1 Overview		2 Exceptions	3 Resp Time	4 Locks	5 Buffers	6 More...	DB2E S074
R/HTLOCKS		Thread Locks/RLF History					
Auth ID	DXB151	Plan	DSNESPRR	Corr ID	DXB151	Connect	TSO
Date	MM/DD/YY	Started	14:16:49	RecType		ThdType	ALLIED-N
Timeouts			0	Suspensions - Lock	0	Unlock Reqsts	7
Deadlocks			0	Suspensions - Latch	0	Query Reqsts	0
Lock Escalation - Shr			0	Suspensions - Other	0	Change Reqsts	0
Lock Escalation - Exc			0	Suspensions - Total	0	Lock Reqsts	23
Max Page Locks Held			2			Other Reqsts	0
Resource Limit Facility		NOT ACTIVE				Requests	Failures
RLF Table ID		..			Claim	4	0
Service Units Limit		0			Drain	0	0
CPU Seconds Limit		0.000					
Highest CPU Seconds Used		0.000		0.0 % of limit			

## Thread Buffer Pool History Panel

This panel displays the buffer pool activity for the selected thread. This panel appears only when you select View Bar Option 5 (Buffers) from within the Thread History Detail function. The following is a sample of this panel:

Menu		Print	Tools	Help	CA-Insight	DXB164	12:30:39
1 Overview		2 Exceptions	3 Resp Time	4 Locks	5 Buffers	6 More...	DB2E S074
R/HTBUFRS		Thread Buffer Pool History					Item 1-2 of 3
Auth ID	DXB151	Plan	DSNESPRR	Corr ID	DXB151	Connect	TSO
Date	MM/DD/YY	Started	14:16:49	RecType		ThdType	ALLIED-N
BUFFER POOL BP0							
Getpages		4	Seq Pref Reqsts	0	HP OK Reads		0
Sync Reads		2	Lst Pref Reqsts	0	HP Read Failures		0
Read Eff		2.0	Dyn Pref Reqsts	0	Cond Getpg Fails		0
Bufr Updates		0	Pref Pages Read	0	HP OK Writes		0
Immed Writes		0	Pref Pgs From HP	0	HP Wrt Failures		0
BUFFER POOL BP1							
Getpages		6195	Seq Pref Reqsts	107	HP OK Reads		0
Sync Reads		255	Lst Pref Reqsts	0	HP Read Failures		0
Read Eff		24.3	Dyn Pref Reqsts	85	Cond Getpg Fails		0
Bufr Updates		0	Pref Pages Read	1085	HP OK Writes		0
Immed Writes		0	Pref Pgs From HP	0	HP Wrt Failures		0

Information on this panel is grouped by each buffer pool used. An Item Count (Item *n-n* of *n*) indicates the number of buffer pools that the completed thread used. If more than two buffer pools were used, the PF7/PF8 scrolling keys are activated and displayed (as in the sample above).

## Thread Remote Location History List Panel

This panel lists all distributed locations on which the thread was executing. If the thread had no distributed processing, the area below the dashed line is blank.

The Thread Remote Location History List panel appears when you:

- Select View Bar Option **6** (More...) from within the Thread History function, then select Menu Option **1** (Remote Locations).
- Enter **6.1** from within the Thread History function and press Enter.

The following is a sample of this panel:

Auth ID	DXB151	Plan	DSNESPRR	Corr ID	DXB151	Connect	TSO
Date	MM/DD/YY	Started	14:16:49	RecType		ThdType	ALLIED-N
-----							
.	Location	LGNTDSN4		Sent	Recved	Remote Site	Coordinator
	Requests	Queued	0	Messages	2	2	Thds Indoubt
	Protocol	N/A	SQL	1	0	Rollbacks	0

This panel displays a scrollable list of the remote locations in the history file for this thread. To see more detail on a remote location, enter **S** or cursor-select the field for that location and press Enter. A description of the Thread Remote Location History Detail panel follows.

## Thread Remote Location History Detail Panel

This panel displays the detailed information on the remote location that you selected on the previous panel for the indicated thread. This panel appears only when you select a remote location from the Thread Remote Location History List panel. The following is a sample of this panel:

Menu		Print	Tools	Help	CA-Insight	MATSAA2	15:21:52		
							DBV6	XE44	
R/HTRMTDTL		Thread Remote Location History Detail							
Auth ID	MATSA02	Plan	DSNESPCS	Corr ID	MATSA02	Connect	TSO		
Date	MM/DD/YY	Started	11:42:24	RecType		Thd Type	DBAT		
Location D420TS44		Instance B26E00F5468B		Network	USILDA01				
				LU Name	A44ID420				
Requests Queued	0			Sent	Recved	Sent	Recved		
SQL Bound Remote	0			0	8	Cnvrstns	0	1	
Block Mode Switch	0	SQL		8	9	Trans	0	1	
Rows in Msg Buffer	0	Messages		0	0	Commits	0	1	
Cnvrstn Allocated	0	Blocks		6	0	Aborts	0	0	
Cnversations Ended	0	Rows		4468	3125				
Max Conversations	0	Bytes							
Times in HH:MM:SS.TTTT		Two Phase Commit Operations							
Elapsd Local	0.0000	Requests	Sent	Recved	Responses	Sent	Recved		
Elpsd Remote	0.0000	Prepare	0	0	Forget	0	0		
CPU Remote	0.0000	Last Agt	0	0	Commit	0	0		
Wait MaxDBAT	0.0000	Commit	0	0	Backout	0	0		
		Backout	0	0					
		Operations with Remote Site as Coordinator							
		Threads Indoubt	0	Commits	0	Rollbacks	0		

## Thread SQL Counts History Panel

This panel displays counts of SQL statements usage for the selected thread.

The Thread SQL Counts History panel appears when you:

- Select View Bar Option 6 (More...) from within the Thread History function. Then select Menu Option 2 (SQL Counts).
- Enter 6.2 from within the Thread History function and press Enter.

The following is a sample of this panel:

Menu		Print	Tools	Help	CA-Insight	MATSAA2	14:24:41		
							D71A	CA31	
R/HTSQL		Thread SQL Counts History							
Auth ID	PDGLS	Plan	PPAM99D	Corr ID	PDGLS	Connect	DB2CALL		
Date	MM/DD/YY	Started	13:24:39	RecType		ThdType	ALLIED-N		
Total SQL	146	SET SQL ID		1		CREATE	DROP	ALTER	
		Incr Bind		0	STO GROUP	0	0	0	
SELECTS	2	LOCK TABLE		0	DATABASE	0	0	0	
INSERTS	0	SET HOST VR		0	TABLESPACE	0	0	0	
UPDATES	0	COMMENT ON		0	TABLE	0	0	0	
DELETES	0	LABEL ON		0	INDEX	0	0	0	
PREPARES	0	GRANTS		0	SYNONYM	0	0		
FETCHES	135	REVOKES		0	VIEW	0	0		
OPEN CSR	4	CONN TYPE 1		0	ALIAS	0	0		
CLOSE CSR	4	CONN TYPE 2		0	PACKAGE		0		
DESCRIBES	0	RELEASE		0	GBL TMP TB	0			
DESCR TBL	0	SET CONNECT		0	AUX TABLE	0			
Reopt Var	0	SET DEGREE		0	TRIGGER	0	0		
ASSOC LOC	0	SET RULES		0	FUNCTION	0	0	0	
ALLOC CSR	0	SET PATH		0	PROCEDURE	0	0	0	
RENAME TB	0	SET PREC		0	DISTINCT	0	0		
HOLD LOC	0	DCL GBL TMP		0					
FREE LOC	0								

## List Prefetch and Query Parallelism History Panel

This panel displays list prefetch and query parallelism statistics for the selected thread.

The List Prefetch and Query Parallelism History panel appears when you:

- Select View Bar Option 6 (More...) from within the Thread History function, then select Menu Option 3 (List Prefetch/Query Parallelism).
- Enter 6.3 from within the Thread History function and press Enter.

The following is a sample of this panel:

Auth ID	PDGLS	Plan	PPAM99D	Corr ID	PDGLS	Connect	DB2CALL
Date	MM/DD/YY	Started	13:24:39	RecType		ThdType	ALLIED-N
R/HTLSTPRF		List Pref/Parallel/LOB Stg/Svpnt History					
List Prefetch				Query Parallelism			
	Number of Times Used		0		Parallel Groups Executed		0
	Failed - No Storage		0		Groups Executed as Planned		0
	Failed - RID Limit		0		Max Degree of Parallelism		0
LOB STORAGE					Groups w/ Reduced Degree		0
	Max LOB Storage (KB)		0		Groups Failed - Cursor		0
SAVEPOINTS					Groups Failed - ESA Sort		0
	Number of requests		0		Groups Failed - Storage/BP		0
	Release requests		0		Groups Failed - Enclave		0
	Rollback requests		0		Grps exec 1 DB2: COORD=NO		0
					Grps exec 1 DB2: ISO=RR/RS		0
					Number Intended Groups		0
					Members Bypassed BP Short		0
					Access Path Redone: Config		0
					Access Path Redone: BP		0
					Grps exec 1 DB2: DclTmpTbl		0

## Packages/DBRM History List Panel

This panel displays data from the history file of the packages and DBRMs that were executed for a particular plan for the selected thread. It also displays a scrollable list of the collection IDs in the history file for this thread. The collection ID is specified on the PACKAGE parameter of the BIND PACKAGE statement.

The Package/DBRM History List panel appears when you:

- Select View Bar Option 6 (More...) from within the Thread History function, then select Menu Option 4 (Package).
- Enter 6.4 from within the Thread History function and press Enter.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight DXB164 12:30:39
DB2E S074

Actions: S=Select for more detail
R/HTPKGS Package/DBRM History List

Auth ID DXB151 Plan DSNEPRR Corr ID DXB151 Connect TSO
Date MM/DD/YY Started 14:16:49 RecType ThdType ALLIED-N
. Coll Pgm PICKME Tot DB2 Elp 4:39.73
    
```

To see more detail on a collection, enter **S** or cursor-select the field for that collection and press Enter. A description of the Package/DBRM History Detail panel follows.



## Package/DBRM History Detail Panel

This panel displays detailed packages or DBRM data for the collection ID selected on the previous panel. This panel appears only when you select a collection ID from the Package/DBRM History List panel. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 14:26:08
D71A CA31

R/HTPKGDTL Package/DBRM History Detail

Auth ID PDGLS Plan PPAM99D Corr PDGLS Conn DB2CALL % Elapsed
Date MM/DD/YY Started 13:24:39 ALL USES Count HHH:MM:SS.TTT Pkg Thrd
Coll ID PAAM99D_ANL DB2 TCB..... 274 0.724 20.9 17.4
Program PAA#DEL4 I/O..... 604 1.822 52.4 43.8
Lock/Latch... 10 0.000 0.0 0.0
DB2 TIMES HHH:MM:SS.TTTT Other Rd I/O. 94 0.423 12.2 10.2
Elapsed All Uses 3.47464 Other Wr I/O. 2 0.003 0.0 0.0
Elapsed Last Use 0.00000 DB2 Services. 0 0.000 0.0 0.0
% Elap Last Use 0.0 Log Quiesce.. 0 0.000 0.0 0.0
TCB Last Use 0.00000 Drain Lock... 0 0.000 0.0 0.0
% TCB Last Use 0.0 Claim Release 0 0.000 0.0 0.0
SQL Statements 137 Arch Log Read 0 0.000 0.0 0.0
StorProc Executed 0 Pg Latch Cont 0 0.000 0.0 0.0
UDFs Scheduled 0 Wt DS Msgs 0 0.000 0.0 0.0
Wt S-Proc TCB 0 0.000 0.0 0.0
Schema Name ..... Wt Glbl Cont 0 0.000 0.0 0.0
Routine Name ..... Wt UDF TCB N/A 0.000 0.0 0.0
Routine Type Glb Chld L-Lk 0 0.000 0.0 0.0
Glb Othr L-Lk 0 0.000 0.0 0.0
Glb Pset P-Lk 0 0.000 0.0 0.0
Glb Page P-Lk 0 0.000 0.0 0.0
Glb Othr P-Lk 0 0.000 0.0 0.0
Other DB2.... N/A 0.500 14.4 12.0

Command ==>
F1=Help 2=Split 3=End 9=Swap 12=Return
    
```

## Thread IFI/Data Capture History Panel

This panel displays information about IFI and Data Propagator (DPROP) processing for the selected thread.

The Thread IFI/Data Capture History panel appears when you:

- Select View Bar Option 6 (More...) from within the Thread History function, then select Menu Option 5 (IFI Counts/Data Capture Facility).
- Enter 6.5 from within the Thread History function and press Enter.

The following is a sample of this panel:

Menu		Print	Tools	Help	CA-Insight	DXB164	12:30:39
							DB2E S074
R/HTIFI		Thread IFI / Data Capture History					
Auth ID	DXB151	Plan	DSNESPRR	Corr ID	DXB151	Connect	TSO
Date	MM/DD/YY	Started	14:16:49	RecType		ThdType	ALLIED-N
IFI CALLS				HHH:MM:SS.TTT	%DB2	Elap	%DB2 CPU
Events.....				Elapsed		0.0	N/A
				TCB		0.0	0.0
DATA CAPTURE							
Log Records Captured..				Elapsed		0.0	
Log Extractions.....							
Data Rows Read.....							
Log Records Read.....							
Data Descriptions Read							
Tables Returned.....							
Describes Performed...				Elapsed		0.0	
Command ==>>>							
F1=Help		2=Split		3=End		5=Previous	
				9=Swap		6=Next	
						12=Return	

## Thread Group Buffer Pool History Panel

This panel displays the group buffer pool activity for the selected thread. It is useful for determining the usage for group buffer pools.

The Thread Group Buffer Pool History panel appears when you:

- Select View Bar Option 6 (More...) from within the Thread History function. Then select Menu Option 6 (Group Buffer Pools).
- Enter 6.6 from within the Thread History function and press Enter.

The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	MATSAA2	11:43:43
						D61D XE44
R/HTGBPL Thread Group Buffer Pool History						
Auth ID	MATSA02	Plan	DSNESP RR	Corr ID	MATSA02	Connect TSO
Date	MM/DD/YY	Started	11:37:54	RecType		ThdType ALLIED-N
GROUP BUFFER POOL GBP0						
READS						
Hit Ratio	0.500					
		Buf Inv	Pg Gone	Total	OTHER	
Data Returned		2	1	3	Unregister page	0
Data Not Returned					Explicit X-Inv	0
X-DB2 R/W		1	2	3	Pri IXLCACHE Rq	0
No X-DB2 R/W		N/A	0	0		
Tot Not Returned		1	2	3	SECONDARY	
WRITES	Chgd Pgs	Cln Pgs	Total		Writes Chng Pgs	0
Sync	3	0	3		Wrt Check Susp	0
					IXLCACHE Req	0
Command ==>						
F1=Help	2=Split	3=End	9=Swap	5=Previous	6=Next	12=Return

Information on this panel is grouped by each group buffer pool used. Use the PF8/PF7 keys to scroll forward and backward in the list, if applicable.

## Thread Global Locking History Panel

This panel displays the global locking activity for the selected thread. It is useful for determining the number of global lock contentions.

The Thread Global Locking History panel appears when you:

- Select View Bar Option 6 (More...) from within the Thread History function.
- Select Menu Option 7 (Global Locking)
- Enter 6.7 from within the Thread History function and press Enter.

The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	DXB164	12:30:39
						DB2E S074
R/HTGLK				Thread Global Locking History		
Auth ID	DXB151	Plan	DSNESPRR	Corr ID	DXB151	Connect TSO
Date	MM/DD/YY	Started	14:16:49	RecType		ThdType ALLIED-N
					REQUESTS	PROPAGATIONS
CONTENTIONS						
False.....		14		Lock....	54	135
IRLM.....		10		Change..	8	11
XES.....		2		Unlock..	8	68
				Denied..	0	N/A
NOTIFY						
Sent.....		3				
Command ==>						
F1=Help	2=Split	3=End		5=Previous	6=Next	
		9=Swap			12=Return	

## Dynamic Prepare/Direct Row Access Panel

This panel shows statistics relating to the use of the dynamic prepare function and direct row access for the selected thread.

The Dynamic Prepare/Direct Row Access panel appears when you:

- Select View Bar Option **6** (More) from within the Thread History function.
- Select Menu Option **8** (Dynamic Prepare / Direct Row Access).
- Enter **6.8** from within the Thread History function and press Enter.

The following is a sample of this panel:

```

Menu Print Tools Help   CA-Insight           MATSAA2           14:28:34
                        D71A CA31

R/HTDYNP           Dynamic Prepare / Direct Row Access Histry

DYNAMIC PREPARE
  Stmt found in cache           0
  Stmt not found in cache       0
  Implicit prepare performed    0
  Prepare avoided               0
  Stmts discarded - MAXKEEPD    0
  Stmts purged - dep. object    0

DIRECT ROW ACCESS
  Number of Times Successful    0
  Reverted to Using Index       0
  Reverted to Using TS Scan     0

```

## Thread DB2 Routine Counts History Panel

This panel shows statistics relating to the use of DB2 routines including stored procedures, user defined functions, and triggers for the selected thread.

The Thread DB2 Routine Counts History panel appears when you:

- Select View Bar Option 6 (More) from within the Thread History function.
- Select Menu Option 9 (DB2 Routine Counts).
- Enter 6.9 from within the Thread History function and press Enter.

The following is a sample of this panel:

Menu		Print	Tools	Help	CA-Insight	MATSAA2	16:06:44
							D61D XE44
R/HTRTN	Thread DB2 Routine Counts History						
	STORED	USER	DEFINED				
	PROCEDURES	FUNCTIONS	TRIGGERS				
Executions	0	0	Statement Triggers Activated	0			
Abends	0	0	Row Triggers Activated	0			
Timeouts	0	0	SQL Errors During Execution	0			
Rejects	0	0					
Maximum Cascading Level (all types)			0				
Command ==>>							
F1=Help		2=Split		3=End		5=Previous	
				9=Swap		6=Next	
						12=Return	

**Note:** Option 8 only appears on the Thread History Menu when a DB2 V6 or higher subsystem is being monitored.

## Viewing Recent Historical Data

This section describes the series of panels that display *quick summaries* of historical thread data. The data for these quick summaries comes from the accounting records collected since the data collector was last started. This is contrasted against the other thread history panels presented in this chapter, where the data comes from records in the history VSAM files.

Quick summaries are available from View Bar Option 3 in the Thread History function or can be displayed from the command line anywhere in Unicenter CA-Insight (see specific panels for details).

## Brief Thread History Panel

This panel displays high-level statistics for threads that have completed since this data collector was last started. An item count (Item  $n$ - $n$  of  $n$ ) indicates the number of thread history records available for viewing from this panel.

The Brief Thread History panel appears when you:

- Select View Bar Option 3 (Quick Summaries...) from within the Thread History function, then select Menu Option 1 (Brief Thread History).
- Enter 3.1 from within the Thread History function and press Enter.
- Enter D THRDHIST from the command line.

The following is a sample of this panel:

Menu Print Tools Help CA-Insight				SE19257	14:30:57	
					DBV3 S018	
					FOCUS OFF	
R/THRDHIST	Brief Thread History				Item 56-57 of 64	
Auth DXB151		HH:MM:SS	Commits	1	Getpages	0
Plan	Tot Elapsed	0	Aborts	0	Buf Updts	0
Type ALLIED-N	DB2 Elapsed	0	Fetches		Read I/O	0
Term NEW AUTH	DB2 CPU...	0	Total SQL		Write I/O	0
Date 10/23/97	I/O Wait...	0	Timeouts		Avg Wait	0.000
Time 14:13:07	Lock Wait..	0	Deadlocks			
Auth IBMUSER		HH:MM:SS	Commits	1	Getpages	0
Plan	Tot Elapsed	2	Aborts	0	Buf Updts	0
Type ALLIED-N	DB2 Elapsed	2	Fetches		Read I/O	0
Term NEW AUTH	DB2 CPU...	0	Total SQL		Write I/O	0
Date MM/DD/YY	I/O Wait...	0	Timeouts		Avg Wait	0.000
Time 14:14:03	Lock Wait..	0	Deadlocks			
Command ==>						
F1=Help	2=Split	3=End			6=Focus	
F7=Up	8=Down	9=Swap	10=Left	11=Right	12=Return	

## Focusing the Report

The Brief Thread History panel includes the PF key option to Focus the report. The Focus facility is a filtering mechanism that lets you view only the data you are interested in without changing the characteristics of the active request. The data collector continues to collect information about threads as they complete, but while you are Focused, you only see information about selected threads. Once you have set Focus to ON, the Focus qualifications are used until you set Focus to OFF. A detailed explanation is available in this section.

## Thread History by Connection Type

### Thread History by Connection Type Panel

This panel summarizes completed thread activity by DB2 connection types. The item count (Item *n-n* of *n*) indicates the number of different connection types that can be viewed on this report.

The Thread History by Connection Type panel appears when you:

- Select View Bar Option 3 (Quick Summaries...) from within the Thread History function, then select Menu Option 2 (by Connection Type).
- Enter 3.2 from within the Thread History function and press Enter.
- Enter **D CONNHIST** from the command line.

The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	SE19257	14:33:01
						DBV3 S018
R/CONNHIST	Thread History by Connection Type					Item 1-1 of 1
From MM/DD/YY 11:58:14 To MM/DD/YY 14:29:07						
Connection	# Threads	# Commits/ # Aborts	Avg/Max Getpages	Avg/Max Read I/O	Avg/Max Seqpref	
BATCH	31	55 3	583.3 3591	1.4 19	0.6 3	
DB2CALL	64	64 0	0.0 0	0.0 0	0.0 0	
TSO	33	28 16	252.6 2730	1.9 13	0.0 0	
Command ==>						
F1=Help	2=Split	3=End 9=Swap	12=Return			

A connection type is the name of an item connected to DB2. These items are defined as:

#### TSO

Specifies TSO foreground users.

#### BATCH

Specifies TSO background users.

#### UTILITY

Specifies a utility running in DB2.

#### DB2CALL

Specifies a "call attach" user.

#### "jobname"

Specifies a CICS/IMS region name.



**"DB2 ssid"**

Specifies an internal DB2 connection.

**SERVER**

Specifies a DRDA connection (DB2 is the server).

## Thread History by Connect and Plan Panel

This panel displays the distribution of work for completed threads across plans within a DB2 connection. The item count (Item *n-n* of *n*) indicates the number of different plan/connection type combinations that can be viewed on this report.

The Thread History by Connect and Plan panel appears when you:

- Select View Bar Option 3 (Quick Summaries...) from within the Thread History function, then select Menu Option 3 (by Connection and Plan).
- Enter 3.3 from within the Thread History function and press Enter.
- Enter **D PLANHIST** from the command line.

The following is a sample of this panel:

Menu Print Tools Help		CA-Insight	SE19257	15:15:06				
				DBV3 S018				
R/PLANHIST		Thread History by Connect and Plan			Item 1-3 of 3			
From MM/DD/YY 11:58:14 To MM/DD/YY 15:14:17								
Conn	Plan	Count	DB2 Elap HH:MM:SS	DB2 CPU # HH:MM:SS	Commits/ # Aborts	Avg/Max Getpages	Avg/Max Read I/O	Avg/Max Seqpref
DB2CALL		82	1:49	0	82 0	0.0 0	0.0 0	0.0 0
TSO		8	17	0	8 0	0.0 0	0.0 0	0.0 0
TSO	DSNEDCL	3	2	0	3 0	29.7 39	0.0 0	0.0 0
Command ==>								
F1=Help		2=Split	3=End		9=Swap		12=Return	

## Thread History by Connect and Correlation ID Panel

This panel shows the distribution of work for completed threads across DB2 correlations within a DB2 connection. This information is useful in determining the correlation IDs that have been active. The item count (Item *n-n* of *n*) indicates the number of different correlation ID/connection type combinations that can be viewed on this report.

The Thread History by Connect and Corr ID panel appears when you:

- Select View Bar Option 3 (Quick Summaries...) from within the Thread History function, then select Menu Option 4 (by Connection and Correlation).
- Enter 3.4 from within the Thread History function and press Enter.
- Enter **D CORRHIST** from the command line.

The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	SE19257	15:15:06
						DBV3 S018
R/PLANHIST	Thread History by Connect and Plan				Item 1-1 of 1	
From MM/DD/YY 11:58:14		To MM/DD/YY 15:14:17				
Conn	Plan	Count	DB2 Elap HH:MM:SS	DB2 CPU # HH:MM:SS	Commits/ # Aborts	Avg/Max Getpages
DB2CALL		82	1:49	0	82 0	0.0 0
						Avg/Max Read I/O
						0.0 0
						Avg/Max Seqpref
						0.0 0
Command ==>						
F1=Help		2=Split		3=End		12=Return
				9=Swap		

## Thread History by Connect and Auth ID Panel

This panel shows the distribution of work for completed threads across authorization IDs within a DB2 connection. The item count (Item  $n-n$  of  $n$ ) indicates the number of different Authorization ID/Connection Type combinations that can be viewed on this report.

The Thread History by Connect and Auth ID panel appears when you:

- Select View Bar Option 3 (Quick Summaries...) from within the Thread History function, then select Menu Option 5 (by Connection and Auth ID).
- Enter 3.5 from within the Thread History function and press Enter.
- Enter **D AUTHHIST** from the command line.

The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	SE19257	15:28:40
						DBV3 S018
R/AUTHHIST	Thread History by Connect and Auth ID					Item 1-2 of 2
From MM/DD/YY 11:58:14 To MM/DD/YY 15:28:24						
		DB2 Elap	DB2 CPU #	Commits/	Avg/Max	Avg/Max
Conn	Auth-id	Count	HH:MM:SS	# Aborts	Getpages	Read I/O
						Seqpref
DB2CALL	DXB151	32	46	0	32	0.0
					0	0
DB2CALL	IBMUSER	54	1:08	0	54	0.0
					0	0
Command ==>						
F1=Help	2=Split	3=End	9=Swap	12=Return		

## Viewing Summarized Thread History Data

This section describes the series of panels that display summarized thread history data. Summarized means that the information is for only the specified interval and other selection criteria, which is entered on the Thread History Selection panel. Press PF6 to display the first summarized data panel.

Most of the summarized panels are closely related to their non-summarized counterparts. Descriptions focus more on the unique aspects of the summarized panels.

## Thread History Summary Overview Panel

This panel displays statistics for the summarized set of completed threads. This is the first panel that appears when you choose to view summarized thread history data. This panel also appears when you select View Bar Option 1 (Overview). The following is a sample of this panel:

Menu		Print	Tools	Help	CA-Insight	MATSAA2	15:34:14	
1 Overview		2	Resp Time	3	Locks	4	Buffers	
5		More...						
R/HTUDEL Thread History Summary Overview								
TERMINATION CODES	Normal		Abend	INDOUBT	HIGHLIGHTS			
Monitor READS ...	0	Application Pgm	0	0	Aborts	0		
Same User Signon	0	End of Memory	0	0	Commits	1		
New User.....	0	Resolve INDOUBT	0	N/A				
DDF Thrd Inactive	0	Cancel Force	0	0				
Deallocation....	1	End of Task	N/A	0				
Commit - RRSAF...	0	Total	0	0				
	Total	1						
-----								
Times in HH:MM:SS.T								
Elapsed Time App	03:51:45.6	Max Pg Locks	8	Select	0	Getpage	68	
Elapsed Time DB2	8.7	Lock Suspnds	0	Fetch	0	Read I/O	34	
CPU Time DB2	0.1	Deadlocks	0	I/U/D	0	Read Eff	2.0	
Wait All DB2 I/O	0.3	Timeouts	0	Dynamic	1	Pref Reqs	0	
Wt All Lock/Ltch	0.3	Escalations	0	DDL/DCL	2	Buf Updts	3	
Wait Log	0.0	L Prf No Stg	0	Calls	0	BP Warn	0	
DB2 Services	6.2	Parallel Err	0	CallFail	0	Avg I/O	0.0093	
Wt Data Shr Msgs	0.0						Log Write	12
Wt Stor Proc TCB	0.0							
Routine Elapsed	0.0							
Command ==>								
F1=Help	2=Split	3=End					12=Return	
		9=Swap						

The portion of the panel above the dashed line displays the number of accounting records that have certain normal, abend, or INDOUBT conditions. It also includes (in the HIGHLIGHTS section) the number of thread aborts and commits.

The portion of the panel below the dashed line displays the same information as the Thread History Overview panel.

## Response Time History Summary Panel

This panel displays DB2 response times and CPU used by the summarized threads. To access this panel, select View Bar Option 2 (Resp Time). The following is a sample of this panel:

Times in HH:MM:SS.TTTT		Qualifying Records 38			
	Total	Average	Evnts	% App Elpsd	% DB2 Elpsd
Elapsed Time App	09:50:41.5059	15:32.6712	N/A	0.3	
CPU Time Appl	1:58.9474	3.1301	N/A	0.3	
TCB Time Appl	1:50.7802	2.9152	N/A	0.3	
SRB Time Appl	8.1672	0.2149	N/A	0.0	
Elapsed Time DB2	28:42.5311	45.3297	2670	4.9	
CPU Time DB2	5.4893	0.1444	N/A		0.2
TCB Time DB2	5.4064	0.1422	N/A		0.2
SRB Time DB2	0.0829	0.0021	N/A		0.0
Wait for DB2 I/O	1.8261	0.0480	274		0.0
Wait Lock/Latch	11:18.3534	17.8514	46		39.4
Wait Other Read	0.5371	0.0141	24		0.0
Wait DB2 Service	16:50.3854	26.5890	742		58.7
IFI Calls Elapsd	4.2814	0.1126	260		0.2
IFI Calls TCB	0.5915	0.0155	N/A		0.0
Wt Data Shr Msgs	0.1221	0.0032	26		0.0
Wait Global Cont	1.6984	0.0446	84		0.0
Other DB2 Time	15.6637	0.4122	N/A		0.8

Command ==>>>  
 F1=Help      2=Split      3=End      9=Swap      12=Return

The Qualifying Records field indicates the number of thread accounting records summarized for this request. The average times are calculated by dividing the total times by the number of qualifying records.

Only events with non-zero values display. As a result, the display might change from one summarized display to the next, because the non-zero events might be different.

## Thread Lock History Summary Panel

This panel displays total and average locking activity for the summarized threads. The average values are calculated by dividing the total values by the number of qualifying records. To access this panel, select View Bar Option 3 (Locks). The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 16:16:43
DBV3 S018
  1 Overview 2 Resp Time 3 Locks 4 Buffers 5 More...
R/HTULOCKS Thread Lock History Summary
Max Page Locks Held 0 Qualifying Records 24

```

	Total	Average		Total	Average
Timeouts	0	0.0	Suspensions - Lock	0	0.0
Deadlocks	0	0.0	Suspensions - Latch	0	0.0
Lock Escalation - Shr	0	0.0	Suspensions - Other	0	0.0
Lock Escalation - Exc	0	0.0	Suspensions - Total	0	0.0
Claim Requests	0	0.0	Unlock Requests	0	0.0
Claim Failures	0	0.0	Query Requests	0	0.0
Drain Requests	0	0.0	Change Requests	0	0.0
Drain Failures	0	0.0	Lock Requests	0	0.0
			Other Requests	0	0.0

```

Command ==>
F1=Help 2=Split 3=End 9=Swap 12=Return

```

## Thread Buffer Pool History Summary Panel

This panel displays the buffer pool activity for the summarized threads. To access this panel, select View Bar Option 4 (Buffers). The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 16:19:58
DBV3 S018
  1 Overview 2 Resp Time 3 Locks 4 Buffers 5 More...
R/HTUBUFRS Thread Buffer Pool History Summary Item 2-2 of 3

```

BP NAME	BP1	TOTALS			
Getpages		6197	Seq Pref Reqsts	107	HP OK Reads 0
Sync Reads		257	Lst Pref Reqsts	0	HP Read Failures 0
Tasks		2	Dyn Pref Reqsts	85	Cond Getpg Fails 0
Bufr Updates		0	Pref Pages Read	1085	HP OK Writes 0
Immed Writes		0	Pref Pgs From HP	0	HP Wrt Failures 0
		<b>AVERAGES</b>			
Getpages		3098.5	Seq Pref Reqsts	53.5	HP OK Reads 0.0
Sync Reads		128.5	Lst Pref Reqsts	0.0	HP Read Failures 0.0
Read Eff		24.1	Dyn Pref Reqsts	42.5	Cond Getpg Fails 0.0
Bufr Updates		0.0	Pref Pages Read	542.5	HP OK Writes 0.0
Immed Writes		0.0	Pref Pgs From HP	0.0	HP Wrt Failures 0.0

```

Command ==>
F1=Help F7=Up 2=Split 8=Down 3=End 9=Swap 12=Return

```

An item count (Item *n-n* of *n*) indicates the number of buffer pools that were used.

Information on this panel is grouped by each buffer pool used within the summarized set of completed threads. Total and average values for all statistics are shown for each buffer pool.

## Thread Remote Location History Summary List Panel

This panel lists all remote locations in the history file that were used by any and all of the summarized threads.

The Thread Remote Locations History Summary List panel appears when you:

- Select View Bar Option 5 (More...) from within the Thread History Summary function, then select Menu Option 1 (Remote Locations).
- Enter 5.1 from within the Thread History Summary function and press Enter.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 16:21:27
DBV3 S018

Actions: S=Select for more detail
R/HTURMOTE Thread Remote Locatn History Summary List

. Location GC0IDB2DEVDB23 Qualifying Records 263
Requests Queued 0 Remote Site Coordinator
Messages 108 72 Thds Indoubt 0
SQL 72 0 Rollbacks 0

Command ==>
F1=Help 2=Split 3=End
9=Swap 12=Return

```

The number of summarized thread accounting records is shown in the Qualifying Records field. To see more detail on a remote location, enter **S** or cursor-select the field for that location and press Enter. A description of the Thread Remote Location History Summary Detail panel follows.

## Thread Remote Location History Summary Detail Panel

This panel displays the detailed information on the remote location that you selected on the previous panel. This panel appears only when you select a remote location from the Thread Remote Location History Summary List panel. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 15:37:07
DBV6 XE44

R/HTURMDTL Thread Remote Location Hist Summary Dtl

Location D420TS44
Total Average Qualifying Records 1
Requests Queued 0 0.0 SQL Sent 0 0.0 Total Recved 8 8.0
SQL Bound Remote 0 0.0 Messages 8 8.0 9 9.0
Block Mode Switch 0 0.0 Blocks 0 0.0 0 0.0
Rows in Msg Buffer 0 0.0 Rows 6 6.0 0 0.0
Cnverstn Allocated 0 0.0 Bytes 4468 4468.0 3125 3125.0
Cnversations Ended 0 0.0 Cnvrstns 0 0.0 1 1.0
Max Conversations 0 Trans 0 0.0 1 1.0
Commits 0 0.0 1 1.0
Aborts 0 0.0 0 0.0

Times in HH:MM:SS.TTT
Total Average
Elpsd Local 0.0000 0.0000
Elpsd Remote 0.0000 0.0000
CPU Remote 0.0000 0.0000
Wait MaxDBAT 0.0000 0.0000

Two Phase Commit Operations
Remote Site as Coordinator
Total Average Requests Total Average Total Average
Sent Sent Recved Recved
Threads Indoubt 0 0.0 Prepare 0 0.0 0 0.0
Commits 0 0.0 Forget 0 0.0 0 0.0
Rollbacks 0 0.0 Commit 0 0.0 0 0.0
Backout 0 0.0 0 0.0
Responses
Last Agt 0 0.0 0 0.0
Commit 0 0.0 0 0.0
Backout 0 0.0 0 0.0

Command ==>
F1=Help 2=Split 3=End 9=Swap 12=Return
    
```

The number of threads meeting the selection criteria that processed at this location is shown in the Qualifying Records field. Again, the average value is computed by dividing the total value by the number of qualifying records.



## Thread SQL Counts History Summary Panel

This panel displays counts of SQL statements by type usage for the summarized threads.

The Thread SQL Counts History Summary panel appears when you:

- Select View Bar Option 5 (More...) from within the Thread History Summary function, then select Menu Option 2 (SQL Counts).
- Enter 5.2 from within the Thread History Summary function and press Enter.

The following is a sample of this panel:

Menu Print Tools Help		CA-Insight		MATSAA2		14:30:28 D71A CA31		
R/HTUSQL Thread SQL Counts History Summary				Row 1-33 of 37				
		Total	Average	Qualifying Records 102		Total	Average	
All SQL	233812	2292.3	SET SQL ID	31	0.3			
SELECTS	374	3.7	LOCK TABLE	0	0.0			
INSERTS	4103	40.2	SET HOST VR	0	0.0			
UPDATES	114	1.1	COMMENT ON	0	0.0			
DELETES	8	0.1	LABEL ON	0	0.0			
PREPARES	18	0.2	GRANTS	0	0.0			
FETCHES	219966	2156.5	REVOKES	0	0.0			
OPEN CSR	4601	45.1	CONN TYPE 1	0	0.0			
CLOSE CSR	4578	44.9	CONN TYPE 2	18	0.2			
DESCRIBES	0	0.0	RELEASE	0	0.0			
DESCR TBL	0	0.0	SET CONNECT	0	0.0			
Incr Bind	0	0.0	SET DEGREE	1	0.0			
Reopt Var	0	0.0	SET RULES	0	0.0			
ASSOC LOC	0	0.0	ALLOC CSR	0	0.0			
HOLD LOC	0	0.0	RENAME TBL	0	0.0			
FREE LOC	0	0.0	SET PATH	0	0.0			
			SET PREC	0	0.0			
			DCL GBL TMP	0	0.0			
			----- CREATE -----					
			----- DROP-----					
			----- ALTER-----					
			Total	Average	Total	Average	Total	Average
STO GROUP	0	0.0	0	0.0	0	0.0	0	0.0
DATABASE	0	0.0	0	0.0	0	0.0	0	0.0
TABLESPACE	0	0.0	0	0.0	0	0.0	0	0.0
TABLE	0	0.0	0	0.0	0	0.0	0	0.0
INDEX	0	0.0	0	0.0	0	0.0	0	0.0
SYNONYM	0	0.0	0	0.0				
VIEW	0	0.0	0	0.0				
ALIAS	0	0.0	0	0.0				
PACKAGE	0	0.0	0	0.0				
GBL TMP TB	0	0.0						
AUX TABLE	0	0.0						
TRIGGER	0	0.0	0	0.0				
FUNCTION	0	0.0	0	0.0	0	0.0	0	0.0
PROCEDURE	0	0.0	0	0.0	0	0.0	0	0.0
DISTINCT	0	0.0	0	0.0				
Command ==>								
F1=Help		2=Split		3=End				
F7=Up		8=Down		9=Swap		12=Return		

The average counts are calculated by dividing the total counts by the number of qualifying records.

## List Prefetch and Query Parallelism History Summary Panel

This panel displays list prefetch and query parallelism statistics for the summarized threads.

The List Prefetch and Query Parallelism History Summary panel appears when you:

- Select View Bar Option 5 (More...) from within the Thread History Summary function, then select Menu Option 3 (List Prefetch/Query Parallelism).
- Enter 5.3 from within the Thread History Summary function and press Enter.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 14:32:33
D71A CA31

R/HTULPRF List Pref/Parallel/LOB Stg/Svpnt Hist Sum

List Prefetch
Number of Times Used 13
Failed - No Storage 0
Failed - RID Limit 0

LOB STORAGE
Max LOB Storage (KB) 0

SAVEPOINTS
Number of requests 0
Release requests 0
Rollback requests 0

Query Parallelism
Parallel Groups Executed 0
Groups Executed as Planned 0
Max Degree of Parallelism 0
Groups w/ Reduced Degree 0
Groups Failed - Cursor 0
Groups Failed - ESA Sort 0
Groups Failed - Storage/BP 0
Groups Failed - Enclave 0
Grps exec 1 DB2: COORD=NO 0
Grps exec 1 DB2: ISO=RR/RS 0
Number Intended Groups 0
Members Bypassed BP Short 0
Access Path Redone: Config 0
Access Path Redone: BP 0
Grps exec 1 DB2: DclTmpTbl 0

Qualifying Records 102

Command ==>
F1=Help 2=Split 3=End 9=Swap 12=Return
    
```

## Resource Limit Facility (RLF)

### Thread Resource Limit History Summary Panel

This panel displays Resource Limit Facility (RLF) information for the summarized threads.

The Thread Resource Limit History Summary panel appears when you:

- Select View Bar Option 5 (More...) from within the Thread History Summary function, then select Menu Option 4 (Resource Limit Facility).
- Enter 5.4 from within the Thread History Summary function and press Enter.

The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	SE19257	16:33:33	
						DBV3 S018	
R/HTURLF	Thread Resource Limit History Summary					Item 1-2 of 2	
	Limit Specification	Count	Avg CPU Used	Max CPU Used	% Limit		
	-----		-----	-----	-----		
		216	0.0000	0.0000	0.0		
	NOT ACTIVE	47	0.0000	0.0000	0.0		
Command ==>							
	F1=Help	2=Split	3=End	9=Swap	12=Return		

## Package/DBRM History Summary List Panel

This panel displays data from the history file of the packages and DBRMs that were executed for the summarized threads. It also displays a scrollable list of the collection IDs in the history file for these summarized threads. The collection ID is specified on the PACKAGE parameter of the BIND PACKAGE statement.

The Package/DBRM History Summary List panel appears when you:

- Select View Bar Option 5 (More...) from within the Thread History Summary function, then select Menu Option 5 (Package).
- Enter 5.5 from within the Thread History Summary function and press Enter.

The following is a sample of this panel:

Collection	Package	Count	Tot Elap	DB2	Tot TCB	DB2
.	DDFREAD	1	11.95		0.36	
.	DYNASQL	36	41.84		2.58	
.	HOLDLOCK	1	3.62		0.01	
.	NUXPLAN	4	1:51.54		0.91	
.	PICKME	1	4:39.73		2:43.74	
.	WAITLOCK	4	4:57.40		0.07	

To see more detail on a collection, enter S or cursor-select the field for that collection and press Enter. A description of the Package/DBRM History Summary Detail panel follows.

## Package/DBRM History Summary Detail Panel

This panel displays detailed package or DBRM data for the collection ID and package selected on the previous panel. This panel appears only when you select a collection ID from the Package/DBRM History Summary List panel. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 14:33:29
D71A CA31

R/HTUPKGD Package/DBRM History Summary Detail

Coll ID AUTH99D_COM Program PTADRVAC Qualifying Records 70
SQL Count 14 HHH:MM:SS.TTT HHH:MM:SS.TTT
ALL EXECS Evnts Total Average %DB2 Elap %Thd DB2 Elap
DB2 Elapsed.. 304 0.496 0.007 N/A 0.6
DB2 TCB..... 304 0.046 0.000 9.2 0.1
I/O..... 86 0.546 0.007 109.8 0.6
Lock/Latch... 0 0.000 0.000 0.0 0.0
Other Rd I/O. 0 0.000 0.000 0.0 0.0
Other Wr I/O. 0 0.000 0.000 0.0 0.0
DB2 Services. 0 0.000 0.000 0.0 0.0
Log Quiesce.. 0 0.000 0.000 0.0 0.0
Drain Lock... 0 0.000 0.000 0.0 0.0
Claim Release 0 0.000 0.000 0.0 0.0
Arch Log Read 0 0.000 0.000 0.0 0.0
Pg Latch Cont 0 0.000 0.000 0.0 0.0
Wt DS Msgs... 0 0.000 0.000 0.0 0.0
Wt S-Proc TCB 0 0.000 0.000 0.0 0.0
Wt Gbl Cont. 0 0.000 0.000 0.0 0.0
Wt UDF TCB... N/A 0.000 0.000 0.0 0.0
Glb Chld L-Lk 0 0.000 0.000 0.0 0.0
Glb Othr L-Lk 0 0.000 0.000 0.0 0.0
Glb Pset P-Lk 0 0.000 0.000 0.0 0.0
Glb Page P-Lk 0 0.000 0.000 0.0 0.0
Glb Othr P-Lk 0 0.000 0.000 0.0 0.0
Other DB2.... N/A 0.369 0.005 74.2 0.4

                HHH:MM:SS.TTT HHH:MM:SS.TTT
                Total Average %DB2 Elap
LAST EXEC
DB2 Elapsed 0.001 0.000 0.2
DB2 TCB.... 0.001 0.000 0.2

Command ==>
F1=Help      2=Split      3=End
              9=Swap      10=Left      11=Right      12=Return
    
```

The average values are calculated by dividing the total values by the number of qualifying records. The number of qualifying records refers to those completed, selected threads that used this collection ID and package.

## Thread IFI/Data Capture History Summary Panel

This panel displays information about IFI and Data Propagator (DPROP) processing for the summarized threads.

The Thread IFI/Data Capture History Summary panel appears when you:

- Select View Bar Option 5 (More...) from within the Thread History Summary function, then select Menu Option 6 (IFI Counts/Data Capture Facility).
- Enter 5.6 from within the Thread History Summary function and press Enter.

The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	SE19257	16:41:28
						DBV3 S018
R/HTUIFI Thread IFI / Data Capture History Summary						
IFI CALLS					Qualifying Records 263	
				Total	Average	%DB2
				HHH:MM:SS.TTT	HHH:MMM:SS.TTT	ELAP %DB2
Events.....	0	Elapsed		0.000	0.000	0.0 CPU
		TCB		0.000	0.000	0.0 0.0
DATA CAPTURE						
Log Records Captured..	0					
Log Extractions.....	0	Elapsed		0.000	0.000	0.0
Data Rows Read.....	0					
Log Records Read.....	0					
Data Descriptions Read	0					
Tables Returned.....	0					
Describes Performed...	0	Elapsed		0.000	0.000	0.0
Command ==>						
F1=Help	2=Split	3=End				12=Return
		9=Swap				

## Group Buffer Pool History Summary Panel

This panel displays the group buffer pool activity for the summarized threads. This information is useful for determining the usage for group buffer pools.

The Thread Group Buffer Pool History Summary panel appears when you:

- Select View Bar Option 5 (More...) from within the Thread History Summary function, then select Menu Option 7 (Group Buffer Pools).
- Enter 5.7 from within the Thread History function and press Enter.

The following is a sample of this panel:

```

Menu Print Tools Help  CA-Insight          MATSAA2          11:45:07
                                     D61D XE44

R/HTUGBPL          Thread Group Buffer Pool History Summary

GROUP BUFFER POOL GBP0          Qualifying Records 1
READS
Hit Ratio 0.500
----- Totals -----
Data Returned          Buf Inv  Pg Gone  Total  Buf Inv  Pg Gone  Total
Data Not Returned
X-DB2 R/W              1        2        3      1.0    2.0    3.0
No X-DB2 R/W          N/A       0        0      N/A    0.0    0.0
Tot Not Returned      1        2        3      1.0    2.0    3.0
WRITES
Sync                  Chgd Pgs  Cln Pgs  Total  Chgd Pgs  Cln Pgs  Total
Sync                  3         0        3      3.0    0.0    3.0
OTHER
Unregister page        0          0        0.0
Explicit X-Inv         0          0        0.0
Pri IXLCACHE Rq       0          0        0.0
SECONDARY
Writes Chng Pgs       0          0        0.0
Wrt Check Susp        0          0        0.0
IXLCACHE Req         0          0        0.0

Command ==>>>
F1=Help          2=Split          3=End
                                     9=Swap
                                     12=Return

```

Information on this panel is grouped by each group buffer pool used. Use the PF8/PF7 keys to scroll forward and backward in the list, if applicable.

## Thread Global Locking History Summary Panel

This panel displays the global locking activity for the summarized threads. This information is useful for determining the amount of global lock contentions.

The Thread Global Locking History Summary panel appears when you:

- Select View Bar Option 5 (More...) from within the Thread History Summary function, then select Menu Option 8 (Global Locking).
- Enter 5.8 from within the Thread History function and press Enter.

The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	DXB164	13:43:50
						DB2E S074
R/HTUGLK	Thread Global Locking History Summary					
					Qualifying Requests	Records 38
CONTENTIONS	Total	Average		Total	Average	Total Average
False.....	20	0.5	Lock....	190	5.0	626 16.5
IRLM.....	16	0.4	Change..	12	0.3	21 0.6
XES.....	6	0.2	Unlock..	52	1.4	379 10.0
			Denied..	0	0.0	N/A N/A
NOTIFYs						
Sent.....	15	0.4				
Command ==>	-----					
F1=Help	2=Split		3=End			12=Return
			9=Swap			



## Dynamic Prepare/Direct Row Access History Summary Panel

This panel shows dynamic prepare activity for the summarized threads.

The Dynamic Prepare/Direct Row Access History Summary panel appears when you:

- Select View Bar Option 5 (More) from within the Thread History Summary function, then select Menu Option 8 (Dynamic Prepare / Direct Row Access).
- Enter 5.8 from within the Thread History function and press Enter.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 15:52:05
D61D XE44

R/HTUDYNP Dyn Prep / Direct Row Access History Summ
Qualifying Records 1

DYNAMIC PREPARE          DIRECT ROW ACCESS
 Stmt found in cache      0      Number of Times Successful  0
 Stmt not found in cache  0      Reverted to Using Index     0
 Implicit prepare performed 0      Reverted to Using TS Scan   0
 Prepare avoided          0
 Stmts discarded - MAXKEEPD 0
 Stmts purged - dep. object 0

Command ==>
 F1=Help      2=Split      3=End
              9=Swap
              12=Return

```

## Thread DB2 Routine Counts History Summary Panel

This panel shows statistics relating to the use of DB2 routines including stored procedures, user defined functions, and triggers for the summarized threads.

The Thread DB2 Routine Counts History Summary panel appears when you:

- Select View Bar Option 5 (More) from within the Thread History Summary function, then select Menu Option 9 (DB2 Routine Counts).
- Enter **5.9** from within the Thread History function and press Enter.

The following is a sample of this panel:

Menu		Print	Tools	Help	CA-Insight	MATSAA2	16:07:55
							D61D XE44
R/HTURTN	Thread DB2 Routine Counts History Summary						
							Qualifying Records 1
	STORED PROCEDURES		USER DEFINED FUNCTIONS		TRIGGERS		
	Total	Average	Total	Average		Total	Average
Executions	0	0.0	0	0.0	Statement Triggers	0	0.0
Abends	0	0.0	0	0.0	Row Triggers	0	0.0
Timeouts	0	0.0	0	0.0	SQL Errors	0	0.0
Rejects	0	0.0	0	0.0			
Maximum Cascading Level (all types): Total						0	Average 0.0
Command ==>							
F1=Help		2=Split		3=End		12=Return	
				9=Swap			

**Note:** Option 9 only appears on the Thread History Menu when a DB2 V6 or higher subsystem is being monitored.

*EXPLAIN* is an SQL command that provides you with information about an SQL statement and the access path that was selected.

## Displaying SQL EXPLAIN Data

All applications that access DB2 do so using SQL queries or requests for data. From a performance standpoint, however, some queries are less efficient than others.

When an SQL query is executed in DB2, the DB2 Data Manager looks at the predicates in the WHERE clause and determines if they are indexable; that is, which predicates are the type that can match the entries of a suitable index. A suitable index can greatly reduce the number of rows processed, saving both I/O and CPU time.

The Data Manager then evaluates the rows retrieved based on the Stage 1 predicates (described in the following) in the query, and passes the qualifying rows to the Relational Data Services (RDS) facility. The RDS evaluates the rows based on the Stage 2 predicates (also described in the following) in the query, and returns the qualified data to the user.

### Stage 1 Versus Stage 2 Predicates

Indexable predicates save on I/O by retrieving fewer rows for the Data Manager to evaluate. Eliminating rows at the Stage 1 predicate level, however, saves time because evaluating rows for Stage 2 predicates consumes significantly more CPU time than Stage 1 evaluations. To optimize using this method can require rewriting your SQL statements to change Stage 2 to Stage 1 predicates, or to evaluate Stage 1 predicates first. For a complete table listing Indexable, Stage 1 and Stage 2 predicates, see the *IBM DATABASE 2 Administration Guide*.

## Monitoring SQL

With Unicenter CA-Insight, you can view SQL that is currently executing, or SQL that was executing. To discover whether a plan or a particular SQL statement is using an index, use the Mini-EXPLAIN (ACCSHIST) request that uses performance trace data, or the EXPLAIN facility. When the ACCSHIST request is active, information about an SQL statement's access path is written to this request each time an SQL statement is EXPLAINed, bound, or executed dynamically. Information displayed includes the SQL text and a description of the access path selected.

You can execute the EXPLAIN facility from a number of panels (such as ACCSHIST and SQLTEXT) by entering an E in the appropriate entry field. The availability of this function is included in the description for those panels.

When Unicenter CA-Insight does an EXPLAIN, it uses the user's plan table. The PROGNAME entry in the plan table is the Unicenter CA-Insight name that performs the EXPLAIN. The update to the plan table is rolled back after the EXPLAIN is performed. The advantage of this approach is that you never have to be concerned with what QUERYNO is used for to do the EXPLAIN.

## The EXPLAIN Plan

The EXPLAIN can use one of two plan names specified in the install parameters (the DC sysparms). Use the PROFILE command to specify the plan you want to use. This option allows an installation to have one plan bound against the SYSIBM tables and an alternate plan bound against one or more catalog shadow tables. However, your administrator might have specified the **same** plan name for both SYSIBM and user qualified plans in sysparms. If this is the case, changing this option has no effect on EXPLAIN's execution. On the PROFILE display, specify:

- S** To use the plan name for SYSIBM tables (EXPLAIN-PLAN-SYSIBM sysparm plan name).
- U** To use the plan name for user qualified tables (EXPLAIN-PLAN-USERQUAL sysparm plan name).

## Manage EXPLAIN Environment Panel

You must have a plan table allocated under one of your authorization IDs before executing the EXPLAIN command for an SQL statement. The DB2 plan table holds the EXPLAIN data.

To create a plan table using Unicenter CA-Inspight's the EXPLAIN facility, select option 5 (Manage EXPLAIN Environment) from the Explain Menu Options panel. The Manage EXPLAIN Environment panel appears:

```

Menu Print Tools Help  CA-Inspight           MATSAA2           10:44:11
                                      DBV6 XE44

                          Manage EXPLAIN Environment

Specify the items to be created or dropped and the desired options (blank
fields will have default values used). Then press Enter.

Type of request . . 1 1. Create           Options:
                   2. Drop                Database _____ Tblspace _____
                                           SQLID . . . _____
                                           DB/Tblspace      Index
Items to be created/dropped:
- Database
- Tablespace
5 PLAN_TABLE
- PLAN_TABLE HINT_IX (DB2 V6)
- DSN_STATEMNT_TABLE (DB2 V6)
                                           Buffer pool . . . _____ . . . _____
                                           VCAT/STOGROUP . . . _____ . . . _____
                                           Name . . . . . SYSDEFLT . . . SYSDEFLT
                                           Pri quantity . . 20 _____ . . 12 _____
                                           Sec quantity . . 20 _____ . . 12 _____
                                           Close YES/NO . . NO _____ . . NO _____

Command ==>>> _____
F1=Help          2=Split          3=End
                                      9=Swap
                                      12=Return
    
```

From this panel you can select one or more objects (database, tablespace, plan table, plan table index used for hints starting with DB2 V6, or the DSN statement table used starting with DB2 V6) that are to be created or dropped. If you are creating a database, tablespace or index, then you can specify the object characteristics on the right side of the panel. When creating a plan table, Unicenter CA-Inspight automatically creates the table with the maximum number of columns supported by the release of DB2 on which you are creating the plan table.

You must have proper DB2 authority (such as "Create Database" or "Create Table") in order to create or drop the objects.

DB2 uses default values for any field that you leave blank. The SQLID can be used to specify the owner (qualifier) of the plan table to be created.

After you have entered the data on the panel, press Enter to have the objects created or dropped.

If there is an error executing a create or a drop, a panel displaying the function being performed along with the SQL error messages display and all work is rolled back.

## EXPLAINing Plans and Packages

This section describes the first menu option of the Explain Menu Options panel. You can select from a list of plans/packages/programs and EXPLAIN them, view related DB2 catalog statistics, and view SQL text. For a description of this SQL text, see [Dynamic EXPLAINs](#).

### Specifying Selection Criteria

#### Qualifying List of Programs Panel

Before you can display EXPLAIN data for a plan or package, you have the option of selectively displaying lists of plans and packages by specifying selection criteria. The following is a sample of the Qualifying List of Programs panel:

Plan	Collection ID	Program	EXP	BindDate	BindTime	Owner	Creator
. ACEPTP1		ACEPTP1	N	YY/MM/DD	15:05:58	USERxx	USERxx
. ACEPTP2		ACEPTP2	N	YY/MM/DD	15:06:27	USERxx	USERxx
. ACEPTP3		ACEPTP3	N	YY/MM/DD	15:06:52	USERxx	USERxx
. ACEPTP4		ACEPTP4	N	YY/MM/DD	15:07:35	USERxx	USERxx
. ACEPTP5		ACEPTP5	N	YY/MM/DD	15:08:02	USERxx	USERxx
. BC1PDBFP	EDB2FP380	BC1PSQL5	N	YY/MM/DD	15:46:12	USERxx	USERxx
. BC1RDB9X	EDB2RP380	BC1PSQL6	N	YY/MM/DD	15:46:14	USERxx	USERxx
. DBDELDPC		DBDELDPC	N	YY/MM/DD	15:46:16	USERxx	USERxx
. DLVYDYN5		DLVYDYN5	N	YY/MM/DD	15:46:17	USERxx	USERxx
. DLVYRSQL		DLVYRSQL	N	YY/MM/DD	15:46:18	USERxx	USERxx
. DLVYUNLO		DLVYUNLO	N	YY/MM/DD	15:46:19	USERxx	USERxx
. DLVYVLFX		DLVYVLFX	N	YY/MM/DD	15:46:19	USERxx	USERxx
. DSNEDCL	DSNEDCL	DSNECP68	N	YY/MM/DD	13:28:19	USERxx	USERxx
. DSNESPCS	DSNESPCS	DSNESM68	N	YY/MM/DD	22:24:14	USERxx	USERxx
. DSNESPRR	DSNESPRR	DSNESM68	N	YY/MM/DD	12:28:41	USERxx	USERxx
. DSNHYCRD	DSNHYCRD	DSNHYCRD	N	YY/MM/DD	13:28:20	USERxx	USERxx
. DSNTIA61		DSNTIAD	N	YY/MM/DD	13:25:09	USERxx	USERxx
. DSNWZP	DSNWZP	DSNWZP	N	YY/MM/DD	13:28:41	USERxx	USERxx
. ENNCONV	EDB2CV380	ENNCONV	N	YY/MM/DD	15:46:12	USERxx	USERxx
. ENNRBLD	EDB2BL380	ENNRBD2	N	YY/MM/DD	15:46:10	USERxx	USERxx
. ENNSYNC	EDB2SY380	ENNRBD2	N	YY/MM/DD	15:46:15	USERxx	USERxx
.		ENNSYD5	N	YY/MM/DD	15:46:14	USERxx	USERxx
. IDB2OBI		IDB2OBI	N	YY/MM/DD	16:00:32	USERxx	USERxx
. IDB2V61S		NUXPLAN	Y	YY/MM/DD	16:03:13	USERxx	USERxx
. IDB2V61U		NUXPLAN	N	YY/MM/DD	16:00:25	USERxx	USERxx

Actions: S=View EXPLAIN data, P=View PATH (DB2 V6).

Command ==>

F1=Help	2=Split	3=End	5=Rfind
		9=Swap	10=Left
			11=Right
			12=Return

The panel is initially displayed with default values. An asterisk (\*) indicates that all of that item (plans, collections, locations, etc.) display on the program list panel.

To filter the list, enter the desired values in the input fields. You can use an asterisk (\*) wildcard character at the end of value to display all items starting with the prior characters. For example, if you enter **ABC\*** in the plan field, Unicenter CA-Insight returns all DBRMs and packages for plans beginning with "ABC."

For performance, you can bypass a scan of the SYSIBM.SYSDBRM table by entering **Y** at Bypass SYSIBM.SYSDBRM scan. If you do this, all DBRMs are grouped into one generic entry in the resulting program list for all plans that qualify. See field-level help for the Bypass DBRM scan field for cases where the scan cannot be bypassed.

Press Enter to display the list of DBRMs and packages.

For DB2 version 6 and higher, enter **P** by a row to view the complete PATH information. The resulting panel is described in the next section.

### PATH for Selected Plan/Package Panel

When you enter **P** from the Qualifying List of Programs panel, you receive a display showing the complete PATH used for the selected plan or package. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 11:12:31
DBV6 XE44

          PATH for Selected Plan/Package

Path : "SYSIBM", "SYSFUN", "SYSPROC", "MATSAA02 "
      :
      :
      :

Command ==>>> _____
      F1=Help      2=Split      3=End
                   9=Swap      12=Return

```

## List of Plans/Packages/Programs

### Qualifying List of Programs Panel

Once you specify selection criteria (or take the default values), a list is returned of all rows from the catalog that match the selection criteria. The following is a sample of the Qualifying List of Programs panel:

Menu		Print	Tools	Help	CA-Insight	SE19257	15:35:14
							DB23 S018
Qualifying List of Programs							
							Row 1-11 of 2520
To view EXPLAIN data, select an entry with an "S". Then press Enter.							
Plan	Collection ID	Program	EXP	BindDate	BindTime	Owner	Creator
. AALON1		LOCK1	Y	YY/MM/DD	03:58:08	USERxx	USERxx
. AALON2		LOCK2	Y	YY/MM/DD	10:43:07	USERxx	USERxx
. AB24DYNS		DLVYDYNS	Y	YY/MM/DD	14:07:49	USERxx	USERxx
. AB24RSQL		DLVYRSQL	Y	YY/MM/DD	14:07:20	USERxx	USERxx
. AB24UNLO		DLVYUNLO	Y	YY/MM/DD	14:06:45	USERxx	USERxx
. AB24VLFX		DLVYVLFX	Y	YY/MM/DD	14:04:47	USERxx	USERxx
. AB32DYNS		DLVYDYNS	N	YY/MM/DD	16:30:48	USERxx	USERxx
. AB32RSQL		DLVYRSQL	N	YY/MM/DD	16:31:13	USERxx	USERxx
. AB32SPAC		DLVYUNLO	N	YY/MM/DD	20:21:10	USERxx	USERxx
. AB32UNLO		DLVYUNLO	N	YY/MM/DD	16:32:01	USERxx	USERxx
. AB32VLFX		DLVYVLFX	N	YY/MM/DD	16:32:24	USERxx	USERxx
Command ==>							
F1=Help	2=Split	3=End		5=Rfind			
F7=Up	8=Down	9=Swap	10=Left	11=Right	12=Return		

The rows are sorted by plan, collection ID, and program name. Additional bind information can be viewed by using the PF11 key to scroll right.

Enter **S** by a row to view detail EXPLAIN data for a particular DBRM. To be able to display EXPLAIN data, the plan/package needs to have been previously bound with EXPLAIN=YES specified. This is indicated in the list by a **Y** in the EXP column. If you try to display EXPLAIN data for a plan that has not been bound with EXPLAIN=YES, the following message displays:

DBG55129W EXPLAIN Data not found in the Plan\_Table



## EXPLAIN Data for an Existing Program

### EXPLAIN Data for Existing Programs Panel - Expanded View

When you select a plan/package to EXPLAIN, the expanded explanation view of the EXPLAIN Data for Existing Programs panel appears. The following is a sample of this panel:

```

Menu Print Tools Help  CA-Insight          MATSAA2          14:39:34
                                D71A CA31

  1 Expanded explanation  2 Summary list

                                Level set (-) . 0
                                Row 1-30 of 1007
Actions: C=Catalog stats, T=SQL Text, O=Update OPTHINT (DB2 V6). F6=Delete.
         QB JN Mtch          Index N-Sort-C TS Pre C Dgree
         Stmt# # MT AC Cl Table/Index Name          Only UJOGUJOG LCK Tp E Ac Jn
PROGRAM: NUXPLAN          DATA IS CURRENT
-----
_   566 1  I  1 SYSIBM.SYSPLAN
                                SYSIBM.DSNPPH01
                                N ----- IS

Line 01          Data accessed from the table
SQL operation:  SELECT statement
Cost estimate:  Milliseconds=1          Service units=1
                : Cost made without using default values.
In.....Table:  SYSIBM.SYSPLAN
                Index: SYSIBM.DSNPPH01
Access Method:  Matching index scan with data access using 1 column.
Lock:          Intent share

-----
_   584 1  I  4 SYSIBM.SYSPACKAGE
                                SYSIBM.DSNKKX01
                                N ----- IS

Line 01          Data accessed from the table
SQL operation:  SELECT statement
Cost estimate:  Milliseconds=1          Service units=1
                : Cost made without using default values.
In.....Table:  SYSIBM.SYSPACKAGE
                Index: SYSIBM.DSNKKX01
Access Method:  Matching index scan with data access using 4 columns.
Lock:          Intent share

-----
_  2670 1  R   SYSIBM.SYSSTMT
                                ----- IS S
                                -----Y-

Command ==>
F1=Help      2=Split      3=End      5=Rfind      6=Delete
F7=Up        8=Down        9=Swap     10=Left     11=Right   12=Return

```

This panel displays EXPLAIN data for an application plan or package previously bound in DB2 with a BIND option of EXPLAIN=YES. The data is shown in tabular format with additional information for that statement shown below the dashed line. Press PF11 to show additional EXPLAIN information to the right of the currently displayed information.

If the plan has been bound with the EXPLAIN=YES option more than once without deleting previous EXPLAIN data from the PLAN\_TABLE, Unicenter CA-Insight displays the rows of the PLAN\_TABLE that are associated with a single BIND execution.

You can use the “Level set” input field to display different levels of EXPLAIN data associated with different BIND executions. By default, Unicenter CA-Insight displays the last set of EXPLAIN data available. A message also displays indicating whether the EXPLAIN data on the screen is current for the last BIND of the plan. The level set you enter is interpreted as a negative number.

### Available Actions

You can perform take the following actions from these panels:

**C**

Retrieves DB2 catalog statistics for all tables and their indexes (whether used or not) involved with the selected SQL statement. The related panel is described later in this chapter.

**T**

Retrieves the SQL text that generated this line of data. The related panel is described later in this chapter.

**O**

Invokes a panel for which you can update the optimizer hints (OPTHINT plan table column) value for the selected SQL statement. The related panel is described later in this chapter.

**PF6**

Deletes the EXPLAIN data for the current level being displayed. This lets you delete old levels of EXPLAIN data for a plan, if you have DB2 UPDATE authority to the PLAN\_TABLE.

**PF11**

Displays additional EXPLAIN information.

- Scroll once to see the P-GroupID, Para Mode, Pg Rng, Outer Join, and MSJ Col fields.
- Scroll twice to see the #, Seq, and Timestamp fields.
- Scroll three times to see the Correlation-name and Group Member fields.

## EXPLAIN Data for Existing Programs Panel - Summary List View

The following is a sample of the summary list view of the EXPLAIN Data for Existing Programs panel:

```

Menu Print Tools Help CA-Insight MATSAA2 14:41:54
                          D71A CA31
  1 Expanded explanation  2 Summary list
                          Level set (-) . 0
                          EXPLAIN Data for plan IDB2V62S
                          Row 1-30 of 180
Actions: C=Catalog stats, T=SQL Text, O=Update OPTHINT (DB2 V6). F6=Delete.
          QB JN MtcH Index N-Sort-C TS Pre C Dgree
          Only UJOGUJOG LCK Tp E Ac Jn
PROGRAM: NUXPLAN
          DATA IS CURRENT
-   566 1 I 1 SYSIBM.SYSPLAN N ----- IS
          SYSIBM.DSNPPH01
-   584 1 I 4 SYSIBM.SYSPACKAGE N ----- IS
          SYSIBM.DSNKXX01
-  2670 1 R SYSIBM.SYSSTMT ----- IS S
          -----Y-
-  2678 1 R SYSIBM.SYSSTMT ----- IS S
          -----Y-
-  2686 1 R SYSIBM.SYSSTMT ----- IS S
          -----Y-
-  2695 1 R SYSIBM.SYSSTMT ----- IS S
          -----Y-
-  2764 1 I 1 SYSIBM.SYSPLAN N ----- IS
          SYSIBM.DSNPPH01
-  2772 1 I 1 SYSIBM.SYSPLAN N ----- IS
          SYSIBM.DSNPPH01
-  2780 1 I 1 SYSIBM.SYSPLAN N ----- IS
          SYSIBM.DSNPPH01
-  2788 1 I 1 SYSIBM.SYSPLAN N ----- IS
          SYSIBM.DSNPPH01
-  2820 1 I 3 SYSIBM.SYSPACKSTMT N ----- IS
          SYSIBM.DSNKSX01
          -----Y-
-  2831 1 I 3 SYSIBM.SYSPACKSTMT N ----- IS
          SYSIBM.DSNKSX01
          -----Y-
-  2842 1 I 3 SYSIBM.SYSPACKSTMT N ----- IS
          SYSIBM.DSNKSX01
          -----Y-

Command ==>>>
F1=Help      2=Split      3=End      5=Rfind     6=Delete
F7=Up        8=Down        9=Swap    10=Left    11=Right   12=Return
    
```

This view displays the same information as the expanded view, but only the portion above the dashed line. In other words, just the tabular EXPLAIN format. The functions and available actions are the same as for the expanded view.

## Displaying DB2 Catalog Statistics Tables and Indexes

### DB2 Catalog Statistics for Tables/Indexes Panel

The DB2 Catalog Statistics for Tables/Indexes panel displays DB2 catalog information for all the tables and all the indexes available for the tables (whether they are actually used to access the tables) for the SQL statement previously chosen. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight DXB164 15:42:46
DB2E S074

DB2 Catalog Statistics for Tables/Indexes Row 1-19 of 47
***** Table stats for SYSIBM.SYSTABLES *****
Num pages: 300 Pct pages: 75% Num columns: 39 Editproc: N/A
Num rows : 300 Seg Size : N/A Max rec len: 523 Valipro: N/A
----- Index stats for SYSIBM.DSNDTX02 -----
%Clustered: 0% 1st key card : -1 URule: UNIQUE Clustered : N
Page size : 4096 Full key card: -1 Space: 0 Clustering: N
Num levels: -1 Num leaf pgs : -1 Type : 2
Seq# <- Column name --> Match Column-type Colcard Low2key High2key
1 DBID N/A SMALLINT -1 X'404040 X'404040
2 OBID N/A SMALLINT -1 X'404040 X'404040
CREATOR N/A CHAR(8) 100
4 NAME N/A VARCHAR(18) -1
----- Index stats for SYSIBM.DSNDTX01 -----
%Clustered: 0% 1st key card : -1 URule: PRIMARY Clustered : N
Page size : 4096 Full key card: -1 Space: 0 Clustering: N
Num levels: -1 Num leaf pgs : -1 Type : 2
Seq# <- Column name --> Match Column-type Colcard Low2key High2key
1 CREATOR Y CHAR(8) 100
2 NAME Y VARCHAR(18) -1

Command ==>
F1=Help 2=Split 3=End 5=Rfind
F7=Up 8=Down 9=Swap 12=Return
    
```

Each set of statistics displays indexes within tables. Within the index sections, after related statistics, is a list of all of the columns that make up that index.

If the information spans more than one screen, the PF7/PF8 scrolling keys are activated and displayed.

Press PF3 (End) to return to the previous panel.

## Displaying SQL Text

### SQL Statement Retrieved from DB2 Catalog Panel

When you select an SQL statement for display, the text of that statement, as well as its related program, collection, and plan display. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 14:37:30
D71A CA31

SQL Statement Retrieved From DB2 Catalog

Use F6 to perform a dynamic EXPLAIN.

Plan . . : IDB2V62S Collection ID . : Degree . : ANY
Program : NUXPLAN Statement Number: 000003383 OptHints : NO
Status: COMPILED W/DEFAULTS
Vers :
Path : "SYSIBM","SYSFUN","SYSPROC","MATSAA2 "
DECLARE GET_INDEX_STATS_51
CURSOR FOR
SELECT I . NAME, I . CREATOR, I . UNIQUERULE, I . COLCOUNT, I .
CLUSTERING, I . CLUSTERED, I . FIRSTKEYCARDF, I .
FULLKEYCARDF, I . NLEAF, I . NLEVELS, I . BPOOL, I . PGSIZE,
I . CLOSERULE, I . SPACE, I . CLUSTERRATIO, I . INDEXTYPE
FROM SYSINDEXES I, SYSTABLES T
WHERE I . TBCREATOR = : H
AND I . TBNAME = : H
AND T . CREATOR = : H
AND T . NAME = : H
AND T . CREATOR = I . TBCREATOR
AND T . NAME = I . TBNAME
AND T . DBNAME = I . DBNAME
AND T . TYPE = 'T'

Command ==>
F1=Help 2=Split 3=End 5=Rfind 6=Explain
9=Swap 12=Return

```

The statement text is retrieved from the SYSIBM.SYSSTMT and the SYSIBM.SYSPACKSTMT catalog tables. If the program was recompiled and the statement numbers changed, then the statement text cannot be located.

For OPEN, FETCH, and CLOSE cursor statements, Unicenter CA-Insight retrieves and displays the DECLARE CURSOR statement in addition to the manipulative cursor statements. If you press PF6 to perform a dynamic EXPLAIN for one of these statements, Unicenter CA-Insight invokes EXPLAIN for the DECLARE CURSOR statement.

Press PF6 to perform a dynamic EXPLAIN. The related panels are described later in this chapter.

## EXPLAINing SQL Statements

This section describes the second, third, and fourth menu options of the Explain Menu Options panel. These options provide different ways of providing an SQL statement for a dynamic EXPLAIN.

Note that navigation from other panels within Unicenter CA-Insight brings you to this portion of the EXPLAIN facility. If your User Profile has a value of Y in the Explain action is EDIT field, you go directly to the ISPF Edit panel before EXPLAIN. This gives you the ability to use PARITY commands from the Edit panel, if you have PARITY installed.

### Using a Data Set to Specify SQL Text

#### EXPLAIN SQL from a Data Set Panel

The first option for providing SQL text for an EXPLAIN is by specifying the name of the data set where the SQL resides. You do this by using the EXPLAIN SQL from a Data Set entry panel. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 11:24:40
DBV6 XE44

EXPLAIN SQL from a Data Set

Enter data set name containing SQL. Then press Enter to EXPLAIN it.
Data set name . . . gsw.input.data
(Fully qualified and unquoted)
Member name . . . . (Required for PDS)

Use SQLID . . . . .
Table Qualifier . . SYSIBM
Set degree . . . . 1
Use path . . . . : "SYSIBM","SYSFUN","SYSPROC","MATSAA2 "
(Use PATH command to view complete path and to update it)

Command ==>
F1=Help 2=Split 3=End 12=Return
9=Swap

```

Specify the data set name, and if the SQL is in a PDS, the member name. Press Enter to retrieve the SQL and have it EXPLAINed.

If you want the EXPLAIN done using a different SQLID, enter the ID in the appropriate field. You can also specify a qualifier to use for unqualified tables.

If you are EXPLAINing an SQL Statement using DB2 V6 or higher, you can also specify the path that is to be used.

The View/Update CURRENT PATH panel appears when you:

- Enter the PATH command on the Command line
- Select Option 2 (EDIT/EXPLAIN SQL statement from a Data Set) from the Explain Menu Options panel.

The following is a sample of this panel:

```

Menu Print Tools Help  CA-Insight          MATSAA2          11:30:10
                                      DBV6 XE44

                                View/Update CURRENT PATH

Change PATH below as desired, then press Enter to update it.

Path . "SYSIBM","SYSFUN","SYSPROC","MATSAA02 " _____
      : _____
      : _____
      : _____

(Name should be enclosed in double quotes and separated by commas with
no blank spaces in between.)

Command ==> _____
      F1=Help      2=Split      3=End
                  9=Swap
                  12=Return

```

After you perform the EXPLAIN, you can edit the SQL statement using ISPF Edit (TSO User Interface only) and re-EXPLAIN it.

The EXPLAIN panels are described in [Dynamic EXPLAINS](#).

## Using the ISPF Editor to Specify SQL Text

### Entering EXPLAIN SQL

The second option for providing an SQL statement for an EXPLAIN is by entering the text using ISPF Edit. This option is valid only for TSO User Interface users.

The Edit SQL panel appears when you:

- Select Option 3 (EDIT/EXPLAIN SQL statement entered in ISPF EDIT) from the Explain Menu Options panel.
- Enter E on other panels that offer the EXPLAIN option. When these are available, they are described in the related panel's description.

The following is a sample of this panel:

```
EDIT ---- EDIT-SQL ----- COLUMNS 001 072
COMMAND ==> SCROLL ==> CSR
***** ***** TOP OF DATA *****
000001 SELECT * FROM LGNTDSN4.SYSIBM.SYSLOCATIONS
000002
000003
000004
000005
000006
000007
000008
000009
000010
000011
000012
000013
000014
000015
000016
000017
000018
```

Enter the text of the SQL statement using normal ISPF Edit procedures. Press PF3 (End) to perform the EXPLAIN.

You are also placed into the EDIT panel if you come to the EXPLAIN facility from another panel (such as SQLTEXT) and have specified Y in Explain action is EDIT in your User Profile. This lets you use Parity.

After you perform the EXPLAIN, you can re-edit the SQL statement and re-EXPLAIN it.

The EXPLAIN panels are described in [Dynamic EXPLAINS](#).



## Specify SQL Text

### Enter EXPLAIN SQL

The third option for providing an SQL statement for an EXPLAIN is by entering the text on a Unicenter CA-Insight panel. To access this panel, select Option 4 (EDIT/EXPLAIN SQL statement entered on Unicenter CA-Insight panel) from the Explain Menu Options panel.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 11:33:55
DBV6 XE44

v

Enter SQL statement text. Then press Enter to EXPLAIN it.
SQL statement text:
. . . update sysibm.sysindexes set firstcardkey = 1
. . . where name > 'jbf' and name < 'jbh'
. . .
. . .
. . .
. . .
. . .
. . .
. . .
. . .
. . .
Use SQLID . Table Qualifier . SYSIBM Set degree . . 1
Use PATH : "SYSIBM","SYSFUN","SYSPROC","MATSA02 (Use PATH command to update)

Command ==>
F1=Help 2=Split 3=End 9=Swap 12=Return

```

Enter the text of the SQL statement to be EXPLAINed on the lines of the panel. Press Enter to perform the EXPLAIN.

If you want the EXPLAIN done using a different SQLID, enter the ID in the appropriate field. You can also specify a qualifier to use for unqualified tables.

If you are EXPLAINing and SQL Statement using DB2 V6 or higher, you can also specify the PATH that is to be used. Use the PATH command to generate the following panel from which you can set the PATH to a valid path definition. A sample panel is shown in [Using a Data Set to Specify SQL Text](#).

After you perform the EXPLAIN, you can edit the SQL statement using ISPF Edit (TSO User Interface only) and re-EXPLAIN it.

The EXPLAIN panels are described in [Dynamic EXPLAINs](#).

## Dynamic EXPLAINS

### Dynamic EXPLAIN of an SQL Statement Panel - Expanded View

When you select an SQL statement to dynamically EXPLAIN, the Expanded view of the Dynamic EXPLAIN of an SQL Statement panel appears. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 14:45:32
                                D71A CA31
  1 Expanded explanation  2 Summary list      Use SQLID . MATSAA2
                                Qualifier . SYSIBM
                                Dynamic EXPLAIN of an SQL Statement Set degree . ANY

Use: F4=edit SQL; F6=perform EXPLAIN; F12=get catalog stats; PATH cmd upd Path
      QB JN Mtch                                Index N-Sort-C TS Pre C Dgree
      Stmt# # MT AC Cl Table/Index Name          Only UJOGUJOG LCK Tp E Ac Jn
      PATH: "SYSIBM","SYSFUN","SYSPROC","MATSAA2 "
      (N/A) 1 R SYSIBM.SYSINDEXES                ----- IX S

-----
Line 01      Data accessed from the table
SQL operation: UPDATE statement
In.....Table: SYSIBM.SYSINDEXES
Access Method: Table scan using sequential prefetch.
Lock: Intent exclusive

-----
update sysibm.sysindexes set firstkeycard = 1
where name > 'jbf' and name < 'jbh'

Command ==>
  F1=Help      2=Split      3=End      4=EditSQL      5=Rfind      6=Explain
                9=Swap      10=Left    11=Right     12=GetStats

```

This panel displays EXPLAIN data for an SQL statement that was dynamically EXPLAINED. You must have UPDATE access to a plan table allocated for one of your authorization IDs (primary or secondary) in order for the EXPLAIN to work.

If you want to use a plan table for one of your secondary IDs, then enter the secondary auth ID in the Use SQLID field. You can also specify a qualifier to use for unqualified tables and change the degree value. For DB2 version 6 and higher, you can use the PATH command to update the current PATH setting. A sample panel is shown in [Using a Data Set to Specify SQL Text](#).

The Expanded Explanation view shows data in tabular format with additional information for that statement shown below the dashed line. Press PF11 to show additional EXPLAIN information to the right of the currently displayed information.

## Available Actions

After the EXPLAIN data displays, you can use the following function keys:

### PF4 (EditSQL)

If you are using Unicenter CA-Inspight in TSO/ISPF, you can edit the SQL statement through ISPF EDIT. If the statement is changed during the edit session, Unicenter CA-Inspight automatically re-EXPLAINS the statement. The Edit panel was described earlier in this chapter.

### PF6 (Explain)

Causes a re-EXPLAIN of the SQL statement.

### PF12 (GetStats)

Displays catalog statistics for this SQL Statement. This panel was described previously in this chapter.

## Changing Dynamic EXPLAIN Parameters

In both the Expanded explanation and Summary list panels, the following three fields can be changed to see how the EXPLAIN performs with different variables:

- Use SQLID – This is used in a SET SQLID before EXPLAINing the text.
- Qualifier – For dynamic SQL, this is initially set to the SQLID value. For static SQL, it is the value specified for QUALIFIER when the SQL was bound.
- Set Degree – For dynamic SQL, this is initially set to 1. For static SQL, it is the value specified for SET DEGREE when the SQL was bound.

## Dynamic EXPLAIN of an SQL Statement Panel - Summary List View

A sample of the Summary List view of the Dynamic EXPLAIN of an SQL Statement panel is shown in the following:

```

Menu Print Tools Help  CA-Inspight           MATSAA2           14:46:41
                                D71A CA31
  1 Expanded explanation  2 Summary list           Use SQLID . MATSAA2
                                Qualifier . SYSIBM
                                Dynamic EXPLAIN of an SQL Statement Set degree . ANY

Use: F4=edit SQL; F6=perform EXPLAIN; F12=get catalog stats; PATH cmd upd Path
      QB JN  Mtch                               Index N-Sort-C TS Pre C Dgree
      Stmt# # MT AC Cl Table/Index Name         Only UJOGUJOG LCK Tp E Ac Jn
      PATH: "SYSIBM", "SYSFUN", "SYSPROC", "MATSAA2 "
      (N/A) 1  R   SYSIBM.SYSINDEXES           ----- IX S
-----
update sysibm.sysindexes set firstkeycard = 1
where name > 'jbf' and name < 'jbh'

```

This view displays the same information as the Expanded view, but only the portion above the single dashed line. In other words, just the tabular EXPLAIN format. The SQL statement being EXPLAINed is also shown.

The functions and available actions are the same as for the Expanded view.

### Dynamic EXPLAIN Limitations

If you are dynamically EXPLAINing currently executing SQL, the SQL statement is truncated after 2,096 bytes (approximately 29 lines). This limit is in effect if the thread's status is ACTIVE-D. If the SQL is dynamic, up to 5,000 bytes (approximately 69 lines) can be captured and EXPLAINed by using the ACCSHIST request which gets the SQL text from the IFCID 63 record.

If the thread's status is ACTIVE-A, up to 20K of text can be EXPLAINed. This is because when the thread is not in a DB2 control block, sampling is used to retrieve the text instead of retrieving the text through the IFI.

Exceeding these limits produces an SQLCODE -104. If the text is too long to perform a successful dynamic EXPLAIN, you can point to the appropriate plan/package/program and perform an EXPLAIN for static SQL from there.

# Unicenter CA-24X7

---

This chapter describes and explains the features and functionality of Unicenter CA-24X7.

## What is Unicenter CA-24X7

Unicenter CA-24X7 is an optional add-on facility for Unicenter CA-Insight that lets you:

- Dynamically change DB2's startup parameters (ZPARMS).
- Cancel DB2 threads.
- Add or delete active log data sets.
- Free database page sets of all users.
- Refresh User Exit routines.

The utility can be run as a batch job or directly from the Unicenter CA-Insight Online User Interface. An integrated scheduler gives you the flexibility of setting runtime parameters for a particular period of time without having to be on hand to perform the changes. For guidance in using the Unicenter CA-24X7 Scheduler, see the *Unicenter CA-Insight System Guide*.

## Ordering Unicenter CA-24X7

Contact your Computer Associates Account Manager for information about ordering Unicenter CA-24X7.

## Security for Unicenter CA-24X7

To use Unicenter CA-24X7, you must enable security. By default, all Unicenter CA-24X7 security is turned off.

Unicenter CA-24X7 is designed to alter DB2 parameters affecting security, operations, memory, and logging functions of DB2. Carefully consider who should be able to access Unicenter CA-24X7. Generally, security should be set up to allow access to those individuals who normally would update the DSNZPARMS for DB2.

As in any tool that changes operational system parameters, use care that you understand the impact of your change. All parameters contain field-level online help and are also documented in the *DB2 Administration Guide*.

The following security parameters associated with Unicenter CA-24X7 functions are shown here. For their descriptions, see the “Security” chapter of the *CA-Insight System Guide*.

```
X247CTHD=[YES | NO]
X247SEC=[YES | NO]
X247=[YES | NO]
```

Some of the Unicenter CA-24X7 functions issue DB2 commands which require that the DB2 data collector have SYSCTRL authority.

## Accessing Unicenter CA-24X7

Unicenter CA-24X7 is an option on the Tools menu (the option number can differ based on your authorization level):

```

Menu Print Tools Help CA-Insight MATSAA2 11:44:21
                                     DBV6 XE44
-----+-----+-----+-----+-----+
Copyright (c) 9_ 1 COMMANDS... ciates International, Inc.
Systems       2 CONDITION...
              3 DBGPRINT...
              4 LIST...
DB2 System    5 PICK... statistics
              6 PLOT... istory
              7 PROFILE... MS Attachments
              8 SHOW...
Threads       9 CA-24X7...
              10 EXCEPTION... hreads
              0 EXIT F3 istory
-----+-----+-----+-----+

              8 User Started Reports
              9 Exception Monitor
              0 Permanent Exception Definitions

Command ==> _____
F1=Help 2=Split 3=End
          9=Swap
    
```

Select the CA-24x7... option to access Unicenter CA-24X7 functions.

You can also enter CA-24x7 or simply 24x7 on the command line of any panel to access Unicenter CA-24X7 functions.

## Not Available Panel

This panel indicates that Unicenter CA-24X7 is not licensed for your system. Contact your Computer Associates sales representative.

```
Menu Print Tools Help CA-Insight MATSA02 10:41:33
DBV4 XE44

CA-24X7 CA-24X7 Not Available

CA-24X7 is a separately licensed product that works with CA-Insight
and is designed to help maintain continuous DB2 availability. It
provides functions that let you cancel DB2 threads, dynamically
change DSNZPARM values, refresh DB2 exit routines, add and delete
active log data sets, and freeing a data base pageset from all users.

Contact your Computer Associates sales representative or contact
CA-Insight technical support for additional information.

Command ==>>>
F1=Help 2=Split 3=End 5=Rfind
9=Swap 12=Return
```

If Unicenter CA-24X7 has been installed on your system but you are not authorized to use it, you receive a message to this effect. Contact your administrator.

## Main Menu

When you enter CA-24x7, the Main Menu appears:

```

Menu Print Tools Help CA-Insight MATSAA2 11:46:07
DBV6 XE44

CA-24X7 Main Menu

Parameter Options
— 1 Buffer Pool Sizes and Thresholds      8 DDF and Data Sharing Parameters
  2 Security Parameters                  9 Operator Functions
  3 Logging Parameters                   10 IRLM and DB2 Locking Parameters
  4 Application Programming Defaults     11 Routine (Stored Procedure) Parm
  5 Storage Sizes                       12 Tracing and Checkpoint Parameters
  6 Data Definition Control Support     13 Buffer Pool Default Parameters
  7 Thread Management

Non-Parameter Functions
14 Add and Delete Active Log Data Sets
15 Free Pagesets of All Users
16 Dynamically Replace Exit Routines
17 CA-24X7 Schedules

Command ==>>>
F1=Help      2=Split      3=End      6=PickDB2
              9=Swap

```

Each of the options is described in the remainder in this chapter.

Field-level and panel-level help is available by pressing PF1 (Help).

## Making Changes

All of the Unicenter CA-24X7 panels essentially work the same way: original and current values display, and an enterable field displays for each parameter you can change. Once you specify values for all of the parameters you want to change, press Enter to immediately affect the change. If you want to affect the changes at a later time, use the Unicenter CA-24X7 Scheduler, which is described in the *Unicenter CA-Insight System Guide*.

If data is entered in multiple fields, the data processes one field at a time. That is, when you press Enter, the first command is processed and the messages panel appears. You then press PF3 (End) and Enter again to process the next field. If an error occurs during command processing, the input field still contains the value originally entered.



## Changing Buffer Pool Sizes and Thresholds

Buffer Pool usage and sizing can be altered using the Buffer Pool Sizes and Thresholds panel. This panel displays a selectable list of buffer pools, which you can scroll left, right, up, and down using the PF keys.

Buffer Pool changes involve adding or decreasing memory allocated to the DB2 database address space (DBM1) or altering thresholds, which cause DB2 to take certain actions. Be sure you understand the implications of your changes before making them. Field-level help is provided for all parameters, which are also documented in the *DB2 Administration Guide*. If you over-allocate buffers beyond the real memory of your system, you can cause significant degradation in performance. When altering DB2 thresholds, consider the impact to the overall workload of your DB2 subsystem.

### Buffer Pool Panels

The Buffer Pool Sizes and Thresholds panel is actually shown across two screens. The first (shown here) displays the virtual buffers (central storage) and hiperpool buffers. (If the IBM Asynchronous Data Mover Facility hardware is present, DB2 uses expanded storage.) The Castout parameter determines whether z/OS or OS/390 can steal DB2 hiperpool pages if necessary for z/OS or OS/390 operations. The prefetch quantity (in pages) is also shown.

To access this panel, select Option 1 (Buffer Pool Sizes and Thresholds) from the Main Menu. The following is a sample of this panel.

Menu		Print	Tools	Help	CA-Insight	MATSAA2	11:47:56
							DBV6 XE44
CA-24X7		Buffer Pool Sizes and Thresholds				Page 1 of 7	
Act	<-Virtual Buffers->		<-Hiper Buffers->		Castout	Prefetch	
	Current	Target	Current	Target			
- BP0	2000	2000	0	0	YES	32	
- BP1	0	500	0	0	NO	0	
- BP2	0	0	0	300	YES	0	
- BP3	0	0	0	0	YES	0	
- BP4	0	0	0	0	YES	0	
- BP5	0	0	0	0	YES	0	
- BP6	0	0	0	0	YES	0	
- BP7	0	0	0	0	YES	0	
- BP8	0	0	0	0	YES	0	
- BP9	0	0	0	0	YES	0	
- BP10	0	0	0	0	YES	0	
- BP11	0	0	0	0	YES	0	

Command ==>>>

F1=Help	2=Split	3=End	
	8=Down	9=Swap	11=Right

Press PF11 (Right) to scroll to the threshold information:

```

Menu Print Tools Help CA-Insight MATSAA2 11:49:23
DBV6 XE44

CA-24X7 Buffer Pool Sizes and Thresholds Page 1 of 7

Act <----- Thresholds ----->
  DM-Crit Seq-Pref Defr-Wrt V-Def-Wrt VP-Seq-Ac P-IO-Seq HP-Seq-Ac
- BP0 0 0 50 11,1 80 50 80
- BP1 0 0 50 13,8194 80 50 80
- BP2 0 0 50 10,0 80 50 80
- BP3 0 0 50 10,0 80 50 80
- BP4 0 0 50 10,0 80 50 80
- BP5 0 0 50 10,0 80 50 80
- BP6 0 0 50 10,0 80 50 80
- BP7 0 0 50 10,0 80 50 80
- BP8 0 0 50 10,0 80 50 80
- BP9 0 0 50 10,0 80 50 80
- BP10 0 0 50 10,0 80 50 80
- BP11 0 0 50 10,0 80 50 80

Command ==>>>
  F1=Help 2=Split 3=End 10=Left
           8=Down 9=Swap
    
```

To select a particular buffer pool, enter **S** in the Act field. A panel of Current Value and Desired Value fields displays:

```

Menu Print Tools Help CA-Insight MATSAA2 11:49:49
DBV6 XE44

CA-24X7 Alter Buffer Pool Sizes and Thresholds

Buffer Pool . : BP0

Current Value Desired Value
Virtual buffer pool size . . . . . : 2000 . . . _____
Hiperpool buffer pool size . . . . . : 0 . . . _____
Castout . . . . . : YES . . . _____
Prefetch pages . . . . . : 32 . . . _____
Data manager critical percent pages : 0 . . . _____
Prefetch disabled percent pages . . : 0 . . . _____
Deferred write percent pages . . . : 50 . . . _____
Vert. deferred write percent pages : 11,1 . . . _____
VP sequential steal percent pages . : 80 . . . _____
HP sequential steal percent pages . : 80 . . . _____
Parallel sequential steal percent . : 50 . . . _____

Command ==>>>
  F1=Help 2=Split 3=End
           9=Swap
    
```

The Alter Buffer Pool Sizes and Thresholds panel submits the appropriate command to DB2 to alter the central or hiperpool storage used by that Buffer Pool. Note that the prefetch quantity (number of pages read in a read-ahead mode) as well as data manager critical percentage and sequential steal disabled threshold adds functionality not supported by the normal DB2 -ALTER BUFFERPOOL command. Sequential prefetch disabled (the default is 90%) turns off *read-ahead* buffering for sequential activity. Data manager critical percent pages causes DB2 to access the page in the virtual buffer pool once for each row that is retrieved or updated in that page. This has a high impact on your system.

## Modifying Security Parameters

The Security Parameters panel shows the original startup and current values for parameters relating to DB2 security. To access this panel, select Option 2 (Security Parameters) from the Main Menu. The following is a sample of this panel:

Menu Print Tools Help CA-Insight MATSAA2 14:50:55			
D71A CA31			
CA-24X7		Security Parameters	
	Original Value	Current Value	Desired Value
Use DB2 authorization . . . . .	YES	YES	
System admin 1 . . . . .	DRAJE03	DRAJE03	
System admin 2 . . . . .	MELRI01	MELRI01	
System operator 1 . . . . .	DRAJE03	DRAJE03	
System operator 2 . . . . .	MELRI01	MELRI01	
Unknown user auth ID . . . . .	IBMUSER	IBMUSER	
Resource limit table auth ID:	SYSIBM	SYSIBM	
HOPAUTH enabled . . . . .	BOTH	BOTH	
RACF protect archive logs . . . . .	NO	NO	
Auth required - bind new pkg:	BINDADD	BINDADD	
Default auth cache size . . . . .	1024	1024	
DBADM create view for others:	NO	NO	
Command ==>			
F1=Help	2=Split	3=End	9=Swap

This panel lets you enable your security package to use your external security facility authorization to gain access to the DB2 resources and to who is allowed INSTALLSYSADM and SYSOPR privileges. These privileges let you perform DB2 catalog recoveries and index repairs beyond the normal SYSADM authorities. Abuse of these parameters can cause a loss of recoverability of your entire system; use care when granting this authority.

When you change the Resource limit table auth ID value, Unicenter CA-24X7 automatically attempts to stop and restart the Resource Limit Facility (RLF) to pick up the new value.

This panel also lets you reset the system *governor* (the resource limit table ID), set the ID for *unknown* users, determine protection for remote systems (HOPAATH), and control the security of your archive log.

## Logging Parameters

The Logging Parameters panels show the original startup and current values for parameters relating to the allocation of DB2 archive logs. Logging parameters affect the size, number, and configuration of you archive log data sets, and parameters related to associating the data set names with a timestamp. You can also control the fast log apply storage allocation through these panels.

To access this panel, select Option 3 (Logging Parameters) from the Main Menu. The display is divided into the following three panels.

### First Logging Parameters Panel

Menu	Print	Tools	Help	CA-Insight	MATSA02	11:20:15
						D71A CA31
CA-24X7	Logging Parameters					Page 1 of 3
		Original Value	Current Value	Desired Value		
Allocation units (BLK,TRK,CYL):	BLK	BLK	BLK			
Primary allocation quantity . . .	1440	1440				
Secondary allocation quantity . . .	180	180				
Catalog archive data sets . . .	NO	NO				
Device type unit 1 name . . . . .	SYSDA	SYSDA				
Device type unit 2 name . . . . .						
Block size . . . . .	24576	24576				
Maximum read tape units alloc.: . .	1	1				
Max entries recorded in BSDS . . . .	1000	1000				
MSVGP 1 . . . . .						
MSVGP 2 . . . . .						
Max fast log apply storage (M):	0	0				
Command ==>						
F1=Help	2=Split	3=End				
	8=Down	9=Swap				

## Second Logging Parameters Panel

```

Menu Print Tools Help CA-Insight MATSA02 11:21:23
D71A CA31

CA-24X7 Logging Parameters Page 2 of 3

Original Current Desired
Value Value Value
Issue WTOR before tape mount : YES . . . : YES . . .
Retention period . . . . . : 90 . . . : 90 . . .
Maximum quiesce interval . . . : 5 . . . : 5 . . .
Data compression enabled . . . : NO . . . : NO . . .
Automatic offloading enabled : YES . . . : YES . . .
Timestamp in data set name . . : NO . . . : NO . . .
UR log write threshold . . . : 0 . . . : 0 . . .

Log 1 data set name prefix Log 2 data set name prefix
Orig. : D71A.ARCHLOG1 D71A.ARCHLOG2
Current D71A.ARCHLOG1 D71A.ARCHLOG2
Desired

Command ==>
F1=Help 2=Split 3=End
F7=Up 8=Down 9=Swap
    
```

## Third Logging Parameters Panel

```

Menu Print Tools Help CA-Insight MATSA02 11:22:00
D71A CA31

CA-24X7 Logging Parameters Page 3 of 3

Original Current Desired
Value Value Value
Write threshold . . . . . : 20 . . . : 20 . . .
Output buffer size . . . . . : 4096000 . . . : 4096000 . . .

Command ==>
F1=Help 2=Split 3=End
F7=Up 8=Down 9=Swap
    
```

## Changing Application Programming Defaults

The Application Programming Default Parameters panel shows the original startup and current values for parameters relating to the coding and use of SQL and the data it returns. These parameters allow dynamic alteration of the DSNHDECP specifications. You can specify new values in the Desired Value column fields. To access this panel, select Option 4 (Application Programming Default Parameters) from the Main Menu. The following is a three-page sample of this panel:

### First Application Programming Defaults Panel

Menu Print Tools Help CA-Insight		MATSAA2	11:58:46
			DBV6 XE44
CA-24X7	Application Programming Defaults		Page 1 of 3
	Original Value	Current Value	Desired Value
Decimal point is . . . . .	.	.	_____
Minimum divide scale . . . . .	NO	NO	_____
SQL string delimiter . . . . .	DEFAULT	DEFAULT	_____
Mixed data . . . . .	NO	NO	_____
EBCDIC Single byte CCSID . . . . .	500	500	_____
EBCDIC Mixed byte CCSID . . . . .	65534	65534	_____
EBCDIC Graphic byte CCSID . . . . .	65534	65534	_____
Date format . . . . .	ISO	ISO	_____
Time format . . . . .	ISO	ISO	_____
Local date length . . . . .	0	0	_____
Local time length . . . . .	0	0	_____
Default encoding scheme . . . . .	EBCDIC	EBCDIC	_____
Command ==>			
F1=Help	2=Split	3=End	
	8=Down	9=Swap	

## Second Application Programming Defaults Panel

```

Menu Print Tools Help CA-Insight MATSAA2 11:59:22
DBV6 XE44

CA-24X7 Application Programming Defaults Page 2 of 3

Original Current Desired
Value Value Value
Standard SQL language . . . . : NO . . . : NO . . . :
Decimal arithmetic . . . . . : DEC15 . . . : DEC15 . . . :
Distributed SQL delimiter . . . : ' . . . : ' . . . :
ASCII Single byte CCSID . . . . : 0 . . . : 0 . . . :
ASCII Mixed byte CCSID . . . . : 65534 . . . : 65534 . . . :
ASCII Graphic byte CCSID . . . . : 65534 . . . : 65534 . . . :
Default current degree . . . . : 1 . . . : 1 . . . :
Allow DESCRIBE for static SQL : NO . . . : NO . . . :
Optimizer hints . . . . . : YES . . . : YES . . . :
Use options for dynamic rules : YES . . . : YES . . . :
Outer join performance enhance: YES . . . : YES . . . :
Get VARCHAR data from index . : NO . . . : NO . . . :

Command ==>
F1=Help 2=Split 3=End
F7=Up 8=Down 9=Swap
    
```

## Third Application Programming Defaults Panel

```

Menu Print Tools Help CA-Insight MATSAA2 14:53:03
D71A CA31

CA-24X7 Application Programming Defaults Page 3 of 3

Original Current Desired
Value Value Value
Max degree of parallelism . . . : 0 . . . : 0 . . . :
Update partition key columns : YES . . . : YES . . . :
SMS DATACLASS for tablespaces : . . . : . . . :
SMS DATACLASS for indexes . . . : . . . : . . . :
Star join option . . . . . : DISABLE . . . : DISABLE . . . :
Favor index access page thresh: 0 . . . : 0 . . . :
EDM Pool better fit algorithm : NO . . . : NO . . . :
Application encoding scheme . : EBCDIC . . . : EBCDIC . . . :

Default locale (Original) :
(Current) :
(Desired) :

Command ==>
F1=Help 2=Split 3=End
F7=Up 8=Down 9=Swap
    
```

## Modifying Storage Parameters

The Storage Sizes panel show the original startup and current values for parameters relating to storage usage by DB2 including EDM pool size, sort pool size, 3390 and 3990 caching options and maximum LOB sizes. To access this panel, select Option 5 (Storage Sizes) from the Main Menu. The following is a sample of this panel:

Menu Print Tools Help CA-Insight MATSA02 11:23:36 D71A CA31			
CA-24X7		Storage Sizes	
	Original Value	Current Value	Desired Value
Use 3990-3 sequential cache . . .	: NO	: NO	. . .
Sort pool . . . . .	: 1024000	: 1024000	. . .
EDM pool . . . . .	: 62080000	: 62080000	. . .
Maximum open data sets . . . . .	: 3000	: 3000	. . .
Utility 3390 cache option . . . . .	: NO	: NO	. . .
Max user LOB storage (K) . . . . .	: 4096	: 4096	. . .
Max system LOB storage (M) . . . . .	: 4096	: 4096	. . .
Maximum LE tokens . . . . .	: 20	: 20	. . .
RID pool (in 16K blocks) . . . . .	: 250	: 250	. . .
Command ==>			
F1=Help	2=Split	3=End	9=Swap

If you are using the 3990-3 or 3990-6 controller, you can enable disk cache control. You can dynamically alter the amount of storage the DBM1 address space devotes to SORT (the default is 10% of the sum of BP0, BP1, BP2, and BP32K) as well as alter the size of your EDMPOOL. You might do this if you were experiencing many EDMPOOL failures due to a lack of contiguous storage for large database DBDs. You can also alter the maximum open data sets (up to 10000).



## Altering DDCS Parameters

The Data Definition Control Support Parameters panel shows the original startup and current values for parameters relating to the DDCS facility. To access this panel, select Option 6 (Data Definition Control Support) from the Main Menu. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 12:45:03
DBV3 5018

CA-24x7 Data Definition Control Support Parameters

Original Current Desired
Value Value Value
DDCS enabled . : NO . . . . . : NO . . . . .
Control all appl: NO . . . . . : NO . . . . .
Req. full names : YES . . . . . : YES . . . . .
Unreg. DDL dflt : ACCEPT . . . . . : ACCEPT . . . . .
Escape character: . . . . . : . . . . .

Command ==>
F1=Help 2=Split 3=End
9=Swap

```

The Data Definition Control Support parameters affect the application and object registration table names, which are used if you are trying to limit DDL to a CASE tool or authorized set of programs. These parameters also affect whether DDCS is enabled for DB2/2™ or DB2/6000™ support.

**Note:** You can only disable and enable DDCS. You cannot enable DDCS if it was not installed at DB2 startup.

## Altering DDF and Data Sharing Parameters

The DDF and Data Sharing Parameters panel shows the original startup and current values for parameters relating to the distributed data facility and data sharing. To access this panel, select Option 8 (DDF and Data Sharing Parameters) from the Main Menu. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 16:24:37
DBV6 XE44

CA-24X7 DDF and Data Sharing Parameters

Original Current Desired
Resource limit access error . : NOLIMIT . . . : NOLIMIT . . .
Resynchronization int. (mins) : 2 . . . : 2 . . .
Thread status after commit . : ACTIVE . . . : ACTIVE . . .
Idle thread timeout int.(secs): 0 . . . : 0 . . .
Extended Security . . . . . : NO . . . : NO . . .
TCPIP already verified . . . . : NO . . . : NO . . .
Protocol used for 3-part names: DRDA . . . : DRDA . . .
Max extra requestor query blks: 100 . . . : 100 . . .
Max extra server query blocks : 100 . . . : 100 . . .
Max type 1 inactive threads . : 0 . . . : 0 . . .
TCPIP Keep Alive override . . : ENABLE . . . : ENABLE . . .
Pool thread timeout . . . . . : 120 . . . : 120 . . .
Wait incompatible retained lk : 0 . . . : 0 . . .

Command ==>
F1=Help 2=Split 3=End
9=Swap
    
```

The Distributed Data Facility parameters control the default Resource Limit Facility (the DB2 governor) error action, how long DB2 takes to automatically resynchronize indoubt threads with communication outages, and whether to allow the thread to go inactive after taking a commit.

## Thread Management Parameters

The Thread Management panel shows the original startup and current values for parameters relating to maximum number of DB2 users. To access this panel, select Option 7 (Thread Management) from the Main Menu. The following is a sample of this panel.

Menu Print Tools Help		CA-Insight	MATSA02	11:24:22
				D71A CA31
CA-24X7	Thread Management			
		Original Value	Current Value	Desired Value
Max users . . . . .	:	800	: 800	. . .
Max remote active . . . . .	:	800	: 800	. . .
Max remote concurrent . . . . .	:	800	: 800	. . .
Max TSO connect . . . . .	:	800	: 800	. . .
Max batch connect . . . . .	:	800	: 800	. . .
Contract thread work storage	:	NO	: NO	. . .
Manage thread storage . . . . .	:	NO	: NO	. . .
Max kept dynamic statements . . . . .	:	5000	: 5000	. . .
Command ==>				
F1=Help		2=Split	3=End	
			9=Swap	

These parameters control the number and type of threads this DB2 allows. You can dynamically alter the maximum users up to 2000 active users, as well as control the resources consumed by remote, TSO, and batch workloads. You can also control whether DB2 periodically contracts thread working storage.

## Changing Operator Functions Parameters

The Operator Functions Parameters panels show the original startup and current values for parameters relating to operator functions such as automatic recall, automatic rebind, and the Resource Limit facility. To access this panel, select Option 9 (Operator Functions) from the Main Menu. The following are sample panels:

### First Operator Functions Page

Menu	Print	Tools	Help	CA-Insight	MATSAA2	14:55:31
						D71A CA31
CA-24X7	Operator Functions				Page 1 of 2	
		Original Value	Current Value	Desired Value		
Wait for HSM recall . . . . .	:	YES	: YES	. . . .		
Seconds to wait for HSM recall:	:	120	: 120	. . . .		
Resource limit table suffix . . .	:	01	: 01	. . . .		
Action on RLST access error . . .	:	NOLIMIT	: NOLIMIT	. . . .		
Use automatic bind . . . . .	:	YES	: YES	. . . .		
EXPLAIN allowed on autobind . . .	:	YES	: YES	. . . .		
DPROF support . . . . .	:	NO	: NO	. . . .		
Site type . . . . .	:	LOCAL	: LOCAL	. . . .		
Change data capture enabled . . .	:	NO	: NO	. . . .		
Data base checking enabled . . .	:	NO	: NO	. . . .		
Default index type . . . . .	:	N/A	: N/A	. . . .		
Read archive copy 2 first . . .	:	NO	: NO	. . . .		
Command ==>						
	F1=Help	2=Split	3=End			
		8=Down	9=Swap			

### Second Operator Functions Page

Menu	Print	Tools	Help	CA-Insight	MATSAA2	12:17:55
						D71A CA31
CA-24X7	Operator Functions				Page 2 of 2	
		Original Value	Current Value	Desired Value		
Collect catalog stats history :	:	NONE	: NONE	. . .		
RUNSTATS statistics roll-up . . .	:	NO	: NO	. . .		
Suppress soft errors (LOGREC) :	:	YES	: YES	. . .		
Command ==>						
	F1=Help	2=Split	3=End			
	F7=Up		9=Swap			

The Operator Functions parameters control how long DB2 waits on external environments, such as DFHSM, establishing the correct resource limit governor name. These parameters control whether DB2 is to auto-rebind plans upon discovery of an invalidated plan. Also whether an EXPLAIN is to be run if such a rebind takes place (such as after an index drop), and whether products, such as data propagator or the data capture facilities, are to be utilized.

When you change the Resource limit table suffix value, Unicenter CA-24X7 attempts to stop and restart the Resource Limit Facility to pick up the new value.

## Modifying IRLM and DB2 Locking

The IRLM and DB2 Locking Parameters panel shows the original startup and current values for parameters relating to the IRLM and locking thresholds such as the maximum number of locks allowed and timeout time. To access this panel, select Option 10 (IRLM and DB2 Locking Parameters) from the Main Menu. The following is a sample of this panel:

CA-24X7		IRLM and DB2 Locking Parameters			
	Original Value	Current Value	Desired Value		
Resource timeout value . . . .	: 60	. . . : 60	. . .	_____	
Deadlock detection cycle . . .	: N/A	. . . : 5	. . .	_____	
Max page locks per tablespace	: 1000	. . . : 1000	. . .	_____	
Max page locks per user . . . .	: 10000	. . . : 10000	. . .	_____	
Utility timeout factor . . . .	: 6	. . . : 6	. . .	_____	
IRLM max CSA if PC=NO . . . .	: N/A	. . . : 6291456	. . .	_____	
Use U lock for repeatable read:	NO	. . . : NO	. . .	_____	
Bypass lock promotion csr hold:	YES	. . . : YES	. . .	_____	
IMS BMP timeout factor . . . .	: 4	. . . : 4	. . .	_____	
IMS DLI timeout factor . . . .	: 6	. . . : 6	. . .	_____	
Use X-lock - searched upd-del :	NO	. . . : NO	. . .	_____	
Command ==>>> _____					
F1=Help	2=Split	3=End			
		9=Swap			

This panel lets you change the amount of time DB2 waits to timeout a suspended thread due to lock contention, how often to check for deadlock situations, how many locks are permitted per user and per table space, how much storage the IRLM takes, and the utility timeout value. DB2 computes the utility timeout value by multiplying the resource timeout value by the number specified here.

## Routine (Stored Procedure) Parameters

The Routine (Stored Procedure) Parameters panel shows the original startup and current values for parameters relating to DB2 routines including stored procedures. To access this panel, select Option **11** (Routine (Stored Procedure)Parms) from the Main Menu. The following is a sample of this panel:

Menu		Print	Tools	Help	CA-Insight	MATSAA2	12:55:14
							DBV6 XE44
CA-24X7		Routine (Stored Procedure) Parameters					
		Original		Current		Desired	
		Value		Value		Value	
SP DB2 proc name :	DBV6SPAS	. . . . .	:	DBV6SPAS	. . . . .	_____	
SP maximum abends:	0	. . . . .	:	0	. . . . .	_____	
SP timeout (secs):	180	. . . . .	:	180	. . . . .	_____	
WLM Environment :			:			_____	
Command ==>							
F1=Help		2=Split		3=End			
				9=Swap			

This panel lets you change the values associated with DB2 routines – namely stored procedures and the WLM environment. If active, you should stop the stored procedures address space using the `-STOP PROCEDURE` command before changing the stored procedure name.

## Tracing and Checkpoint Parameters

The Tracing and Checkpoint Parameters panel shows the original startup and current values for parameters relating to DB2 tracing and checkpoint processing. To access this panel, select Option **12** (Tracing and Checkpoint Parameters) from the Main Menu. The following is a sample of this panel:

Menu Print Tools Help CA-Insight		MATSAA2	14:59:14
			D71A CA31
CA-24X7	Tracing and Checkpoint Parameters		
	Original Value	Current Value	Desired Value
Statistics trace interval . . .	: 30	. . . : 30	. . .
Default MON trace buffer size :	8192	. . . : 8192	. . .
Dataset stats time (minutes) :	5	. . . : 5	. . .
Roll up parallel task acctg . . :	YES	. . . : YES	. . .
Synchronize stats recording . . :	NO	. . . : NO	. . .
Checkpoint frequency . . . . .	: 50000	. . . : 50000	. . . RECORDS
UR checkpoint frequency . . . .	: 0	. . . : 0	. . .
Ckpts between level ID updates:	5	. . . : 5	. . .
Chkpoints to read-only switch :	5	. . . : 5	. . .
Minutes to read-only switch . . :	10	. . . : 10	. . .
Command ==>			
F1=Help	2=Split	3=End	9=Swap

This panel lets you change the values associated with DB2 tracing, including various statistics intervals and parallel task accounting roll, and various checkpoint related parameters. The checkpoint frequency is a key parameter that affects how often your DB2 system checkpoints (based on the number of log records written). You can use this parameter to correct over or under checkpointing.

## Buffer Pool Default Parameters

The Buffer Pool Default Parameters panel shows the original startup and current values for parameters relating to default buffer pools. Use this panel to change the default buffer pools to be used when creating indexes and tablespaces. These values are new with DB2 version 6.

To access this panel, select Option 13 (Buffer Pool Default Parameters) from the Main Menu. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 13:09:36
DBV6 XE44

CA-24X7 Buffer Pool Default Parameters

Original Current Desired
Value Value Value
Default tablespace buffer pool: BP0 . . . : BP0 . . . : _____
Default index buffer pool . . . : BP0 . . . : BP0 . . . : _____

Command ==>>
F1=Help 2=Split 3=End
9=Swap
    
```

## Adding and Deleting Active Log Data Sets

The Add and Delete Active Log Data Sets panel shows currently active logs allocated. To access this panel, select Option 14 (Add and Delete Active Log Data Sets) from the Main Menu. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 12:53:15
DBV3 S018

CA-24x7 Add and Delete Active Log Data Sets

Action codes: D=Delete. Use F6 to add a new log data set.

Act Status Type Log data set name Pct Used Blocks
CURRENT PRI DSN310.LOGCOPY1.DS04 10% 2520
AVAIL PRI DSN310.LOGCOPY1.DS02 0% 1440
AVAIL PRI DSN310.LOGCOPY1.DS01 0% 1440
AVAIL PRI DSN310.LOGCOPY1.DS03 0% 1440

Command ==>>
F1=Help 2=Split 3=End 6=AddLog
9=Swap
    
```



This panel is used to dynamically add or delete active log data sets. This is particularly useful if your active logs are filling too rapidly without time to recycle DB2 (perhaps because your operators have gone home for the weekend), or if you are increasing the size of your active log data sets to reduce time to backout in an archive situation. Unicenter CA-24X7 prevents you from deleting the current log data set until it is archived. You are responsible for running IDCAMS job to physically allocate the new log. You receive a confirmation screen prior to deleting or adding an active log. See [Deleting an Active Log Data Set](#) and [Adding a Log Data Set](#) for more information.

## Deleting an Active Log Data Set

To delete an Active Log Data Set, enter **D** in that line's entry field and press Enter. A confirmation panel appears:

```

Menu Print Tools Help CA-Insight SE19257 12:57:06
DBV3 S018

CA-24x7 Delete Active Log Data Set Confirmation

You have requested to delete the following active log data set. Press
F6 to confirm the delete request or F3 to abort.

Data set name . : DSN310.LOGCOPY1.DS02
Log copy number : 1
Log status . . : AVAIL
Log percent used: 0%

Specify FORCE if the active log should be deleted even if it has not
been offloaded yet . . . NOFORCE (FORCE, NOFORCE)

Command ===>
  F1=Help      2=Split      3=End      6=Confirm
                9=Swap

```

If an active log has not been offloaded, you must use the FORCE option to have it deleted. We highly recommend not using the FORCE option, except under extreme circumstances.

Press PF6 to confirm the delete, or PF3 (End) to cancel the deletion and return to the previous panel.

## Adding a Log Data Set

To dynamically add an Active Log Data Set, press PF6 (AddLog) from the Add and Delete Active Log Data Sets panel. The following panel appears:

```
Menu Print Tools Help CA-Insight SE19257 12:58:16
DBV3 S018

CA-24x7 Dynamically Add Active Log Data Set
Enter the fields below, then press F6 to confirm adding the log data set.

Log type . . . . . 1 Primary
                2 Secondary

Data set name . . . .

Note: you must have previously defined and initialized the log data
set before attempting to add it. The data set name must be fully
qualified without quotes.

Command ==>>
F1=Help      2=Split      3=End      6=Confirm
              9=Swap
```

Enter the log type and data set name. Note that the data set must be predefined and initialized before attempting to add to it.

Press PF6 to confirm the addition, or press PF3 (End) to return to the previous panel without adding an Active Log Data Set.

## Freeing Page Sets of All Users

The Free Pagesets of all Users panel is designed to cancel threads accessing a particular table space or index space in order to free it for other access, such as scheduling an image copy. To access this panel, select Option 15 (Free Page Sets Of All Users) from the Main Menu. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 13:04:34
DBV3 5018

CA-24x7 Free pageset of all Users

Specify the name of a data base and page set to be freed of all users,
then press Enter.

Data base . . . . . WARNING: free DSNDB01 and DSNDB06
Pageset . . . . . pagesets with extreme caution.

Stop pageset before freeing users? . . NO (YES, NO)

Restart pageset using access . . . . . NONE (NONE, RW, RO, UT, FORCE)

Command ==>
F1=Help 2=Split 3=End
9=Swap

```

You must supply values for the Data base and Pageset (table space or index space) fields. The panel prompts you as to whether to stop the object while canceling threads accessing it and what mode to restart the object in, such as for utility or read-only processing, or any other type of processing. All threads accessing the resource terminate abnormally and ROLLBACK to their last commit point.

## Dynamically Replacing Exit Routines

The Dynamically Replace Exit Routines panel lets you bring in new exits that affect the security, editproc (useful when testing compression exits), date/time formats, and log capture exits. To access this panel, select Option **16** (Dynamically Replace Exit Routines) from the Main Menu. The following is a sample of this panel:

```
Menu Print Tools Help CA-Insight SE19257 13:06:36
DBV3 S018

CA-24x7 Dynamically Replace Exit Routines
Exit routine type . . 1 Connection
2 Sign on
3 Edit proc
4 Validation
5 Date
6 Time
7 Field proc
8 Log capture

Exit routine name . .
Source load library .

The source load library field must specify a fully qualified, unquoted,
APF authorized load library.

Command ==>
F1=Help 2=Split 3=End
9=Swap
```

This panel requires that the load module to replace any of these exits must come from an APF-authorized library. Use extreme care when changing these exits. Changes to your connection and signon exits can be used to test different configurations, but if these changes are incorrect, they can also disable access to DB2. New edit proc, validation, date and time, or field procs can cause data to be corrupt if abused. Changes to the log capture exit can affect the amount of time it takes for data to be logged, which can influence DB2 performance in a high update shop.

## Viewing Unicenter CA-24X7 Schedules

The Schedules panel lists all scheduled Unicenter CA-24X7 commands. These reflect the command text and when the command executes as specified in the SCHEDULE member of the SOURCE library. (This is the member pointed to by the UDBSCHED DD statement in the data collector JCL.)

To access this panel, select Option **17** (CA-24x7 Schedules) from the Main Menu. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 13:10:03
DBV3 S018

CA-24x7 CA-24x7 Schedules

Use F5 to edit and F6 to refresh the CA-24x7 schedules.

From To Day/wk Command text
16:06 16:30 YYY.... SET BPSIZE BPID(BP0) VALUE (2000)
16:00 16:05 YYY.... SET BPSIZE BPID(BP0) VALUE (1800)
16:06 16:30 YYY.... SET BPMAX BPID(BP0) VALUE (2000)
16:00 16:05 YYY.... SET BPMAX BPID(BP0) VALUE (1800)

Command ==>
F1=Help 2=Split 3=End 5=EditSchd 6=Refresh
9=Swap 10=Left 11=Right

```

To update the commands in the Scheduler, press PF5. After the commands have been entered, press PF3 (End) to save the SCHEDULE member. To activate the new commands, enter PF6 to refresh the data collector schedule.

Details on how to use the Unicenter CA-24X7 Scheduler can be found in the *Unicenter CA-Insight System Guide*.

## Canceling Threads

The Active Thread request (THRDACTV) has an option enabled by Unicenter CA-24X7. From the Threads Identified by DB2 panel, you can cancel a specific thread by entering C in the selection field to the left of the thread. The Threads Identified by DB2 panel is shown here:

```

Menu Print Tools Help CA-Insight SE19257 13:14:30
DBV3 S018
1 All 2 Connections 3 Curr Contn 4 Contn Hist 5 Lock Summary 6 More...
R/THRDACTV Threads Identified to DB2 Item 4-7 of 7
All
Actions: S=Select, T=SQL, L=Locks, E=Except, R=Rmt, C=Cancel, M=More...
-----
Auth ID Corr ID Plan Type Status Conn DB2 Elap DB2 CPU Crit Warn Info
-----
- KSTON01 KSTON01 .... DLVYDYNs CAF ACTIVE-A 19 1.95 0 0 0
- IBMUSER GSWV42V3 CAF ACTIVE-D 1 0.00 0 0 0
- IBMUSER GSWV42V3 CAF ACTIVE-A 4 0.32 0 0 0
- IBMUSER GSWV42V3 CAF ACTIVE-A 1 0.04 0 0 0

Command ==>
F1=Help 2=Split 3=End 4=SortCpu 6=Focus
9=Swap 10=Left 11=Right 12=Return
    
```

When you enter the **CANCEL** command, you receive a confirmation panel that identifies the specific thread you wish to cancel. To complete the command, press PF6. To cancel the command, press PF3 (End).

The following is a sample confirmation panel:

```

Menu Print Tools Help CA-Insight SE19257 13:15:48
DBV3 S018

CA-24x7 Cancel Thread Confirmation

You have requested to cancel the current SQL statement for the thread
identified below. Press F6 to confirm the cancel request or F3 to
abort the cancel request.

Plan name . . . : DLVYDYNs
Authorization ID: KSTON01
Connection name : DB2CALL
Correlation ID : KSTON01

Command ==>
F1=Help 2=Split 3=End 6=Confirm
9=Swap
    
```

The CANCEL command uses standard IBM interfaces to terminate a thread in the application (STATUS ACTIVE-A) and in DB2 (STATUS ACTIVE-D). The integrity of DB2 data is maintained using normal DB2 ROLLBACK processing. Because ROLLBACK processing can take time, the CANCEL can take sometime to complete if the thread has been processing many updates.

If you attempt to cancel a thread and are not authorized to issue the command or if Unicenter CA-24X7 is not licensed on your system, you receive a message to this effect. Cancel thread security is maintained in the Unicenter CA-Insight Security File maintained by your Administrator.





# User Started Reports

---

This chapter describes how you can use and manage requests. The reports, which are shown in the “[Application Reports](#),” “[Auditor Reports](#),” and “[Thread and System Requirements](#)” chapters, are only those meant to be started by users, rather than reports that were started when the data collector was started.

## Working with Reports

When you select User Started Requests from the main menu, you are shown the status of all reports that you are authorized to see.

Once a report has been started, it can be displayed, altered, or stopped. This chapter describes how to do these tasks, as follows:

- [Displaying and Altering User Started Reports](#)
- [Starting Reports](#)
- [Qualifying Reports](#)
- [Focusing Reports](#)

## Displaying and Altering User Started Reports

When you select User Started Reports from the Unicenter CA-Insight main menu, the Show facility displays the status of all reports that you are authorized to see. The reports shown are defined by one or more requests. Certain reports, APPLPROB and HPROBE, are referred to as probes. These reports are discussed in detail in the “[Application Reports](#)” chapter.

## Report Formats

Show has Long, Short, and Diagnostic formats. Selecting User Started Reports from the main menu always displays the Long or Short format, depending on which format was last used. The Diagnostic format is intended to be used only by the most advanced users who must look at all requests, including startup requests. The Long and Short formats much more usable, and are suitable for most purposes.

To change formats, enter **Long, Short, or Diagnostic** in the entry field in the upper right corner of the Show screen. You can enter the first character of the format type (S, L, or D), and Show recognizes the command. For examples of the different report formats, see the following topics:

- [Long Format](#)
- [Short Format](#)
- [Diagnostic Format](#)

### Long Format

This format lists the user started reports that you are authorized to display. The reports you started are listed before the reports others have started. The long format also lists the subcomponents of the probes.

```

Menu Print Tools Help CA-Insight ROLDA03 10:42:37
_ 1 Running 2 Start Menu DB41 XAE1

Show Show User Started Requests Item 1-9 of 23
Long

Actions:S=Display F=Freeze P=Print R=Resume X=Stop Z=Reset Q=Qualifiers V=Rew

Owner/Name Status Recs Title
-----
ROLDA03
- APPLPROF ACTIVE 0 Profile of Rows Processed for a Statement
- ACCSHIST ACTIVE 0 Mini-EXPLAIN for Binds & Dynamic SQL
- APPLPROB
- THRDRTRAC ACTIVE 0 Probe Thread Summary
- APPLIO ACTIVE 0 Application I/O by Database & Pageset
- PLANSUM ACTIVE 0 SQL Statements by Plan and Program
- SQLSUM ACTIVE 0 Rows Processed for Each SQL Statement
- SCANSUM ACTIVE 0 Scan Summary by Plan and Pageset

Command ==>
F1=Help 2=Split 3=End 5=Rfind
F7=Up 8=Down 9=Swap 10=Left 11=Right
    
```

### Short Format

This format lists the user-started reports that you are authorized to display. The reports you started are listed before the reports others have started. The short format does not list the subcomponents of the probes.

```

Menu Print Tools Help CA-Insight ROLDA03 10:43:44
DB41 XAE1
_ 1 Running 2 Start Menu
Show Show User Started Requests Item 1-5 of 5
Short
Actions:S=Display F=Freeze P=Print R=Resume X=Stop Z=Reset Q=Qualifiers V=Revw
Owner/Name Status Recs Title
-----
OLDA03
- APPLPROF ACTIVE 0 Profile of Rows Processed for a Statement
- ACCSHIST ACTIVE 0 Mini-EXPLAIN for Binds & Dynamic SQL
- APPLPROB ACTIVE 0 Probe Thread Summary
- HPROBE ACTIVE 16 SQL Summary by Plan
Command ==>
F1=Help 2=Split 3=End 5=Rfind
9=Swap 10=Left 11=Right
    
```

### Diagnostic Format

This format lists both the user-started reports and STARTUP reports that you are authorized to display. The requests are listed in the order that they were started. Requests belonging to a probe are listed as any other request.

```

Menu Print Tools Help CA-Insight ROLDA03 10:44:34
DB41 XAE1
_ 1 Running 2 Start Menu
Show Show Request Detail Item 86-94 of 103
Diagnostic
Actions:S=Display F=Freeze P=Print R=Resume X=Stop Z=Reset Q=Qualifiers V=Revw
Name Owner TQU Interval Status Items Size Print Review Outfile
-----
- THRDTRAC ROLDA03 PQU ACTIVE 43
- APPLIO ROLDA03 PQU ACTIVE 16
- PLANSUM ROLDA03 PQU ACTIVE 95
- SQLSUM ROLDA03 PQU ACTIVE 277
- SCANSUM ROLDA03 PQU ACTIVE 142
- LOCKSUM ROLDA03 PQU ACTIVE 38
- HPRAPSUM ROLDA03 PQU ACTIVE 1 7
- HPRACCTS ROLDA03 PQU ACTIVE 317
- HPRPLNIO ROLDA03 PQU ACTIVE 29
Command ==>
PF1=Help 2=Split 3=End 5=Rfind
PF7=Up 8=Down 9=Swap 10=Left 11=Right
    
```

This format is provided for diagnostic purposes and many of the requests listed cannot be displayed or altered from this panel, because they:

- Are not intended to report data.
- Are linked to another request, and require a context gained from that other request.

## Line Commands

Line commands can be used on all probes, all non-probe requests, and on some of the probe components, depending on the type of probe.

- S** (Display) Retrieves a report from the data collector for display on the terminal.
- F** (Freeze) Suspends the collection of data for an active report (the data already collected is retained for display) or for the Probe. Use R (Resume) to resume collecting data. DB2 processing between the Freeze and Resume is excluded from the request data. Freezing a request can eliminate the CPU overhead of the request in the DB2 subsystem by eliminating the need for one or more trace record types. This is the case if records are being collected only for the “frozen” report. If they are also being collected for another report, they continue to be collected. Freezing the request does not eliminate its virtual storage overhead in the data collector.
- P** (Print) Prints the data (in a report format) from the selected report. If there is data to print, the following message is issued:  
DBG55058I - The reports have been printed  
If there is no data to print, the following message appears:  
DBG55059I - No report data to print
- R** (Resume) Restarts a report or Probe that has been suspended with the F (Freeze) option.
- X** (Stop) Purges the report or Probe from the data collector. Stopping a report eliminates all of its storage and CPU overhead from the DB2 subsystem and the data collector.
- Z** (Reset) Causes the output accumulators of an active report to be output to PRINT and/or OUTFILE (as specified in the User Profile Print Parameters) and then resets the accumulators to zero. It does not restart the report.
- Q** (Qualifiers) If Start Qualifications are in effect for this report or Probe (see [Qualifying Reports](#)), they display on the Report Qualification panel.

## Starting Reports

The following section discusses the starting reports.

### Start Menus

If you select **2** from the Show panel, you see the Start Menu that corresponds to your user profile. As shown in the following , Application and Auditor users see a panel with numbered selections for starting specific reports, while the Systems and DBA users see a panel with some additional options.

Selecting reports from these menu initiates the Start Qualification panel.

### Application Menu

Application	1	Profile of Rows Processed for a Statement
	2	Mini-EXPLAIN for Binds and Dynamic SQL
	3	Traditional Application Probe
	4	Hierarchical Application Probe

### Auditor Menu

Audit Reports	1	Authorization Failures+
	2	GRANT/REVOKE+Statements Processed
	3	DDL+ on Audited Tables
	4	Updates+on Audited Tables
	5	Reads+ on Audited Tables
	6	BINDS+or%Dynamic SQL+on Audited Tables
	7	DB2 Commands+Issued
	8	Secondary ID+Utilization
	9	Distributed AUTHID Translation+

## Systems and DBAs

Application	–	1	Profile of Rows Processed for a Statement
		2	Mini-EXPLAIN for Binds and Dynamic SQL
		3	Traditional Application Probe
		4	Hierarchical Application Probe
Menus		5	Thread I/O Requests
		6	Routine Thread Requests
		7	High Volume/Overhead Thread Requests
		8	Routine System Requests
		9	High Volume/Overhead System Requests
		0	Auditor Requests

## Selecting From the Start Menus

When you select one of the Application or Audit reports, the Start Qualification panel appears.

When you select one of the menu selections available on the Systems and DBAs Start Panel, another panel displays more requests that can be started. When you select one of these requests, the Start Qualification panel appears. This panel is described in [Qualifying Reports](#).

## Report Descriptions

For detailed information about the different types of User Started Reports, see the following chapters later in this guide:

- [Application Reports](#)
- [Auditor Reports](#)
- [Thread and System Requirements](#)

## Qualifying Reports

The following section discusses the qualifying reports.

### Start Qualification Panel

Qualified requests run using the qualification parameters you enter on this panel. The Start Qualification parameters can reduce the amount of data that the data collector is required to maintain for the request. An unqualified request does not use any DB2 qualifying parameters at Start time, although you can refine the data displayed using the Focus feature (detailed in [Focusing Reports](#)). The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	MATSAA2	09:49:35
						D420 XE44
Start	Start Qualification					Request APPLPROF
CA-Insight Qualifications						
Duration . . . .	1000	HHMM	Reset Duration .		HHMM	
Start Time . . .		HHMM	Reset Time . . .		HHMM	
Start Date . . .		MM/DD				
Show Identifier .			Group . . . . .			
DB2 Qualifications						
DB2 Qualify . . . . .	N	(Y or N)	Auth ID . . . . .	MATSAA2		
Plan . . . . .			Correlation . . .			
Connection . . .			Location . . . . .			
Operator . . . .			LU Name . . . . .			
Network ID . . .						
Command ==>						
F1=Help	2=Split	3=End	9=Swap			12=Return

**Note:** The Start Qualification panel differs depending on the request being started and security parameters. The “Include Detail” line only relates to Probes. Security can let you choose detail or not. The fields for Plan, Auth ID, Connection, Correlation, Operator, Location, Network ID, and LU Name also vary based on the item being started and your security profile.

## Qualification Types

Qualifications fall into two general groupings:

### Unicenter CA-Insight Qualifications

These control how long the request runs and at what time the request should start collecting data, as well as when the request is reset. Your User Profile in the Security File might limit the values you can specify here.

### DB2 Qualifications

These are used to narrow the collection of data to only those that contain certain DB2 variable values. Wildcards can be used on these fields, described in following sections.

When you have finished entering your start qualification parameters, press Enter to start the request. In some cases, you might have to wait for a time interval to complete before data displays.

If you decide not to start the request, press PF3 (End) to return to the LIST panel.

## How Reset Works

Resetting clears the request report and starts accumulating data again. It has the same effect as stopping the request and starting it again. Reset Duration is the amount of time before the request is reset. Reset Time is the next occurrence of that time, today or tomorrow. If you specify both Reset Duration and Reset Time, the Reset Time is used for the first reset and the Reset Duration is used for subsequent resets.

## Using Wildcards

Wildcard characters can be used in the DB2 Qualification fields. An asterisk (\*) can be used for multiple characters. A question mark (?) can be used for a single character. Trace overhead is proportional to the number of records DB2 passes to the data collector. Requests that generate many records, such as RECTRACE, should not be started with wildcards. This is because they force Unicenter CA-Insight to use unqualified DB2 traces, which generate far more data and overhead than qualified DB2 traces.



## DB2 Qualify Field

If the Unicenter CA-Insight security parameter START-WILDCARD (see the “Security” chapter in the *Unicenter CA-Insight System Guide*) has a value of YES, then the following line is added after the DB2 Qualifications heading on the Start Qualification panels:

DB2 Qualify . . . . . N (Y or N)

- If you specify **Y**, requests using DB2 qualified traces collect data only from DB2 that meets the qualifications that follow.
- If you specify **N**, all pertinent data for this request is collected from DB2. This can collect an enormous amount of data. Use it with care.

## Show Identifier Field

This field lets you identify a prefix for the Title field on the Show panel.

## GroupField

This field lets you define the user group that owns the request, so that a group of users can share reports within the data collector.

The Security system defines user groups. A user group has a group name and a list of user IDs. If your user ID is defined to a group, and that group name was specified in this field, you can display, alter, and stop the report, as though you started it.

You can specify a group name in this field **if** your User ID is part of that group. In addition, some users can specify any valid group name if they are authorized to do so.

**Note:** The Group field does not affect the order of reports listed on the Show panel. Reports that you start are always listed first.

## Focusing Reports

The following section discusses the focusing reports.

### Report Focus Panel

The Focus facility lets you view only the threads that interest you without changing the characteristics of the active request. When you use Focus, the data collector continues to collect information based on the Start Qualification criteria, but you only see information displayed that fits your selection criteria. After you set the Focus to YES, the Focus qualifications are used for all applicable displays until you set Focus to NO.

Focus is available when PF6=FOCUS displays on PF Key Line 1 of a panel. When you press this key, the Report Focus panel appears:

```

Menu Print Tools Help CA-Insight SE19257 16:37:53
DBV3 S018
THRDACTV started by STARTUP with the following qualifications.
Focus Report Focus
Status . . . . . : NO . . N Y or N
-----
Plan . . . . . : . . D331DYNS
Auth ID . . . . . : . . RO
Operator ID . . . . . : . .
Connection ID . . . . . : . .
Correlation ID . . . . . : . .
Location . . . . . : . .
Network ID . . . . . : . .
LU Name . . . . . : . .
Command ==>
F1=Help 2=Split 3=End 12=Return
9=Swap
    
```

The Report Focus panel shows Start Qualifications in the left column and Focus Qualifications in the right column. Only Focus qualifications can be entered on this panel.

To establish Focus reporting criteria, enter **Y** in the Focus Status field and enter the desired reporting restrictions. Press PF3 (End) to apply the Focus criteria to the request, or press PF12 to ignore any changes you made on the Report Focus panel. In both cases the request re-display.

You can turn Focus on and off by entering **FOCUS ON** or **FOCUS OFF** on the command line of the request panel.

Your installation can enforce an auth ID focus. If it does, Focus set to **Y** and the Focus variables are set accordingly. Auth ID enforcement can force the auth ID to be your user ID, or a leading portion of your user ID.

## The LIST Panel

To see a list of available requests, and to start inactive requests, use the LIST panel:

```

Menu Print Tools Help CA-Insight SE19257 11:40:00
      1 First Line 2 Statistics DBV3
Actions: B=Browse, S=Start, C=Check, E=Edit (in ISPF)
List-1st List of Request Library Item 1-10 of 171
Request Lib First line of request
-----
- ACCSHIST- 1 * (qualified trace) Trace of all SQL Statements (Owner-unique=ye
- ALTERBP - 1 * (unqualified trace) ALTER BUFFERPOOL commands issued
- AMSTRACE- 1 * (unqualified trace) AMS Commands Issued by DB2
- APPEXCP- 1 * (unqualified trace) Application Exception Events
- APPLIO - 1 * (qualified summarize) I/O By Database by Pageset
- APPLPROF- 1 * (qualified Summarize) Profile of Rows Processed for a Statement
- ARCIACD - 1 *
- ARCIACDB- 1 *
- ARCIACDD- 1 *
- ARCIACDP- 1 *
Command ==>
F1=Help 2=Split 3=End
F7=Up 8=Down 9=Swap

```

This panel displays a scrollable list of the requests in the Request libraries in order of request name. You can locate a particular request by entering **L** *requestname* on the command line and pressing Enter.

The column label “Lib” indicates which of the Request libraries contains this request, with a value of **1** being the first library in the concatenation sequence. See the Additional Request Data Sets for details.

## Navigation

### command line

Enter **LIST**.

### Menu Bar

Tools Menu, Option List...

## Display Options

You can change the request information displayed by selecting one of the following View Bar options:

### 1 (First Line)

Displays the first line of each request. For Unicenter CA-Insight-supplied requests, the first line is always a comment describing the request.

### 2 (Statistics)

Displays information about the request, including version, creation and modification dates, size, and the last person to update the request.

## Input Field Commands

For each item listed on the LIST panel, you can issue the following command options:

### B

(Browse) Displays the request's IQL statements (similar to ISPF Browse).

### S

(Start) Begins data collection for the request. When a request is Started, Unicenter CA-Insight checks for syntax errors. If it detects errors, the request is not Started and a listing displays of the IQL code and any syntax checker messages.

When you Start a request, the Start Qualification panel can display (see [Qualifying Reports](#)). This controls the amount of data the data collector maintains for this request. Not all requests must be qualified.

**Note:** The User Profile START parameter in the Security File controls your ability to Start requests. See the "Security" chapter in the *Unicenter CA-Insight System Guide* for details on this parameter.

A started request runs until the data collector terminates or the request stops (see [Line Commands](#)). You must stop the request if you want to use the same request to study another application using different Start Qualifications.

### C

(Check) Performs a syntax check of the IQL code. If a syntax error is found, a listing displays of the IQL code and any syntax checker messages.

### E

(Edit) Displays the requests IQL code in an ISPF Edit session. Normal ISPF functionality is available. (TSO User Interface only)

# Application Reports

The Application Reports, described in this chapter, are a type of User Started Report. These Application Reports can be launched from the Application, Systems and DBA Start menus.

For more information about how to use User Started Reports, see the [“User Started Reports”](#) chapter.

## Hierarchical Application Probe

### Pausing of the Hierarchical Probe

Unlike the traditional probe, whose data is allowed to wrap for all its requests, the hierarchical probe requests are not allowed to wrap. The data in one request is always dependent on the data from another request for going from a summarized view of the data to a more detailed view. Therefore, when the data collection table (whose size is dependent on the NEVENTS keyword) for one of the hierarchical probe requests fills up, all of the hierarchical probe requests are paused.

Request	Default NEVENTS	Estimated Storage	Description
HPRACCT	150	0.2M	<ul style="list-style-type: none"> <li>■ Provides an overview of the accounting record.</li> <li>■ Identifies accounting record fields indicating potential problems.</li> <li>■ Identifies potentially harmful SQL statements (including any SQL statement with a negative SQL return code.)</li> <li>■ Identifies SQL statements with excessive sorting activity.</li> </ul>

Request	Default NEVENTS	Estimated Storage	Description
HPRSTDTL	3000	2.4M	Provides detail events for an SQL statement or subsystem event (create thread, commit, etc.).  This is analogous to SQLTRACE in the traditional probe and is optional to start when the hierarchical probe is started.
HPRSTLST	1500	0.7M	Provides a list of each SQL statement and DB2 event that occurred for a thread.
HPRSTSML	1500	0.8M	Provides a list of each SQL statement or DB2 event for a given SQL statement or DB2 event.

Most of the hierarchical probe requests are SUMMARIZE requests and are not subject to pausing (unless you add an NEVENTS keyword). However, the following hierarchical probe requests are TRACE requests and have a limitation of collecting NEVENTS before the request is paused:

If your hierarchical probe is pausing too early, you can look at the DBGPRINT from the data collector to see which request was paused first. Requests HPRSTLST and HPRSTSML trace the same type of data and should fill up at approximately the same time. Therefore, if you increase one of these, you should also increase the other.

## Profile of Rows Processed by a Statement Panel

This panel provides a summary of SQL statements processed within a plan. It aids in the identification of problem plans and programs by showing the number of SQL statements that were processed and the average number of rows processed by each statement. Unpaired statements include statements like DESCRIBE. "UNPAIRED" also appears if an error occurred before the statement terminated normally.

The following is a sample of this panel:

Menu		Print	Tools	Help	CA-Insight	MATSA2	13:43:33	
							DBV6 XE44	
R/APPLPROF		Profile of Rows Processed by a Statement					Row 40-68 of 123	
Actions:		E=Explain, T=SQL Text						
Plan	Program/ Collection ID	Stmt#	Stmt Typ/ Iso Level	Count/ Av Dur(sec) Av CPU(sec)	Trigd %Trig	Index Data WkFile	AvRows	
-	DSNESPRR DSNESM68	215	DELETE RR	2 0.0063 0.0029	NO 55.7 44.4	6.0 478.0 0.0		
-	DSNESPRR DSNESM68	215	DR INDEX NA	1 1.2046 0.0174	NO 11.0 0.0	21.0 11.0 0.0		
-	DSNESPRR DSNESM68	222	ROLLBACK NA	1 0.0000 0.0000	NO 0.0 0.0	0.0 0.0 0.0		
-	DSNESPRR DSNESM68	222	UNPAIRED NA	2 0.0000 0.0000	NO 0.0 0.0	0.0 0.0 0.0		
-	DSNESPRR DSNESM68	229	UNPAIRED NA	4 0.0000 0.0000	NO 0.0 0.0	0.0 0.0 0.0		
-	IDB2V61S NUXPLAN	547	SELECT CS	1 0.0001 0.0001	NO 2.0 0.0	2.0 2.0 0.0		
-	IDB2V61S NUXPLAN	688	PREPARE NA	1 0.0174 0.0115	NO 5.0 0.0	5.0 5.0 0.0		
-	IDB2V61S NUXPLAN	699	OPENCURS CS	1 0.0212 0.0101	NO 270.0 0.0	0.0 270.0 0.0		
-	IDB2V61S NUXPLAN	1002	CLOSCURS NA	1 0.0001 0.0001	NO 0.0 0.0	0.0 0.0 0.0		

Command ==>

F1=Help	2=Split	3=End	
F7=Up	8=Down	9=Swap	12=Return

## EXPLAINing the SQL Statements

The Application Profile panel lets you perform an EXPLAIN of the listed SQL statement by one of the following methods:

- Enter **E** in the selection field next to a statement and press Enter to retrieve data from a PLAN\_TABLE. The PLAN\_TABLE is the one used the last time the plan was bound. The SQL statement must be in a plan that has been bound with EXPLAIN=YES.
- Enter **T** in the selection field next to a statement and press Enter to display the text in the SQL Statement Retrieved from DB2 Catalog panel. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 17:01:53
DBV3 S018

SQL Statement Retrieved From DB2 Catalog Row 1-8 of 69
Use F6 to perform a dynamic EXPLAIN.
Plan . . : IDB2V42 Collection ID . :
Program : NUXPLAN Statement Number: 03464
Vers :
FETCH PROG_V31_BYPASS
INTO :H, :H, :H, :H, :H, :H, :H, :H, :H, :H, :H, :H, :H, :H
, :H, :H, :H, :H
DECLARE PROG_V31_BYPASS
CURSOR FOR
SELECT '(N/A) ', C . COLLID, C . NAME, C . OWNER, CHAR ( C .
BINDTIME ), C . VALIDATE, C . ISOLATION, ' ', C . RELEASE, C
Command ==>
F1=Help 2=Split 3=End 5=Rfind 6=Explain
F7=Up 8=Down 9=Swap 12=Return
    
```

Press PF6 to perform the dynamic EXPLAIN or press PF3 (End) to return to the previous panel.

While you cannot edit the text on this panel, you can edit the text from within the Dynamic EXPLAIN function.



## Mini-EXPLAIN for Binds & Dynamic SQL Panel

This panel displays information about the access path that the DB2 optimizer has chosen to use for retrieving rows from a table. Samples are shown in the following:

```

R/ACCSHIST      Mini-EXPLAIN for Binds & Dynamic SQL      Row 79-111 of 205
=====
Time MM/DD/YY 20:05:34 Plan IDB2V52S Auth MATSAA2
Enter E to EXPLAIN the following SQL ==> _

SELECT I . NAME, I . CREATOR,
       I . UNIQUERULE, I . COLCOUNT, I . CLUSTERING, I . CLUSTE
       RED, I . FIRSTKEYCARD, I . FULLKEYCARD, I . NLEAF, I . NLEVELS
       , I . BPOOL, I . PGSIZE, I . CLOSERULE, I . SPACE, I . CLUSTER
       RATIO, I . INDEXTYPE FROM SYSIBM .SYSINDEXES I, S
       SYSIBM .SYSTABLES T WHERE I . T
       BCREATOR = ? AND I
       . TBNAME = ? AND T
       . CREATOR = ? AND T
       . NAME = ? AND T
       . CREATOR = I . TBCREATOR AND T
       . NAME = I . TBNAME AND T
       . DBNAME = I . DBNAME AND T
       . TYPE = 'T'

>>

Explain data for Plan: IDB2V52S Collection ID: Stmt
Program: NUXPLAN Appl name:
When optimize: BIND Version: .....
Cost: 85 Group member: Query parall

QB/      Mtch      C-E/ SrtN/      Dgree/ P
Seq Access method/  Cols/ Creator  Table name/  Indx SrtC  TS Pref GrpID S
# Access type      MIX# Tbl/IX  Index name   Only UJOG  LK Type Ac Jn S
-----
1 1st or only table  2 SYSIBM  SYSTABLES    NNNN  IS N/A
1 Matching I-scan  1 SYSIBM  DSNDTX01     N NNNN
1 Join by nested lp 1 SYSIBM  SYSINDEXES   NNNN  IS List
2 Match I-scan/LPrf 1 SYSIBM  DSNDXX02     Y NNNN
1 Join by nested lp 2 SYSIBM  SYSINDEXES   NNNN  IS List
2 Match I-scan/LPrf 2 SYSIBM  DSNDXX03     Y NNNN
1 Join by nested lp SYSIBM  SYSINDEXES   NNNN  IS N/A
2 Nonmatch I-sc/LPrf 3
N NNNN
    
```

```

R/ACCSHIST      Mini-EXPLAIN for Binds & Dynamic SQL      Row 1-33 of 160
=====
Time MM/DD/YY 13:35:12 Plan IDB2V61S Auth MATSAA2
Enter E to EXPLAIN the following SQL ==> _

      EXPLAIN PLAN SET QUERYNO=00006345 FOR

      I . UNIQUERULE, I . COLCOUNT, I .          SELECT I . NAME, I . CREATOR,
      RED, I . FIRSTKEYCARDF, I .                CLUSTERING, I . CLUSTE
      F, I . NLEVELS, I . BPOOL, I . PGSIZE,     FULLKEYCARDF, I . NLEA
      CE, I . CLUSTERRATIO, I . INDEXTYPE        FROM SYSIBM .SYSINDEXES I, S
      SYSIBM .SYSTABLES T                        WHERE I . T
      BCREATOR = ?                               AND I
      . TBNAME = ?                               AND T
      . CREATOR = ?                              AND T
      . NAME = ?                                 AND T
      . CREATOR = I . TBCREATOR                 AND T
      . NAME = I . TBNAME                       AND T
      . DBNAME = I . DBNAME                     AND T
      . TYPE = 'T'
      >>

Explain data for Plan: IDB2V61S Collection ID:          Stmt
      Program: NUXPLAN      Appl name:
      When optimize: BIND      Version: .....
      Cost: 87              Group member:          Query parall
      Cost Est (MS):        Cost Est (SU):
      Cost Category: B      Cat B Reason: No Tbl Crd
      Opt Hint ID:         Hints Used: No

QB/      Mtch      C-E/ SrtN/      Dgree/ P
Seq Access method/  Cols/ Creator  Table name/    Indx SrtC  TS Pref GrpID S
# Access type      MIX# Tbl/IX      Index name     Only UJOG  LK Type Ac Jn S
-----
1 1st or only table 2 SYSIBM  SYSTABLES      ---- IS N/A
  1 Matching I-scan 1 SYSIBM  DSNDTX01      N ----
1 Join by nested lp 2 SYSIBM  SYSINDEXES     ---- IS List
  2 Match I-scan/LPrf 1 SYSIBM  DSNDXX03      Y ----
1 Join by nested lp 1 SYSIBM  SYSINDEXES     ---- IS List
  2 Match I-scan/LPrf 2 SYSIBM  DSNDXX02      Y ----
1 Join by nested lp SYSIBM  SYSINDEXES     ---- IS N/A
  2 Nonmatch I-sc/LPrf 3
  
```

You can use these panels with the BIND/REBIND/FREE Activity panel.

Enter **E** and press Enter to perform a dynamic EXPLAIN of the statement.

## Traditional Application Probe

The Application Probe gives you an easy, thorough, and efficient way to trace DB2 activity for a DB2 user and/or plan. Using the Probe, you can collect and display significant activities in the life of a thread.

The Application Probe is a collection of reports you use to see, in detail, how your DB2 program is running. You use this function to *probe* the internal DB2 activity your program caused. The reports are generated from a selected set of DB2 event trace records that are started when you start the Probe, and stopped when you halt the Probe. The reports are treated as a group, which is linked together to let you see various summaries of DB2 events or a very detailed chronological report of DB2 activity.

The reports available in the Traditional Application Probe are as follows:

- Probe Thread Summary
- Application I/O by Database and Pageset
- SQL Statements by Plan and Program
- Pages and Rows Processed for Each SQL Statement
- Scan Summary by Plan and Pageset
- Page Lock Summary
- Trace All SQL Statements

### Probe Thread Summary Panel

This panel formats accounting information as threads complete and any exceptional conditions that might have been caused by the applications being traced, such as negative SQL return codes. The following is a sample of this panel:

R/THRDRTRAC		Probe Thread Summary				Row 1-33 of 51	
----- S T A R T O F A C C O U N T I N G D A T A -----							
Plan	IDB2V625	Auth ID	MATSAA2	Corr ID	MATSAA2	Connection	DB2CALL
Created	15:03:29	Commits	1	Aborts	0	Term Code	NORMAL
Times in	HH:MM:SS.T	Deadlocks	0	Dynamic	0	Getpages	2623
Elapsed Time App	3.6	Timeouts	0	Op Curs	1	Sync Reads	121
CPU Time Appl	0.1	Max Pg Lks	0	Cl Curs	1	Read Eff	21.7
TCB Time Appl	0.1	Lk Suspnds	0	Fetch	3	Bufr Updts	8
TCB Time StorPrc	0.0	Lat Suspnds	0	Select	1	Imm Writes	0
Elapsed Time DB2	3.5	Escaltn Shr	0	Insert	0	S Pref Req	82
CPU Time DB2	0.1	Escaltn Exc	0	Update	0	L Pref Req	0
TCB Time DB2	0.1	UnLock Reqs	1	Delete	0	Avg I/O	0.0135
StorPrc DB2 TCB	0.0	Query Reqs	0	DDL/DCL	0	D Pref Req	0
Wait for DB2 I/O	1.6	Change Reqs	0	Inc Bnd	0	Pref Pages	2078
Wait Locks/Latch	0.0	Lock Reqs	9	Lk Tbl	0	HP Read Ok	0
Wait Other Read	0.9	Drain Reqs	6	S SQLID	0	HP Prf Pgs	0
Wait Other Write	0.0	Drain Fails	0	CALL	0	HP Rd Fail	0
Wait DB2 Service	0.0	Claim Reqs	0	StPrc Abnd	0	C Gpg Fail	0
Wait Drain Lock		Claim Fails	0	CALL Rjctd	0	HP Wr OK	0
Wt Claim Release		P-lock Reqs		CALL Tmout	0	HP Wr Fail	0
Wt Pg Latch Cont		P-lock Chng					
Wt Arch Log Read	0.0	P-lock Unlk		LogWrite	0	SES XI Data	0
Wait Log Quiesce		PropXES Rqs				SES XI NoData	0
Wt Data Shr Msgs	0.0	PropXES Chg				SES-Pg Data	0
Wait Global Cont	0.0	PropXES Unl				SES-Pg NoData	0
Wt Stor Proc TCB	0.0	Susp IRLM Gbl				SES-Pg SupDir	0
Other DB2 Time	0.8	Susp XES Gbl				SES Wr Chng	0
Wt Log Write I/O	0.0	False Cont				SES Wr Cln	0
UDF Total Elapsd	0.0	Gbl Req Fail				Unreg Page	0
UDF TCB CPU	0.0	Notify Sent				Explicit XI	0
UDF SQL CPU	0.0					Duplxd Wrts	0
UDF Wait TCB	0.0					Duplxd CmpCk	0
UDF SQL Elapsd	0.0					Pri-IXL Reqs	0
Trigger Elapsd	0.0					Sec-IXL Reqs	0
Trigger CPU	0.0					GetPgs GBP Dep	0
CPU Before Encla	0.0						
DB2 CPU Be4 Encl	0.0						
Storeproc Elapsd	0.0						
Storeproc SQL	0.0						
Open/Close/HSM							
SYSLGRNG Updates							
DMS Wait Time							
Other XUS Wait							
Force-at-commit							
Wait IXL Reqs							
Glbl Child L-Lk	0.0						
Glbl Other L-Lk	0.0						
Glbl Pgset P-Lk	0.0						
Glbl Page P-Lk	0.0						
Glbl Other P-Lk	0.0						
----- E N D O F A C C O U N T I N G D A T A -----							
DBG55013I Scroll limit reached							

Use options 1 through 7 to select other requests in the probe.

## Application I/O by Database and Pageset Panel

This panel summarizes all synchronous reads and writes for the threads by database and table space/index. This panel identifies those objects (databases and page sets) that are most frequently used. It can be used to help pinpoint inefficient scans. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight GINJ001 21:06:21
DBV4 XE44
  1 Summary 2 IO 3 Plan 4 SQL 5 Scans 6 Locks 7 Detail
R/APPLIO Application I/O by Database & Pageset

```

Database	Pageset	Read I/Os	Pages Read	Avg Read Time	Max Read Time	SES Wrt I/Os	DB2 Wrt I/Os	Total Wrt I/Os	Pages Wrt	Avg Write Time	Max Write Time
DSNDB06	SYSPLAN	1	1	0.020	0.020	0	0	0	0	0.000	0.000
DSNDB06	=====	1	1	0.020	0.020	0	0	0	0	0.000	0.000
DSNDB07	DSN4K01	1	1	0.032	0.032	0	0	0	0	0.000	0.000
DSNDB07	=====	1	1	0.032	0.032	0	0	0	0	0.000	0.000
=====	=====	2	2	0.026	0.032	0	0	0	0	0.000	0.000

```

Command ==>
F1=Help      2=Split      3=End      6=Focus
              9=Swap      12=Return

```

## SQL Statements by Plan and Program Panel

This panel summarizes all SQL statements by plan and program within plan, showing the total number of items (pages, index entries, data rows, or work file rows) processed. This panel is useful for determining which programs execute many statements with inefficient Stage 2 predicates. The following is a sample of this panel:

```

Menu Print Tools Help  CA-Insight          MATSAA2          13:51:55
                        DBV6 XE44
_  1 Summary  2 IO  3 Plan  4 SQL  5 Scans  6 Locks  7 Detail
R/PLANSUM      SQL Statements by Plan and Program
Plan: DSNESPRR Program: DSNESM68          SQL Stmts: 386   Iso Level: RR
                        Avg Dur:      0.009
                        Avg CPU:      0.000
                        Average Percent Time Within Triggers - Dur: 0.2
                                                                - CPU: 2.8

      |----- Total Rows -----| |----- Total
      Any Right  DM  RDS  |----- Total
      Table Table Qual  Qual INSERT UPDATE DELETE DELETE Scan'd Scan'd
Index   94    2   28   409  4    63    66    370    6
Seq DS 15043 2684 1417 409  4    63    66    985
Plan: IDB2V61S Program: NUXPLAN          SQL Stmts: 615   Iso Level: NA
                        Avg Dur:      0.004
                        Avg CPU:      0.000

      |----- Total Rows -----| |----- Total
      Any Right  DM  RDS  |----- Total
      Table Table Qual  Qual INSERT UPDATE DELETE DELETE Scan'd Scan'd
Index   417  210  372   34  226  613
Seq DS 22485 5268 337  333  2617
WrkFile 128   128  128  124  56

Command ==>>>
F1=Help      2=Split      3=End      6=Focus
              9=Swap      10=Left    11=Right   12=Return
    
```

## Rows Processed for Each SQL Statement Panel

This panel summarizes all SQL statements by plan, program within plan, and SQL statement number within program, showing the total number of items (pages, index entries, data rows, or work file rows) processed. The following is a sample of this panel:

```

Menu Print Tools Help  CA-Insight          MATSAA2          14:08:08
                                DBV6 XE44
_  1 Summary  2 IO  3 Plan  4 SQL  5 Scans  6 Locks  7 Detail
R/SQLSUM          Rows Processed for Each SQL Statement          Row 1-21 of 124
Actions:  E=Explain, T=SQL Text

- Stmt Type: PREPARE  Avg Dur:    0.0167          Plan: DSNESPRR  Triggered: NO
  Stmt #: 116        Avg CPU:    0.0002          Program: DSNESM68
  Iso Level: NA      Count:      1              Collection: DSNESPRR
  |----- Total Rows -----| |----- Total
    Any Right  DM  RDS  Rf Int  Rf Int
    Table Table Qual Qual INSERT UPDATE DELETE DELETE Scan'd Scan'd
Index
Seq DS
WrkFile

- Stmt Type: DELETE  Avg Dur:    0.0549          Plan: DSNESPRR  Triggered: NO
  Stmt #: 215        Avg CPU:    0.0054          Program: DSNESM68
  Iso Level: RR      Count:      1              Collection: DSNESPRR
  Avg Called Trigger Pct. Dur: 76.2
  CPU: 56.0
  |----- Total Rows -----| |----- Total
    Any Right  DM  RDS  Rf Int  Rf Int
    Table Table Qual Qual INSERT UPDATE DELETE DELETE Scan'd Scan'd
Index
Seq DS
WrkFile
  12
  694  414  228  12
  12
  48
  61

Command ==>>>
F1=Help      2=Split      3=End          6=Focus
F7=Up        8=Down      9=Swap       10=Left      11=Right     12=Return

```

## EXPLAINing the SQL Statements

You can perform an EXPLAIN of the listed SQL statement by:

- Enter **E** in the selection field next to a statement and press Enter to retrieve data from a PLAN\_TABLE. The PLAN\_TABLE is the one used the last time the plan was bound with EXPLAIN=YES.
- Enter **T** in the selection field next to a statement and press Enter to display the text in the SQL Statement Retrieved From DB2 Catalog panel. A sample was shown in [Profile of Rows Processed by a Statement](#). From there, you can perform the dynamic EXPLAIN.

## Scan Summary by Plan and Pageset Panel

This panel summarizes all data manager scan activity by plan, database, and table space/index (or page set), showing the total number of items (pages, index entries, data rows, or work file rows) processed for each DB2 object. This panel is useful for determining which plans are using expensive Stage 2 predicates. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 13:44:30
PAUSED DBV6 XE44
_ 1 Summary 2 IO 3 Plan 4 SQL 5 Scans 6 Locks 7 Detail

R/SCANSUM Scan Summary by Plan and Pageset

Plan IDB2V615 Avg Dur (MM:SS.TT) 0.02
DB DSND806 Space SYSPKAGE Count 13
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
Any Right Total Rows
Table Table Qual Qual INSERT UPDATE DELETE DELETE Rf Int Scan'd Rf Int
Index 2 22 22 11
Seq DS 22 22 4 2

Plan IDB2V615 Avg Dur (MM:SS.TT) 0.05
DB DSND806 Space SYSPLAN Count 7
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
Any Right Total Rows
Table Table Qual Qual INSERT UPDATE DELETE DELETE Rf Int Scan'd Rf Int
Index 5 1 7 7
Seq DS 4 4 8 4

Plan IDB2V615 Avg Dur (MM:SS.TT) 0.06
DB DSND806 Space SYSUSER Count 1
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
Any Right Total Rows
Table Table Qual Qual INSERT UPDATE DELETE DELETE Rf Int Scan'd Rf Int
Index 1 1 1
Seq DS 1 1 2 1

Plan IDB2V615 Avg Dur (MM:SS.TT) 0.07
DB DSND807 Space DSN4K01 Count 4
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
Any Right Total Rows
Table Table Qual Qual INSERT UPDATE DELETE DELETE Rf Int Scan'd Rf Int
WrkFile 6 6 3
TempTbl 6 3
TranTbl 6 3

Command ==>
F1=Help 2=Split 3=End 9=Swap 10=Left 11=Right 6=Focus 12=Return
    
```



## Page Lock Summary Panel

This panel summarizes lock activity for a thread, including highest number of page locks held concurrently, lock escalations, and lock activity for each DB2 object on which locks were held. This panel is useful for determining the tables and table spaces experiencing possible lock escalation or timeout conditions. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 12:15:13
DBV3 S018
1 Summary 2 IO 3 Plan 4 SQL 5 Scans 6 Locks 7 Detail FOCUS OFF
R/LOCKSUM Page Lock Summary
LOCK SUMMARY AT MM/DD/YY 11:49:53.26 Maximum locks held concurrently: 5
Auth: JBG Conn: TSO Lock escalations - SHR: 0 EXC: 0
Plan: DSNESPCS Corr: JBG
Database Space Type Max page Hi lock Lock state prior
locks state to escalation
JBG JBGTSPC2 segmented 2 n/a n/a
DSNDB06 SYSSTATS segmented 0 n/a n/a
DSNDB06 SYSDBASE nonsegmented 0 IS n/a
DSNDB06 SYSPKAGE segmented 2 n/a n/a

Command ==>
F1=Help 2=Split 3=End 6=Focus
9=Swap 12=Return
    
```

## Trace All SQL Statements Panel

This panel traces all SQL statements and the many different DB2 activities caused by them. The SQLTRACE request is started only if you specify a value of Y in the Include SQLTRACE parameter of the Start Qualifications panel. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 12:16:49
DBV3 S018
1 Summary 2 IO 3 Plan 4 SQL 5 Scans 6 Locks 7 Detail
R/SQLTRACE Trace all SQL Statements
Event Time Corr Plan/ Dur/CPU
Auth (Seconds)
-----
TSO COMMIT 49:53.2667 JBG DSNESPCS
E Explain T SQL Text
END UNPAIRED 49:53.2668 JBG DSNESPCS 0.0000 Program DSNESM68
SQL Code 0 No d
RMID 2
BGN WT SERVICE 49:53.2674 JBG DSNESPCS
END WT SERVICE 49:53.2680 JBG DSNESPCS 0.0000
BGN WT SERVICE 49:53.2692 JBG DSNESPCS RMID 2
END WT SERVICE 49:53.2704 JBG DSNESPCS 0.0000
THREAD TERMINATED 49:53.2706 JBG

Command ==>
F1=Help 2=Split 3=End 10=Left 11=Right 12=Return
9=Swap
    
```

## EXPLAINing the SQL Statements

You can perform an EXPLAIN of the listed SQL text by entering an **E** in the selection field next to a statement and pressing Enter to perform a dynamic EXPLAIN of the statement. This is described in the “[EXPLAIN](#)” chapter.

If only an SQL statement number is shown on the report, you can obtain EXPLAIN information by:

- Entering **E** in the selection field next to a statement and pressing Enter to retrieve data from a PLAN\_TABLE. The PLAN\_TABLE is the one used the last time the plan was bound with EXPLAIN=YES.
- Enter **T** in the selection field next to a statement and pressing Enter to display the text in the SQL Statement Retrieved From DB2 Catalog panel. A sample is shown in [Profile of Rows Processed by a Statement Panel](#). You can then perform the EXPLAIN from this panel.

## Hierarchical Application Probe

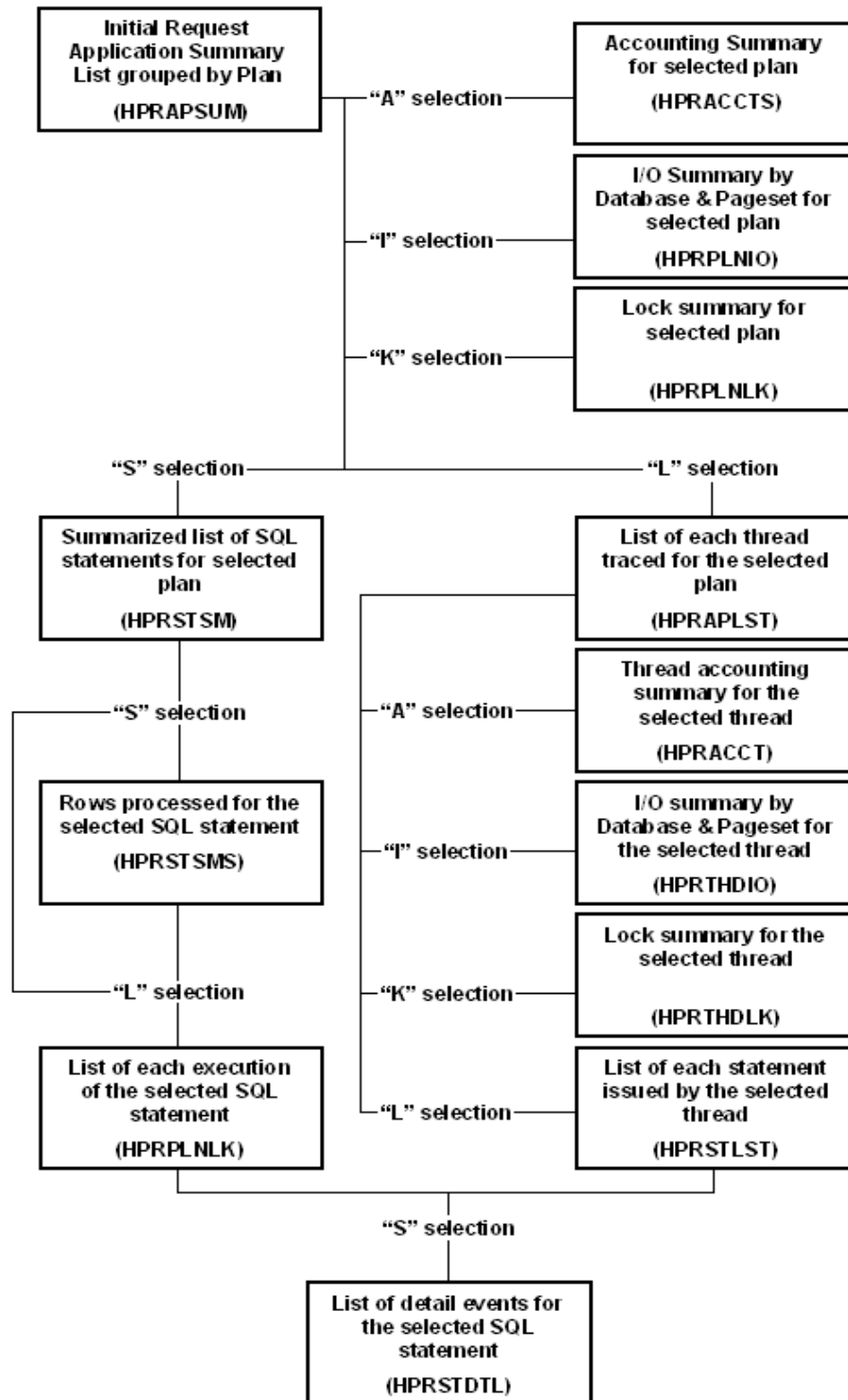
The hierarchical probe is similar to the traditional probe in the data that it contains, but is radically different in the way that it presents the data. By default, it collects and groups the data both summarized by application plan and for each thread traced. You start at high level summary screens and drill down to lower level, more detailed screens which only show data for the item selected on the higher level screen.

The reports available in the Hierarchical Probe are as follows:

- SQL Summary by Plan
- Accounting Summary for a Plan
- I/O by DB & Pageset for Plan Panel
- Lock Summary for Plan
- Statement Summary for Plan
- Rows Processed for SQL Statement
- Selected Statement List for Plan
- Threads Traced for Plan
- Thread Accounting Summary
- Thread I/O by Database & Pageset
- Thread Lock Summary

- SQL Statements for a Thread
- SQL Statement Detail

The following illustration shows the different displays available and hierarchical structure:



## SQL Summary by Plan Panel

This panel is the initial request for displaying the hierarchical probe data. It shows a summary of all applications traced grouped by plan name.

```

Menu Print Tools Help CA-Insight DXB164 16:10:26
DBV3 5018

R/HPRAPSUM SQL Summary by Plan
Actions: S=Stmt summary, L=List of threads, A=Acctg sum, I=I/O sum, K=Lock sum
  Plan      Thds  Stmts   Avg Stmt   Avg Stmt   Tot Stmt   Tot Stmt
          Resp      CPU      Resp      CPU      Resp      CPU
-----
_ DSNESPCS   1    8    0.0563    0.0105    0.2816    0.0508
_ IDB2V51   7   279    0.0496    0.0104   12.8665    2.7113

Command ==>
F1=Help      2=Split      3=End
              9=Swap      12=Return

```

Use this display to view the traced applications and drill down to view more detailed information. Use the action codes as follows:

- S** A line by line summary of all SQL that has been traced for a plan.
- L** A list of each thread traced for a plan.
- A** A summary from the accounting records for qualifying threads.
- I** A summary of I/O activity for the plan.
- K** A summary of page lock activity for the plan.

## Accounting Summary for Plan Panel

This panel shows a summary of the fields on the accounting records for the qualifying threads, highlighting possible fields that might need to be analyzed. Use the accounting information to determine if any problem fields might be non-zero indicating possible problems.

To access this panel, use the **A** action code from the SQL Summary by Plan panel. You cannot invoke the display directly. The following is a sample of this panel.

R/HPRACCTS		Accounting Summary for Plan IDB2V625				Row 1-33 of 104	
----- A C C O U N T I N G   D A T A   T O T A L S -----							
Commits	1	Aborts	0				
Times in	HH:MM:SS.T						
Elapsed Time Appl	3.6	Deadlocks	0	Dynamic	0	Getpages	2623
CPU Time Appl	0.3	Timeouts	0	Op Curs	1	Sync Reads	121
TCB Time Appl	0.1	Max Pg Lks	0	Cl Curs	1	Read Eff	21.7
SRB Time Appl	0.1	Lk Suspnds	0	Fetch	3	BufR Updts	8
TCB Time StorPrc	0.0	Lat Suspnds	0	Select	1	Imm Writes	0
Elapsed Time DB2	3.5	Escaltn Shr	0	Insert	0	S Pref Req	82
CPU Time DB2	0.1	Escaltn Exc	0	Update	0	L Pref Req	0
TCB Time DB2	0.1	Unlock Reqs	1	Delete	0	Avg I/O	0.0135
SRB Time DB2	0.0	Query Reqs	0	DDL/DCL	0	D Pref Req	0
StorPrc DB2 TCB	0.0	Change Reqs	0	Inc Bnd	0	Pref Pages	2078
Wait for DB2 I/O	1.6	Lock Reqs	9	Lk Tbl	0	HP Read Ok	0
Wait Locks/Latch	0.0	Drain Reqs	6	S SQLID	0	HP Prf Pgs	0
Wait Other Read	0.9	Drain Fails	0	CALL	0	HP Rd Fail	0
Wait Other Write	0.0	Claim Reqs	0	StPrc Abnd	0	C Gpg Fail	0
Wait DB2 Service	0.0	Claim Fails	0	CALL Rjctd	0	HP Wr OK	0
Wait Drain Lock	0.0	P-lock Reqs	0	CALL Tmout	0	HP Wr Fail	0
Wt Claim Release	0.0	P-lock Chng	0				
Wt Pg Latch Cont	0.0	P-lock Unlk	0	LogWrite	0	SES XI Data	0
Wt Arch Log Read	0.0	PropXES Rqs	0			SES XI NData	0
Wait Log Quiesce	0.0	PropXES Chg	0			SES-Pg Data	0
Wt Data Shr Msgs	0.0	PropXES Unl	0			SES-Pg NData	0
Wait Global Cont	0.0	Susp IRLM Gbl	0			SES-Pg SupDr	0
Wt Stor Proc TCB	0.0	Susp XES Gbl	0			SES Wr Chng	0
Other DB2 Time	0.8	False Cont	0			SES Wr Cln	0
Wt Log Write I/O	0.0	Gbl Req Fail	0			Unreg Page	0
UDF Total Elapsd	0.0	Notify Sent	0			Explicit XI	0
UDF TCB CPU	0.0					Duplxd Wrts	0
UDF SQL CPU	0.0					Duplxd CmpCk	0
UDF Wait TCB	0.0					Pri-IXL Reqs	0
UDF SQL Elapsd	0.0					Sec-IXL Reqs	0
Trigger Elapsed	0.0					GetPgs GBP Dep	0
Trigger CPU	0.0						
CPU Before Encla	0.0						
DB2 CPU Be4 Encl	0.0						
Storeproc Elapsd	0.0						
Storeproc SQL	0.0						
Open/Close/HSM	0.0						
SYSLGRNG Updates	0.0						
DMS Wait Time	0.0						
Other XUS Wait	0.0						
Force-at-commit	0.0						
Wait IXL Reqs	0.0						
Glbl Child L-Lk	0.0						
Glbl Other L-Lk	0.0						
Glbl Pgset P-Lk	0.0						
Glbl Page P-Lk	0.0						
Glbl Other P-Lk	0.0						
----- E N D   O F   A C C O U N T I N G   D A T A -----							

```

----- A C C O U N T I N G   D A T A   A V E R A G E S -----
Commits 1.00      Aborts 0.00
Times in HH:MM:SS.T
Elapsed Time Appl      3.6 Deadlocks      0.00 Dynamic      0.0 Getpages      2623.00
CPU Time Appl          0.3 Timeouts      0.00 Op Curs      1.0 Sync Reads    121.00
TCB Time Appl          0.1 Max Pg Lks    0.00 Cl Curs      1.0 Read Eff      21.7
SRB Time Appl          0.1 Lk Suspnds    0.00 Fetch        3.0 Bufr Updts    8.00
TCB Time StorPrc      0.0 Lat Suspnds    0.00 Select       1.0 Imm Writes    0.00
Elapsed Time DB2      3.5 Escaltn Shr   0.00 Insert       0.0 S Pref Req     82.00
CPU Time DB2          0.1 Escaltn Exc   0.00 Update       0.0 L Pref Req     0.00
TCB Time DB2          0.1 Unlock Reqs   1.00 Delete       0.0 Avg I/O       0.0135
SRB Time DB2          0.0 Query Reqs    0.00 DDL/DCL      0.0 D Pref Req     0.00
StorPrc DB2 TCB      0.0 Change Reqs   0.00 Inc Bnd      0.0 Pref Pages    2078.00
Wait for DB2 I/O      1.6 Lock Reqs     9.00 Lk Tbl      0.0 HP Read Ok     0.00
Wait Locks/Latch      0.0 Drain Reqs    6.00 S SQLID      0.0 HP Prf Pgs     0.00
Wait Other Read       0.9 Drain Fails   0.00 CALL         0.0 HP Rd Fail     0.00
Wait Other Write      0.0 Claim Reqs    0.00 StPrcAb      0.0 C Gpg Fail     0.00
Wait DB2 Service      0.0 Claim Fails   0.00 CALL Rj      0.0 HP Wr OK       0.00
Wait Drain Lock       0.0 P-lock Reqs    0.00 CALL TO     0.0 HP Wr Fail     0.00
Wt Claim Release      0.0 P-lock Chng    0.00
Wt Pg Latch Cont      0.0 P-lock Unlk    0.00 LogWrit      0.0 SES XI Data     0.00
Wt Arch Log Read      0.0 PropXES Rqs    0.00             SES XI NData    0.00
Wait Log Quiesce      0.0 PropXES Chg    0.00             SES-Pg Data     0.00
Wt Data Shr Msgs      0.0 PropXES Unl    0.00             SES-Pg NData    0.00
Wait Global Cont      0.0 Sus IRLM Gb    0.00             SES-Pg SupDr    0.00
Wt Stor Proc TCB      0.0 Sus XES Gbl    0.00             SES Wr Chng     0.00
Other DB2 Time        0.8 False Cont   0.00             SES Wr Cln      0.00
Wt Log Write I/O      0.0 Gbl Req Err    0.00             Unreg Page      0.00
UDF Total Elapsd      0.0 Notify Sent    0.00             Explicit XI     0.00
UDF TCB CPU           0.0              Duplxd Wrts    0.00
UDF SQL CPU           0.0              Duplxd CmpCk   0.00
UDF Wait TCB          0.0              Pri-IXL Reqs   0.00
UDF SQL Elapsd        0.0              Sec-IXL Reqs   0.00
Trigger Elapsed       0.0              GetPgs GBP Dep 0
Trigger CPU           0.0

CPU Before Encla      0.0
DB2 CPU Be4 Encl     0.0
Storeproc Elapsd     0.0
Storeproc SQL         0.0
Open/Close/HSM       0.0
SYSLGRNG Updates     0.0
DMS Wait Time        0.0
Other XUS Wait        0.0
Force-at-commit       0.0
Wait IXL Reqs        0.0
Glbl Child L-Lk      0.0
Glbl Other L-Lk      0.0
Glbl Pgset P-Lk      0.0
Glbl Page P-Lk       0.0
Glbl Other P-Lk      0.0
----- E N D   O F   A C C O U N T I N G   D A T A -----

```

## I/O by DB and Pageset for Plan Panel

This panel shows a summary of the I/O activity for the application plan. Use the I/O activity to identify which page sets might have excessive I/O response times.

To access this panel, use the I action code from the SQL Summary by Plan panel. You cannot invoke the display directly. The following is a sample of this panel.

Menu Print Tools Help CA-Insight DXB164 16:49:33 DBV3 5018											
R/HPRPLNIO I/O by DB & Pageset for Plan IDB2V51											
Database	Pageset	Read I/Os	Total Pages Read	Write I/Os	Total Pages Written	Total Pages Rd/Wr	Avg Rd Time	Max Rd Time	Avg Wr Time	Max Wr Time	
DSNDB01	DSNSCT02	2	2	0	0	2	0.023	0.030	0.000	0.000	
	SCT02	5	5	0	0	5	0.015	0.025	0.000	0.000	
DSNDB04	PLANRTAB	3	3	0	0	3	0.015	0.021	0.000	0.000	
DSNDB06	DSNATX02	1	1	0	0	1	0.022	0.022	0.000	0.000	
	DSNDCX01	3	3	0	0	3	0.021	0.029	0.000	0.000	
	DSNDTX01	2	2	0	0	2	0.023	0.026	0.000	0.000	
	DSNDYX01	2	2	0	0	2	0.017	0.025	0.000	0.000	
	SYSDBASE	11	11	0	0	11	0.009	0.019	0.000	0.000	

Command ==>>	_____					
F1=Help	2=Split	3=End	9=Swap	10=Left	11=Right	12=Return



## Lock Summary for Plan Panel

This panel shows a summary of the page lock activity and lock suspensions for the application plan. Use the page lock activity to identify for which page sets the most number of page locks are being held.

To access this panel, use the **K** action code from the SQL Summary by Plan panel. You cannot invoke the display directly. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight DXB164 16:53:05
DBV3 5018

R/HPRPLNLK Lock Summary for Plan IDB2V51

Page lock summary...

Maximum locks held concurrently: 122
Lock escalations - SHR: 0 EXC: 0

Database Space Type Max Lock Hi Lock Lock
Type Type Type Locks State Type
DSNDB01 DBD01 nonsegmented 2 IX Page
DSNDB01 SPT01 segmented 1 n/a
DSNDB04 PLAN1VDQ nonsegmented 0 X None
DSNDB04 PLAN1XZX nonsegmented 0
DSNDB06 SYSDBASE nonsegmented 15 IX Page
DSNDB06 SYSPLAN nonsegmented 2
DSNDB06 SYSVIEWS nonsegmented 1
DSNDB06 SYSGROUP nonsegmented 1 IS
DSNDB06 SYSDBAUT nonsegmented 3 IX
DSNDB06 SYSUSER nonsegmented 2 IS
DSNDB06 SYSCOPY nonsegmented 0 IX None
DSNDB06 SYSPKAGE segmented 2 n/a Page
DSNDB06 SYSSTR segmented 1
DSNDB06 SYSSTATS segmented 0 None

Lock suspension summary...

Lock resource Lock type Dead Time <- Suspend type ->
lock outs Lock Latch Other Suspend time
.....
DSNDB04 .PLANRTAB DSN310 PAGESET 0 1 1 0 0 1:02.8826

Command ==>
F1=Help 2=Split 3=End 10=Left 11=Right 12=Return
9=Swap
    
```

## Statement Summary for Plan Panel

This panel shows a summary of each SQL statement and selected other events (such as create and terminate thread) traced grouped by plan, collection ID, program and statement number. Use this panel to determine which statements have the worst response time, and what events are causing the response time.

To access this panel, use the **S** action code from the SQL Summary by Plan panel. You cannot invoke the display directly. The following is a sample of this panel:

```

Menu Print Tools Help    CA-Insight          DXB164          16:56:17
                                      DBV3 5018

R/HPRSTSM      Statement Summary for Plan IDB2V51          Item 1-27 of 27
Actions: S=Stmt row data, L=List each stmt, E=Explain, T=SQL text

  Program Stmt# Stmt type      Object      Count  Avg Resp  Pct of total
-----
- NUXPLAN   501 SELECT      .....      1      0.0036  0.0|=
-           633 PREPARE   QRYPLN      4      0.0612  1.9|=
-           644 OPENCURS  QRYPLN      2      0.0185  0.2|=
-           890 CLOSCURS  QRYPLN      2      0.0002  0.0|=
-           896 UNPAIRED .....      2      0.0000  0.0|=
-           1746 UNPAIRED .....      2      0.0000  0.0|=
-           2005 OPENCURS  STMTCSR     7      0.4853  26.4|====
-           2013 FETCH    STMTCSR    203     0.0003  0.6|=
-           2052 SELECT      .....      5      0.0015  0.0|=
-           2262 CLOSCURS  STMTCSR      2      0.0026  0.0|=
-           2427 SELECT      .....      7      0.0049  0.2|=
-           2586 OPENCURS  GET_INDEX_STATS 1      0.0009  0.0|=
-           2639 OPENCURS  GET_INDEX_COLUMN 1      7.0323  54.6|=====
-           2683 CLOSCURS  GET_INDEX_COLUMN 1      0.0001  0.0|=
-           2692 CLOSCURS  GET_INDEX_STATS 1      0.0002  0.0|=
-           2894 FETCH    QRYPLN      3      0.0012  0.0|=
-           3034 SELECT      .....      1      0.0044  0.0|=
-           3128 FETCH    GET_INDEX_STATS 2      0.1589  2.4|=
-           3169 FETCH    GET_INDEX_COLUMN 2      0.0007  0.0|=
-           3199 SELECT      .....      1      0.0680  0.5|=
-           3275 SELECT      .....      1      0.0426  0.3|=
-           3543 OPENCURS  PROG_V31     1      1.1950  9.2|==
-           3548 FETCH    PROG_V31     6      0.0006  0.0|=
-           3574 CLOSCURS  PROG_V31     1      0.0003  0.0|=
- (L only)          Create thread  9      0.0145  1.0|=
- (L only)          ROLLBACK     2      0.0822  1.2|=
- (L only)          Terminate thread 9      0.0099  0.7|=
Command ==>
  F1=Help      2=Split      3=End      10=Left      11=Right      12=Return
  9=Swap
    
```

Use the action codes as follows:

- S** A summary of rows processed for the SQL statement.
- L** A list of each execution of an SQL statement.
- E** EXPLAIN data for the associated program.
- T** The SQL text for the statement.

## Rows Processed for SQL Statement Panel

This panel shows a summary of the rows processed for the selected SQL statement. It displays both the totals and averages. This panel identifies how much data is being retrieved and then qualified by the data manager (DM) or the RDS.

To access this panel, use the **S** action code from the Statement Summary for Plan panel. You cannot invoke the display directly. The following is a sample of this panel:

```

Menu Print Tools Help    CA-Insight                MATSAA2                13:34:50
                                                                DBV6 XE44

R/HPRSTSMS      Rows Processed for SQL Statement

ctions: E=Explain, T=SQL text
- Plan IDB2V61S Program NUXPLAN CollID          Count      6
- Stmt# 3361      StmtType OPENCURS Object GET_INDEX_COLUMN Avg Dur     0.0009
                                                                Avg CPU    0.0005

      |-----|-----|-----|-----|-----|-----|-----|-----|
      Any Right  DM   Total Rows -----|-----|-----|-----|
      Table Table Qual  Qual INSERT UPDATE DELETE DELETE Scan'd  Scan'd
Index      6
Seq DS    15          15   15
WrkFile

      |-----|-----|-----|-----|-----|-----|-----|-----|
      Average Rows -----|-----|-----|-----|
Index      1.0
Seq DS    2.5          2.5  2.5
WrkFile

Command ==> _____
F1=Help      2=Split      3=End
              9=Swap      10=Left      11=Right      12=Return
  
```

Use one of the following:

- The **E** action code to view EXPLAIN data for the associated program.
- The **T** action code to view the SQL text for the statement.

## Selected Statement List for Plan Panel

This panel shows each individual execution of a particular SQL statement or other non-SQL event (such as create and terminate thread). This panel identifies which executions have the worst response time and lets you drill down to determine what events are taking place to cause the response time.

To access this panel, use the **L** action code from the Statement Summary for Plan panel. You cannot invoke the display directly. The following is a sample of this panel:

Menu		Print	Tools	Help	CA-Insight	DXB164	08:41:46	
							DBV3 5018	
R/HPRSTSM	Selected Statement List for Plan IDB2V51					Item 1-12 of 12		
Actions: S=Detail, E=Explain, T=SQL Text								
Program	Stmt#	StmtType	Object	SQLRC	Elapsed	CPU	Time	
- NUXPLAN	3548	FETCH	PROG_V31	0	0.0442	0.0019	08:41:20.48	
- NUXPLAN	3548	FETCH	PROG_V31	0	0.0013	0.0006	08:41:20.53	
- NUXPLAN	3548	FETCH	PROG_V31	0	0.0003	0.0003	08:41:20.53	
- NUXPLAN	3548	FETCH	PROG_V31	0	0.0010	0.0007	08:41:20.53	
- NUXPLAN	3548	FETCH	PROG_V31	0	0.0004	0.0004	08:41:20.53	
- NUXPLAN	3548	FETCH	PROG_V31	100	0.0071	0.0020	08:41:20.53	
- NUXPLAN	3548	FETCH	PROG_V31	0	0.0017	0.0012	08:41:27.20	
- NUXPLAN	3548	FETCH	PROG_V31	0	0.0004	0.0004	08:41:27.21	
- NUXPLAN	3548	FETCH	PROG_V31	0	0.0004	0.0004	08:41:27.21	
- NUXPLAN	3548	FETCH	PROG_V31	0	0.0003	0.0003	08:41:27.21	
- NUXPLAN	3548	FETCH	PROG_V31	0	0.0011	0.0006	08:41:27.21	
- NUXPLAN	3548	FETCH	PROG_V31	100	0.0011	0.0011	08:41:27.21	

Command ==>	_____					
F1=Help	2=Split	3=End	9=Swap	10=Left	11=Right	12=Return

Use the **S** action code to view the detail events associated with a given execution of the statement, the **E** action code to view EXPLAIN data for the associated program, and the **T** action code to view the SQL text for the statement.

## Threads Traced for Plan Panel

This panel shows a list of each thread traced for the selected plan. Use this panel to identify which threads have the worst response time, and which statements are using the most resources.

To access this panel, use the **L** action code from the SQL Summary by Plan panel. You cannot invoke the display directly. The following is a sample of this panel.

```

Menu Print Tools Help CA-Insight DXB164 17:01:00
DBV3 5018

R/HPRAPLST Threads Traced for Plan IDB2V51 Item 1-7 of 7
Actions: S=Statements, A=Accounting, I=I/O Summary, K=Lock Summary
Plan Auth ID Conn Correlation DB2 Elap CPU Time Start Time
-----
- IDB2V51 DXB164 DB2CALL DXB164 1.2020 0.2853 10:59:26.0463
- IDB2V51 DXB164 DB2CALL DXB164 0.9632 0.2338 11:01:18.2964
- IDB2V51 DXB164 DB2CALL DXB164 1.3035 0.4583 11:22:48.6259
- IDB2V51 DXB164 DB2CALL DXB164 0.7801 0.4953 11:23:00.6924
- IDB2V51 DXB164 DB2CALL DXB164 0.2248 0.1922 11:23:11.1527
- IDB2V51 DXB164 DB2CALL DXB164 0.2454 0.2000 11:23:20.3827
- IDB2V51 DXB164 DB2CALL DXB164 7.4297 0.4939 11:23:27.5286

Command ==>
F1=Help 2=Split 3=End 10=Left 11=Right 12=Return
9=Swap
    
```

Use the action codes as follows:

- S** A list of each SQL statement executed for a particular execution of a thread.
- A** A summary of information from the accounting record, if available.
- I** A summary of I/O activity for the thread.
- K** A summary of page lock activity for the thread.

## Thread Accounting Summary Panel

This panel shows a summary of the fields on the accounting record for the thread, highlighting possible fields that might need to be analyzed. It also highlights SQL statements with non-zero return codes and statements with expensive sorts.

To access this panel, use the **A** action code from the Threads Traced for Plan panel. You cannot invoke the display directly. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 15:14:06
D71A CA31

R/HPRACCT Thread Accounting Summary Row 1-31 of 52
Plan: IDB2V62S Conn: DB2CALL Auth: MATSAA2 Corr: MATSAA2

----- S T A R T O F A C C O U N T I N G D A T A -----
Created 15:03:29 Commits 1 Aborts 0 Term Code NORMAL
Times in HH:MM:SS.T
Elapsed Time App 3.6 Deadlocks 0 Dynamic 0 Getpages 2623
CPU Time Appl 0.3 Timeouts 0 Op Curs 1 Sync Reads 121
TCB Time Appl 0.1 Max Pg Lks 0 Cl Curs 1 Read Eff 21.7
SRB Time Appl 0.1 Lk SuspnDs 0 Fetch 3 Bufr Updts 8
TCB Time StorPrc 0.0 Lat SuspnDs 0 Select 1 Imm Writes 0
Elapsed Time DB2 3.5 Escaltn Shr 0 Insert 0 S Pref Req 82
CPU Time DB2 0.1 Escaltn Exc 0 Update 0 L Pref Req 0
TCB Time DB2 0.1 Unlock Reqs 1 Delete 0 Avg I/O 0.0135
SRB Time DB2 0.0 Query Reqs 0 DDL/DCL 0 D Pref Req 0
StorPrc DB2 TCB 0.0 Change Reqs 0 Inc Bnd 0 Pref Pages 2078
Wait for DB2 I/O 1.6 Lock Reqs 9 Lk Tbl 0 HP Read Ok 0
Wait Locks/Latch 0.0 Drain Reqs 6 S SQLID 0 HP Prf Pgs 0
Wait Other Read 0.9 Drain Fails 0 CALL 0 HP Rd Fail 0
Wait Other Write 0.0 Claim Reqs 0 StPrc Abnd 0 C Gpg Fail 0
Wait DB2 Service 0.0 Claim Fails 0 CALL Rjctd 0 HP Wr OK 0
Wait Drain Lock P-lock Reqs CALL Tmout 0 HP Wr Fail 0
Wt Claim Release P-lock Chng
Wt Pg Latch Cont P-lock Unlk LogWrite 0 SES XI Data 0
Wt Arch Log Read 0.0 PropXES Rqs SES XI NoData 0
Wait Log Quiesce PropXES Chg SES-Pg Data 0
Wt Data Shr Msgs 0.0 PropXES Unl SES-Pg NoData 0
Wait Global Cont 0.0 Susp IRLM Gbl SES-Pg SupDir 0
Wt Stor Proc TCB 0.0 Susp XES Gbl SES Wr Chng 0
Other DB2 Time 0.8 False Cont SES Wr Cln 0
Wt Log Write I/O 0.0 Gbl Req Fail Unreg Page 0
UDF Total Elapsd 0.0 Notify Sent Explicit XI 0
UDF TCB CPU 0.0 Duplxd Wrts 0
UDF SQL CPU 0.0 Duplxd CmpCk 0
UDF Wait TCB 0.0 Pri-IXL Reqs 0
UDF SQL Elapsd 0.0 Sec-IXL Reqs 0
Trigger Elapsed 0.0 GetPgs GBP Dep 0
Trigger CPU 0.0
CPU Before Encla 0.0
DB2 CPU Be4 Encl 0.0
Storeproc Elapsd 0.0
Storeproc SQL 0.0
Open/Close/HSM
SYSLGRNG Updates
DMS Wait Time
Other XUS Wait
Force-at-commit
Wait IXL Reqs
Glbl Child L-Lk 0.0
Glbl Other L-Lk 0.0
Glbl Pgset P-Lk 0.0
Glbl Page P-Lk 0.0
Glbl Other P-Lk 0.0
----- E N D O F A C C O U N T I N G D A T A -----

```

### Thread I/O by Database and Pageset Panel

This panel shows a summary of the I/O activity for the thread. It identifies the I/O activity for database page sets and lets you identify which page sets might have excessive I/O response times.

To access this panel, use the **I** action code from the Threads Traced for Plan panel. You cannot invoke the display directly. The following is a sample of this panel.

```

Menu Print Tools Help    CA-Insight                DXB164                17:01:41
                                                                DBV3 5018

R/HPRTHDIO      Thread I/O by Database & Pageset
Plan: IDB2V51   Conn: DB2CALL   Auth: DXB164   Corr: DXB164

      Total      Total Total
      Read Pages Write Pages Pages
Database Pageset  I/Os  Read  I/Os  Written Rd/Wr  Avg Rd Max Rd Avg Wr Max Wr
-----
DSNDB01 DSNCT02      2      2      0      0      2 0.023 0.030 0.000 0.00
        SCT02      5      5      0      0      5 0.015 0.025 0.000 0.00
DSNDB06 DSNDCX01      3      3      0      0      3 0.021 0.029 0.000 0.00
        SYSDBASE      8      8      0      0      8 0.005 0.018 0.000 0.00

Command ==>
F1=Help      2=Split      3=End
              9=Swap      10=Left      11=Right      12=Return
    
```

## Thread Lock Summary Panel

This panel shows a summary of the page lock activity and lock suspensions for the thread. It identifies the page lock activity and lets you identify for which page sets the most number of page locks are being held.

To access this panel, use the **K** action code from the Threads Traced for Plan panel. You cannot invoke the display directly. The following is a sample of this panel:

```

Menu Print Tools Help    CA-Insight                DXB164                17:02:20
                                                                DBV3 5018

R/HPRTHDLK      Thread Lock Summary

Plan: IDB2V51  Conn: DB2CALL  Auth: DXB164  Corr: DXB164
Actions: S=Detail, E=Explain, T=SQL Text
Page lock summary...

LOCK SUMMARY AT MM/DD/YY 11:23:35.11  Lock escalations - SHR: 0  EXC: 0
Maximum locks held concurrently: 122

Database Space      Type      Max  Hi Lock  Lock
Locks      State  Type
DSNDB01 DBD01  nonsegmented  2  IX  Page
DSNDB01 SPT01  segmented    1  n/a
DSNDB04 PLAN1VDQ nonsegmented  0  X  None
DSNDB04 PLAN1XZX nonsegmented  0
DSNDB06 SYSDBASE nonsegmented 15  IX  Page
DSNDB06 SYSPLAN  nonsegmented  2
DSNDB06 SYSVIEWS nonsegmented  1
DSNDB06 SYSGROUP nonsegmented  1  IS
DSNDB06 SYSDBAUT nonsegmented  3  IX
DSNDB06 SYSUSER  nonsegmented  2  IS
DSNDB06 SYSCOPY  nonsegmented  0  IX  None
DSNDB06 SYSPKAGE segmented    2  n/a  Page
DSNDB06 SYSSTR   segmented    1
DSNDB06 SYSSTATS segmented    0  None

Lock suspension summary...

Lock resource      Lock  Dead Time <- Suspend type ->
type              lock outs Lock  Latch  Other Suspend time
.....
DSNDB04 .PLANRTAB  DSN310  PAGESET  0  1  1  0  0  1:02.8826

Command ==> _____
    
```



## SQL Statements for a Thread Panel

This panel shows a list of each SQL statement and selected other events (such as create and terminate thread) traced for the selected thread. It identifies which statements have the worst response time and lets you determine what events are causing the response time.

To access this panel, use the **S** action code from the Threads Traced for Plan panel. You cannot invoke the display directly. The following is a sample of this panel:

Menu		Print	Tools	Help	CA-Insight	DXB164	17:02:40	
							DBV3 5018	
R/HPRSTLST		SQL Statements for a Thread				Item 1-13 of 13		
Plan: IDB2V51		Conn: DB2CALL		Auth: DXB164		Corr: DXB164		
Actions: S=Detail, E=Explain, T=SQL Text								
Program	Stmnt#	StmntType	Object	SQLRC	Elapsed	CPU	Time	
(S only)		Create thread		0	0.0131	0.0099	11:23:27.51	
- NUXPLAN	2427	SELECT	.....	0	0.0042	0.0029	11:23:27.52	
- NUXPLAN	3034	SELECT	.....	0	0.0044	0.0032	11:23:27.61	
- NUXPLAN	2586	OPENCURS	GET_INDEX_STATS	0	0.0009	0.0003	11:23:27.67	
- NUXPLAN	3128	FETCH	GET_INDEX_STATS	0	0.2913	0.0083	11:23:27.67	
- NUXPLAN	2639	OPENCURS	GET_INDEX_COLUM	0	7.0323	0.4640	11:23:27.97	
- NUXPLAN	3169	FETCH	GET_INDEX_COLUM	0	0.0006	0.0006	11:23:35.01	
- NUXPLAN	3199	SELECT	.....	0	0.0680	0.0050	11:23:35.01	
- NUXPLAN	3169	FETCH	GET_INDEX_COLUM	100	0.0007	0.0007	11:23:35.08	
- NUXPLAN	2683	CLOSCURS	GET_INDEX_COLUM	0	0.0001	0.0001	11:23:35.08	
- NUXPLAN	3128	FETCH	GET_INDEX_STATS	100	0.0265	0.0081	11:23:35.08	
- NUXPLAN	2692	CLOSCURS	GET_INDEX_STATS	0	0.0002	0.0002	11:23:35.11	
- (S only)		Terminate thread		0	0.0116	0.0069	11:23:35.11	
Command ==> _____								

Use the action codes as follows:

- S** Detail events associated with a particular execution of an SQL statement.
- E** EXPLAIN data for the associated program.
- T** The SQL text for the statement.

## SQL Statement Detail Panel

This panel shows the detail events associated with a particular execution of an SQL statement or non-SQL event (such as create and terminate thread).

To access this panel, use the **S** action code from the SQL Statements for a Thread panel or the Selected Statement List for Plan panel. You cannot invoke the display directly. The following are two samples of this panel:

### First Sample

```

Menu Print Tools Help CA-Insight DXB164 17:04:40
DBV3 5018

R/HPRSTDTL SQL Statement Detail

Plan: IDB2V51 Conn: DB2CALL Auth: DXB164 Corr: DXB164
Actions: E=Explain, T=SQL Text
Event Object/Detail Elapsed CPU Time
-----
_ BEGIN SELECT ..... 11:23:35.0126
  BEGIN INDX SCAN Stmt#: 3199 Pgm: NUXPLAN
    Table: SYSIBM.SYSCOLUMNS 11:23:35.0131
    Index: SYSIBM.DSNDCX01
    DB/TS: DSND06 SYSDBASE
    SYNC READ DSND06 DSNDCX01 Pgs: 1 0.0296 0.0005 11:23:35.0435
    SYNC READ DSND06 DSNDCX01 Pgs: 1 0.0187 0.0005 11:23:35.0627
    SYNC READ DSND06 DSNDCX01 Pgs: 1 0.0156 0.0007 11:23:35.0798
  END INDX SCAN Table: SYSIBM.SYSCOLUMNS 0.0674 0.0044 11:23:35.0805
    Index: SYSIBM.DSNDCX01
    DB/TS: DSND06 SYSDBASE
    |----- Rows -----| |- Pgs -|
    Any Right DM RDS RI
RI
Table Table Qual Qual ISRT UPDT DLET DLET Scan Scan
Index 1 1 1 1 3
Seq DS 1 1 1
_ END SELECT ..... 0.0050 11:23:35.0807
  Stmt#: 3199 Pgm: NUXPLAN
  SQL Code 0
    |----- Rows -----| |- Pgs -|
    Any Right DM RDS RI RI
Table Table Qual Qual ISRT UPDT DLET DLET Scan Scan
Index 2 2 2 1 3
Seq DS 2 2 2
Command ==> _____
    
```

Second Sample

```

Menu Print Tools Help CA-Insight MATSAA2 13:55:29
DBV6 XE44

R/HPRSTDTL SQL Statement Detail
Plan: IDB2V61S Conn: DB2CALL Auth: MATSAA2 Corr: MATSAA2
Actions: E=Explain, T=SQL Text
Event Object/Detail Elapsed CPU Time
-----
_ BEGIN SELECT ..... 13:47:28.3578
      Stmt#: 3110 Pgm: NUXPLAN
      Iso Level: CS
      BEGIN INDX SCAN Table: SYSIBM.SYSPLAN 13:47:28.3587
      Index: SYSIBM.DSNPPH01
      DB/TS: DSNDB06 SYSPLAN
      END INDX SCAN Table: SYSIBM.SYSPLAN 0.0011 0.0004 13:47:28.3597
      Index: SYSIBM.DSNPPH01
      DB/TS: DSNDB06 SYSPLAN
      |----- Rows -----| |----- Pages -----|
      Any Right DM RDS RI RI LOB LOB
      Table Table Qual Qual ISRT UPDT DLET DLET Scan Scan Scan UPDT
      Index 1 1 1 1 2
      Seq DS 1 1 1 1 1
_ END SELECT ..... 0.0020 0.0009 13:47:28.3599
      Stmt#: 3110 Pgm: NUXPLAN
      Iso Level: CS Reoptimized: NO
      SQL Code 0
      |----- Rows -----| |----- Pages -----|
      Any Right DM RDS RI RI LOB LOB
      Table Table Qual Qual ISRT UPDT DLET DLET Scan Scan Scan UPDT
      Index 1 1 1 1 2
      Seq DS 1 1 1 1 1

Command ==> _____
    
```

Use the E action code to view EXPLAIN data for the associated program, or the T action code to view the SQL text for the statement.



# Auditor Reports

The Auditor Reports, described in this chapter, are a type of User Started Report. These Auditor Reports can be launched from the Auditor, Systems, and DBA Start menus.

For more information about how to use User Started Reports, see the [“User Started Reports”](#) chapter.

## Converting Audit Reports to Run in Batch

A number of the Auditing panels shown in this chapter are commonly converted to be run using the Batch Report Writer. See *Creating Batch Reports in the Unicenter CA-Insight Batch Report Reference* for more details.

## Authorization Failures Panel

Select the Authorization Failures option to display a list of all local DB2 authorization failures (Remote authorization failures are available under a different option). This panel is useful for determining who is issuing unauthorized DB2 commands or SQL. The following is a sample of this panel:

Event Time	Auth ID	Failed Privilege, Object Type	Source Creator, Target Creator	Source Obj Name, Target Obj Name	Ret Code, Rsn Code
Menu Print Tools Help CA-Insight MATSAA2 07:35:52 D420 XE44					
R/AUTHFAIL Authorization Failures FOCUS OFF					
MM/DD/YY 07:35:41	USERxx	CREATE TABLE DATABASE	MATSAA2 MATSAA2	DSNDB06 TESTFAIL	-1 40404040
CREATE TABLE TESTFAIL (C1 CHAR(5)) IN DATABASE DSNDB06					
MM/DD/YY 07:35:50	USERxx	STOP DB DATABASE		DSNDB04	-1 40404040

## GRANT/REVOKE Statements Processed Panel

Select the GRANT/REVOKE Statement Processed option to display SQL GRANT/REVOKE statements. This panel is useful for determining the security authorizations that are being controlled, such as who issued the command and the authority they had. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 16:38:34
DB23 S018
Focus Off
R/GRANTREV GRANT/REVOKE Statements Processed Row 1-11 of 15

Event Time Grantor/ Revoker Stmt Type Grantor Authority Object Type SQL Code
-----
MM/DD/YY MVS4 GRANT GRANTEE TABLE OR VIEW 0
16:35:37
GRANT ALL ON TABLE TEMP_TABLE TO PUBLIC
-----
MM/DD/YY MVS4 GRANT GRANTEE TABLE OR VIEW 0
16:36:25
GRANT ALL ON TABLE TEMP_TABLE TO PUBLIC
-----
MM/DD/YY MVS4 REVOKE TABLE OR VIEW 0

```

## DDL on Audited Tables Panel

Select the DDL on Audited Tables option to display instances of SQL Create, Alter, and Drop statements executed against audited DB2 tables (audit level CHANGES or ALL). This panel is useful in determining who is issuing DDL against audited DB2 tables. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 16:57:05
DB23 S018
Focus Off
R/AUDCLAS3 DDL on Audited Tables Row 1-13 of 20

Time Auth ID, Corr ID Plan Name, Conn Name DBID, Table ID Table Owner, Creator, Name DDL Action
-----
DROP TABLE TEMP_TABLE
-----
MM/DD/YY JJ22 DSNESPCS 4 MVS4 CREATE
16:44:06 JJ22 TSO 862 JJ22
AUDIT_TABLE
CREATE TABLE AUDIT_TABLE
(COL1 CHAR(5), COL2 CHAR(5)) AUDIT ALL

```

The operations displayed include:

- Any CREATE that includes an AUDIT statement
- Any DROP (including database and table space DROPs) of an audited table
- Any ALTER statement that changes a table's AUDIT status

## Updates on Audited Tables Panel

Select the Updates on Audited Tables option to display the first instance (in a unit of recovery) of an SQL modification (Update, Insert, or Delete) to an audited table (audit level CHANGES or ALL). This panel is useful in determining users and plans that are updating audited DB2 tables. The following is a sample of this panel:

Menu Print Tools Help		CA-Insight	GINJ001	15:18:08
				DBV4 XE44
				FOCUS OFF
R/AUDCLAS4	Updates on Audited Tables			
Event Time	Auth ID, Corr ID	Plan Name, Conn Name	DB Name, Tbspace Nm	Table Name, Table OBID
-----	-----	-----	-----	-----
MM/DD/YY	USERxx	DSNESPCS	GINJ001	GINJ001.JBGTBL01
15:09:38	USERxx	TSO	JBGTSPC2	5

## READS on Audited Tables Panel

Select the READs on Audited Tables option to display plans/authorization IDs that issue SELECTs against audited DB2 tables (audit level ALL only). This panel is useful in determining who is accessing audited tables. The following is a sample of this panel:

Menu Print Tools Help		CA-Insight	GINJ001	15:20:54
				DBV4 XE44
				FOCUS OFF
R/AUDCLASS5	READs on Audited Tables			
Event Time	Auth ID, Corr ID	Plan Name, Conn Name	DB Name, Pageset Name	Table Name, Table OBID
-----	-----	-----	-----	-----
MM/DD/YY	USERxx	DSNESPCS	GINJ001	GINJ001.JBGTBL01
15:15:56	USERxx	TSO	JBGTSPC2	5

## BINDS and Dynamic SQL on Audited Tables Panel

Select the BINDS and Dynamic SQL on Audited Tables option to trace all instances of dynamic SQL statements issued against audited tables or binds of SQL that include an audited table. This panel is useful in determining who is binding plans, running dynamic SQL, or binding plans and packages that access audited tables. The following is a sample of this panel:

Menu Print Tools Help		CA-Insight		GINJ001	15:45:41
				DBV4	XE44
R/AUDCLAS6				BINDS & Dynamic SQL on Audited Tables	
				FOCUS OFF	
Event Time	Auth ID/ Corr ID	Plan Name/ Conn Name/ Collection	DBRM Name/ Time Token/ Isolation	SQL Stmt Type, SQL Stmt #, SQLCODE	
MM/DD/YY 15:45:28	USERxx USERxx	DSNESPCS TSO DSNESPCS	DSNESM68 149EEA901A79FE48 S	SELECT	119 0
SELECT COL1 FROM GINJ001.JBGTBL01 WHERE COL2 BETWEEN 'D''4A' AND 'E''49'					

If the table has the AUDIT CHANGES option, only SQL Update, Delete, and Insert statements are reported. If the table has the AUDIT ALL option, all SQL statements, including Select, are reported.

## DB2 Commands Issued Panel

Select the DB2 Commands option to display an audit trail of all DB2 commands and who issued them. This panel is useful in determining the DB2 commands that are being invoked. The following is a sample of this panel:

Menu Print Tools Help		CA-Insight		SE19257	16:18:04
				DB23	MVSB1
R/DB2CMDS				DB2 Commands Issued	
				Focus Off	
				Row 19-29 of 100	
Date/Time	Auth ID	Corr ID	Action	Rtn Code	Duration MM:SS.TTTT
-DISPLAY DATABASE(*) RESTRICT LIMIT(*)					
MM/DD/YY 14:49:49	IBMUSER	GSWV41DC	Ended	0	0.8182
MM/DD/YY 15:01:18	IBMUSER	GSWV41DC	Issued		
-MODIFY TRACE(MON ) CLASS(1,2,3) TNO(05) IFCID(003,023,024,025,044,045,054,090,091,095,096,105,107,169,172,177,196)					
MM/DD/YY 15:01:19	IBMUSER	GSWV41DC	Ended	0	1.2540
MM/DD/YY 15:04:31	IBMUSER	GSWV41DC	Issued		



This information is also sent to the Messages function for viewing in context with other subsystem activity.

**Note:** This request is part of the standard Unicenter CA-Insight startup deck and does not need to be started.

## Secondary ID Utilization Panel

Select the Secondary ID Utilization option to display an audit trail of secondary ID usage where an AUTH-ID was changed. This panel is useful in determining how the SET-CURRENT-SQLID statement is being used. The following is a sample of this panel:

Menu Print Tools Help				CA-Insight	SE19257	16:50:01
						DB23 MVS81
						Focus Off
R/SECIDTR	Secondary ID Utilization					
Event Type	Date	Time	Orig ID	New ID	Status	
-----	-----	-----	-----	-----	-----	
Set SQLID	MM/DD/YY	16:31:43	JJZ2	MVS4	Successful	
Set SQLID	MM/DD/YY	16:32:46	MVS4	JGBXX	Denied	

The AUTH-ID can be changed by a SET-CURRENT-SQLID statement, or when a TSO, IMS, or CICS connection is made to DB2.

## Distributed Auth-ID Translation Panel

Select the Distributed Auth-ID Translation option to display an audit trail of how DB2 translates authorization IDs for remote request processing. This panel is useful in determining faulty authorization ID translations in distributed processing. The following is a sample of this panel:

Menu Print Tools Help				CA-Insight	SE19257	16:19:20
						DB23 MVS81
						Focus Off
R/AUDDISTR	Distributed Auth-ID Translation					
Event Time	Network	Instance	Translator	Resp Location	Req LU, Resp LU	Req Auth, Resp Auth
-----	-----	-----	-----	-----	-----	-----
MM/DD/YY 15:11:43	LEGENT	A8B38E8359A1	REQUESTOR	GCOIDB2DEVDBV3	LUOFDBV3	TROBERD
MM/DD/YY 15:33:28	LEGENT	A8B39353AE72	REQUESTOR	GCOIDB2DEVDBV3	LUOFDBV3	TROBERD



# Thread and System Requirements

---

The Thread and System Reports, described in this chapter, are types of User Started Reports. These Thread and System Reports can be launched from the Systems and DBA Start menus.

For more information about how to use User Started Reports, see the [“User Started Reports”](#) chapter.

## Routine Thread Requests

This section describes routine thread reports. DB2 performance is not affected by running these reports. The reports described in this section are as follows:

- Summary of Package Allocations
- BIND, REBIND, and FREE PLAN Activity
- DB2 Utility Activity
- Long I/O
- Plans That Waited for I/O for Another Thread

The System and DBA users have a Routine Thread Requests option on their Start Menu.

## Summary of Package Allocations Panel

This panel lists the trace of the package allocations for the threads specified in the Start Qualifications panel. It is useful in determining which packages are being executed. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight GINJ001 20:40:49
DBV4 XE44

R/PKGALLOC Summary of Package Allocations
From MM/DD/YY 20:36:59 To MM/DD/YY 20:40:28
Collection/
Location Plan Package Is Rl Ac Count First/ Dynam Last Rules
-----
DBV4TS44 RADIO23 JOECOLLECTION S C U 5 01/05 R ROBUS
BATCH23 01/05
DBV4TS44 DSNESPCS DSNESPCS S C U 1 01/05 R ..
DSNESM68 01/05
    
```

## BIND/REBIND/FREE Activity Plan

This panel shows when BIND activity occurs, who is doing it, and what options are being used. This report is useful in determining the type of activity against the catalog that can cause contentions on systems. You can also use it as a standards enforcement tool for applications. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 15:17:12
D71A CA31

R/BINDTRAC BIND/REBIND/FREE Activity FOCUS OFF
Row 1-33 of 144

MM/DD/YY 15:16:56 PDGLS caused BIND REPLACE
on Package D71APTIB PSMM99D_PSM PSA$API
Version
Isolation CS Acquire U Consis Token 0F0F1F0F00404040
Validate R Release C REBIND ALL(*) N Ret cd 0
Qualifier BTCHMTP Owner BTCHMTP Explain N Cache 0
SQLrules . Degree 1 Disconnect .
DYNrules R
DeferPrep NO KeepDyn NO Reoptimize NO
OptHint Immdwri N DB-Protocol P
CCSID En-Scheme E (A=ASCII,E=EBCDIC,U=UNICODE) value: 500
    
```

You can use this panel with the Mini-EXPLAIN for BINDs and Dynamic SQL panel.

## A Description of the BIND Process

The BIND process for plans checks all SQL statements in the plan for validity, specifies and records how resource locks are to be acquired and released, and calculates data access costs and determines access path. You can improve application performance by your choice of BIND parameters and by your BIND and REBIND timing. One recurring trade-off you face is whether to tune for greater concurrency or more efficient CPU usage. You can decide this only by assessing your site's needs, but when you do decide, the BIND parameters offer you clear alternatives. See [BIND Parameter Settings](#) for more information.

## BINDs and Incremental BINDs

When you are first preparing to execute a program, you use the BIND(ADD) option. If you subsequently change the SQL in a program to improve performance or because of changing needs at your site, you must BIND the program again using the BIND(REPLACE) option. Always include the RETAIN parameter to keep the plan authorities in place, unless you truly mean to eliminate them.

The VALIDATE parameter controls when DB2 verifies the DB2 objects used in the plan, at bind time (BIND) or at execute time (RUN). Choose BIND unless you have a good reason not to. Otherwise, if you choose RUN, DB2 verifies the DB2 objects each and every time you run the program, wasting your time and machine resources.

## REBINDs and Automatic BINDs

When you create or drop an index, or make another change which would affect access path without changing the SQL in a program, you should REBIND the program to ready it for execution. You should run PDASTATS or RUNSTATS before a REBIND so the access path selection uses up-to-date statistics.

Some changes (like Dropping an index) to a database can invalidate a plan. If your plan is invalidated and you try to execute the program without first rebinding, DB2 performs an automatic bind at thread allocation. While this happens, the program waits. In addition, you have no control over the access path selected for the program, which begins to execute as soon as the automatic bind ends. Try to avoid this condition by using BIND(REPLACE) or REBIND after a plan is invalidated.

## BIND Parameter Settings

Parameters set at BIND time can significantly affect later application performance. The suggested parameter settings in the following have the greatest performance impact.

- **VALIDATE** – Use VALIDATE(BIND) instead of VALIDATE(RUN) (the default). The overhead from having DB2 validate all SQL statements at each program execution can be considerable. VALIDATE(BIND) establishes static SQL validity at each BIND and allows multiple executions from a single validation.
- **ACQUIRE and RELEASE** – IBM recommends ACQUIRE(USE)/RELEASE(COMMIT). This option determines when in the program execution that resource locks are acquired and released. ACQUIRE(USE) specifies that resources (table spaces, pages, etc.) are acquired when they are needed, RELEASE(COMMIT) releases the resources at the first commit after they are no longer needed. This option allows greater application concurrency, and is especially useful if many SQL statements in a program execute only rarely. This option can, however, increase the possibility of deadlocks.
- **ACQUIRE(ALLOCATE)/RELEASE(DEALLOCATE)** – Acquires all of the resource locks needed by a program when the program is initiated, then retains them until all execution completes. This process is more CPU efficient, but greatly decreases concurrency; it should be used only if CPU cost is your highest priority.
- **ISOLATION LEVEL** – Again, your choice determines the priority of concurrency or CPU usage. You can select one of two settings: Cursor Stability (CS) or Repeatable Read (RR). A CS level specifies that a page lock is held only while the cursor is on that page, and the lock is released when the cursor moves to another page. This allows maximum concurrency, but also allows the chance that the cursor returns to a page on which the data has changed. A RR level holds a page lock until the next commit point. This ensures that the application can return to a page and find the data unchanged, but can leave pages locked for long periods of time (less concurrency), particularly in a distributed environment, where remote access times are slower. These settings apply to read-only processing, as updated data remains locked until a COMMIT or ROLLBACK. We recommend isolation level CS, or, if you use RR level, to plan for frequent COMMITS.

- **EXPLAIN** – Use EXPLAIN(YES) – After creating a PLAN\_TABLE to produce access path information at BIND time. If you have created or dropped indexes or tables since an application was bound, you should run the PDASTATS or RUNSTATS utility and then BIND or REBIND the application. Check the PLAN\_TABLE results, or use the Mini-EXPLAIN panel. Based on this information, you might want to change the application SQL to improve performance.
- **RETAIN** – Enter YES to keep all execution authorities when modifying an existing plan. If you enter NO, DB2 spends time deleting from and writing to the SYSPLANAUTH Catalog table at REBIND time.

## Utility Activity Panel

This panel shows the phases that a utility program has executed. This panel is useful in determining what DB2 utilities are running. The following is a sample of this panel:

R/UTILTRAC		Utility Activity					
Time	Utility ID	DB Name	Pageset	Part-DS#	Utl Name	Phase	
MM/DD/YY 12:05:01	RUNSTATS	00000000	00000000		RUNSTATS	UTILINIT	
MM/DD/YY 12:05:03	RUNSTATS	DSNDB06	SYSPLAN	0	RUNSTATS	RUNSTATS	
MM/DD/YY 12:05:08	RUNSTATS	DSNDB06	SYSPLAN	1	RUNSTATS	UTILTERM	

Some recommendations for running DB2 utilities are mentioned in the following:

### LOAD

To improve performance of the LOAD utility:

- Load numeric data in its internal format; numeric conversion is unnecessary overhead.
- Sort your input data in cluster order to avoid having to reorganize it later.
- Use LOG(NO) on the LOAD statement followed by a full image copy with SHRLEVEL CHANGE

### REORG

To improve performance of the REORG utility:

- Use LOG(NO) on the REORG statement followed by a full image copy.
- Specify UNLOAD CONTINUE on the REORG statement, to keep from invoking all edit routines and field procedures during unloading and reloading.

### Sorting with DFSORT

LOAD and REORG both invoke DFSORT to order the key and RID pairs for indexes. To improve performance of the DFSORT utility:

- Reduce device contention by allocating sort work files on devices separate from the input and output files.
- Allocate sort work files on fast devices to maximize data transfer rate and sort work file I/O.
- Specify larger virtual storage (2MB or more) for the utility procedure default region to allow DFSORT to run more efficiently.
- Use cylinder allocation for sort work data sets for optimized sorts.

### COPY

Use a full image copy after REORG or if more than 5% of the table space pages contain updated records, to save the cost of a later merge copy.

### RECOVER

To improve performance of the RECOVER utility:

- Use the PART option to retrieve multiple indexes at the same time or just the one part in error. RECOVER INDEX is faster than REORG INDEX. Also, the PART option is required for partitioned indexes.
- Use a table space list (RECOVER TABLESPACE ts1 TABLESPACE ts2...) rather than multiple RECOVER commands to avoid multiple log scans.

### RUNSTATS

Specify a list of columns when gathering statistics on non-indexed columns to avoid gathering statistics on all columns.

## Long I/Os Panel

This panel displays physical I/O operations that take more than 25 milliseconds to complete. It is useful in determining if excessive DASD contention is occurring. The following is a sample of this panel:

Menu Print Tools Help CA-Insight SE19257 18:19:47							
DBV3 5018							
FOCUS OFF							
Item 16-18 of 18							
R/LONGIO	Long I/Os						
Date/Time	Database/Space	DBID/DBID	Correlation	Auth ID/Plan	Type	Duration Millisec	BP
MM/DD/YY 18:18:39	JBG JBGTPC2	263 5	JBG2	JBG2 DSNESPSC	List Prefetch	326.168	BP0
MM/DD/YY 18:18:39	JBG JBGTPC2	263 5	JBG2	JBG2 DSNESPSC	List Prefetch	191.110	BP0
MM/DD/YY 18:18:39	JBG JBGTPC2	263 5	JBG2	JBG2 DSNESPSC	List Prefetch	56.400	BP0



## Plans That Waited on I/O for Another Thread Panel

This panel shows which plans are delayed by I/O performed for other plans. It is useful in determining if there are data set or buffer pool contention problems. The following is a sample of this panel:

Menu Print Tools Help CA-Insight SE19257 17:24:00 DBV3 MVSB1									
R/IOWAITRS Plans that Waited on I/O for Another Thread Item 1-10 of 10									
Correlation	Auth ID	Plan	Database	Pageset	Count	Av Dur	Read	Write	Cncl'd
JBG	JBG	DSNESPCS	DSNDB06	DSNGGX01	2	0.102	2	0	0
JBG	JBG	DSNESPCS	DSNDB07	DSN4K01	2	0.021	2	0	0
JBG	JBG	DSNESPCS	DSNDB07	DSN4K02	73	0.007	2	71	0
JBG	JBG	DSNESPCS	DSNDB07	DSN4K03	592	0.010	550	42	0
JBG	JBG	DSNESPCS	JBG	JBGTSPC2	23	0.059	23	0	0
JBG	JBG	IDB2V41	DSNDB06	DSNKKX02	1	0.006	1	0	0
JBG	JBG	IDB2V41	DSNDB06	SYSPLAN	22	0.036	22	0	0
JBG	JBG	IDB2V41	JBG	PLANTS	1	0.017	1	0	0
TASHMOR@	TASHMOR	LDM	DSNDB06	DSNDTX02	1	0.119	1	0	0
TASHMOR@	TASHMOR	LDM	DSNDB06	SYSDBASE	3	0.056	3	0	0

## High Volume/Overhead Thread Requests

This section describes thread reports that might adversely affect DB2 performance while they are running. The reports described in this section are as follows:

- Table Constraint Activity Summary
- Table Constraint Activity Detail
- SQL Statements that Scan Many Pages
- SQL Summary by Plan and Program
- SQL Summary by Plan, Program and Cursor
- Lock Suspension Details
- Detail Trace of DB2 SQL Activity
- Detail Trace of DDF Activity
- Page Accesses by Plan and Buffer Pool
- Read I/O Summary by DB, Pageset and Plan
- Write I/O Summary by DB, Pageset and Plan
- Parallel I/O Group Details

The System and DBA users have a High Volume/Overhead Thread Requests option on their Start Menu.

### Table Constraint Activity Summary Panel

This panel shows summarized information about table constraints. The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	GINJ001	16:48:38
						DBV4 XE44
R/TBLCONSM	Table Constraint Activity Summary					Item 1-2 of 2
	Table	Constraint Name	Constraint Oper	Reject	Ok	
-----						
	GINJ001.JBGTBL01		ENFORCE	0	1500	
	GINJ001.JBGTBL01	BOGUS5	ALTER ADD	0	0	

### Table Constraint Activity Detail Panel

This panel shows detailed information about table constraints. The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	GINJ001	16:53:43
						DBV4 XE44
						FOCUS OFF
R/TBLCONDT	Table Constraint Activity Detail					
	Date/Time	Table	Operation	Constraint Na		
-----						
	MM/DD/YY 16:43:38	00000005	ENFORCE			
	MM/DD/YY 16:43:38	00000005	ENFORCE			
	MM/DD/YY 16:43:38	00000005	ENFORCE			
	MM/DD/YY 16:43:38	00000005	ENFORCE			
	MM/DD/YY 16:43:38	00000005	ENFORCE			
	MM/DD/YY 16:43:38	00000005	ENFORCE			
	MM/DD/YY 16:43:38	00000005	ENFORCE			

## SQL Statements that Scan Many Pages Panel

This panel shows work done for any SQL statement that processes more than 25 pages. It is useful in determining those SQL statements that are causing excessive GETPAGE requests. The following is a sample of this panel:

```

Menu Print Tools Help  CA-Insight                MATSAA2                13:49:27
                                                DBV6 XE44

R/EXPSQL                SQL Statements that Scan Many Pages            Row 412-445 of 445
Actions:  E=Explain, T=SQL Text

- CLOSCURS              Collection: DSNESPRR                Time: 13:40:27.5610
Auth: MATSA02           Program: DSNESM68                  Dur: 0.0001 Secs
Corr: MATSA02           Stmt #: 215                        CPU: 0.0001 Secs
Plan: DSNESPRR         SQL Code: 0                        Cursor:
                          Iso Level: NA                       Reoptimized: NO
                          Triggered: NO

                          |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
                          Any  Right  DM    Total Rows  -----|-----|-----|-----|-----|
                          Table Table Qual  RDS  Qual INSERT UPDATE DELETE DELETE Scan'd Scan'd
Index:                   12
Seq DS:                   694   414   228   12
WrkFile:

- DELETE                Collection: DSNESPRR                Time: 13:42:15.6003
Auth: MATSA02           Program: DSNESM68                  Dur: 0.0110 Secs
Corr: MATSA02           Stmt #: 215                        CPU: 0.0049 Secs
Plan: DSNESPRR         SQL Code: 0                        Cursor: C1
                          Iso Level: RR                       Reoptimized: NO
                          Triggered: NO
                          Triggers Called Tot - Elapsed: 0.0070 CPU: 0.0
                          Pct - Elapsed: 64.0 CPU: 5

                          |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
                          Any  Right  DM    Total Rows  -----|-----|-----|-----|-----|
                          Table Table Qual  RDS  Qual INSERT UPDATE DELETE DELETE Scan'd Scan'd
Index:                   12
Seq DS:                   694   414   228   12
WrkFile:

```

## EXPLAINing the SQL Statements

You can perform an EXPLAIN of the listed SQL statement by entering:

- **E** in the selection field next to a statement and pressing Enter to retrieve data from a PLAN\_TABLE. The PLAN\_TABLE is the one used the last time the plan was bound with EXPLAIN=YES.
- **T** in the selection field next to a statement and pressing Enter to display the text in the SQL Statement Retrieved from DB2 Catalog panel. See the sample in [EXPLAINing the SQL Statements](#) in the “Application Reports” chapter. You can then perform the dynamic EXPLAIN from this panel.

## SQL Summary by Plan and Program

### SQL Summary by Plan and Program Panel

This panel summarizes the SQL activity by plan and program for the threads specified in the Start Qualifications panel. This panel is useful in determining those programs that execute many inefficient Stage 2 predicates (described in [Stage 1 Versus Stage 2 Predicates](#)). The following is a sample of this panel:

Menu Print Tools Help CA-Insight MATSAA2 14:06:30											
DBV6 XE44											
R/PGMSUM SQL Summary by Plan and Program											
From MM/DD/YY 14:06:10 To MM/DD/YY 14:06:26											
Plan: IDB2V61S Collection: Iso Level: CS											
Prog: NUXPLAN SQL Stmts: 438											
	-----		Average Rows					-----		-----	
	Any	Right	DM	RDS				Rf Int		Averag	
	Table	Table	Qual	Qual	INSERT	UPDATE	DELETE	DELETE	Scan'd	Rf Int	
Index:	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Seq DS:	254.1	61.2	2.5	2.5	0.0	0.0	0.0	0.0	26.0	0.0	
WrkFile:	0.2	0.2	0.2	0.2	2.4	0.0	0.0	0.0	0.2	0.0	
	-----		Total Rows					-----		-----	
	Any	Right	DM	RDS				Rf Int		Total	
	Table	Table	Qual	Qual	INSERT	UPDATE	DELETE	DELETE	Scan'd	Rf Int	
Index:	8	0	30	5	0	0	0	0	14	0	
Seq DS:	111294	26785	1115	1115	0	0	0	0	11374	0	
WrkFile:	92	92	92	89	1033	0	0	0	81	0	

## SQL Summary by Plan, Program and Cursor Panel

This panel summarizes DB2 page set accesses for each SQL cursor statement. It is useful in determining problem SQL statements by showing the average and total rows and pages processed. Results are grouped by cursor name within program type. Determine the problem SQL statements by whether the statements were processed by Stage 1 (Data Manager) or by Stage 2 (Relational Data Services).

The following is a sample of this panel:

```

Menu Print Tools Help    CA-Insight                MATSAA2                14:08:33
                                                                DBV6 XE44

R/CURSSUM                SQL Summary by Plan, Pgm and Cursor                Row 1-32 of 51

From MM/DD/YY 14:08:16 To MM/DD/YY 14:08:26
Plan: IDB2V61S Collection:                                Cursor: PROG_V61
Prog: NUXPLAN   SQL Stmts: 12                            Cursor Closes: 2     Iso Lvl: NA

|----- Average Rows per Cursor Close -----| |----- Averag
      Any Right  DM      RDS      Rf Int
      Table Table Qual   Qual INSERT UPDATE DELETE DELETE Scan'd Rf Int
Index:  6.0  0.0  28.0   3.0  0.0  0.0  0.0  0.0  10.0  0.0
Seq DS: 25.0 25.0  0.0   0.0  0.0  0.0  0.0  0.0   5.0  0.0
WrkFile: 6.0  6.0  6.0   3.0  3.0  0.0  0.0  0.0   8.0  0.0

|----- Total Rows -----| |----- Total
      Any Right  DM      RDS      Rf Int
      Table Table Qual   Qual INSERT UPDATE DELETE DELETE Scan'd Rf Int
Index:  12   0   56     6     0     0     0     0     20   0
Seq DS:  50  50   0     0     0     0     0     0     10   0
WrkFile: 12  12  12     6     6     0     0     0     16   0

Plan: IDB2V61S Collection:                                Cursor: QRYDSN
Prog: NUXPLAN   SQL Stmts: 338                            Cursor Closes: 84    Iso Lvl: CS

|----- Average Rows per Cursor Close -----| |----- Averag
      Any Right  DM      RDS      Rf Int
      Table Table Qual   Qual INSERT UPDATE DELETE DELETE Scan'd Rf Int
Index:  0.0  0.0  0.0   0.0  0.0  0.0  0.0  0.0   0.0  0.0
Seq DS: 1293.7 302.8 1.0   1.0  0.0  0.0  0.0  0.0  132.1  0.0
WrkFile: 0.0  0.0  0.0   0.0  0.0  0.0  0.0  0.0   0.0  0.0

|----- Total Rows -----| |----- Total
      Any Right  DM      RDS      Rf Int
      Table Table Qual   Qual INSERT UPDATE DELETE DELETE Scan'd Rf Int
Index:  0     0     0     0     0     0     0     0     0     0
Seq DS: 108672 25433 84    84    0     0     0     0  11100  0

```

## Lock Suspension Details Panel

This panel lists the threads that have been suspended while waiting for a lock. It is useful in determining response delays due to lock suspensions. The following is a sample of this panel:

Menu		Print	Tools	Help	CA-Insight	SE19257	14:21:03
							DB23 S018
							FOCUS OFF
R/SUSPNDTR	Lock Suspension Details						
Date	Time	Description	Plan	Auth ID	Conn	Corr	Type
MM/DD	12:41:22	TIMEOUT	RADIO23	JBG	BATCH	GSWJBG1	DATAPAGE
MM/DD	12:41:22	TIMEOUT	RADIO23	JBG	BATCH	GSWJBG2	DATAPAGE
		Task Waiting	RADIO23	JBG	BATCH	GSWJBG2	
		Task Holding	RADIO23	JBG	BATCH	GSWJBG3	
		Task Waiting	RADIO23	JBG	BATCH	GSWJBG1	
		Task Holding	RADIO23	JBG	BATCH	GSWJBG3	

## Detail Trace of DB2 Activity Panel

This panel shows exactly what DB2 is doing in the course of program execution. It is useful in determining problems in response time or to test applications before they are moved into a production environment. The following is a sample of this panel:

Menu Print Tools Help		CA-Insight		GINJ001		17:58:55	
						DBV4 XE44	
R/RETRACE		DETAIL TRACE OF DB2 ACTIVITY				Row 611-640 of 656	
Corr-ID	Planname	Event Time MM:SS.TTTT	Event Dur SS.TTTT	Event CPU SS.TTTT	Event Action	Rtrn Code	Lk Lck Lock Dr Ste Type
USERxx	DSNESPCS	53:07.8913	0.0017	0.0009	END FETCH	100	Program: Collection:
USERxx	DSNESPCS	53:07.8932			BGN CLOSCURS		Program: Collection:
E Explain T SQL Text							
USERxx	DSNESPCS	53:07.8936	0.0003	0.0002	END CLOSCURS	0	Program: Collection:
USERxx	DSNESPCS	53:07.8945			BGN SYNC		PSW-Key:
USERxx	DSNESPCS	53:07.8969			CLAIM REQST	0	Database: Request:
USERxx	DSNESPCS	53:07.8970			CLAIM REQST	0	Database: Request:
USERxx	DSNESPCS	53:07.8971			CLAIM REQST	0	Database: Request:
USERxx	DSNESPCS	53:07.8973			CLAIM REQST	0	Database: Request:
USERxx	DSNESPCS	53:07.8974			CLAIM REQST	0	Database: Request:
USERxx	DSNESPCS	53:07.8975			CLAIM REQST	0	Database: Request:
USERxx	DSNESPCS	53:07.8976			CLAIM REQST	0	Database: Request:
USERxx	DSNESPCS	53:07.8979			END DSET CLSE		Database:
USERxx	DSNESPCS	53:07.8985			LOCK SUMMARY		Max Thrd Lks:
			segmented		Tablespace: GINJ001		JBGTSPC2 Hi L
			segmented		Tablespace: DSNDB06		SYSSTATS Hi L
			nonsegmented		Tablespace: DSNDB06		SYSDBASE Hi L
USERxx	DSNESPCS	53:07.8986			CMT LSN UOW		

This report contains one line for each DB2 event. For most events, both a begin and an end record are formatted and printed. Column headings apply to the DB2 Lock Detail records. For other records, only the left-most column heading apply, as described in the field-level help.

**Important!** This request can be very expensive. Be sure to include the qualification specification on the Start Qualifications panel so a DB2 qualified trace activates for the request. Otherwise, it can more than double the cost of running every program in the system.

## EXPLAINing the SQL Statements

You can perform an EXPLAIN of the listed SQL text by entering:

- **E** in the selection field next to a statement and pressing Enter to perform a dynamic EXPLAIN of the statement. For a description, see the “[EXPLAIN](#)” chapter.

If only an SQL statement number is shown on the report, you can obtain EXPLAIN information by entering:

- **E** in the selection field next to a statement and pressing Enter to retrieve data from a PLAN\_TABLE. The PLAN\_TABLE is the one used the last time the plan was bound with EXPLAIN=YES.
- **T** in the selection field next to a statement and pressing Enter to display the text in the SQL Statement Retrieved From DB2 Catalog panel. For a sample, see [EXPLAINing the SQL Statements](#) in the “Application Reports” chapter. You can then perform the EXPLAIN from this panel.

## Detail Trace of DDF Activity Panel

This panel shows in detail what happens when distributed data is processed. It is useful in determining the execution flow for distributed SQL statements. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 13:07:06
DB23 S018

R/DISTRIB Detail Trace of DDF Activity Row 1-15 of 157
Actions: E=Explain, T=SQL Text
13:05:13.4198 VTAM MACRO CALL/RETURN
Auth ID JBG Plan DSNESPCS Network LEGENT LU LUOFDB23
Command APPCCMD RCPRI 0
Control OPRCNTL RCSEC 1
Qualify CNOS
13:05:13.4213 VTAM MACRO CALL/RETURN
Auth ID JBG Plan DSNESPCS Network LEGENT LU LUOFDB23
Command APPCCMD RCPRI 0
Control OPRCNTL RCSEC 0
Qualify DISPLAY
13:05:13.9268 VTAM MACRO CALL/RETURN
Auth ID JBG Plan DSNESPCS Network LEGENT LU LUOFDB23
Command APPCCMD RCPRI 0
Control ALLOC RCSEC 0
Qualify ALLOCD
    
```

**Important!** This request can generate large amounts of data in a short time.



## EXPLAINing the SQL Statements

You can perform an EXPLAIN of the listed SQL text by entering:

- E in the selection field next to a statement and pressing Enter to perform a dynamic EXPLAIN of the statement. For a description, see [“EXPLAIN”](#) chapter.

If only an SQL statement number is shown on the report, you can obtain EXPLAIN information by entering:

- E in the selection field next to a statement and pressing Enter to retrieve data from a PLAN\_TABLE. The PLAN\_TABLE is the one used the last time the plan was bound with EXPLAIN=YES.
- T in the selection field next to a statement and pressing Enter to display the text in the SQL Statement Retrieved From DB2 Catalog panel. For a sample, see [EXPLAINing the SQL Statements](#) in the “Application Reports” chapter. You can then perform the EXPLAIN from this panel.

## Page Accesses by Plan and Buffer Pool Panel

This panel displays a trace of page accesses by buffer pool within plan. It is useful for determining the exact sequence of buffer pool accesses. The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	SE19257	18:32:23	DBV3 S018				
R/PLNPGACC	Page Accesses by Plan and Buffer Pool					Row 30-41 of 157					
Plan	BP	Database	Pageset	Access	Getpgs	Hits	%Hits	S	Rd	Pftch	Updts
DSNBIND	BP0	DSNDB01	DSNSCT02	10	4	2	50.0		4	0	2
			DSNSPT01	134	53	48	90.6		53	0	28
			DSNSPT02	122	47	41	87.2		47	0	28
			SCT02	9	2	0	0.0		2	0	5
			SPT01	70	17	13	76.5		17	0	36
DSNBIND	BP0	DSNDB01	=====	345	123	104	84.6		123	0	99
DSNBIND	BP0	DSNDB06	DSNAGH01	32	16	15	93.8		16	0	0
			DSNAPH01	7	3	3	100.0		3	0	1
			DSNAPX01	3	1	0	0.0		1	0	1
			DSNATX01	13	5	3	60.0		5	0	3

**Important!** This request can generate large amounts of data in a short time.

## Read I/O Summary by DB, Pageset and Plan Panel

This panel summarizes the physical read I/O grouped by page set within database and by the plan accessing that page set. It is useful for determining which page set/plan combinations are impacting response time. Information displays in alphabetical order by database, page set, and plan. The following is a sample of this panel:

Menu Print Tools Help		CA-Insight		GINJ001		19:58:28		DBV4 XE44	
R/PLANRDIO		Read I/O Summary by DB, Pageset and Plan						Item 1-4 of 26	
From MM/DD/YY 13:33:37 To MM/DD/YY 16:57:03									
Database/ Pageset	Plan	I/O Type	Read I/Os	Pages Read	Pages Per I/O	Avg Dur	Max Dur	Failures	
DSNDB01	**DB2**	All I/O	1	1	1.00	0.0393	0.0393	0	
DBD01		Seq Pref	0	0	0.00	0.0000	0.0000	0	
		Lst Pref	0	0	0.00	0.0000	0.0000	0	
		Dyn Pref	0	0	0.00	0.0000	0.0000	0	
		Sync Rd	1	1	1.00	0.0393	0.0393	0	
DSNDB01	DSNESPCS	All I/O	3	3	1.00	0.0251	0.0345	0	
DBD01		Seq Pref	0	0	0.00	0.0000	0.0000	0	
		Lst Pref	0	0	0.00	0.0000	0.0000	0	
		Dyn Pref	0	0	0.00	0.0000	0.0000	0	
		Sync Rd	3	3	1.00	0.0251	0.0345	0	
DSNDB01	**DB2**	All I/O	1	1	1.00	0.0211	0.0211	0	
DSNLLX01		Seq Pref	0	0	0.00	0.0000	0.0000	0	
		Lst Pref	0	0	0.00	0.0000	0.0000	0	
		Dyn Pref	0	0	0.00	0.0000	0.0000	0	
		Sync Rd	1	1	1.00	0.0211	0.0211	0	
DSNDB01	**DB2**	All I/O	1	1	1.00	0.0188	0.0188	0	
DSNLLX02		Seq Pref	0	0	0.00	0.0000	0.0000	0	
		Lst Pref	0	0	0.00	0.0000	0.0000	0	
		Dyn Pref	0	0	0.00	0.0000	0.0000	0	
		Sync Rd	1	1	1.00	0.0188	0.0188	0	

### Write I/O Summary by DB, Pageset and Plan Panel

This panel summarizes physical write I/O, grouped by page set within database, and by plan accessing the page set. It is useful in determining those plans that do synchronous write I/Os. Information displays in alphabetical order by database, page set, and plan. The following is a sample of this panel:

Menu Print Tools Help CA-Insight SE19257 17:27:25 DBV3 MVS81										
R/PLANWRIO Write I/O Summary by DB, Pageset and Plan Row 33-43 of 44										
Database	Pageset	Plan	I/O Type	I/Os	Pages	Pgs Per I/O	Avg Dur	Max Dur	Failures	
JBG	**DB2**		All I/O	2	8	4.00	0.0178	0.0181	0	
JBGX4CL5			Async Wr	2	8	4.00	1.0000	1.0000	0	
			Sync Wr	0	0	0.00	0.0000	0.0000	0	
JBG	DSNESPSCS		All I/O	1	1	1.00	0.0077	0.0077	0	
JBGX4CL5			Async Wr	0	0	0.00	0.0000	0.0000	0	
			Sync Wr	1	1	1.00	1.0000	1.0000	0	
JBG	**DB2**		All I/O	2	2	1.00	0.0165	0.0188	0	
PLANTS			Async Wr	1	1	1.00	0.5000	1.0000	0	
			Sync Wr	1	1	1.00	0.5000	1.0000	0	

### Parallel I/O Group Details Panel

This panel lists the trace of parallel I/O activity initiated. It is useful in determining when the degree of I/O parallelism was reduced by buffer pool shortages. The following is a sample of this panel:

Menu Print Tools Help CA-Insight SE19257 17:29:39 DBV3 S018										
R/PARALLIO Parallel I/O Group Details Row 1-14 of 74										
PARALLEL TASK CREATED						Record	1 of 1			
_ E=Explain, T=SQL Text										
Date MM/DD	Time 17:29:12.975	Auth JBG	Collection							
Corr JBGC		Plan PARALLEL	Program PARALLEL							
		Conn BATCH	Con Token 1511201C1A095634							
Stmt	517	Planned Degree at Bind Time	1							
Qry Blk	1	Planned Degree at Run Time	5	Reason	PLANNED BIND VALUE					
P Group	1	Actual Degree at Run Time	5							
PARALLEL GROUP ELAPSED TIME										
_ E=Explain, T=SQL Text										
Date MM/DD	Time 17:29:17.420	Auth JBG	Collection							
Corr JBGC		Plan PARALLEL	Program PARALLEL							
		Conn BATCH	Con Token 1511201C1A095634							

## EXPLAINing the SQL Statements

You can perform an EXPLAIN of the text of the listed SQL statement number by entering:

- **E** in the selection field next to a statement and pressing Enter to retrieve data from a PLAN\_TABLE. The PLAN\_TABLE is the one used the last time the plan was bound with EXPLAIN=YES.
- **T** in the selection field next to a group and pressing Enter to display the text in the SQL Statement Retrieved from DB2 Catalog panel. For a sample, see [EXPLAINing the SQL Statements](#) in the “Application Reports” chapter. You can then perform the EXPLAIN from this panel.

## Routine System Requests

This section describes routine system reports. DB2 performance is not affected by running these reports. The reports described in this section are as follows:

- Read I/O Summary by DB and Pageset
- Write I/O Summary by DB and Pageset
- I/O Summary by Database and Pageset
- Dynamic Prefetch by DB and Pageset
- ARCHIVE LOG Reads
- Checkpoints Taken
- ALTER BUFFERPOOL Commands
- AMS Commands Issued by DB2
- Data Sharing Details

The System and DBA users have a High Volume/Overhead System Requests option on their Start Menu.

## Read I/O Summary by DB and Pageset Panel

This panel traces the DASD reads for threads and summarizes the counts by database and page set. It is useful in determining the page sets that should be on faster DASD. The following is a sample of this panel:

Menu Print Tools Help		CA-Insight		GINJ001		20:14:19		
						DBV4 XE44		
R/RDBYPSET		Read I/O Summary by DB and Pageset				Item 11-19 of 19		
From MM/DD/YY 13:34:55 To MM/DD/YY 16:57:03								
Database/ Pageset	Avg/Max Seconds	Pages Read	Tot Prf Pgs/Pct	Seq Prf Pgs/Pct	Lst Prf Pgs/Pct	Dyn Prf Pgs/Pct	Sync Pgs/Pct	Read I/Os
DSNDB06	0.0242	2	0	0	0	0	2	2
DSNGGX01	0.0395		0.0	0.0	0.0	0.0	100.0	
DSNDB06	0.0197	3	0	0	0	0	3	3
DSNSCX01	0.0302		0.0	0.0	0.0	0.0	100.0	
DSNDB06	0.0114	3	0	0	0	0	3	3
DSNSDX01	0.0189		0.0	0.0	0.0	0.0	100.0	
DSNDB06	0.0153	2	0	0	0	0	2	2
DSNTNX01	0.0245		0.0	0.0	0.0	0.0	100.0	
DSNDB06	0.0196	4	0	0	0	0	4	4
SYSSTR	0.0325		0.0	0.0	0.0	0.0	100.0	
DSNDB07	0.0423	6	6	6	0	0	0	1
DSN4K01	0.0423		100.0	100.0	0.0	0.0	0.0	
GINJ001	0.1374	756	749	534	176	39	7	28
JBGTSPC2	0.4455		99.1	70.6	23.3	5.2	0.9	
GINJ001	0.0123	10	9	9	0	0	1	2
JBGX1CL1	0.0152		90.0	90.0	0.0	0.0	10.0	
GINJ001	0.0179	3	0	0	0	0	3	3
JBGX1CL2	0.0395		0.0	0.0	0.0	0.0	100.0	

## Write I/O Summary by DB and Pageset Panel

This panel summarizes the DASD writes by database and page set. It is useful in determining which page sets are being written synchronously. The following is a sample of this panel:

Menu Print Tools Help CA-Insight				GINJ001				20:26:55			
								DBV4 XE44			
R/WRBYPSET		Write I/O Summary by DB and Pageset						Item 1-3 of 3			
From MM/DD/YY 20:10:32 To MM/DD/YY 20:26:22											
				Total	Sync		Async		SES	DB2	Total
Database	Pageset	Avg Sec	Max Sec	Pages	Pages	%SIO	Pages	%AIO	Write	Write	Write
				Wrt	Wrt		Wrt		I/Os	I/Os	I/Os
DSNDB07	DSN32K01	0.0342	0.0766	25	0	0	25	100	0	13	13
DSNDB07	DSN4K01	0.0611	0.3618	1418	0	0	1418	100	0	56	56
GINJ001	JBGTSPC2	0.2052	0.3347	256	0	0	256	100	0	8	8

## I/O Summary by Database and Pageset Panel

This panel summarizes the physical I/O to DB2 data sets by page set. (A page set is a table space or an index within the database). It is useful in determining that inefficient table space I/Os are being performed for load balancing. Subtotals are presented for each database and a grand total at the bottom of the report. The following is a sample of this panel:

Menu Print Tools Help		CA-Insight		GINJ001		20:30:26		DBV4 XE44			
R/IOBYPSET		I/O Summary by Database and Pageset						Row 14-41 of 48			
From MM/DD/YY 13:35:26 To MM/DD/YY 20:24:46											
Database	Pageset	Read I/Os	Pages Read	Avg Read Time	Max Read Time	SES Wrt I/Os	DB2 Wrt I/Os	Total Wrt I/Os	Pages Wrt	Avg Write Time	Max Write Time
DSNDB06	DSNATX01	2	2	0.025	0.038	0	0	0	0	0.000	0.000
	DSNATX02	3	3	0.081	0.215	0	0	0	0	0.000	0.000
	DSNATX03	2	2	0.030	0.041	0	0	0	0	0.000	0.000
	DSNDDH01	2	2	0.021	0.027	0	0	0	0	0.000	0.000
	DSNDPX01	2	2	0.012	0.014	0	0	0	0	0.000	0.000
	DSNDTX02	2	2	0.017	0.027	0	0	0	0	0.000	0.000
	DSNGGX01	2	2	0.024	0.039	0	0	0	0	0.000	0.000
	DSNKAX02	2	2	0.021	0.024	0	0	0	0	0.000	0.000
	DSNKDX01	2	2	0.020	0.029	0	0	0	0	0.000	0.000
	DSNKDX02	1	1	0.016	0.016	0	0	0	0	0.000	0.000
	DSNKKX01	2	2	0.031	0.044	0	0	0	0	0.000	0.000
	DSNKSX01	3	3	0.025	0.027	0	0	0	0	0.000	0.000
	DSNPPH01	1	1	0.021	0.021	0	0	0	0	0.000	0.000
	DSNSCX01	3	3	0.019	0.030	0	0	0	0	0.000	0.000
	DSNSDX01	3	3	0.011	0.018	0	0	0	0	0.000	0.000
	DSNTNX01	2	2	0.015	0.024	0	0	0	0	0.000	0.000
	SYSPKAGE	2	2	0.028	0.029	0	0	0	0	0.000	0.000
	SYSPLAN	8	190	0.045	0.066	0	0	0	0	0.000	0.000
	SYSSSTR	4	4	0.019	0.032	0	0	0	0	0.000	0.000
DSNDB06	=====	48	230	0.028	0.215	0	0	0	0	0.000	0.000
DSNDB07	DSN32K01	1	4	0.048	0.048	0	0	0	0	0.000	0.000
	DSN4K01	3	20	0.043	0.049	0	0	0	0	0.000	0.000
DSNDB07	=====	4	24	0.044	0.049	0	0	0	0	0.000	0.000
GINJ001	JBGTPC2	28	756	0.137	0.445	0	0	0	0	0.000	0.000

### Dynamic Prefetch by DB and Pageset Panel

This panel displays DB2 page sets that have been accessed by dynamic prefetch. It is useful in determining the effectiveness of dynamic prefetch. The following is a sample of this panel:

Menu Print Tools Help		CA-Insight	SE19257	14:05:52
				DB23 S018
R/DYNAMPRF	Dynamic Prefetch by DB and Pageset			Item 1-9 of 9
Database	Pageset	Dyn Prf Pages	Dyn Prf I/Os	Total Pages I/Os
DSNDB01	SYSUTIL	0	0	16 16
DSNDB06	DSNDSX01	33	2	154 123
DSNDB06	DSNDXX02	9	1	113 105
DSNDB06	DSNUCH01	0	0	3 3
DSNDB06	DSNUCX01	0	0	2 2
DSNDB06	SYSCOPY	0	0	7 7
DSNDB06	SYSDBASE	755	60	1064 369
DSNDB06	SYSDBAUT	15	12	23 20
RODB0001	TS1001	0	0	12 4

### Archive Log Reads Panel

This panel shows archive log read activity and impact. It is useful in determining the requirements for the active log resizing considering recovery and rollbacks. The following is a sample of this panel:

Menu Print Tools Help		CA-Insight	SE19257	18:46:21
				DBV3 S018
R/LOGRDSUM	Archive Log Reads		Row 1 of 1	
# Reads	Avg Duration (MM:SS:TTT)	Max Duration (MM:SS:TTT)		
2	3:12:192	3:15:578		



## Checkpoints Taken Panel

This panel displays when each DB2 checkpoint was taken and its beginning RBA since the request was started. It is useful in determining if the time between DB2 checkpoints is acceptable for DB2 restarts and recovery. The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	SE19257	18:53:58	
						DBV3 S018	
						Focus Off	
R/CHECKPTS		Checkpoints Taken					
	Date	Time	Beginning Checkpoint RBA				
	-----		-----				
	MM/DD/YY	17:52:06	0000000020590B26				

## ALTER BUFFERPOOL Commands Issued Panel

This panel displays changes that have been made to the DB2 buffer pools since the request was started and who made the change. It is useful in determining changes made to the DB2 buffer pools and hiperpools. The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	MATSAA2	12:23:56			
						D51J HP92			
						FOCUS OFF			
R/ALTERBP		ALTER BUFFERPOOL Commands Issued					Item 1-2 of 2		
GROUPBUFFER POOL	GBP0				OLD	NEW	OLD	NEW	
	Date	MM/DD/YY	Auth	SYSOPR	RATIO		GBPOOLT	50	50
			Time	12:23:30	GBPCHKPT	8	CLASST	10	10
					AUTOREC	Y			
BUFFER POOL	BP0				OLD	NEW	OLD	NEW	
VP/HP	VP		Auth	SYSOPR	VPSIZE	2000	VPPSEQT	50	50
Date	MM/DD/YY		Time	14:17:41	HPSIZE	0	DWQT	50	49
Rtn Cd	0		Rsn Cd	00000000	VPSEQT	80	VDWQT %	10	10
					HPSEQT	80	CASTOUT	Y	Y
					VPXPSEQT	0	VPTYPE	L	L
					VDWQT PGS	0	PGSTEAL	N	N.

## AMS Commands Issued by DB2 Panel

This panel traces all DB2-issued VSAM AMS (Access Method Services) commands. These DB2-issued AMS commands result from creating and deleting of table spaces and index spaces defined with storage groups. It is useful in determining ICF Catalog activity generated through DB2. The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	SE19257	18:59:48
						DBV3 5018
						Focus Off
R/AMSTRACE	AMS Commands Issued by DB2					
Date/Time Issued	Auth ID	Corr ID	Plan	Conn	Ret Cd	
-----	-----	-----	-----	-----	-----	-----
MM/DD/YY 17:59:27	JBG	JBG	DSNESPCS	TSO		0
	DELETE DSN310.DSNDBC.JBG.JBGX4CL5.I0001.A001					
	CLUSTER					
-----	-----	-----	-----	-----	-----	-----

## Data Sharing Details Panel

This panel shows detailed information about data sharing. The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	GINJ001	14:41:40
						DB2F HP92
						FOCUS OFF
R/DATASHR	Data Sharing Details					Row 85-98 of 102
MM/DD/YY	Change	DSNDB01	.DSNLLX01		.PARTI'000'	BPOOL BP0
14:40:13			Previous New			BP: BP0
	Requested state	N/A	S		Conditional req:	No
	Held lock state	SIX	S		Restart lock req:	No
	Cached state:	SIX	S		Modify lock:	No
MM/DD/YY	Change	DSNDB01	.SYSLGRNX		.PARTI'000'	BPOOL BP0
14:40:15			Previous New			BP: BP0
	Requested state	N/A	S		Conditional req:	No
	Held lock state	SIX	S		Restart lock req:	No
	Cached state:	SIX	S		Modify lock:	No
MM/DD/YY	Change	DSNDB01	.DSNLLX02		.PARTI'000'	BPOOL BP0
14:40:15			Previous New			BP: BP0

## High Volume/Overhead System Requests

This section describes system reports that might adversely affect DB2 performance while they are running. The reports described are as follows:

- Page Accesses by Buffer Pool
- EDM Pool Load Activity
- Detail Trace of DB2 Logging Activity
- Summary of Secondary ID Usage for TSO
- Summary of Secondary ID Usage for CICS and IMS

The System and DBA users have a High Volume/Overhead System Requests option on their Start Menu.

### Page Accesses by Buffer Pool Panel

This panel traces DB2 buffer pool activity, broken down by page set accessed within each buffer pool. It is useful in determining buffer pool hit ratio of page sets. The following is a sample of this panel:

Menu Print Tools Help CA-Insight SE19257 19:04:45 DBV3 S018									
R/BPPGACCS Page Accesses by Buffer Pool Row 1-12 of 78									
BP	Database	Pageset	Access	Getpgs	Hits	%Hits	S Rd	Pftch	Updts
BP0	DSNDB01	DBD01	28	9	7	77.8	9	0	9
		DSNSCT02	14	6	4	66.7	6	0	2
		DSNSPT01	142	57	52	91.2	57	0	28
		DSNSPT02	122	47	41	87.2	47	0	28
		SCT02	14	4	1	25.0	4	0	6
		SPT01	79	21	16	76.2	21	0	37
		SYSLGRNG	140	59	36	61.0	59	0	19
BP0	DSNDB01	=====	539	203	157	77.3	203	0	129
BP0	DSNDB06	DSNADH01	5364	2684	2683	100.0	2684	0	0
		DSNAGH01	32	16	15	93.8	16	0	0

**Important!** This request is extremely expensive to run. Use it with a qualified DB2 Trace.

## EDM Pool Load Activity Panel

This panel displays loads of skeleton cursor tables and database descriptors. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 13:59:58
DB23 S018
FOCUS OFF
Item 1-8 of 8
R/EDMTRACE EDM Pool Load Activity
Event Obj DM Calls
Time Typ Plan, DB or Pkg Reqd Section Collection
-----
12:40:18 PT BATCH23 00000001 0000000D JOECOLLECTION
12:55:22 CT DSNESPCS 00000001 FFFFFFFE
12:55:22 CT DSNESPCS 00000001 00000001
12:55:23 PT DSNESM68 00000001 FFFFFFFE DSNESPCS
12:55:23 PT DSNESM68 00000001 00000001 DSNESPCS
12:57:08 DB JBG 00000002
13:07:18 DB JBG 00000002
13:22:20 DB JBG 00000002
    
```

Determine which objects are loaded most frequently by sorting the report on column 2 (Obj Typ). You can do this by issuing the following command:

```
SORT 2
```

Large load values can suggest that the EDM Pool is too small or is fragmented. Each load causes I/O activity to the directory.

## Detail Trace of DB2 Logging Activity Panel

This panel shows the events that make up DB2 logging. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 19:09:03
DBV3 S018
Focus Off
Row 37-51 of 410
R/LOGTRACE Detail Trace of DB2 Logging Activity
17:52:08.5936 START WAIT FOR LOG MANAGER Corr ID GSWJBGCP Plan DSNBIND
FORCE request Yes Archive Log Cmd No
17:52:08.5976 ACTIVE LOG WRITE Corr ID GSWJBGCP Plan DSNBIND
Duration (MM:SS.TTTT) 0.0036
17:52:08.6005 ACTIVE LOG WRITE Corr ID GSWJBGCP Plan DSNBIND
Duration (MM:SS.TTTT) 0.0026
17:52:08.6009 END WAIT FOR LOG MANAGER Corr ID GSWJBGCP Plan DSNBIND
Duration (MM:SS.TTTT) 0.0072
17:52:08.7448 READ LOG Corr ID 003.RCRS Plan
Duration (MM:SS.TTTT) 0.0664
17:52:08.7564 BSDS WRITE Corr ID 003.RCRS Plan
Duration (MM:SS.TTTT) 0.0114
    
```

**Important!** This request can produce a large volume report. It is formatted as a 132-character display. We recommend modifying the LOGTRACE request to use a PRINT output specification. For a description, see the “Creating Batch Reports” chapter in the *Unicenter CA-Insight Batch Report Reference*.

## Summary of Secondary ID Usage for TSO Panel

This panel summarizes TSO logon attempts that use secondary IDs. The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	SE19257	19:13:06
						DBV3 MVS81
R/SECIDISM	Summary of Secondary ID Usage for TSO					
Orig ID	New ID	Status	Secondary ID List			
-----	-----	-----	-----			
JBG	JBG	successful	MVS4	MVS43	DSN310	

This request is formatted as a 132-character display. We recommend modifying the SECIDISM request to use a PRINT output specification. For more information about creating batch reports, see the *Unicenter CA-Insight Batch Report Reference*.

## Summary of Secondary ID Usage for CICS and IMS Panel

This panel summarizes CICS and IMS sign-on attempts that use secondary IDs. The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	SE19257	19:13:06
						DBV3 5018
R/SECIDSSM	Summary of Secondary ID Usage for CICS and IMS					
Orig ID	New ID	Status	Secondary ID list			
-----	-----	-----	-----			
CICS21A	CICS21A	successful				
GSWJBG	CICSX	successful	CICSX			

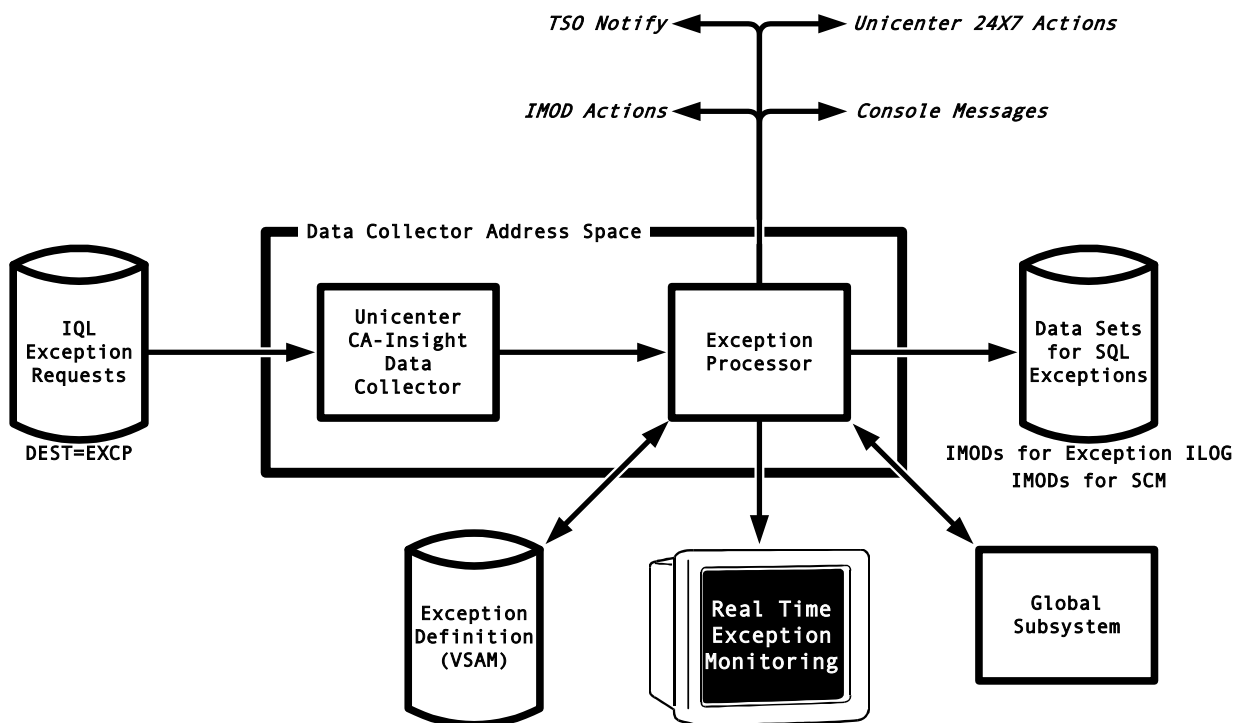
This request is formatted as a 132-character display. We recommend modifying the SECIDISM request to use a PRINT output specification. For more information about creating batch reports, see the *Unicenter CA-Insight Batch Report Reference*.



Knowing when a DB2 processing limit is exceeded plays an important part in tuning DB2 performance. The Exception Processor detects events for which you can supply your own exceptions and their characteristics, or use one of the thousands of pre-defined exceptions that come with the product (listed in the “Exception Types and Field Variables” appendix).

## Exception Processor Processing Flow

This diagram shows the flow of data to and from the Exception Processor:



When the data collector is started, the Exception Processor routines read the exceptions from the Exception Definitions VSAM data set and builds an exception template or base definitions in storage. The first time Unicenter CA-Insight is started, the Exception Processor initializes the VSAM data set with default exceptions.

As events occur in DB2, the Exception Processor monitors them. The Exception Processor runs in the data collector Address Space, and based on the Exception definitions residing in storage, checks for exception occurrences on an interval basis (usually every five seconds). The Exception Processor handles any actions to be performed when an exception is triggered. This includes invoking 24x7 to issue 24x7 command (24x7 Actions), issuing WTO's (Console Messages), notifying users (TSO Notify), initiating IMODs (IMOD Actions), notifying the System Condition Monitor of critical system errors (Global Subsystem), and writing SQL and its related Explain information to a data set (Datasets for SQL exceptions). The real-time Exception monitoring component displays exceptions for the subsystem currently being monitored.

The Exception processor also handles input from IQL-based requests that have a destination of EXCP. This means that you can create custom IQL requests to have the output be used as input to the Exception Processor (through the data collector). This is useful for reporting information from DB2 records (IFCIDs) not covered by the standard Unicenter CA-Insight requests. See additional information in the following on this Exception type.

Multiple data collectors on the same z/OS or OS/390 image can share one Exception Definitions VSAM file. Multiple z/OS or OS/390 images with shared DASD can also share one Exception Definitions VSAM file.

You can dynamically modify or disable existing Exceptions. You can also add new Exceptions online, but these do not take effect until the Exception System is restarted. When you add an Exception online, you are given the opportunity to restart the Exception System.

You can use the Exception Manager display to dynamically restart the Exception system by using the Exception sub-option of the Tools pull-down menu, or by issuing the EXCMGR command.



## Types of Exceptions

Exception definitions fall within one of the following types:

- Subsystem exceptions
- Database exceptions

**Note:** Database exceptions cause some overhead. A -DIS DB(\*) SPACENAME (\*) RESTRICT command is executed as a thread with a correlation ID of INTERNAL and the data collector's Auth ID. This thread causes DBDs to be loaded into the EDM Pool and also causes GETPAGE requests.

- Application exceptions:
  - Real-time – Monitor threads currently allocated to DB2
  - Summarized historical – Monitor accounting trace records. Summarized exceptions indicate how well your applications are performing. These exceptions are based upon averages and totals for a specific subsystem, connection, and plan combination from when Unicenter CA-Insight was initialized.
  - Individual historical – Monitor accounting trace records. Individual exceptions cause each accounting record to be analyzed and checked for possible exceptions. This can be more expensive than summarize historical exceptions, depending upon the rate of thread termination.
  - SQL Statement exceptions – Similar to Real-time, except that they apply to one static and/or dynamic SQL statement. You do not need performance traces to monitor SQL exceptions. The purpose of these exceptions is to identify expensive SQL statements.
- IQL-based Exceptions – The first 8 characters of the IQL request output are used as a unique tag to identify the request to the Exception Processor. The Exception Processor looks for the IQL-based exception definition that most closely matches the tag. A default IQL-based exception is supplied with \*\*\*\*\* used as the Exception Identification criteria. This is used as a catch all for IQL-based exceptions. Also, see the discussion on the next page.

## IQL-based Exceptions - Two Supplied Requests

The following section discusses IQL-based exception processing.

### IQL Exception Requests

Two of Unicenter CA-Insight's supplied requests provide IQL-based exception processing:

- APPEXCP – Captures the following application events:
  - Excessive sorting
  - Degree of Parallel I/O reduced
  - Rebind required
- SYSEXCP – Captures the following subsystem events:
  - Number of threads approaches abend threshold
  - Number of pool threads approaches current maximum
  - Transaction overflowing to the pool
  - Transaction waiting for a dedicated thread
  - Transactions are waiting for a pool thread

Both of these requests produce no visible output: the exception information is forwarded (using the EXCP destination) to the Exception Processor. Each output record begins with the eight-character tag described on the previous page.

### Tuning IQL Exception Thresholds

One of the supplied Unicenter CA-Insight requests, THRESHDS, is used to supply global variables used in these requests. These variables represent thresholds that trigger exceptions from those requests. You can change the thresholds without missing exceptions that would have occurred if you had stopped and restarted the exception request.

To alter the thresholds, make the desired changes to the THRESHDS member, and then stop and start the request.

## Exception Monitoring

This section describes the functions of the Exception Monitor option of the Initial Menu. Information on adding or modifying exceptions is covered in [Exception Definitions](#).

With the Exception facilities, you can set exception limits, display current exceptions, and review a log of previous exceptions to detect when limits are exceeded. This lets you isolate an exception occurrence and tune the performance of an application or your DB2 subsystem.

You can use an exception occurrence to diagnose and tune an application in the following way:

- Review the Exception Messages panel to see when an exception occurred or view the Exception Monitor panels (described in this section) to see an exception as it occurs. Either method flags exceptions and identifies the responsible application.
- Use the Thread History panels to determine what the application was doing at the time the exception occurred.
- Use the Application Probe to trace the application and determine which locks were held on which DB2 tables, which SQL statements were being executed at the time, and what resources they consumed.
- Correct the application.

## Common Features

The following section discusses common features.

### Exception Lists

Each of the Exception Monitoring panels includes a field to toggle between three possible lists of the exceptions:

- **IN-ALERT** – (Default) Displays all current exceptions. These exceptions occurred in the last exception interval or their display time has not yet elapsed.
- **TRIPPED** – Displays all exceptions that have occurred since the data collector has been active. Tripped exceptions do not include real-time application exceptions for threads that no longer exist. These are discarded as soon as the thread goes away to reduce storage usage.
- **INUSE** – Display all exceptions currently active being checked by the Exception Processor. Be aware that this does not list all of the exceptions being defined as INUSE. Also, if an exception is being used by one or more threads, plans, databases, etc., then the exception is listed for each qualifying thread, page set, or plan. The Exception Processor requires qualifying data (e.g., a qualifying thread or page set) for an exception to be checked and thus show up on this display.

To change the Exception list, type over the current value and press Enter.

The last portion of the panel title indicates which of the lists you are viewing. For example, when you view the IN-ALERT list of Database exceptions, the panel title reads:

Database Exceptions In Alert

If you change the list to TRIPPED, the panel title reads:

Database Exceptions That Have Tripped

### Exception Order

In all Exception views, the exceptions are listed in severity level order:

- **CRITICAL**
- **WARNING**
- **INFORMATIONAL**

## PF Keys

You can quickly search for a text string in the Exception Monitoring panels by entering: `F searchstring` on the command line and pressing Enter. Use the PF5 (rfind) key to repeat the search.

## Actions

You can choose to perform actions on the listed exceptions by entering one of the following actions in the selection field to the left of each action's severity level:

- U (Update Current and Permanent) – Lets you change both the current runtime definition and the permanent definition in the exception data set.
- T (Temporary Update) – Lets you temporarily override the current runtime exception definition until the Exception system is restarted. The procedure for updating an exception definition is covered in [Exception Definitions](#).
- G (Goto Screen) – Executes the go to screen command, if specified in the Exception Definition. Many Subsystem exceptions have a go to action that displays the System Snapshot panel. Many Application exceptions have a go to action that displays the Active Thread Detail panel. If you try a go to action and no go to screen command has been specified for that exception, the current panel redisplay, with the following error message:

```
DBG55124W There is no "GOTO" command defined
```

Once you go to a panel, the normal functions within that component are available. When you press PF3 (End) to end, you are returned to the Exception panel you started from.

- H (Help) – Provides a pop-up help window with a description of the exception definition, fields that make up the definition, and helpful hints for the fields. For IQL-based exceptions, the help associated with the exception identifier displays.

Like other Help system panels, many Exception Help panels include hypertext links to view additional information. In the following sample, the hypertext link is the string HHBPRPI. For more information about hypertext links, see [Hypertext Links](#) in the “Introduction” chapter.

An example of the help text (in Expanded window view) for a Subsystem Exception is shown in the following:

```

Menu Print Tools Help CA-Insight SE19257 16:39:18
DBV3 MVSBI
Exception Help Row 1-23 of 23
XCHLPFLH

This exception is defined as:
Count of a field value for an interval

With field 1 being:
READ I/O requiring paging in BP0

The following is an extended description of the exception and/or the
fields involved in making up the exception....

Reads with paging:
This field shows the number of times a buffer pool buffer had to be
paged in from a paging data set in order to satisfy a READ I/O
request.

If this field is consistently higher than zero, then you have a system
problem.

HHBPRPI -Help for reducing buffer pool paging problems.

CA-Insight name= PAGEIN-RD
DB2 field = QBSTRPI
    
```

## Monitoring All Exceptions

The following section discusses monitoring the All Exceptions panel.

### All Exceptions Panel

When you first select Exception Monitoring from the Initial Menu, the All Exceptions panel appears. A sample is shown:

```

Menu Print Tools Help CA-Insight SE19257 13:42:07
DBV3 S018
1 All 2 Subsystem 3 Application 4 Database 5 IQL Type . IN-ALERT
EXCDISP All Exceptions In Alert (IN-ALERT, INUSE,
TRIPPED)
Row 1-12 of 86
Actions: H=Help, G="Goto" screen, U=Update current and permanent, T=Temp update

----- SUBSYSTEM EXCEPTIONS -----
_ CRIT 00:01:18-CURRENT Average number of updates per page written is low
for BP4. Ratio value is 1
_ CRIT 00:01:38-CURRENT Average number of pages written per write I/O is
low for buffer pool 2. Ratio value is 2
_ WARN 19:29:29-CURRENT The resource limit facility is inactive.
MM/DD/YY
_ INFO 19:29:29-CURRENT DB2 is running in single active log mode.
MM/DD/YY
----- APPLICATION EXCEPTIONS: ACTIVE THREADS -----
_ CRIT 14:57:04-CURRENT High "IN DB2" time: PLAN="BLANKS", AUTH=IBMUSER ,
MM/DD/YY CONN=DB2CALL , CORR=GSWV41V3 , Resp=12:46.85
    
```

Only exceptions for the current subsystem display. If you want to see exceptions for another subsystem, return to the Initial Menu and use the Pick DB2 function. Then return to this panel.

The order of the exceptions in this display is:

- Subsystem Exceptions
- Application Exceptions, real-time
- Application Exceptions, historical summary
- Application Exception, individual historical
- Database Exceptions
- IQL-based Exceptions

The default Exception list type is IN-ALERT.

### Accessing the All Exceptions Panel

To display the All Exceptions panel, you can:

- Select Exception Monitor from the Initial Menu.
- Enter **EXCEPT** on the command line and press Enter.
- Select View Bar Option 1 (All) from within the Exception Monitor function.

## Monitoring Subsystem Exceptions

The following section discusses monitoring the subsystem exceptions.

### Subsystem Exceptions Panel

The second Exception view is to display only Subsystem Exceptions. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 13:53:46
DBV3 S018
 1 All 2 Subsystem 3 Application 4 Database 5 IQL Type . TRIPPED
EXCDISP Subsystem Exceptions That Have Tripped (IN-ALERT, INUSE,
TRIPPED) Row 1-12 of 51
Actions: H=Help, G="Goto" screen, U=Update current and permanent, T=Temp update

----- SUBSYSTEM EXCEPTIONS -----
_ CRIT 00:01:18-CURRENT Average number of updates per page written is low
for BP4. Ratio value is 1
_ CRIT 00:01:38-CURRENT Average number of pages written per write I/O is
low for buffer pool 2. Ratio value is 2
_ CRIT 00:01:38-CURRENT Average number of updates per page written is low
for buffer pool 2. Ratio value is 1
_ CRIT 00:01:38-00:02:38 Average number of getpage requests per read I/O is
low for buffer pool 2. Ratio value is 1
_ WARN 13:51:10-13:51:30 High number of buffer pool 0 reads encountered
paging during the last 5 seconds: 24
_ INFO 19:29:29-CURRENT DB2 is running in single active log mode.

```

**Note:** The previous sample shows only tripped subsystem exceptions.

The default Exception list type is IN-ALERT.

### Accessing the Subsystem Exceptions Panel

To display the Subsystem Exceptions panel, select View Bar Option 2 (Subsystem) from within the Exception Monitor function.

### Additional Displays of Subsystem Exceptions

You can also see Subsystem exceptions for recent past activity by displaying the Exception List panel within the System History function. This panel is described in the "[Exceptions](#)" chapter.



## Monitoring Application Exceptions

The following section discusses monitoring the application exceptions.

### Application Exceptions Panel

The third Exception view is to display only Application Exceptions. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 14:03:07
DBV3 S018
1 All 2 Subsystem 3 Application 4 Database 5 IQL Type . IN-ALERT
EXCDISP Application Exceptions In Alert (IN-ALERT, INUSE,
TRIPPED)
Actions: H=Help, G="Goto" screen, U=Update current and permanent, T=Temp update

----- APPLICATION EXCEPTIONS: ACTIVE THREADS -----
_ CRIT 14:01:04-CURRENT High avg "IN DB2" resp time per LUW: .00
P="IFI/CMD" A=IBMUSER CN=DB2CALL CR=GSWV41V3
_ CRIT 14:02:38-CURRENT Timeout(s) encountered for PLAN="BLANKS",
AUTH=IBMUSER , CONN=DB2CALL , CORR=GSWV41V3
----- APPLICATION EXCEPTIONS: HISTORICAL SUMMARY -----
NO EXCEPTIONS DETECTED
----- APPLICATION EXCEPTIONS: INDIVIDUAL HISTORICAL -----
NO EXCEPTIONS DETECTED

```

Application Exceptions display in this order:

- Active Threads (real-time)
- Historical Summary
- Individual Historical

The default Exception list type is IN-ALERT.

### Accessing the Application Exceptions Panel

To display the Application Exceptions panel, select View Bar Option 3 (Application) from within the Exception Monitor function.

### Additional Displays of Application Exceptions

You can also see Application exceptions for current thread activity by displaying the Exception List panel within the Active Threads function. See the [“Exceptions”](#) chapter for a description of this panel. If you want to see Application exceptions for completed threads, display the Exception List panel from within the Thread History function. See the [“Exceptions”](#) chapter for a description of this panel.

## Monitoring Database Exceptions

The following section discusses monitoring database exceptions.

### Database Exceptions Panel

The fourth Exception view is to display only Database Exceptions. The following is a sample of this panel:

```

Menu Print Tools Help   CA-Insight           SE19257           14:14:57
                        DBV3 S018
  1 All   2 Subsystem   3 Application   4 Database   5 IQL   Type . INUSE
EXCDISP           DATABASE EXCEPTIONS CURRENTLY IN USE   (IN-ALERT, INUSE,
                                                    TRIPPED)
                                                    Row 1-12 of 4835
Actions: H=Help, G="Goto" screen, U=Update current and permanent, T=Temp update

----- DATA BASE EXCEPTIONS -----
- WARN 13:34:02-14:04:10 Database, DSNDB04 , and pageset, EMP , is
                        in a restricted state: RW,COPY
-   00:00:00-00:00:00 High number of data set extents, 0, for
                        database DSNDB04 and pageset EMP
-   00:00:00-00:00:00 High number of data set opens, 0, for
                        database DSNDB04 and pageset EMP
-   00:00:00-00:00:00 Database, MA1JL65 , and pageset, XEMP2 , is
                        in a restricted state:
-   00:00:00-00:00:00 High number of data set extents, 0, for
                        database MA1JL65 and pageset XEMP2
-   00:00:00-00:00:00 High number of data set opens, 0, for

```

The sample panel shows in use Database exceptions. When you display in use exceptions, the panel lists all of the Exception Definitions that are residing in memory waiting to be checked. Exceptions marked Inactive are not included.

In the previous sample panel, the time ranges appear as 00:00:00. This is because these values are supplied at the time the exception is tripped. The same is true for variable fields (such as XEMP1K5\$ in the next to last exception shown).

The default Exception list type is IN-ALERT.

### Accessing the Database Exceptions Panel

To display the Database Exceptions panel, select View Bar Option 4 (Database) from within the Exception Monitoring function.

## Monitoring IQL-Based Exceptions

The following section discusses monitoring IQL-based exceptions.

### IQL-Based Exceptions Panel

The last Exception view is to display only IQL-based Exceptions. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 14:21:58
      1 All 2 Subsystem 3 Application 4 Database 5 IQL DBV3 S018
EXCDISP IQL Based Exceptions In Alert (IN-ALERT, INUSE,
TRIPPED)
Actions: H=Help, G="Goto" screen, U=Update current and permanent, T=Temp update

----- IQL BASED EXCEPTIONS -----
_ CRIT 20:50:03-20:50:23 RECSSORT 14118 Rows sorted Cor WOLF2 Pln
MM/DD/YY MM/DD/YY DSNEPC5 Auth WOLF2 Pgm DSNE5M68 Stm# 131

```

Also, see the discussion on IQL-based Exception requests earlier in this chapter.

The default Exception list type is IN-ALERT.

### Accessing the IQL-based Exceptions Panel

To display the IQL-based Exceptions panel, select View Bar Option 5 (IQL) from within the Exception Monitoring function.

## Exception Definitions

This section describes the functions of the Define Exceptions option of the Initial Menu, as well as the update action from the Exception Definitions option of the Initial Menu. For information on monitoring exceptions, see [Exception Monitoring](#).

You can update exception definitions from the Define Exceptions option, or from the Exception Monitoring option. The operation of the update panels is the same for both adding and updating exceptions. Therefore, they are not described twice.

For information on updating exception definitions, see [Changing Existing Exceptions](#).

## Definition Summary

In order to define exceptions, you walk through a series of panels. The flow is generally the same for all five types of exceptions (Subsystem, Database, Application, SQL Statement, and IQL-based).

The following table presents a quick glance at the steps you need to take in order to add a new exception. The panel names are listed in the order in which they appear, and the exception characteristics you define on each panel are described. For a step-by-step, panel-by-panel walkthrough of the process, see [Exception Definition Scenario](#).

Begin by selecting Define Exceptions from the Initial Menu.

Step	Panel Title	Definitions
1	Exception Definitions (menu)	Choose the type of Exception
2	List of Exception Definition	Press PF6 to add a new definition (IQL Exceptions go directly to Step 6)
3a	Full Application or SQL Statement Exception (Application Type only)	Select whether the application exception being added is to apply for the application as a whole or for each SQL statement
3b	Application Types Selection List (Full Application Exceptions only)	Choose whether to check for application exceptions in historical summary, individual historical, and/or real time mode
3c	SQL Statement Types and Capture Options (SQL Exceptions only)	Choose whether to check for exceptions in dynamic, static, or both types of SQL
4	Define/Modify Exception Type	Select the exception type. Choices vary for subsystem, application, and database exception categories.
5	Exception Field Variables	Enter the variables for the exception type, which indicates the data to which the exception applies. Choices depend on the type you selected in Step 4.
6	Exception Identification Data	Specify the subsystem, plan, or other identification information to which the exception applies.

---

Step	Panel Title	Definitions
7	Exception Execution Controls	<p>Specify the exception's control information for:</p> <ul style="list-style-type: none"><li>■ Exception levels (Critical, Warning, or Informational)</li><li>■ Thresholds for levels</li><li>■ Times of day the exception is to be checked</li><li>■ Days of the week the exception is to be checked</li><li>■ When the exception actions should be reset</li><li>■ How often the exception should be checked</li></ul>
8	Exception Message Text	<p>Enter the text to be displayed for the exception. You <b>must</b> enter message text to proceed.</p>
9	Exception Display Controls	<p>Specify the display controls for:</p> <ul style="list-style-type: none"><li>■ The length of time the exception should display after its detection</li><li>■ The number of times the exception should be detected before being displayed</li><li>■ Which panel should be displayed (goto screen) when the exception is chosen from the exception display</li><li>■ The level at which the terminal alarm should sound</li><li>■ The level at which the exception should be displayed</li><li>■ The color in which the exception levels are to be displayed</li></ul>

---

Step	Panel Title	Definitions
10	Logging & Notification	<p>Specify logging &amp; notification information for the:</p> <ul style="list-style-type: none"> <li>■ Level at which the exception should start to log</li> <li>■ Number of times the exception should occur before being logged</li> <li>■ Name of up to three TSO users who should be notified when the exception is triggered</li> <li>■ Level at which a WTO should be issued</li> <li>■ Level at which a held WTO should be issued</li> </ul>
11	Exception Actions – Part I	<p>Specify the action to take when the exception is triggered, including the:</p> <ul style="list-style-type: none"> <li>■ Text of an operator command that should be issued</li> <li>■ Level at which the operator command should be issued</li> <li>■ IMOD to be invoked when the exception occurs</li> <li>■ Unicenter CA-Insight request that should automatically start</li> </ul>
12	Exception Actions – Part II	<p>24x7 command to execute. Issue SNMP trap (requires Unicenter Network and Systems Management Database Performance Monitor Option).</p>

When you complete these steps, you are informed that the exception is added or updated, and the View/Update Exception Definition panel displays. This panel presents the exception criteria you have just specified.

The information displayed in Steps 4, 5, and 6 comprises the key for an exception. That is, these items must be a unique combination. You cannot define duplicate exceptions.

## Exception Data Set Updated Panel

When any of the previous exception data is changed, you are presented with a restart needed notification panel from which you can restart the exception system. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 17:59:12
                                DBV3 S018

Exception Data Set Updated

The exception data set has been modified. This change can not be made
dynamically and requires that the exception system be restarted. Press F6 to
restart the exception system now or use the F3 End key to defer the change
until the next time the exception system is restarted.

Note: restarting the exception system will cause any exception actions to
reoccur if the exception is still detected upon restart.

DBG55114I Record has been successfully added/updated.

```

New definitions do not become active until the exception system is restarted. In addition, changes to an exception status (active or inactive), or changes to the identification data do not go into effect until the exception system is restarted.

## Exception Definition Scenario

The following scenario walks you through the process of defining a new application exception. This new exception checks for a low GETPAGE per READ I/O ratio. The panels used in this process are described, as well as any additional information about your options on that panel. The Step 3c panel is described after the scenario because it only applies to SQL Statement exceptions.

The steps that you must perform are highlighted in bold type for each step, so you can continue through the process without reading the surrounding explanation if you choose not to do so.

If you are already familiar with the exception definition process, you can skip this section, or see the Definitions Summary Table earlier in this chapter, which summarizes these steps.

**Note:** At any point during the exception definition process, you can press PF3 (End) to back up through the panels and change your definitions, or press PF12 to cancel the process altogether.

## Step 1. Choose the Type of Exception

Select Define Exceptions from the Initial Menu. The Exception Definitions panel appears. This panel lets you select the type of exception to define or update. You can define, view, or update Subsystem, Database, Application, or IQL-based exceptions.

Select option **3** (Application Exceptions) by entering 3 on the command line and pressing Enter.

```

Menu Print Tools Help  CA-Insight          SE19257          18:16:20
                                      DBV3 S018

                          Exception Definitions

_ 1  Subsystem Exceptions
_ 2  Database Exceptions
_ 3  Application Exceptions (Includes SQL based)
_ 4  IQL Based Exceptions (Shadow Definitions)
    
```

## Step 2. Add a New Application Exception

The List of Application Exception Definitions panel appears. This panel lists application exceptions defined on your system. The exceptions are identified by subsystem name, connection/plan name, type (SUMmary, REAL-time, SQL-based, or INDividual), and message text. In addition, the exception's status (ACTIVE or INACTIVE) is shown. The following is a sample of this panel:

```

Menu Print Tools Help  CA-Insight          SE19257          18:28:45
                                      DBV3 S018

                          List of Application Exception Definitions
                                      Row 1-11 of 147
Actions: U=Update current and permanent, P=Update permanent definition only,
C=Copy, D=Delete, A=Activate, I=Inactivate. Use F6 to add.
STATUS SSN CONN/PLAN TYPE <-----> EXCEPTION TEXT ----->
_ ACTIVE DBV3 ***** SQL Long running SQL: PLAN=&PLANNAM, AUTH=&AUTHIDX,
  CATQRY CONN=&CONNNAM, CORR=&CORRELATION, Resp=&VALUEXX

_ ACTIVE **** ***** REAL Application is running with repeatable read
  *****

_ ACTIVE **** ***** SUM Low virtual to hiper pool success ratio, &VALUEXX,
  ***** for PLAN=&PLANNAM and CONN=&CONNNAM

                          REAL Low virtual to hiper pool success ratio: &VALUEXX
    
```



You can scroll through this list and use an action code (Update current and permanent, Permanent update only, Copy, Delete, Activate, Inactivate) to perform a function. The Copy function has the same panel flow as adding an exception: the fields are filled out as on the original. However, you must change the key information. For a discussion of Activate and Inactivate, see [Activating and Inactivating Exceptions](#).

Press PF6 to add a new exception.

### Full Application or SQL Statement Exception Panel

The Full Application or SQL Statement Exception panel appears. This panel is used to indicate if the exception applies to the application as a whole or just checks at an SQL statement level. The following is a sample of this panel:

Select Option **1** (Entire Application) and press Enter.

```

Menu Print Tools Help CA-Insight SE19257 18:29:02
DBV3 S018

Full Application or SQL Statement Exception

Indicate whether the exception is to apply to the application as a whole, or
for an individual SQL statement (real time only). Then press Enter.

Indicate the type of application exception . . . 1. Entire application
2. SQL statement

```

### Step 3. Choose an Application Type

The Application Types Selection List panel appears. This panel prompts you to select one or more application types by entering **S** beside your selections. Unicenter CA-Insight checks for exceptions for the types you choose.

The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 19:02:29
DBV3 S018

Application Types Selection List

Choose one or more of the following with an "S". Then press Enter.

S Check thread history data on a summary/average basis
  Check thread history data for each thread
S Check threads that are currently executing

Note: Checking data for each thread can generate a significant
amount of overhead if there is a high volume of qualifying threads.

```

You can check for:

**Summarized historical thread activity**

Enter **S** beside Check thread history data on a summary/average basis to select this option. Press the Tab key.

**Individual historical thread activity**

Press the Tab key without selecting this option.

**Real-time thread activity**

Enter **S** beside Check threads that are currently executing to select this option. Press Enter.

**Note:** The note on the panel pertains to the second choice.

## Step 4. Select an Exception Type

The Define/Modify Exception Type panel appears. This panel lets you select the type of exception checking to be performed. Select the first choice, Ratio of one field value over another, by entering **S** beside that option. Press Enter.

The following is a sample of this panel:

```
Menu Print Tools Help CA-Insight SE19257 19:06:02
DBV3 S018

Define/Modify Exception Type

Select type of exception using an "S". Then press Enter.
S Ratio of one field value over another
. Ratio of one field value over another for an interval
. Total count of a field value
. Count of a field value for an interval
. Rate per second of a field value
. Percentage of one field value over another
. Percentage of one field value over another during an interval
. A specified resource is active or inactive
. Average application "time" (CPU, elapsed, etc.) exception
```

**Note:** There are other exception types that apply to subsystems, databases, and SQL statements. See the "[Exception Types and Field Variables](#)" appendix for a list of all exception types.

## Step 5. Select Exception Field Variables

The Exception Field Variables panel appears. This panel lets you select the variables for the exception by entering an S in the field to the left of your choice. The following is a sample of this panel:

```

Menu Print Tools Help   CA-Insight           SE19257           19:10:20
                                                                DBV3 S018

                                Exception Field Variables
                                                                Row 1-13 of 975

Select field 1 using an "S". Then press Enter.
. # of COMMITS and aborts
. # of COMMITS
. # of aborts
. # of SMF type 101 records processed
. # of synchronous writes for all pools
S # of GETPAGE requests for all pools
. # of system page updates for all pools
. # of synchronous READ I/Os for all pools
. # of sequential prefetch requests for all pools
. # of list prefetch requests for all pools
. # of dynamic prefetch requests for all pools
. # of successful hiper pool reads for all pools
. # of unsuccessful hiper pool reads for all pools

```

If the list is too long to fit on your screen, the PF7/PF8 scrolling keys display and activate.

For a complete list of exception variables that you can select for different types of exceptions, see the [“Exception Types and Field Variables”](#) appendix.

Tab to # of GETPAGE requests for all pools and select this option by entering an S beside it. Press Enter.

### Exception Field Variables Panel - 2 of 2

Because you are defining a ratio of one field to another, this exception definition requires two variables. The Exception Field Variables panel appears again, prompting you to select a second field variable:

```

Menu Print Tools Help CA-Insight SE19257 19:12:58
                                DBV3 S018
                                Exception Field Variables
                                Row 1-13 of 975
Select field 2 using an "S". Then press Enter.
. # of COMMITS and aborts
. # of COMMITS
. # of aborts
. # of SMF type 101 records processed
. # of synchronous writes for all pools
. # of GETPAGE requests for all pools
. # of system page updates for all pools
S # of synchronous READ I/Os for all pools
. # of sequential prefetch requests for all pools
. # of list prefetch requests for all pools
. # of dynamic prefetch requests for all pools
. # of successful hiper pool reads for all pools
. # of unsuccessful hiper pool reads for all pools
    
```

Tab to # of synchronous READ I/Os for all pools and select this option by entering an S beside it. Press Enter.

You have just selected an application to monitor the ratio of GETPAGE requests per READ I/O operation.

### Step 6. Set Exception Identification Data

The Exception Identification Data panel appears. This panel prompts you for identification data. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 14:27:45
                                D61D XE44
                                Exception Identification Data
Verify the information below. Then press Enter.
Ratio of one field value over another
Field 1 . . . : # of GETPAGE requests for all pools
Field 2 . . . : # of synchronous READ I/Os for all pools
Is the exception to occur when the value is higher or lower than the
threshold value? . . . . . HIGH (Enter HIGH or LOW)
Does exception apply to test, prod. or both? . BOTH (Enter TEST/PROD/BOTH)
Qualifying data (may be generically specified)
Subsystem name . **** Connection name . ***** Plan name . *****
    
```

This panel lets you indicate whether the exception is considered to exist if the value is higher or lower than the threshold (in the case of resource availability, you indicate whether the exception is considered to exist if the resource is active or inactive.) Identification data is specific to the type of exception you are defining:

- For subsystem exceptions, you indicate the subsystem to which the exception applies
- For application exceptions, you indicate the subsystems, connections, and plans to which the exception applies
- For database exceptions, you indicate the subsystems, database, and page set to which the exception applies
- For IQL-based exceptions, you indicate the IQL exception ID, severity level, and subsystem name to which the exception applies

Using an asterisk (\*) may generically specify any of the identification names. For example, you could specify a subsystem name of \*, a database name of DSNDB06, and a page set name of DSN\*.

The entry of a subsystem is allowed because one exception definitions VSAM data set can be shared among multiple data collectors. If each of your data collectors has its own exception definitions VSAM data set, then you do not need to enter a subsystem name.

Enter the exception identification data as follows:

1. Specify whether the value for the exception is higher or lower than the threshold value.

In the Enter HIGH OR LOW field, enter **LOW** to check for a low GETPAGE per READ I/O ratio.

2. Specify whether this exception is to apply to test, production, or both types of DB2 subsystems.

Data collectors can be defined to be monitoring test or production subsystems (see the *Unicenter CA-Insight System Guide* for details). You can use this setting to have a particular exception definition that applies to either or both types.

3. You can specify the subsystem, connection, and plan to which the exception should apply. You can enter this information specifically, or you can qualify it by using wildcard characters.

Leave the default asterisks in the three qualifying data fields so that all subsystems, connections, and applications are checked for exceptions. Press Enter.

4. If you have defined a duplicate exception, a pop-up window prompts you to perform one of the following steps:
  - Redefine the key of the exception you are defining
  - Update panels in the existing exception

## Generic Specifications

Though you can specify exceptions generically, a separate exception entry is dynamically built for each qualifying application, database, or subsystem. Unicenter CA-Inspight does not summarize all qualifying data into one generically specified exception entry; it reports exceptions uniquely by plan, connection, and subsystem or database, page set, and subsystem. When duplicate exception types with different qualifying data are specified, the unique exception definition is used.

To determine which exception entries qualify for a record, Unicenter CA-Inspight uses three criteria in the following order:

- Plan name
- Connection ID
- Subsystem ID

For database exceptions, Unicenter CA-Inspight uses:

- Page Set
- Database
- Subsystem

For example, if an application has DSN8CC21 as the plan name, CICSTEST as the connection ID, and the following defined exceptions:

```
PLAN=DSN8* ,CONN=CICSTEST . . .  
PLAN=DSN8C* ,CONN=CICS* . . .  
PLAN=DSN8C* ,CONN=* . . .
```

First, all exceptions that match on plan name are found. In this case, all three match. The first one would be eliminated because the other two more uniquely match the record. The next criterion is connection name. The second is chosen over the third because CONN=CICS\* is more specific than CONN=\*.

The same is true for database exceptions. Page set names have a higher priority than database names, and both names have higher priority than subsystem names.

## Step 7. Set Exception Execution Controls Panels

The Exception Execution Controls panel appears. This panel lets you control the exception levels to be active as well as their threshold values and check/reset timing. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 19:20:33
DBV3 S018

Exception Execution Controls

Change the execution controls below as needed. Then press Enter.

Specify which levels are active and their threshold values:
Informational active? . . N (Y or N) Threshold value . . . 0
Warning active? . . . . N (Y or N) Threshold value . . . 0
Critical active? . . . . Y (Y or N) Threshold value . . . 5
Specify the times of day for which the exception is to be checked:
Begin time # 1 . . . 0000 (HHMM) End time # 1 . . . 2400 (HHMM)
Begin time # 2 . . . 0000 (HHMM) End time # 2 . . . 0000 (HHMM)
Indicate the days of the week the exception is valid (Y=Yes, N=No):
Sun Y Mon Y Tues Y Wed Y Thur Y Fri Y Sat Y
Time of day to reset exception (2400 implies do not reset) 2400 (HHMM)
How many seconds are to elapse between exception checks? 5

```

Execution controls are entered as follows:

- Specify the exception levels that you want active.
 

Check for critical exceptions only by tabbing to the Informational Active field and entering **N**, then tabbing to the Warning Active field and entering **N**.
- Specify the threshold value for that level.
 

Check for a threshold value of 5 by tabbing to the Threshold Value field (to the right of the Critical Active field) and entering **5**.
- Specify the time of day that you want to check the exception.
 

You can define two different times of day for checking the exception. For example, to specify that the exception is to be checked during peak hours of the day only, set the Begin Time #1 field to **0900** and the End Time #1 field to **1600**. If you want the exception to be checked only once per day, set the second time range to **0000** to **0000** (this is the default).

Leave the default values, as shown in the previous sample panel.

**Note:** The range of your time specification cannot span over midnight.
- Specify the days of the week that you want to check the exception.
 

Leave the Y default value beside each day of the week to check for the exception every day.

- Specify the time of day that you want to reset the exception.

The action flags are reset, causing any action for an exception that might be reoccurring to be reinvoked. For example, if an exception is triggered and logged, and then continues to occur, resetting the exception relogs that exception and takes the specified action again. This can be useful if you want to be sure that exception appears on the report every day that it is triggered, even if the exception never ended.

If you do not want to reset the exception, set this field to 2400, as shown in the sample panel.

Leave the default setting, 2400, so that this exception is not reset.

- Set the amount of time to elapse between the exception's checks.

The last field on the panel lets you specify the amount of time that should elapse between exception checks. If this time is less than the exception processor's detection cycle, the time defaults to the detection cycle time. This field is most useful for limiting checks on expensive exceptions and for increasing the time range on interval-based exceptions. For example, you can set an exception to check the number of database opens for the last hour.

Allow five seconds to elapse between exception checks by tabbing to the last field on the panel and entering 5, as shown in the sample panel. Press Enter.

You have completed the exception execution controls.

## Step 8. Enter the Exception Message Text

The Exception Message Text panel appears. This panel requires that you specify the text of the exception message. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 19:26:12
DBV3 5018

Exception Message Text

Specify the exception text on the lines below. Then press Enter.

Text for summarized historical exceptions
Part 1 . . . High average number of BP GETPAGE requests/READ
Part 2 . . . I/O. &VALUE for PLAN=&PLANNAM and CONN=&CONNAM

Ind./real-time text for the exception display, logging, & notifications
Part 1 . . . High avg. #BP GETPAGE requests/read I/O: &VALUEXX
Part 2 . . . P=&PLANNAM A=&AUTHIDIDX CN=&CONNAM CR=&CORRELATION

Ind./real-time text for all other on-line screens
Part 1 . . . High average number of buffer pool GETPAGE
Part 2 . . . requests per READ I/O: &VALUEXX

```



## About Exception Messages

Each exception message contains two 50-character parts. On most screens, the exception message displays on two lines, each containing one of the two 50-character parts, with the extra blanks compressed out. For notification messages, such as messages to TSO uses and WTO messages, the two 50-character parts are joined together to form one 100-character part. The extra blanks, including those at the end of the first 50-character part, are removed.

Exception messages can contain variables for the subsystem name and exception value, which are replaced with the appropriate data when the message appears. Exception variables begin with &. Most exception variables are padded with Xs at the end, to ensure that enough room is available in the exception message to replace the variables with the data they represent.

Each exception type requires specific text sections:

- Application exceptions have three text sections:
  - Text for Summarized Historical Exceptions – when an exception occurs for summarized historical application data, this text appears on the Exception Monitor.
  - Individual/Real-Time Text for the Exception Display, Logging, and Notifications – when an individual value for historical application data or a value for real-time application activity exceeds a threshold, this text appears on the Exception Monitor. The text in this message should include variables that identify the plan, connection, user, and so on.
  - Individual/Real-Time Text for all Other Online Screens – when an individual value for historical applications or a value for real-time application activity exceeds a threshold, this text appears on all other displays. Do not include variables in the text for this message section, because the application is already identified by other fields on the panel on which the message displays.

**Note:** You **must** enter text in all of the sections.

- Subsystem and database exceptions require one message area only.
- SQL Statement exceptions have two message sections that are similar to the second and third application message text previously described.
- IQL-based exceptions do not use this message text.

## Message Variables

Each message has its own set of variables that you can use in the exception text. Most of the variable names are padded with Xs to be used as holding places for the full length of the value. That way, you ensure that there is enough room to replace the variable with the value. The following table shows the variables, their meanings, and where they can be used:

Variable	Meaning	Valid For
&PLANNAM message variable	Plan name	A1, A2, A3, S1, S2
&AUTHIDX	Authorization ID	A2, A3, S1, S2
&CONNAM	Connection ID	A1, A2, A3, S1, S2
&LVL	Level of exception: CRIT, WARN, or INFO	all
&CORRELATION	Correlation ID	A2, A3, S1, S2
&SSN	Subsystem name	all
&DBNAMEX	Database name	DB
&PAGESET	Page set name	DB
&VALUEXX	Exception value	all
&DATABASESTATUSX	Database status	DB

The Valid For column abbreviations in the table denote the following:

- A1** – First message text for application exception messages
- A2** – Second message text for application exception messages
- A3** – Third message text for application exception messages
- S1** – First message text for SQL Statement exception messages
- S2** – Second message text for SQL Statement exception messages
- DB** – Database exception messages
- all** – All exception message types

### Table Notes

Note the following:

- &VALUEXX might not be valid for some exception types (such as resource availability).
- &DATABASESTATUSX is valid only for the database status exception type.

Certain data automatically displays whenever the messages display or are sent (such as subsystem name, data, time, and level of exception). When WTOs and TSO notification messages are sent, the exception message is sent after an identification message.

Copy the message text as shown in the sample panel and press Enter.

## Step 9. Enter the Display Controls

The Display Controls panel appears after you enter your message text. This panel is used to control when and how your exception displays. The following is a sample of this panel:

```

Menu Print Tools Help  CA-Insight          SE19257          19:39:31
                                      DBV3 5018

                          Display Controls

Change the display options below as needed. Then press Enter.

Number of seconds to display after last occurrence . 60
Number of times exception will occur before display . 1
Screen command to execute ("go to" screen) . . . . . D THRDHIST

Sound terminal alarm or bell starting at level . . . . N (I=Info, W=Warn,
                                                         C=Crit, N=None)
Display starting at level . . . . . I (I=Info, W=Warn,
                                       C=Crit, N=None)
Color to display exception messages
  Informational . . . T   Warning . . . Y   Critical . . . R
  (R=Red, P=Pink, Y=Yellow, G=Green, T=Turq., B=Blue, W=White)

```

Specify the following information on the panel:

### Number of Seconds...

Controls the length of time (in seconds) that the exception message is to be displayed after it is detected. This information is used to determine whether to include an exception in the Exception Monitor.

Enter **60** in this field to display this message once it is detected. Press the Tab key.

### Number of Times...

Controls the number of times the exception must be detected before being displayed.

Enter **1** in this field to display it the first time it is triggered.

### Screen Command to Execute...

Specifies a command to be executed when you use the G action code (goto screen) on the Exception Monitor.

You can use any valid panel navigation command in this field, including special commands.

For example:

- \$XCAS – Displays the System Snapshot panel for the subsystem for which the exception occurred. See [System Snapshot](#) in the “Viewing Current System Statistics” chapter for a description.
- \$XCAP – Valid for application exceptions. It behaves differently depending upon the application exception type:
  - Real time displays the appropriate application displayed on the Active Thread Detail panel. For more information about this panel, see [Thread Detail Panels](#) in the “Viewing DB2 Thread Activity” chapter.
  - Ind. Hist and Sum. Hist display the Thread History Selection Criteria panel with the plan, connection, and subsystem names already filled in. You can fill in any other criteria, then view Detailed (PF5) or Summarized (PF6) data.
  - Other special commands (beginning with \$XCA) are included in member DEFAULTS in the IUIMAPS library.

Tab to the Screen Command to Execute... field and enter **D THRDHIST** to display the Brief Thread History panel when you use the G action code on the Exception Monitor for this exception.

#### **Sound Terminal Alarm or Bell...**

Specifies the level at which to sound the terminal alarm when the exception appears. Enter:

- C – Sound the alarm only for critical occurrences.
- W – Sound the alarm for warning and critical occurrences.
- I – Sound the alarm when an exception is detected.
- N – Eliminate the alarm altogether.

Tab to the SOUND TERMINAL ALARM OR BELL... field and enter **N** to eliminate the alarm from sounding when the exception is triggered.

#### **Display Starting Level...**

Controls the level at which to display the exception. Enter:

- C – Display the exception only when the exception reaches the critical level.
- W – Display the exception when it reaches the warning or critical level.
- I – (Default) Display the exception when it is detected at any level.
- N – Do not display the exception.

Leave the I in this field to display the message when this exception is triggered.

**Color to Display Exception Messages**

Controls the color of the exception message for the three different levels.  
Enter:

- R—Display the message in red (default for critical).
- P—Display the message in pink.
- Y—Display the message in yellow (default for warning).
- G—Display the message in green.
- T—Display the message in turquoise (default for informational).
- B—Display the message in blue.
- W—Display the message in white.

Enter **T** in the Informational field, **Y** in the Warning field, and **R** in the Critical field.

Check that the information you have entered into the fields on this panel match that shown in the sample panel. Press Enter.

**Step 10. Enter Logging and Notification Controls**

The Logging and Notification Controls panel appears. This panel is used to specify when logging and automatic notification for WTO and TSO (SEND command) messages are to occur. See the [“Viewing Messages”](#) chapter for information on viewing log exceptions. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SWASLOF 19:49:15
DBV3 S018

Logging and Notification Controls

Change the logging and notification options below. Then press Enter.

Log exception starting at level . . . . . W (I, W, C, or N)
  For individual hist. . Y For hist. summary . N For real-time . Y
Number of times exception will occur before logging . 1
Send to TSO user #1 . . SE19257 starting at level . W (I, W, C, or N)
Send to TSO user #2 . . . . . starting at level . N
Send to TSO user #3 . . . . . starting at level . N
  For individual hist. . Y For hist. summary . N For real-time . Y
Issue WTO starting at level . . . . . N (I, W, C, or N)
  For individual hist. . N For hist. summary . N For real-time . N
  Hold the WTO starting at level . . . . . N (I=Info, W=Warn,
                                          C=Crit, N=None)

```

Specify the following information on the panel:

**Log Exception Starting at Level**

Specifies the level to start logging the exception to its ILOG log data set.

Enter:

- C – Log the exception only when the exception reaches the critical level.
- W – Log the exception when the exception reaches the warning or critical level.
- I – Log the exception whenever the exception is detected at any level.
- N – Never log the exception.

Enter **W** in this field to log an exception when it reaches the warning level.

**For Individual Hist, For Hist Summary, and For Real-Time**

Specifies the application exception types to log this exception. If a type is not active for this exception, the corresponding setting has no effect.

Enter **Y** beside the For Individual Hist and For Real-Time fields to log the exception for those exception types.

**Number of Times Exception Will Occur...**

On the fourth line, indicate how many times the exception is to be detected before it should be logged.

Leave the default value (1) in this field to log the exception each time it is triggered.

**Send to TSO User... and Starting at Level**

You can specify up to three TSO user IDs to notify when the exception occurs. Indicate at what levels they should be notified. Enter:

- C – Notify the specified TSO users only when the exception reaches the critical level.
- W – Notify the specified TSO users when the exception reaches the warning or critical level.
- I – Notify the specified TSO users when the exception is detected at any level.
- N – (Default) Never send a message - the specified TSO users.

Enter your own user ID in one of the Send to TSO User fields and enter **W** to notify when the exception reaches the warning or critical levels.

**For Individual Hist, For Hist Summary, and For Real-Time**

Specifies the application exception types to send this exception. If a type is not active for this exception, the corresponding setting has no effect.

Enter **Y** beside the For Individual Hist and For Real-Time fields to send the exception message to you for those exception types.

**Issue WTO Starting at Level...**

Specifies at what level to start issuing WTO messages for the exception. To be effective, this level should be at, or higher than, the issuing level. Enter:

- C – Send/hold a WTO only when the exception reaches the critical level.
- W – Send/hold a WTO when the exception reaches the warning or critical level.
- I – Send/hold a WTO when the exception is detected at any level.
- N – (Default) Never send/hold a WTO.

**For Individual Hist, For Hist Summary, and For Real-Time**

Specifies the application exception types to send a WTO message for this exception. If a type is not active for this exception, the corresponding setting has no effect.

Leave the default (N) in each of these fields.

**Hold the WTO Starting at Level**

Indicates if and when to issue a held WTO on behalf of exception types specified in the previous field. Enter:

- C – Hold the WTO only when the exception reaches the critical level.
- W – Hold the WTO when the exception reaches the warning or critical level.
- I – Hold the WTO when the exception is detected at any level.
- N – (Default) Never hold the WTO.

Leave the default (N) in this field.

Check your specifications with those shown in the sample panel and if they agree, press Enter.

***Important!*** Use this field with extreme caution! Too many exceptions flood a console and bring down z/OS or OS/390!

## Step 11. Set Exception Actions - Part I

The Exception Actions Part 1 panel appears. This panel is used to control the actions that Unicenter CA-Insight should take when the exception occurs. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 19:54:17
DBV3 S018

Exception Actions Part 1

Specify actions to take when exception occurs. Then press Enter.

Issue following operator command starting at level . N (I, W, C or N)
Cmd text
For individual hist. . N For hist. summary . N For real-time . N
Invoke following IMOD when the exception occurs . . .
using ISERV (blanks imply use default ISERV) . . .
starting at level . . . . . N (I, W, C or N)
For individual hist. . N For hist. summary . N For real-time . N
Start request # 1 APPLPROF starting at level . . . . W (I, W, C or N)
For individual hist. . Y For hist. summary . N For real-time . Y
Start request # 2 starting at level . . . . N (I, W, C or N)
For individual hist. . N For hist. summary . N For real-time . N
    
```

Specify the following information on this panel:

### Issue Following Operator Command Starting at Level

Indicates if and when to issue a z/OS or OS/390 operator command when an exception reaches a certain severity level. Enter:

- C— Issue the command at the exception’s critical level.
- W— Issue the command at the exception’s warning level.
- I— Issue the command whenever the exception is detected.
- N— (Default) Never issue the command.

The command is issued only when the exception is first detected. For example, if the same exception is detected for ten consecutive intervals, the command is issued just once (during the first interval). If the exception goes undetected for one or more intervals, the command is reissued the next time the exception is detected.

If an exception is defined generically, the command is issued for each new beginning occurrence (for example, each plan) using the generically-defined exception.

Leave the default (N) in this field.

### CMD Text

Specifies the z/OS or OS/390 operator command to display when the exception reaches the specified level.

Leave this field blank.



**For Individual Hist, For Hist Summary, and For Real-Time**

Specifies the application exception types to send the specified z/OS or OS/390 operator command for this exception. If a type is not active for this exception, the corresponding setting has no effect.

Leave the default (N) in these fields.

**Invoke Following IMOD...**

Specifies the name of an IMOD to invoke each time it detects this exception. Blanks indicate to not invoke an IMOD. Leave this field blank.

The data sent to an IMOD named in the definition of an exception has the following layout:

Position	Length	Description
1	4	DB2 subsystem name
5	8	Plan name
13	8	Connection name
21	8	Authorization ID
29	12	Correlation ID
41	8	IQL request name
49	1	Severity code (C, W, or I)
50	1	Type code: <ul style="list-style-type: none"> <li>■ 1 – IQL</li> <li>■ I – application, individual</li> <li>■ R – application, real-time</li> <li>■ A – application, summary</li> <li>■ S – subsystem</li> <li>■ D – database</li> </ul>
51	1	Reason for invoking the IMOD (not applicable for types 1 and I): <ul style="list-style-type: none"> <li>■ B – exception begin</li> <li>■ E – exception end</li> <li>■ P – exception peak</li> <li>■ D – dropped severity</li> </ul>
52	1	Reserved
53	4	ASID of user thread
57	2	Length of message text
59	100	Exception message text

### Using ISERV...

Indicates when to execute the IMOD. If you specify an IMOD and leave this field blank, then the default ISERV specified in the MSSUB SYSPARM parameter is used.

Leave this field blank.

### Starting at Level

Indicates at what severity level to invoke the IMOD. Enter:

- C – Invoke the IMOD only when the exception reaches the critical level.
- W – Invoke the IMOD only when the exception reaches the warning or critical level.
- I – Invoke the IMOD when the exception reaches any level.
- N – (Default) Never invoke the IMOD.

The IMOD is invoked when the exception first occurs, when it reaches a new peak or worst value, when it stops occurring, or when it occurs after not being detected for at least one exception detection cycle. For IQL-based exceptions, the IMOD is issued for each detection.

Leave the default (N) in this field.

### For Individual Hist, For Hist Summary, and For Real-Time

Specifies the application exception types to send the specified IMOD for this exception. If a type is not active for this exception, the corresponding setting has no effect.

Leave the default (N) in these fields.

### Start Request..., Starting at Level...

You can specify up to three Unicenter CA-Insight requests to start when the exception occurs. For Application exceptions, the request is qualified as much as possible. Indicate at what level to start the requests. Enter:

- C – Start the request only when the exception reaches the critical level.
- W – Start the request only when the exception reaches the warning or critical level.
- I – Start the request when the exception reaches any level.
- N – (Default) Never start the request.

The request is started when the exception first occurs, or when it occurs after not being detected for at least one exception detection cycle. For IQL-based exceptions, the request is started for each detection.

Enter **APPLPROF** beside Start Request # 1 and Enter **W** beside Starting at Level to start the APPLPROF request when the exception reaches the warning or critical level.

**For Individual Hist, For Hist Summary, and For Real-Time**

Specifies the application exception types to start the request for this exception. If a type is not active for this exception, the corresponding setting has no effect.

Enter **Y** Beside the For Individual Hist and For Real-Time fields to start the request for those exception types.

Check your specifications with those shown in the sample panel and if they agree, press Enter.

**Step 12. Set Exception Actions - Part 2**

The Exception Actions Part 2 panel appears. This panel is used to control the actions that Unicenter CA-24X7 should take when the exception occurs. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight MATSAA2 10:50:43
                                         D420 XE44

Exception Actions Part 2

Specify actions to take when exception occurs. Then press Enter.

Issue following 24x7 command starting at level . C (I, W, C or N)
Part 1 . . . CANCEL PLAN=&PLANNAM CONN=&CONNAM AUTH=&AUTHIDX
Part 2 . . . CORR=&CORRELATION
For individual hist. . N For hist. summary . N For real-time . Y

Issue SNMP trap starting at level . . . . . N (I, W, C, or N)
For individual hist. . N For hist. summary . N For real-time . N
Number of times exception will occur before sending a trap. 0

```

Specify the following information on this panel:

**Issue Following 24x7 Command Starting at Level**

Indicates when to issue a Unicenter CA-24X7 command when an exception reaches a certain severity level. Enter:

- C— Issue the command at the exception’s critical level.
- W— Issue the command at the exception’s warning level.
- I— Issue the command whenever the exception is detected.
- N— (Default) Never issue the command.

The command is issued only when the exception is first detected. For example, if the same exception is detected for ten consecutive intervals, the command is issued just once (during the first interval). If the exception goes undetected for one or more intervals, the command is reissued the next time the exception is detected.

If an exception is defined generically, the command is issued for each new beginning occurrence (for example, each plan) using the generically-defined exception.

Enter C (Critical) for this field.

**Part 1/Part 2**

Specifies the Unicenter CA-24X7 commands to issue when the exception reaches the specified level.

- In the Part 1 field, enter:

CANCEL PLAN=&PLANNAM CONN=&CONNAM AUTH=&AUTHIDX

- In the Part 2 field, enter:

CORR=&CORRELATION

**For Individual Hist, For Hist Summary, and For Real-Time**

Specifies the application exception types to issue the Unicenter CA-24X7 command for this exception. If a type is not active for this exception, the corresponding setting has no effect.

Enter Y in the Real-time field. Press Enter.

**Issue SNMP Trap Starting at Level**

Invokes the DB2 agent to issue an SNMP trap and help set the state of the DB2 subsystem and its resources to the DB2 agent when the exception reaches a certain severity level. Enter:

- C – Invoke the agent at the exception’s critical level.
- W – Invoke the agent at the exception’s warning level.
- I – Invoke the agent at the exception’s informational level.
- N – (Default) Never invoke the agent.

The agent is invoked only when the exception is first detected, when it changes severity, and when the exception terminates.

Leave N in this field.

**For Individual Hist, For Hist Summary, and For Real-Time**

Specifies the application exception types to log this exception. If a type is not active for this exception, the corresponding setting has no effect.

Leave these fields as N.

**Number of Times Exception Will Occur...**

Indicates how many times to detect the exception before the agent is invoked to issue an SNMP trap.

Leave the default value of 0.

## Exception Data Set Updated Panel

This panel indicates that you have successfully added your exception. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 20:06:33
DBV3 S018

Exception Data Set Updated

The exception data set has been modified. This change can not be made
dynamically and requires that the exception system be restarted. Press F6 to
restart the exception system now or use the F3 End key to defer the change
until the next time the exception system is restarted.

Note: restarting the exception system will cause any exception actions to
reoccur if the exception is still detected upon restart.

DBG55114I Record has been successfully added/updated.

```

After you have defined an exception, the exception record is stored in the Exception Definition VSAM data set. But the exception does not take effect until the Exception Processor has recycled.

Press PF6 to recycle the Exception Processor.

Press PF3 (End) if you do **not** want to recycle the Exception Processor.

## View/Update Exception Definition Panel

This panel indicates that you have successfully added your exception. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 20:19:18
DBV3 S018

View/Update Exception Definition

Choose one of the following with an "S". Then press Enter.
Ratio of one field value over another
Field 1 . . . : # of GETPAGE requests for all pools
Field 2 . . . : # of synchronous READ I/Os for all pools

. Exception Identification Data
. Exception Execution Controls
. Exception Message Text
. Exception Display Controls
. Logging and Notification Controls
. Exception Actions Part 1 (Commands, IMODs, Requests)
. Exception Actions Part 2 (24x7, Agent traps)
. Application exception types (Sum, Individual, Real)

DBG55155W Permanent update successful. Current is N/A.

```

From here, you can press PF3 (End) to return to the List of Exception Definitions panel shown in Step 2 of this scenario. From this panel, you can define another new application exception or update the definition of an existing one.

## SQL Statement Exceptions

The following section discusses SQL statement exceptions.

### SQL Statement Types and Capture Options Panel

This panel contains additional characteristics for SQL Statement exceptions. (This would be displayed in Step 3c of the scenario). It controls which types of SQL statements (dynamic and static) you want to check. You can also capture the SQL statement and log it (with associated information) to a data set of your choice. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SWASLOF 20:29:06
DBV3 S018

SQL Statement Types and Capture Options

Update the following as desired. Then press Enter.

Indicate which types of SQL statements to check . . . 1 1. Dynamic SQL
                                                         2. Static SQL
                                                         3. Both types

Capture SQL text to data set starting at level . . . N (I=Info, W=Warn,
DSName . . . . . C=Crit, N=None)
                                                         (Unquoted)

Try to EXPLAIN captured SQL statement . . . . . N (N=No, Y=Yes,
                                                         X=Extended EXPLAIN)
    
```

Specify the following information on this panel:

#### Indicate Which Types of SQL Statements to Check

Specifies the types of SQL statements to which the exception applies:

- 1 – (Default) Check only dynamic SQL.
- 2 – Check only static SQL.
- 3 – Check both dynamic and static SQL.

**Capture SQL Text to Data Set Starting at Level**

Indicates when to log an SQL statement that exceeds the exception threshold to the data set described in 3. Enter:

- C – Log the SQL statement – the indicated data set at the exception’s critical level.
- W – Log the SQL statement – the indicated data set at the exception’s warning level.
- I – Log the SQL statement – the indicated data set whenever the exception is detected.
- N – (Default) Never log the SQL statement.

**DSName**

This is the name of the data set to which the SQL Statement exceptions is logged (as selected in b). The data set name should be fully qualified without quotes and defined for fixed 80-byte records. The data set is dynamically allocated when there is an SQL statement to be logged, then MODs or appends the new data, and then frees the data set when the data has been written. The default value is blank.

An example of the output of this data set follows.

**Try to Explain Captured SQL Statement**

Indicates whether to perform an EXPLAIN for SQL statements that are being captured and logged to a data set (c). The EXPLAIN results are placed in the data set. The EXPLAIN takes place on behalf of the data collector, which implies that the data collector address space’s user ID must have access to all objects in the statement and have a PLAN\_TABLE allocated in order for the EXPLAIN to be successful.

Enter one of the following:

**Y**

EXPLAIN the SQL statement yielding default tabular output.

**X**

EXPLAIN the SQL statement yielding the normal tabular output plus the extended explanation.

**N**

(Default) Never EXPLAIN the SQL statement.

### Logging SQL Statement Exceptions

If you specify a data set for capturing SQL Statement exceptions (Steps 2 and 3), the data is written to the file as 80-byte records. The following is an example of the format of records written to the data set for SQL exceptions:

```

-
- YYYY-MM-DD-10.54.10.622631
-
- SQL statement detected and logged for the following exception:-
-   Long running SQL statement. Resp= 33.33
-
-
- Identification data:
- Subsystem . . . : DB23           Plan name . . . : DSNEsprR
- Auth ID . . . . : DXB164        Program name . . : DSNEsm68
- Connection ID : TSO             Stmt number . . . : 00131
- Correlation ID: DXB164         Language . . . . : *DYNAMIC*
- Location . . . :                 Collection ID :
- Version:
- Statement type: OPEN CURSOR
- Statement begin time: YYYY-MM-DD-10.53.28.319391
-
- SQL Statement Text:
-
-   SELECT *
-     FROM SYSIBM.SYSSTMT
-     WHERE TEXT IN (SELECT TEXT
-                   FROM SYSIBM.SYSSTMT
-                   WHERE TEXT LIKE '%A%' )
-     ORDER BY TEXT
-
-   Dynamic explain of SQL statement using qualifier: DXB164
-   QB JN  Mch  Index N-Sort-C TS Pre C Dgree GrpID
- Stmt# # MT AC Cl Table/Index Name Only UJOGUJOG LCK Tp E Ac Jn Ac Jn
- (N/A) 1  R   SYSIBM.SYSSTMT      --- IS S   N/A  N/A
-                                     ---Y-      N/A  N/A
-   2   R   SYSIBM.SYSSTMT      --- IS S   N/A  N/A
-                                     ---Y-Y-      N/A  N/A
-
- _____
- Line 01      Data accessed from the table
- In.....Table: SYSIBM.SYSSTMT
- Access Method: Table scan using sequential prefetch.
- Lock: Intent Share
-
- Line 02      Data accessed from the table
- In.....Composite table (previous interim table)
- Access...Sort: Composite table sorted for ORDER BY.
-
- Line 03      Data accessed from the table
- In.....Table: SYSIBM.SYSSTMT
- Access Method: Table scan using sequential prefetch.
- Lock: Intent Share
-
- Line 04      Data accessed from the table
- In.....Composite table (previous interim table)
- Access...Sort: Composite table sorted for UNION or elimination of duplicate
- rows and ORDER BY.
-
-

```



## Changing Existing Exceptions

To change previously defined exception characteristics, enter the **U** (Update) action code in the selection field next to the exception in:

- The List of Exception Definitions panel.
- Any of the Exception Monitoring panels.

In either case, the View/Update Exception Definition panel appears. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 20:33:17
                                DBV3 S018
                                View/Update Exception Definition
Choose one of the following with an "S". Then press Enter.
Average application "time" (CPU, elapsed, etc.) exception
Field 1 . . . : Elapsed time spent processing in DB2
Field 2 . . . : # of COMMITS and aborts

. Exception Identification Data
. Exception Execution Controls
. Exception Message Text
. Exception Display Controls
. Logging and Notification Controls
. Exception Actions Part 1 (Commands, IMODs, Requests)
. Exception Actions Part 2 (24x7, Agent traps)
. Application exception types (Sum, Individual, Real)

```

The listed categories vary depending upon the type of exception definition.

To update the various characteristics of the exception definition:

1. Enter an **S** next to any of the categories (Identification Data, Execution Controls, etc.) and press Enter.
2. Enter your new characteristics over the displayed data. You can add or delete characteristics as you choose. Press Enter when you are finished.

Updating exception definitions from the Exception Monitoring panels does not update the base definitions in the exception definition VSAM data set. Changes are lost when the data collector is brought down. You must use the Define Exceptions option to update the base definition.

The panels that correspond to the choices shown in the View/Update Exception Definition panel are the same ones you use for defining an exception.

## Deleting an Exception Definition

To delete an exception definition, enter **D** in the input field next to the exception you want to delete and press Enter. The Confirm Exception Deletion panel appears. The following is a sample of this panel:

```

Menu Print Tools Help CA-Insight SE19257 20:38:07
DBV3 S018

Confirm Exception Deletion

You have requested to delete the following exception.

Press Enter to delete it or End to abort deletion.

Average application "time" (CPU, elapsed, etc.) exception
Field 1 . . . : Elapsed time spent processing in DB2
Field 2 . . . : # of COMMITs and aborts

Note: deleting an exception will only delete the definition from the exception
data set and will not remove the current real time definition. You must
restart the exception processor in order for the change to take effect.
    
```

Press Enter to confirm the delete, or press PF3 (End) to cancel the delete.

When the exception is deleted, the List of Exception Definitions panel redisplay, and the following message displays:

```
DBG55118I Exception successfully deleted.
```

If the delete is confirmed, the Restart Prompt panel appears.

## Activating and Inactivating Exceptions

Exceptions can be activated and inactivated at any time. This can only be performed from the List of Subsystem Exception Definitions panel:

```

Menu Print Tools Help CA-Insight SE19257 20:42:34
DBV3 S018

List of Subsystem Exception Definitions Row 1-11 of 5454
Actions: U=Update current and permanent, P=Update permanent definition only,
C=Copy, D=Delete, A=Activate, I=Inactivate. Use F6 to add.
STATUS SSN <----- EXCEPTION TEXT ----->
_ ACTIVE **** A DB2 performance class 7 trace is running!

_ ACTIVE **** A DB2 global trace is running.

_ ACTIVE **** IRLM is running in cross memory mode (PC=YES).

_ ACTIVE **** IRLM internal trace is active.
    
```

**Active**

The normal state for an exception. The data collector processes events that satisfy the criteria defined in the exception.

**Inactive**

The data collector ignores the exception.

**Activating an Exception**

To activate an exception definition, enter **A** in the selection field for that exception and press Enter. The value in the STATUS column changes from INACT to ACTIVE, and the following message displays:

```
DBG55114I Record has been successfully added/updated.
```

The Restart Prompt panel displays.

**Inactivating an Exception**

To inactivate an exception definition, enter **I** in the selection field for that exception and press Enter. The value in the STATUS column changes from ACTIVE to INACT, and the following message displays:

```
DBG55114I Record has been successfully added/updated.
```

The Restart Prompt panel displays.

**Exception Manager Display**

Use the List of Subsystem Exception Definitions panel to check and change the current status of the exception system.

```

Menu Print Tools Help CA-Insight SE19257 20:42:34
                                DBV3 5018
                                List of Subsystem Exception Definitions
                                Row 1-11 of 5454
Actions: U=Update current and permanent, P=Update permanent definition only,
         C=Copy, D=Delete, A=Activate, I=Inactivate. Use F6 to add.
STATUS  SSN  <----- EXCEPTION TEXT ----->
_ ACTIVE **** A DB2 performance class 7 trace is running!

_ ACTIVE **** A DB2 global trace is running.

_ ACTIVE **** IRLM is running in cross memory mode (PC=YES).

_ ACTIVE **** IRLM internal trace is active.

```

The following lists possible values for the current status:

**RUNNING**

Indicates that the exception system is processing normally.

**STOPPED**

Indicates that the exception system was at one time running normally, but has since been stopped. You can use this panel to restart the exception system.

**TERMINATING**

Indicates that the exception system was at one time running normally, but has received a request to stop or restart and is currently terminating in order to satisfy the request.

**INITIALIZING**

Indicates that the exception system has received a request to restart and is currently in the initialization phase.

**NOT INSTALLED OR ABENDED**

Indicates that the exception system was not started when the data collector was started (controlled through the EXCEPTION-PROCESSOR sysparm), or the exception system has subsequently abended. In either case, the exception system might not be (re)started.

To change the current state of the exception system, enter 1 to restart the exception system or 2 to stop the exception system. If you enter 1 and the exception system is currently running, the exception system stops and restarts.

## Accessing the Exception Manager Panel

You can invoke the Exception Manager by performing one of the following:

- Entering **EXCMGR** on the command line and pressing Enter.
- Using the **EXCEPTION** option of the Tools pull-down menu.

# System Condition Monitor (SCM)

---

The System Condition Monitor (SCM) displays the status of system components that have been identified to it.

Unicenter CA-Insight identifies z/OS or OS/390, CICS, and DB2 to the System Condition Monitor.

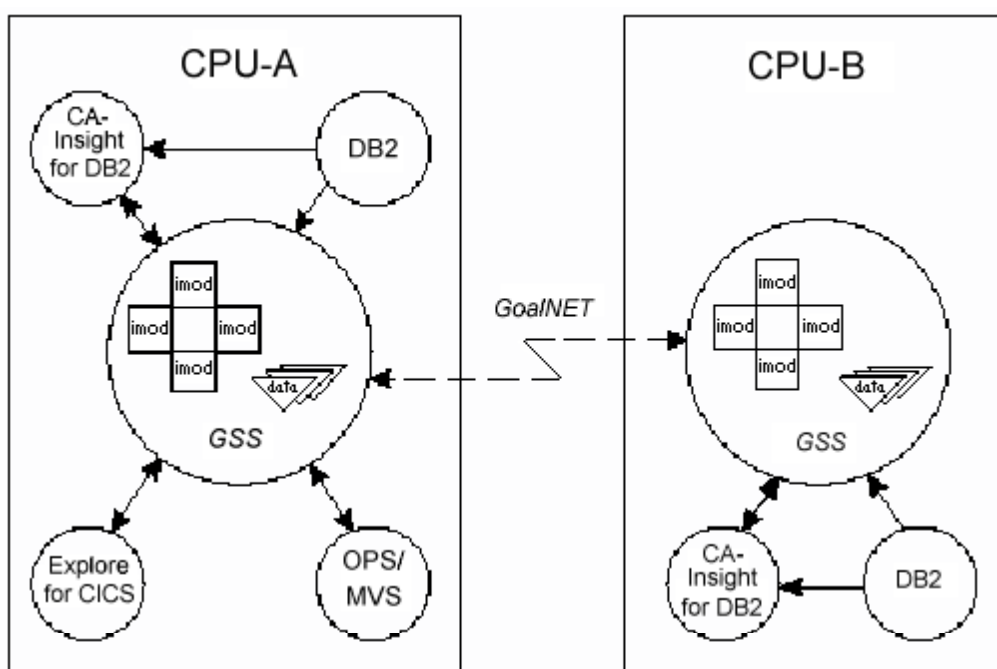
System Applications, such as monitors from Candle Corporation and Landmark Systems Corporation, can also be defined to the System Condition Monitor. Console messages issued by these monitors (reflecting z/OS or OS/390, CICS, and DB2 status) can be collected and displayed.

## How the System Condition Monitor Works

The following section discusses how the System Condition Monitor works.

### Global Subsystem (GSS)

The key to the System Condition Monitor is the use of the Global Subsystem (GSS), which is shipped with Unicenter CA-Insight (Unicenter CA-Insight uses the GSS to view DB2 console messages). The GSS is a set of software services that allow integration between Unicenter CA-Insight, as well as communication with other products.



The Global Subsystem consists of several essential components:

- A communications link (GoalNET) – Between products running on multiple CPUs.
- A Global Events Manager (GEM) – Accepts, generates, and routes events (e.g. console messages and commands) within and between systems.
- Intelligent Modules (IMODs) – Customizable REXX-language facility to perform monitoring and reporting.

Since IMODs are at the heart of the System Condition Monitor, the next section discusses them in more detail.

## IMODs

The Global Subsystem lets you create and use intelligent modules (IMODs) written in an extension of IBM's SAA-standard REXX computer language. Using IMODs, you can write programs to perform activities such as:

- Automated systems monitoring.
- Triggering detailed analysis.
- Regulating resources.
- Reporting on global system activities.
- Problem documentation and resolution.

In addition, many Computer Associates products execute IMODs in response to console commands, system events, exceptions, messages, or other conditions.

Storing of condition information is normally done on an interval basis (30-60 seconds). However, events or exceptions can also be used to trigger the storing of information. In effect, the System Condition Monitor becomes a repository of global system exception and event information.

Each product involved uses a common IMOD to retrieve data stored in the GSS. This IMOD retrieves all of the data stored by each product for the System Condition Monitor. By using GoalNET, data can be retrieved for products on multiple z/OS or OS/390 images.

There is one GSS per z/OS or OS/390. When you request data from more than one z/OS or OS/390 image, the SCM requests data from its local GSS and then causes IMODs to execute which retrieve data from each GSS on the other z/OS or OS/390 images. When you request SCM data from a remote z/OS or OS/390 image, the local GSS retrieves the remote z/OS or OS/390' local data. This retrieved data is referred to as global data. GSS never stores local z/OS or OS/390 data in another z/OS or OS/390 image.

The result is a single-image view of all systems in a network of systems. This technology has very low overhead, with a minimum of network traffic, because exceptions are sent to other GSSs only when needed.

## Displaying the System Condition Monitor

The System Condition Monitor can be displayed by one of the following methods:

- Select the Condition... option from the Tools pull-down menu
- Enter **COND** on the command line of any panel

## The System Condition Monitor - Global View

The System Condition Monitor - Global View panel gives you a high-level glimpse into the status of the various subsystems you are monitoring. The following is a sample of this panel:

```

Menu  Print  Tools  Help  CA-Insight                JBG2      16:53:82
                        DBV3

Condition                System Condition Monitor                Item 1-3 of 3
Line codes:  S=Show Detail, X=Invoke Monitor (VTAM U/I only)

*      *      *      Show
Name   Type   System  Inactive Y  Line   z X   z X   z X
-----
DB23   DB2    S018   16:52:45   92    =====
DBV3   DB2    S018   16:52:45   203   =====
DSNB   DB2    S028   16:58:43   20    =====
    
```

The three possible colors (represented here as shades of gray) for Condition are red (Problem), yellow (Warning), and green (Ok).

If using a monochrome (or non-extended-attribute) terminal, the panel appears as:

```

Menu  Print  Tools  Help  CA-Insight                SE19257   18:27:23
                        DBV3
Condition                System Condition Monitor                Item 1-6 of 6
Line codes:  S=Show Detail, X=Invoke Monitor (VTAM U/I only)

*      *      *      Show
Name   Type   System  Inactive Y  Line   Problem X
-----
. NET   VTAM    B1      12:55:01   11    Warning X
. CICS311A CICS    B1      12:55:00   15    Problem X
. DSN    DB2     B1      16:10:12   22    Problem X
. DB23   DB2     B1      Inactive   0     Ok X
. CICS21A OM/CICS B2      12:45:00   18    Warning X
    
```

In both cases, you can see that there is a detail line for each application defined to the GSS. In this example, all of the conditions have been selected for display for both active and inactive applications.



## Field Descriptions

The fields in the System Condition Monitor - Global View panel are:

**Name**

Name of the address space (or application) being monitored.

**Type**

The type of subsystem being monitored.

**System**

The system ID of the system in which the subsystem runs.

**Time**

Time at which the information about the address space (or application) was last updated. If you selected to display inactive address spaces (or applications), the word Inactive appears in this column.

**Count**

The number of detail lines available.

**Note:** Most exceptions use more than one line.

**Condition**

The current status of the subsystem, as follows:

- Ok (Green) – All values collected for the subsystem are within defined limits.
- Warning (Yellow) – A minor problem in the subsystem has been detected.
- Problem (Red) – A serious problem in the subsystem has been detected.

## Filtering the Data

By simply selecting various options on the System Condition Monitor - Global View panel, you can increase or reduce the amount of data displayed.

You can use the input fields above the Name, Type, and System column headings to limit the display to a particular subsystem or group of subsystems. You can specify an address space or application name, subsystem type, or subsystem ID. Use the asterisk (\*) generic character to display subsystems sharing characters in their name, type, or ID.

Enter **X** next to each severity color (or word) that you want to display. The default is red (Problem) and yellow (Warning). If inactive subsystems are shown, their condition displays even if not selected with an X.

## Showing Inactive Address Spaces

The default on the System Condition Monitor - Global View panel is to show only active address spaces (or applications). If you want to also see the condition of inactive address spaces or applications, enter **Y** at the entry Show Inactive, above the Time column heading.

When you choose to show inactive address spaces (or applications), this is indicated in the Time column by the word Inactive.

## The System Condition Monitor - Detail View

When you enter **S** or cursor-select an application name on the System Condition Monitor - Global View panel, the System Condition Monitor - Detail View panel appears. The following is a sample of this panel:

Menu	Print	Tools	Help	CA-Insight	JBG2	16:53:82 DBV3
CondDet1		System Condition Monitor			Row 16-24 of 92	
Name	Type	System	Time	Count	Condition	
-----	-----	-----	-----	-----	-----	
DB23	DB2	S018	16:50:44	92	=====	
EXCEPTIONS						
MM/DD/YY 03:19:05 High percentage of package table requests from EDM pool had to be satisfied with a load: 100					=====	
MM/DD/YY 06:27:18 Database, AFLBETAA, and pageset, DSN8S23D, is in a restricted state: RW, COPY					=====	
MM/DD/YY 06:27:18 Database, AFLBETAA, and pageset, DSN8S23R, is in a restricted state: RW, COPY					=====	

Again, the three possible colors (represented here as shades of gray) for Condition are Red(problem), Yellow (warning), and Green (Ok).

On monochrome (or non-extended-attribute) terminals, the panel appears as:

Menu	Print	Tools	Help	CA-Insight	SE19257	19:35:39
						DBV3 MVSBI
CondDet1	System Condition Monitor Detail				Row 19-27 of 39	
Name	Type	System	Time	Count	Condition	
-----	-----	-----	-----	-----	-----	
DBV3	DB2	B1	19:35:22	39	Problem	
EXCEPTIONS						
MM/DD/YY	18:34:21	Average number of pages written per write I/O is low for BP5. Ratio value is 1				PROBLEM
MM/DD/YY	18:34:21	Average number of pages written per write I/O is low for BP20. Ratio value is 2				PROBLEM
MM/DD/YY	18:34:21	The resource limit facility is inactive.				WARNING
MM/DD/YY	18:34:21	Average number of updates per page written is				WARNING

These panels show exceptions from Unicenter CA-Insight requests and messages issued by DB2. IMODs associate a severity with each text block. IMODs also control how long each text block resides in the GSS.

If you use an extended attribute terminal, but prefer to see words instead of color bars, enter **COLOR OFF** on the command line. Note that this affects other Unicenter CA-Insight functions – including PLOT – as well as the colorizing of fields by value thresholds.

## Field Descriptions

The first line of the Detail View panel displays the same information as the line you selected from the Global View panel.

The format of the information on the remainder of the panel depends on the product from which the information is obtained. For DB2, the fields indicate the following information:

### Exception

The text of a Unicenter CA-Insight exception or a DB2 console message.

### Condition

The severity of the exception message as defined in the Exception IMOD. Possible colors (display status) are:

- OK (Green) – The exception is informational.
- Warning (Yellow) – This exception (or exception message) has been defined as a minor problem.
- Problem (Red) – This exception (or exception message) has been defined as a major problem.

## Invoking Other Monitors

The invoking of other monitors is a one-way operation. Due to the other vendors' implementation of security and VTAM interfaces, Computer Associates cannot provide a mechanism to return to the System Condition Monitor. Therefore, this function is provided as a non-supported feature.

### How to Invoke Other Monitors

If you are accessing Unicenter CA-Insight through the VTAM User Interface, you have the option of invoking other monitors from within the System Condition Monitor.

From the System Condition Monitor - Global View panel, enter **X** and press Enter to switch to the monitor for that particular subsystem. In the following example, an X has been entered next to NET, a VTAM monitor:

Menu Print Tools Help CA-Insight SE19257 18:27:23					
Condition System Condition Monitor DBV3 Item 1-6 of 6					
Line codes: S=Show Detail, X=Invoke Monitor (VTAM U/I only)					
*	*	*	Show		Problem X
Name	Type	System	Inactive Y	Line	Warning X
-----	-----	-----	-----	-----	-----
X NET	VTAM	B1	12:55:01	11	Warning
. CICS311A	CICS	B1	12:55:00	15	Problem
. DSN	DB2	B1	16:10:12	22	Problem
. DB23	DB2	B1	Inactive	0	Ok
. DBV3	DB2	B1	16:12:33	2	Warning
. CICS21A	OM/CICS	B2	12:45:00	18	Warning

### Returning from Other Monitors

Since Unicenter CA-Insight gives up control when switching to another monitor, it is dependent on the other monitor how you should return to Unicenter CA-Insight. See that product's documentation for ways to invoke another subsystem, if possible.

If you cannot programmatically return to Unicenter CA-Insight, you must terminate the current VTAM session and start a new Unicenter CA-Insight VTAM User Interface session.

# Exception Types and Field Variables

This appendix lists and details the Exception Types and Field Variables.

## Field Variables

This section lists the field variables that are available in the Exception Processor. The variables are grouped by exception type; for example, they can be grouped by subsystem, application, SQL, and database. IQL-based exceptions have no field variables available.

## Types of Exceptions

The following table identifies the types of exceptions you can define and whether they are used for subsystems, applications, databases, or SQL statements (IQL-based exceptions have no field values, and therefore not included in the table).

The numbers in the first column are for your reference when reviewing the variables that pertain to each exception type. These variables are described on the pages following the table.

#	Description	Used For
1	Ratio of one field value over another	Subsystem, Application, and SQL
2	Ratio of one field value over another for an interval	Subsystem, Application, and SQL
3	Total count of a field value	All
4	Total count of a field value for an interval	All
5	Rate per second of a field value	All

#	Description	Used For
6	Percentage of one field value over another	Subsystem, Application, and SQL
7	Percentage of one field value over another for an interval	Subsystem, Application, and SQL
8	CPU percentage for a DB2 Address Space	Subsystem
9	A specified resource is active or inactive	Subsystem and Application
10	Average application time (CPU, elapsed, etc.)	Application and SQL
11	Number of extents for a database page set's data set	Database
12	Restricted databases and page sets	Database
13	DB2 Address Spaces with enqueue conflicts	Subsystem

## Subsystem Exception Field Variables

The following are subsystem type 1-7 exception field variables.

### Buffer Pool Fields

- BP0 GETPAGE requests
- BP0 READ I/O requests
- BP0 getpage failures – VPOOL full
- BP0 expansion failures – virtual storage shortage
- BP0 UPDATES – system pages
- BP0 PAGES WRITTEN – system pages
- BP0 WRITE I/O – asynchronous
- BP0 # active buffers
- BP0 READ I/O requiring paging
- BP0 WRITE I/O requiring paging
- BP0 – total number of data sets opened
- BP0 synchronous/immediate WRITE I/O

- BP0 sequential prefetch requests
- BP0 # pages read due to sequential prefetch
- BP0 sequential prefetch failures – buffer shortage
- BP0 sequential prefetch failures – no READ engines
- BP0 WRITE I/Os delayed – no WRITE engine available
- BP0 number of times deferred threshold reached
- BP0 # times at DATA MANAGER CRITICAL threshold
- BP0 buffer count (total # buffers in BP0)
- BP0 # times migrated data sets encountered
- BP0 number of recall timeouts
- BP0 count of prefetch (asynchronous) read I/Os
- BP0 # times work file prefetch aborted – 0 pref quantity
- BP0 # times could not support the concurrent work files
- BP0 max work files allocated for sort/merge processing
- BP0 # pages for which destructive read was requested
- BP0 # pages dequeue from VDWQ – destructive read request
- BP0 # sort merge passes requested
- BP0 # work files requested during sort/merge processing
- BP0 # work files denied during sort/merge processing
- BP0 # times sort/merge done inefficiently – BP shortage
- BP0 # of times list prefetch requested
- BP0 # times vertical deferred write threshold reached
- BP0 # of dynamic prefetch requested
- BP0 # of successful VP expansions/contractions
- BP0 # of successful hiperpool expansions/contractions
- BP0 # of pages read from HP to VP synchronously w/MVPG
- BP0 # of pages read from HP to VP asynchronously w/MVPG
- BP0 # of unsuccessful HP to VP MVPG reads
- BP0 # pages written from VP to HP synchronously
- BP0 # pages written from VP to HP asynchronously
- BP0 # unsuccessful VP to HP page writes
- BP0 # buffers allocated for virtual pool

- BP0 # buffers allocated for hiperpool
- BP0 # pages read due to dynamic prefetch
- BP0 # pages read due to list prefetch
- BP0 # dynamic prefetch (asynchronous) read I/Os
- BP0 # list prefetch (asynchronous) read I/Os
- BP0 # getpage issued by sequential request
- BP0 # sync. read I/Os performed by sequential requests
- BP0 # getpage failures – conditional getpage request
- BP0 highest prefetch I/O streams ever been allocated
- BP0 # prefetch I/O streams denied – BP shortage
- BP0 # negotiations between BM and RDS – I/O parallelism
- BP0 # times I/O parallelism downgraded – BP shortage
- BP0 # times prefetch quality decreased to half normal
- BP0 # times prefetch quality decreased to 1/4 normal
- BP0 # pages read from HP to VP using ADMF
- BP0 # unsuccessful HP to VP reads using ADMF
- BP0 # pages written from VP to HP using ADMF
- BP0 # unsuccessful HP to VP writes using ADMF
- BP0 current # HP buffers backed by expanded storage

**Note:** The same fields are available for BP1 through BP49 and BP32K through BP32K9.

### Group Buffer Pool Fields

- # SES-reads – buffer XI: w/data returned for GBP0
- # SES-reads – buffer XI: w/o data returned for GBP0
- # SES-reads – buff XI: w/o data & dir entry for GBP0
- # SES-reads – requested page not found for GBP0
- # SES-reads – page n/a: w/o data returned – GBP0
- # SES-reads – page n/a: w/o data & dir entry – GBP0
- # SES-writes for changed pages for GBP0
- # SES-writes for clean pages for GBP0
- # castouts initiated – castout class threshold – GBP0



- # castouts initiated – GBP castout threshold – GBP0
- # pref SES-reads w/data returned – GBP0
- # pref SES-reads w/o data returned – GBP0
- # pref SES-reads w/o data & dir entry – GBP0
- # SES-writes (system exec. unit) changed pgs – GBP0
- # pages castout from GBP to DASD – GBP0
- # times castout engine not available – GBP0
- # times SES write engine n/a – GBP0
- # uncompleted SES-read reqs: SES storage – GBP0
- # uncompleted SES-write reqs: SES storage – GBP0
- # “other” SES requests – GBP0
- # SES-writes (system exec unit) clean pages – GBP0
- Allocated size of GBP in 4K blocks – GBP0
- Actual # allocated directory entries – GBP0
- Actual # allocated data entries – GBP0
- # GBP checkpoints triggered by this member for GBP0
- # GBP rebuilds this member participated in for GBP0
- # IXLCACHE “unlock-castout” requests for GBP0
- # IXLCACHE “read-castout-class” requests for GBP0
- # IXLCACHE “read-castout-stats” requests for GBP0
- # IXLCACHE “delete-name” requests for GBP0
- # IXLCACHE “read-dirinfo” requests for GBP0
- # of “register page” requests for GBP0
- # of “unregister page” requests for GBP0
- # of “register-page-list” done by prefetch for GBP0
- # GBP-reads done by Prefetch – changed page for GBP0
- # GBP-reads done by Prefetch – clean page for GBP0
- # explicit cross invalidates for GBP0
- # writes to secondary GBP for duplexing for GBP0
- # failed writes to sec. GBP (storage) for GBP0
- # suspended write completion checks for GBP0
- # IXLCACHE “delete-name-list” requests for GBP0

- # IXLCACHE “read-castout-stats” requests for GBP0
- # IXLCACHE “delete-name” requests for GBP0
- # async IXLCACHE invocations for primary GBP0
- # async IXLCACHE invocations for secondary GBP0
- # getpages for GBP dependent pages for GBP0

**Note:** The same fields are available for GBP1 through GBP49 and GBP32K through GBP32K9.

### Miscellaneous Fields

- EXCPs done by MSTR address space
- EXCPs done by DBM1 address space
- EXCPs done by DIST address space
- EXCPs done by IRLM address space
- Paging done by MSTR address space
- Paging done by DBM1 address space
- Paging done by DBM1 address space
- Paging done by IRLM address space
- Total # commits and aborts (logical units of work)
- Total # of minutes DB2 has been active
- Maximum amount of CSA allowed for IRLM locks
- Current amount of CSA used by IRLM locks
- Current number of active logs defined
- Current number of active logs available for use
- Current number of active logs that are full
- Current number of input archive log requests
- Current number of input archive log mounts pending
- Current number of input archive logs allocated
- Current number of output archive log requests
- Current number of output archive log mounts pending
- Current number of output archive logs allocated
- Current number of archive log requests
- Current number of archive log mounts pending

- Current number of archive logs allocated
- Current # of threads queued
- Maximum # of data sets concurrently open (DSMAX)
- Total # of checkpoints taken
- Current # of batch threads in use
- Current # of TSO threads in use
- Current # of threads in use
- Current # of remote threads in use
- Maximum # of batch threads allowed
- Maximum # of TSO threads allowed
- Maximum # of active threads allowed
- Maximum # of remote threads allowed
- Total # of threads created
- # successful package auth checks using pkg auth cache
- # successful pkg auth checks – execute held by PUBLIC
- # package auth checks not making use of pkg auth cache
- # times DB2 overwrote auth ID in the pkg auth cache
- # times DB2 overwrote pkg entry in pkg auth cache
- # successful auth checks using routine auth cache
- # successful auth checks for public routines
- # routine auth checks could not use routine auth cache
- # times authid overwritten in routine auth cache
- # times routine entry overwritten in routine auth cache
- # times unable to add entry to routine auth cache
- Max storage used for LOB values

### Log Statistics Fields

- # of log WRITE requests with waits
- # of log NOWAIT WRITE requests
- # of log FORCE WRITE requests
- # of log waits due to an unavailable buffer
- # of log READs satisfied from output buffers

- # of log READs satisfied from active data sets
- # of log READs satisfied from archive data sets
- # of log READs delayed due to tape volume contention
- # of BSDS access requests
- # of active log output control intervals created
- # of WRITE I/Os for writing output log buffers
- # of archive log READ allocations
- # of archive log WRITE allocations
- # of log control intervals offloaded
- # of read accesses delayed—unavailable resource
- # of look-ahead tape volume mounts attempted
- # of look-ahead tape volume mounts performed
- # times log write request suspended
- # log write I/O requests
- # log CIs written
- # serial log write requests
- # log writes schedules due to log write threshold
- # log writes requiring page-in

### DDF Fields

- Total # of SQL statements sent to a remote site
- Total # of SQL statements received from a remote site
- Total # of rows sent to a remote site
- Total # of rows received from a remote site
- Total # of bytes sent to a remote site
- Total # of bytes received from a remote site
- Total # of conversations initiated locally
- Total # of conversations initiated remotely
- Total # of messages sent to a remote site
- Total # of messages received from a remote site
- Total # of migrated transactions sent
- Total # of migrated transactions received

- Total # of COMMIT requests sent to a remote site
- Total # of COMMIT requests received from a remote site
- Total # of ABORT requests sent to a remote site
- Total # of ABORT requests received from a remote site
- Total # of conversations queued
- # of switches to limited block from continuous
- Total # SQL statements bound for remote access
- Total # of rows in block fetch message buffer
- Total # of blocks transmitted using block fetch
- Total # of blocks received using block fetch
- Total # of prepare requests sent to participant
- Total # of prepare requests received from coordinator
- Total # of last agent requests sent to coordinator
- Total # of last agent requests received from initiator
- Total # of committed requests sent to participant
- Total # of committed requests received from coordinator
- Total # of backout requests sent to participant
- Total # of backout requests received from coordinator
- Total # of forget responses sent to coordinator
- Total # of forget responses received from participant
- Total # of request commit responses sent to coordinator
- Total # request commit resp. received from participant
- Total # of backout responses sent to coordinator
- Total # of backout responses received from participant
- Total # threads indoubt w/rmt location as coordinator
- Total # commits performed w/rmt location as coordinator
- Total # rollbacks done w/remote location as coordinator
- Total # of DBAT threads that have been queued
- Total # of cold start connections with all remotes
- Total # of warm start connections with all remotes
- Total # resynchronization connections attempted
- Total # resynchronization connections succeeded

- Total # conversations deallocated due to ZPARM limit
- Current number of active DBATs
- Maximum number of active DBATs that existed (HWM)
- Current number of inactive DBATs
- Maximum number of inactive DBATs
- Maximum number of active and inactive DBATs that existed (HWM)
- Num connections terminated – max type 1 inactive
- Current number of type 2 inactive threads
- Maximum number of type 2 inactive threads
- Num queued receive reqs for type 2 inactive thread
- Current number type 2 inactive threads queued
- Maximum number type 2 inactive threads queued
- Current number active DBAT slots not in use
- Maximum number active DBAT slots not in use
- Number requests requiring data base access thread
- Number requests satisfied using pool thread

### Subsystem Services Component Fields

- # of queued create threads
- # of units of recovery gone indoubt

### Short on Storage Fields

- # of times short on storage – contraction issued
- # of times short on storage – critical
- # of times short on storage – abend issued

### EDM Pool Fields

- # of EDM request failures – no pages available
- # of pages in EDM pool
- # of application requests for a CT section
- # of times a CT section had to be loaded from DASD
- # of EDM pages in use for CT
- # of free pages in EDM pool

- # of EDM pages in use for DBD
- # of EDM pages in use for SKCT
- # of application requests for a DBD
- # of times a DBD had to be loaded from DASD
- # of application requests for a PT section
- # of times a PT section had to be loaded from DASD
- # of EDM pages in use for PT
- # of EDM pages in use for SKPT
- # inserts for dynamic cache
- # requests for dynamic cache
- # of pages in use for dynamic cache
- # of failures due to EDM dataspace full
- # of pages in EDM dataspace
- # of free pages in EDM dataspace free chain

### SQL Statement Counts

- # of SELECT statements
- # of INSERT statements
- # of UPDATE statements
- # of DELETE statements
- # of DESCRIBE statements
- # of PREPARE statements
- # of OPEN CURSOR statements
- # of CLOSE CURSOR statements
- # of CREATE TABLE statements
- # of CREATE INDEX statements
- # of CREATE TABLE SPACE statements
- # of CREATE SYNONYM statements
- # of CREATE DATABASE statements
- # of CREATE STORAGE GROUP statements
- # of CREATE VIEW statements
- # of DROP INDEX statements

- # of DROP TABLE statements
- # of DROP TABLE SPACE statements
- # of DROP DATABASE statements
- # of DROP SYNONYM statements
- # of DROP STORAGE GROUP statements
- # of DROP VIEW statements
- # of ALTER STORAGE GROUP statements
- # of FETCH CURSOR statements
- # of ALTER TABLE SPACE statements
- # of ALTER TABLE statements
- # of ALTER INDEX statements
- # of COMMENT ON statements
- # of LOCK TABLE statements
- # of GRANT statements
- # of REVOKE statements
- # of Incremental BINDs
- # of LABEL ON statements
- # of SET SQLID statements
- # of CREATE ALIAS statements
- # of DROP ALIAS statements
- # of SET "host variable" statements
- # of ALTER DATABASE statements
- # of DROP PACKAGE statements
- # of DESCRIBE TABLE statements
- # of CONNECT type 1 statements
- # of CONNECT type 2 statements
- # of RELEASE statements
- # of SET CONNECTION statements
- # of SET CURRENT DEGREE statements
- # of SET CURRENT RULES statements
- # of SQL CALL statements executed
- # of times a stored procedure abended



- # of times an SQL CALL statement timed out
- # of times an SQL CALL statement was rejected
- # of parallel groups downgraded – no enclave
- # of RENAME TABLE statements
- # CREATE GLOBAL TEMPORARY TABLE statements
- # ASSOCIATE LOCATOR statements
- # ALLOCATE CURSOR statements
- # of CREATE TRIGGER statements
- # of DROP TRIGGER statements
- # of SET CURRENT PATH statements
- # of DROP USER DEFINED FUNCTION statements
- # of DROP PROCEDURE statements
- # of CREATE DISTINCT TYPE statements
- # of DROP DISTINCT TYPE statements
- # of CREATE FUNCTION statements
- # of CREATE PROCEDURE statements
- # of HOLD LOCATOR statements
- # of FREE LOCATOR statements
- # of CREATE AUX TABLE statements
- # of ALTER FUNCTION statements
- # of ALTER PROCEDURE statements
- # SET CURRENT PRECISION statements executed
- # DECLARE GLOBAL TEMPORARY TABLE statements executed

### Lock Statistics Fields

- # of deadlocks
- # of suspends due to unavailable lock
- # of timeouts
- # of shared lock escalations
- # of exclusive lock escalations
- # of suspends due to latches
- # of suspends due to reasons other than lock/latch

- # of lock requests
- # of unlock requests
- # IRLM query requests
- # change lock requests
- # other IRLM requests
- # claim requests
- # unsuccessful claim requests
- # drain requests
- # unsuccessful drain requests

### Global Locking Fields

- # P-lock lock requests
- # P-lock change lock requests
- # P-lock unlock requests
- # lock requests propagated to XES synchronously
- # change lock requests propagated to XES synchronously
- # unlock requests propagated to XES synchronously
- # suspends due to IRLM global resource contention
- # suspends due to XES global resource contention
- # false (hash) contentions
- # global/change lock denied – incompatible retained lock
- # notify messages sent
- # notify messages received
- # resources propagated from IRLM to XES asynchronously
- # times page set lock negotiated – interest level changed
- # times page lock negotiated – interest level changed
- # times “other” lock negotiated – interest level changed
- # CHANGEPE requests
- Max # engines available for P-lock/Notify exit requests
- # times engine unavailable for P-lock/Notify exit request

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### Multiple Index (List Prefetch Usage) Fields

- # of times Multiple Index Access used
- # of times Mult-Index failed – no storage
- # of times Mult-Index failed – limit exceeded

### Query Parallelism Fields

- Max degree of parallelism among parallel groups
- Total number of parallel groups executed
- Total # parallel groups failed – UPDATE/DELETE cursor
- Total # parallel groups failed – lack of ESA support
- Total # parallel groups failed – buffer/storage short
- Total # parallel groups reduced – buffer/storage short
- Total # parallel groups processed normally
- # parallel groups executed single DB2 – COORDINATOR=NO
- # parallel groups executed single DB2 – isolation=RR/RS
- # parallel groups intended to run across the data sharing grp
- # times parallel coordinator bypass a DB2 – BP shortage
- # parallel groups w/reformulated access path: sysplex
- # parallel groups w/reformulated access path: BP short

### RID Pool Fields

- # of times RID list failed – RDS limit exceeded
- # of times RID list failed – DM limit exceeded
- highest number of RID blocks
- current number of RID blocks
- # of times RID list failed – no storage
- # of times RID list failed – concurrent processes
- # of columns bypassed – invalid Select Procedure

### Drain Processing Fields

- Current number of data sets open
- Maximum number of data sets concurrently open
- # of data sets open with close(YES), but not in use
- Maximum number of page sets available to DRAIN
- # of data sets that were closed through the DRAIN process
- # times requested PB found on free queue for DS open
- # infrequently updated d.s. converted from R/W to R/O

### Dynamic Prepare Fields

- # PREPAREs bypassed – prepared statement cache
- # PREPAREs not found in prepared statement cache
- # implicit PREPAREs w/KEEPDYNAMIC(YES) – executable n/a
- # PREPAREs avoided w/KEEPDYNAMIC(ES) – executable found
- # times exec copy of prepared stmt discarded – MAXKEEPD
- # times prepared stmt purged cache – dependent obj n/a

### Direct Row Access

- # of times direct row access was successful
- # of times direct row access failed – IX access used
- # of times direct row access failed – TS scan used

### DB2 Routines and Triggers

- # of times a statement trigger was activated
- # of times a row trigger was activated
- # of times SQL error occurred during trigger execution
- Maximum level of nested SQL cascading
- # of user defined functions executed
- # of times a UDF abended
- # of times a UDF timed out waiting to be scheduled
- # of times a UDF was rejected
- Subsystem Type 8 Exceptions

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### CPU Fields

- CPU used by MSTR address space
- CPU used by DBM1 address space
- CPU used by DIST address space
- CPU used by IRLM address space
- Subsystem Type 13 Exceptions

### Enqueue Fields

- Number of enqueue conflicts for the MSTR address space
- Number of enqueue conflicts for the DBM1 address space
- Number of enqueue conflicts for the DIST address space
- Number of enqueue conflicts for the IRLM address space
- Subsystem Type 9 Exceptions

### Active/Inactive Fields

- DB2 subsystem is active/inactive
- IRLM PC=YES is active/inactive
- IRLM trace is active/inactive
- Distributed data facility is active/inactive
- Resource limit facility is active/inactive
- Dual active logging is active/inactive
- A statistics trace is active/inactive
- An accounting trace is active/inactive
- A performance trace is active/inactive
- A global trace is active/inactive
- An audit trace is active/inactive
- A monitor trace is active/inactive
- A statistics class 1 trace is active/inactive
- A statistics class 2 trace is active/inactive
- A statistics class 30 trace is active/inactive
- A statistics class 31 trace is active/inactive
- A statistics class 32 trace is active/inactive
- An accounting class 1 trace is active/inactive

- An accounting class 2 trace is active/inactive
- An accounting class 3 trace is active/inactive
- An accounting class 4 trace is active/inactive
- An accounting class 30 trace is active/inactive
- An accounting class 31 trace is active/inactive
- An accounting class 32 trace is active/inactive
- A performance class 1 trace is active/inactive
- A performance class 2 trace is active/inactive
- A performance class 3 trace is active/inactive
- A performance class 4 trace is active/inactive
- A performance class 5 trace is active/inactive
- A performance class 6 trace is active/inactive
- A performance class 7 trace is active/inactive
- A performance class 8 trace is active/inactive
- A performance class 9 trace is active/inactive
- A performance class 10 trace is active/inactive
- A performance class 11 trace is active/inactive
- A performance class 12 trace is active/inactive
- A performance class 13 trace is active/inactive
- A performance class 14 trace is active/inactive
- A performance class 15 trace is active/inactive
- A performance class 16 trace is active/inactive
- A performance class 30 trace is active/inactive
- A performance class 31 trace is active/inactive
- A performance class 32 trace is active/inactive
- A global class 1 trace is active/inactive
- A global class 2 trace is active/inactive
- A global class 3 trace is active/inactive
- A global class 4 trace is active/inactive
- A global class 5 trace is active/inactive
- A global class 6 trace is active/inactive
- A global class 7 trace is active/inactive

- A global class 8 trace is active/inactive
- A global class 30 trace is active/inactive
- A global class 31 trace is active/inactive
- A global class 32 trace is active/inactive
- An audit class 1 trace is active/inactive
- An audit class 2 trace is active/inactive
- An audit class 3 trace is active/inactive
- An audit class 4 trace is active/inactive
- An audit class 5 trace is active/inactive
- An audit class 6 trace is active/inactive
- An audit class 7 trace is active/inactive
- An audit class 8 trace is active/inactive
- An audit class 9 trace is active/inactive
- An audit class 30 trace is active/inactive
- An audit class 31 trace is active/inactive
- An audit class 32 trace is active/inactive
- A monitor class 1 trace is active/inactive
- A monitor class 2 trace is active/inactive
- A monitor class 3 trace is active/inactive
- A monitor class 4 trace is active/inactive
- A monitor class 30 trace is active/inactive
- A monitor class 31 trace is active/inactive
- A monitor class 32 trace is active/inactive
- Application and SQL Exception Field Variables

### Application Type 9 Exceptions

The only available field is:

- Application plan is active using repeatable read

## Application and SQL Type 10 Exceptions

The available fields are:

- Elapsed time spent processing in DB2
- Wait time for asynchronous IXL requests
- Wait time for glbl contention for child L-Locks
- Wait time for glbl contention for other L-Locks
- Wait time for glbl contention for pageset P-Locks
- Wait time for glbl contention for page P-Locks
- Wait time for glbl contention for other P-Locks
- Wait time for DB2 I/O
- CPU time used while in DB2
- Wait time for suspends
- Wait time for synchronous DB2 services
- Application total elapsed time
- Wait time for asynchronous write I/O
- Wait time for ARCHIVE LOG MODE(QUIESCE)
- Wait time for drain locks
- Wait time for claim releases
- Wait time for archive reads (tape)
- Wait time for page latch contentions
- Wait time for sending msgs to data sharing group
- Wait time for global lock contention
- Total TCB time to satisfy stored procedure CALLs
- DB2 TCB time to satisfy stored procedure CALLs
- Wait time for available stored procedure TCB
- Wait time for sync exec unit switch: open/close/hsm
- Wait time for sync exec unit switch: SYSLGRNG rec
- Wait time for sync exec unit switch: Dataspace mgr
- Wait time for sync exec unit switch: other tasks
- Wait time for log write I/O
- TCB time for UDF requests in stored procedure/WLM
- DB2 TCB time for processing UDF SQL



- Wait time waiting for UDF TCB
- Total elapsed time for executing UDFs
- Total elapsed time processing UDF SQL
- TCB time consumed while executing under triggers
- Elapsed time while executing under triggers
- TCB time consumed prior to enclave creation time
- DB2 TCB time processing SQL prior to enclave creation
- Total elapsed time in stored procedure—incl. SQL
- Total elapsed time executing stored procedure SQL
- Total TCB time executing triggers under enclave
- Total elapsed time executing triggers under enclave
- Wait time for force-at-commit
- Wait time for asynchronous IXL requests

## Application and SQL (Type 1-7 and 10) Exceptions

### Accounting Fields

- # of COMMITs and aborts
- # of COMMITs
- # of aborts
- # of SMF type 101 records processed

### Miscellaneous Fields

- Number of DB2 entry/exit events
- Number of I/O wait trace events
- Number of latch/lock wait trace events
- Number of async read I/O wait trace events
- Number of async write I/O wait trace events
- Number of sync execution unit switch wait trace events
- Number suspensions due to ARCHIVE LOG MODE(QUIESCE)
- Number of drain lock wait trace events
- Number of wait claim release trace events

- Number of archive read wait trace events
- Number of page latch contention wait trace events
- Number send msg to data sharing group wait trace events
- Number of global lock contention wait trace events
- Number of stored procedure SQL entry/exit events
- Number of stored procedure waits for available TCB
- Number of parallel tasks created
- Number of times reoptimization has occurred
- Number of sync. exec. unit switch events: OPEN/CLOSE
- Number of sync. exec. unit switch events: SYSLGRNG rec
- Number of sync. exec. unit switch events: Dataspace Mgr
- Number of sync. exec. unit switch events: other service
- Number of log write I/O wait trace events
- Number of log records written
- Number of SQL entry/exit events by UDFs
- Number of force-at-commit wait trace events
- Max storage used for LOB values
- Number of asynchronous IXL request events
- Number of savepoint requests
- Number of release savepoint requests
- Number of rollback to savepoint requests
- Number of glbl contention for child L-locks trace events
- Number of glbl contention for other L-locks trace events
- Number glbl contention for pageset P-locks trace events
- Number glbl contention for page P-locks trace events
- Number glbl contention for other P-locks trace events

### Buffer Pool Fields

- # of synchronous writes for all pools
- # of GETPAGE requests for all pools
- # of system page updates for all pools
- # of synchronous READ I/Os for all pools

- # of sequential prefetch requests for all pools
- # of list prefetch requests for all pools
- # of dynamic prefetch requests for all pools
- # of successful hiperpool reads for all pools
- # of unsuccessful hiperpool reads for all pools
- # of successful hiperpool writes for all pools
- # of unsuccessful hiperpool writes for all pools
- # getpages failed – conditional getpage for all pools
- # async. pref. pages read by owning agent for all pools
- # pages found/moved from HP to VP for pref. for all BPs
- # of synchronous writes for BP0
- # of GETPAGE requests for BP0
- # of system page updates for BP0
- # of synchronous READ I/Os for BP0
- # of sequential prefetch requests for BP0
- # of list prefetch requests for BP0
- # of dynamic prefetch requests for BP0
- # of successful hiperpool reads for BP0
- # of unsuccessful hiperpool reads for BP0
- # of successful hiperpool writes for BP0
- # of unsuccessful hiperpool writes for BP0
- # getpages failed – conditional getpage for BP0
- # async. pref. pages read by owning agent for BP0
- # pages found/moved from HP to VP for pref. for BP0

**Note:** The same fields are available for BP1 through BP49 and BP32K through BP32K9.

### Group Buffer Pool Fields

- # SES-reads – buffer XI: w/ data returned for all GBPs
- # SES-reads – buffer XI: w/o data returned for all GBPs
- # SES-reads – buff XI: w/o data & dir entry for all GBPs
- # SES-reads – requested page not found for all GBPs
- # SES-reads – page n/a: w/o data returned – all GBPs

- # SES-reads – page n/a: w/o data & dir entry – all GBPs
- # SES-writes for changed pages for all GBPs
- # SES-writes for clean pages for all GBPs
- # SES-reads – buffer XI: w/data returned for GBP0
- # SES-reads – buffer XI: w/o data returned for GBP0
- # SES-reads – buff XI: w/o data & dir entry for GBP0
- # SES-reads – requested page not found for GBP0
- # SES-reads – page n/a: w/o data returned – GBP0
- # SES-reads – page n/a: w/o data & dir entry – GBP0
- # SES-writes for changed pages for GBP0
- # SES-writes for clean pages for GBP0
- # “unregister page” requests for all GBPs
- # “unregister page” requests for GP0
- # async IXLCACHE invocations for primary GBP0
- # async IXLCACHE invocations for secondary GBP0
- # explicit cross invalidations for GBP0
- # writes to secondary GBP for duplexing for GBP0
- # completion checks for susp sec GBP writes for GBP0
- # getpages for GBP dependent pages for GBP0

### Lock Fields

- # of deadlocks
- # of suspends – lock conflict
- # of timeouts
- # of share lock escalations
- # of exclusive lock escalations
- Total of maximum # of page locks held
- # of suspends – latch conflict
- # of suspends – other conflict
- # of lock requests
- # of unlock requests
- # of IRLM query requests

- # of change lock requests
- # of other IRLM requests
- # of claim requests
- # of unsuccessful claim requests
- # of drain requests
- # of unsuccessful drain requests

### Global Locking Fields

- # P-lock lock requests
- # P-lock change lock requests
- # P-lock unlock requests
- # lock requests propagated to XES synchronously
- # change lock requests propagated to XES synchronously
- # unlock requests propagated to XES synchronously
- # suspends due to IRLM global resource contention
- # suspends due to XES global resource contention
- # false (hash) contentions
- # global/change lock denied – incompatible retained lock
- # notify messages sent

### Resource Limit Fields

- Maximum amount of resource limit service units used
- Maximum amount of resource limit service units available
- Current amount of resource limit service units used

### Distributed Data Facility (DDF) Fields

- Total # of SQL statements sent to a remote site
- Total # of SQL statements received from a remote site
- Total # of rows sent to a remote site
- Total # of rows received from a remote site
- Total # of bytes sent to a remote site
- Total # of bytes received from a remote site
- Total # of conversations initiated locally

- Total # of conversations initiated remotely
- Total # of messages sent to a remote site
- Total # of messages received from a remote site
- Total # of migrated transactions sent
- Total # of migrated transactions received
- Total # of COMMIT requests sent to a remote site
- Total # of COMMIT requests received from a remote site
- Total # of ABORT requests sent to a remote site
- Total # of ABORT requests received from a remote site
- Total # of conversations queued
- # of switches to limited block from continuous
- Total # SQL statements bound for remote access
- Total # of rows in block fetch message buffer
- Total # of blocks transmitted using block fetch
- Total # of blocks received using block fetch
- Total # conversations successfully allocated
- Total # conversations terminated
- Maximum number of conversations allocated
- Total # prepare requests sent to participant
- Total # prepare requests received from coordinator
- Total # last agent requests sent to coordinator
- Total # last agent requests received from initiator
- Total # commit requests sent to participant
- Total # commit requests received from coordinator
- Total # backout requests sent to participant
- Total # backout requests received from coordinator
- Total # forget responses sent to coordinator
- Total # forget responses received from participant
- Total # request commit responses sent to coordinator
- Total # req. commit responses rcvd from participant
- Total # backout responses sent to coordinator
- Total # backout responses received from participant

- Total # threads gone indoubt w/rmt location coordinator
- Total # commits performed w/rmt location coordinator
- Total # rollbacks performed w/rmt location coordinator

### Multiple Index (List Prefetch) Usage

- # of times Multiple Index Access used
- # of times Mult-Index failed – no storage
- # of times Mult-Index failed – limit exceeded

### Query Parallelism Fields

- Max degree of parallelism among parallel groups
- Total number of parallel groups executed
- Total # parallel groups failed – UPDATE/DELETE cursor
- Total # parallel groups failed – lack of ESA support
- Total # parallel groups failed – buffer/storage short
- Total # parallel groups reduced – buffer/storage short
- Total # parallel groups processed normally
- # parallel groups executed single DB2 – COORDINATOR=NO
- # parallel groups executed single DB2 – isolation=RR/RS
- # para. grps intended to run across the data sharing grp
- # times para. coordinator bypass a DB2 – BP shortage
- # parallel groups w/reformulated access path: sysplex
- # parallel groups w/reformulated access path: BP short

### SQL Statement Counts (not applicable to SQL Statement exceptions)

- # of SELECT statements issued
- # of INSERT statements issued
- # of UPDATE statements issued
- # of DECLARE statements issued
- # of DESCRIBE statements issued
- # of PREPARE statements issued
- # of OPEN CURSOR statements issued
- # of CLOSE CURSOR statements issued

- # of FETCH statements issued
- # of LOCK TABLE statements issued
- # of CREATE TABLE statements
- # of CREATE INDEX statements
- # of CREATE TABLE SPACE statements
- # of CREATE SYNONYM statements
- # of CREATE DATABASE statements
- # of CREATE STORAGE GROUP statements
- # of CREATE VIEW statements
- # of DROP INDEX statements
- # of DROP TABLE statements
- # of DROP TABLE SPACE statements
- # of DROP DATABASE statements
- # of DROP SYNONYM statements
- # of DROP STORAGE GROUP statements
- # of DROP VIEW statements
- # of ALTER STORAGE GROUP statements
- # of ALTER TABLE SPACE statements
- # of ALTER TABLE statements
- # of ALTER INDEX statements
- # of COMMENT ON statements
- # of GRANT statements
- # of REVOKE statements
- # of Incremental BINDs
- # of LABEL ON statements
- # of SET SQLID statements
- # of CREATE ALIAS statements
- # of DROP ALIAS statements
- # of SET "host variable" statements
- # of ALTER DATABASE statements
- # of DROP PACKAGE statements
- # of DESCRIBE TABLE statements



- # of CONNECT type 1 statements
- # of CONNECT type 2 statements
- # of RELEASE statements
- # of SET CONNECTION statements
- # of SET CURRENT DEGREE statements
- # of SET CURRENT RULES statements
- # of SQL CALL statements executed
- # of times a stored procedure abended
- # of times an SQL CALL statement timed out
- # of times an SQL CALL statement was rejected
- # of parallel groups downgraded – no enclave
- # of RENAME TABLE statements
- # CREATE GLOBAL TEMPORARY TABLE statements
- # ASSOCIATE LOCATOR statements
- # ALLOCATE CURSOR statements
- # of CREATE TRIGGER statements
- # of DROP TRIGGER statements
- # of SET CURRENT PATH statements
- # of DROP USER DEFINED FUNCTION statements
- # of DROP PROCEDURE statements
- # of CREATE DISTINCT TYPE statements
- # of DROP DISTINCT TYPE statements
- # of CREATE FUNCTION statements
- # of CREATE PROCEDURE statements
- # of HOLD LOCATOR statements
- # of FREE LOCATOR statements
- # of CREATE AUX TABLE statements
- # of ALTER FUNCTION statements
- # of ALTER PROCEDURE statements
- # SET CURRENT PRECISION statements executed
- # DECLARE GLOBAL TEMPORARY TABLE statements executed

### Dynamic Prepare Fields

- # PREPAREs bypassed – prepared statement cache
- # PREPAREs not found in prepared statement cache
- # implicit PREPAREs w/KEEPDYNAMIC(YES) – executable n/a
- # PREPAREs avoided w/KEEPDYNAMIC(ES) – executable found
- # times exec copy of prepared stmt discarded – MAXKEEPD
- # times prepared stmt purged cache – dependent obj n/a

### Direct Row Access

- # of times direct row access was successful
- # of times direct row access failed – IX access used
- # of times direct row access failed – TS scan used
- DB2 Routines and Triggers
- # of times a statement trigger was activated
- # of times a row trigger was activated
- # of times SQL error occurred during trigger execution
- Maximum level of nested SQL cascading
- # of user defined functions executed
- # of times a UDF abended
- # of times a UDF timed out waiting to be scheduled
- # of times a UDF was rejected

### Database Exception Field Variables

This section lists the database exception field variables.

#### Database Type 3, 4, and 5 Exceptions

The only available field is:

- Number opens for a data base page set's data sets

#### Database Type 11 and 12 Exceptions

The only available field is:

- None. These database exception types do not use variables.

## Defined Exceptions

This section lists all of the exceptions that come packaged with Unicenter CA-Insight.

You can change the status by updating the definition using the Exception Definition function. See the [Changing Existing Exceptions](#) section for a description of this function.

## Subsystem Exceptions

This section lists the format and definitions of the Subsystem Exceptions.

### Format for Subsystem Exceptions

The format for Subsystem Exceptions is:

```
status subsystem_name exception_text
```

### List of Subsystem Exception Definitions

These are the Subsystem Exception definitions:

Status	Subsystem Name	Exception Text
ACTIVE	****	High ratio of failures moving pages from virtual to hiper pool (ADMF) for BP0: &VALUEXX/1.
ACTIVE	****	High ratio of failures moving pages from hiper to virtual pool (ADMF) for BP0: &VALUEXX/1.
ACTIVE	****	High ratio of failures moving pages from virtual to hiper pool (non-ADMF) for BP0: &VALUEXX/1.
ACTIVE	****	High ratio of failures moving pages from hiper to virtual pool (non-ADMF) for BP0: &VALUEXX/1.
ACTIVE	****	Average number of pages written per write I/O is low for BP0. Ratio value is &VALUEXX.
ACTIVE	****	Average number of updates per page written is low for BP0. Ratio value is &VALUEXX.
ACTIVE	****	Average number of getpage requests per read I/O. Ratio value is &VALUEXX.

Status	Subsystem Name	Exception Text
ACTIVE	****	High percent of BP0 writes encountered paging during the last minute: &VALUEXX.
ACTIVE	****	High percent of BP0 reads encountered paging during the last minute: &VALUEXX.
ACTIVE	****	High percentage of BP0 pages in use: &VALUEXX%.
ACTIVE	****	High number of conditional getpage request failures for BP0 during last interval: &VALUEXX.
ACTIVE	****	High number of data set opens encountered during the last minute for BP0: &VALUEXX.
ACTIVE	****	High rate of sequential prefetch activity for BP0, &VALUEXX.
ACTIVE	****	High rate of BP0 write I/O requests during the last exception interval, &VALUEXX.
ACTIVE	****	High number of BP0 update requests during last exception interval, &VALUEXX.
ACTIVE	****	High number of BP0 getpage requests during the last exception interval: &VALUEXX.
ACTIVE	****	High number of times prefetch quantity reduced to 1/4 for parallel I/O for BP0: &VALUEXX
ACTIVE	****	High number of times prefetch quantity reduced to 1/2 for parallel I/O for BP0: &VALUEXX
ACTIVE	****	High number of times a parallel group could not run at the planned degree for BP0: &VALUEXX.
ACTIVE	****	High number of requested prefetch I/O streams that were denied for BP0: &VALUEXX.
ACTIVE	****	High number of inefficient sort merge passes due to buffer shortage for BP0: &VALUEXX.
ACTIVE	****	High number of times a sort or merge pass failed due to buffer shortage for BP0: &VALUEXX.
ACTIVE	****	High number of times work file creation failed due to buffer shortage for BP0: &VALUEXX.
ACTIVE	****	High number of times work file prefetch aborted due to buffer shortage for BP0: &VALUEXX
ACTIVE	****	High number of BP0 HSM recall timeouts:&VALUEXX
ACTIVE	****	High number of times data manager critical threshold reached for BP0: &VALUEXX

Status	Subsystem Name	Exception Text
ACTIVE	****	High number of times sequential prefetch has been disabled due to SRB shortage for BP0: &VALUEXX
ACTIVE	****	High number of times sequential prefetch has been disabled due to buffer shortage BP0: &VALUEXX
ACTIVE	****	High number of getpage failures due to VPOOL full for BP0: &VALUEXX
ACTIVE	****	High number of times DB2 coordinator bypassed a DB2 due to lack of buffer pool storage: &VALUEXX
ACTIVE	****	High percent of failures for retrieving dynamic statement from EDM pool statement cache: &VALUEXX <b>Note:</b> The BP0 exceptions above are defined for all buffer pools. However, only BP0-BP2 and BP32K are active. BP3-BP49 and BP32K1-BP32K9 are inactive.
ACTIVE	****	High number of times SES-write request failed due to lack of SES storage for GBP0: &VALUEXX
ACTIVE	****	High number of times SES-read request failed due to lack of SES storage for GBP0: &VALUEXX
ACTIVE	****	High number of times a SES write engines was unavailable for SES-writes for GBP0: &VALUEXX
ACTIVE	****	High number of times castout engine was unavailable for GBP0: &VALUEXX <b>Note:</b> The GBP0 exceptions above are defined for all group buffer pools. However, only GBP0-GBP2 and GBP32K are active. GBP3-GBP49 and GBP32K1-GBP32K9 are inactive.
ACTIVE	****	A DB2 performance class 7 trace is running!
ACTIVE	****	A DB2 global trace is running.
ACTIVE	****	IRLM is running in cross memory mode (PC=YES).
ACTIVE	****	IRLM internal trace is active.
ACTIVE	****	High number of checkpoints taken during the last hour. Number of mins per checkpoint was &VALUEXX
ACTIVE	****	Low percentage of "look-ahead" archive tape mounts were successful: &VALUEXX
ACTIVE	****	Low number of active logs, &VALUEXX, available for DB2 to use.
ACTIVE	****	DB2 is taking too many checkpoints. The average number of minutes between checkpoints is &VALUEXX

Status	Subsystem Name	Exception Text
ACTIVE	****	DB2's IRLM task has &VALUEXX enqueue conflicts.
ACTIVE	****	DB2's DIST task has &VALUEXX enqueue conflicts.
ACTIVE	****	DB2's DBM1 task has &VALUEXX enqueue conflicts.
ACTIVE	****	DB2's MSTR task has &VALUEXX enqueue conflicts.
ACTIVE	****	The DB2 accounting trace is not running.
ACTIVE	****	The DB2 statistics trace is not running.
ACTIVE	****	DB2 is running in single active log mode.
ACTIVE	****	The resource limit facility is inactive.
ACTIVE	****	The distributed data facility (DDF) is inactive.
ACTIVE	****	DB2 subsystem is not active.
ACTIVE	****	High percentage of DBD requests from the EDM pool required loads during the last minute:&VALUEXX%
ACTIVE	****	High percentage of CT requests from the EDM pool required loads during the last minute:&VALUEXX%
ACTIVE	****	High CPU for IRLM address space = &VALUEXX% during the last exception interval.
ACTIVE	****	High CPU for DIST address space = &VALUEXX% during the last exception interval.
ACTIVE	****	High CPU for DBM1 address space = &VALUEXX% during the last exception interval.
ACTIVE	****	High CPU for MSTR address space = &VALUEXX% during the last exception interval.
ACTIVE	****	High percentage of IRLM's maximum CSA is currently in use:&VALUEXX%.
ACTIVE	****	High percentage of maximum REMOTE threads in use during the last exception interval =&VALUEXX%.
ACTIVE	****	High percentage of maximum threads in use during the last exception interval =&VALUEXX%.
ACTIVE	****	High percentage of maximum TSO threads in use during the last exception interval =&VALUEXX%.
ACTIVE	****	High percentage of maximum BATCH threads in use during the last exception interval =&VALUEXX%.

Status	Subsystem Name	Exception Text
ACTIVE	****	High percentage of last agent requests per commit for distributed activity: &VALUEXX.
ACTIVE	****	High percentage of package table requests from EDM pool had to be satisfied with a load: &VALUEXX.
ACTIVE	****	High percentage of DBD requests from the EDM pool had to be satisfied with a load:&VALUEXX%.
ACTIVE	****	High percentage of cursor table requests from the EDM pool had to be satisfied with a load:&VALUEXX%.
ACTIVE	****	BP32K was used during the last minute. Number of getpages performed = &VALUEXX.
ACTIVE	****	High rate of threads encountered during the last exception interval:&VALUEXX/SEC.
ACTIVE	****	High paging rate for the IRLM address space during the last exception interval: &VALUEXX/SEC.
ACTIVE	****	
ACTIVE	****	High paging rate for the DIST address space during the last exception interval: &VALUEXX/SEC.
ACTIVE	****	High paging rate for the DBM1 address space during the last exception interval: &VALUEXX/SEC.
ACTIVE	****	High paging rate for the MSTR address space during the last exception interval: &VALUEXX/SEC.
ACTIVE	****	High I/O rate for the DIST address space during the last exception interval: &VALUEXX/SEC.
ACTIVE	****	High I/O rate for the DBM1 address space during the last exception interval: &VALUEXX/SEC.
ACTIVE	****	High I/O rate for the MSTR address space during the last exception interval: &VALUEXX/SEC.
ACTIVE	****	High rate of data received from remote locations. Last exception interval rate = &VALUEXX BYTES/SEC.
ACTIVE	****	High rate of data sent to remote locations. Rate for last exception interval was&VALUEXX BYTES/SEC.
ACTIVE	****	High rate of lock requests encountered during the last exception interval: &VALUEXX/SEC.
ACTIVE	****	High rate of SQL FETCH requests encountered during the last exception interval: &VALUEXX/SEC.

Status	Subsystem Name	Exception Text
ACTIVE	****	High rate of SQL DELETE requests encountered during the last exception interval: &VALUEXX/SEC.
ACTIVE	****	High rate of SQL UPDATE requests encountered during the last exception interval: &VALUEXX/SEC.
ACTIVE	****	High rate of SQL INSERT requests encountered during the last exception interval: &VALUEXX/SEC.
ACTIVE	****	High rate of SQL SELECT requests encountered during the last exception interval: &VALUEXX/SEC.
ACTIVE	****	High number of times engine was unavailable for a P-lock exit or Notify exit request: &VALUEXX
ACTIVE	****	Archive log in progress.
ACTIVE	****	&VALUEXX tape mounts are pending for output archive logs.
ACTIVE	****	&VALUEXX tape mounts are pending for input archive logs.
ACTIVE	****	High number of active logs are full,&VALUEXX, and have not been offloaded yet.
ACTIVE	****	ACTIVE **** High number of threads currently queued,&VALUEXX.
ACTIVE	****	High number of remote threads queued: &VALUEXX.
ACTIVE	****	High number of times DB2 has abended tasks due to a short on storage condition = &VALUEXX.
ACTIVE	****	High number of times DB2 has encountered a critical short on storage condition = &VALUEXX.
ACTIVE	****	High number of times DB2 has issued a contraction due to a short on storage condition = &VALUEXX.
ACTIVE	****	High number of times a unit of recovery has gone indoubt = &VALUEXX.
ACTIVE	****	High total number of times a thread was queued during create thread: &VALUEXX.
ACTIVE	****	High number of times parallel groups processed at a degree less than the planned degree: &VALUEXX.
ACTIVE	****	High number of times parallel groups fell back to sequential mode: &VALUEXX.
ACTIVE	****	High number of columns with invalid select procedures that were bypassed: &VALUEXX.



Status	Subsystem Name	Exception Text
ACTIVE	****	High number of times RID pool processing aborted due to maximum concurrency: &VALUEXX.
ACTIVE	****	High number of times RID pool processing aborted due to insufficient storage: &VALUEXX.
ACTIVE	****	High number of times RID pool processing aborted due to number of RIDS exceeding DM limit:&VALUEXX.
ACTIVE	****	High number of times multiple index processing was disabled due to not enough storage was&VALUEXX.
ACTIVE	****	High number of threads gone indoubt with remote location as the coordinator: &VALUEXX.
ACTIVE	****	High number of exclusive lock escalations detected for subsystem =&VALUEXX.
ACTIVE	****	High number of shared lock escalations detected for subsystem =&VALUEXX.
ACTIVE	****	High total number of TIMEOUTS encountered for subsystem =&VALUEXX.
ACTIVE	****	High total number of DEADLOCKS encountered for subsystem =&VALUEXX.
ACTIVE	****	High number of times archive log read accesses delayed due to unavailable resources: &VALUEXX.
ACTIVE	****	High number of times log read was delayed due to tape volume contention: &VALUEXX.
ACTIVE	****	High number of times output log buffer was unavailable: &VALUEXX.
ACTIVE	****	High number EDM pool load failures due to full pool: &VALUEXX.
ACTIVE	****	DB2 is taking too few checkpoints. The average number of minutes between checkpoints is &VALUEXX.
ACTIVE	****	High number of times access path recalculated due to change in sysplex configuration &VALUEXX.
ACTIVE	****	High number of times access path recalculated due to buffer pool resource shortage &VALUEXX.

## Database Exceptions

This section lists the format and definitions of the Database Exceptions.

### Format of Database Exceptions

The format for Database Exceptions is:

```
status subsystem_name database/pageset exception_text
```

### List of Database Exceptions

These are the Database Exceptions:

Status	Subsystem Name	Database/ Pageset	Exception Text
INACT	****	*****	Database, &DBNAMEX, and pageset, &PAGESET, is in a restricted state: &DATABASESTATUSX
INACT	****	*****	High number of data set extents, &VALUEXX, for database &DBNAMEX and pageset &PAGESET
INACT	****	*****	High number of data set opens, &VALUEXX, for database &DBNAMEX and pageset &PAGESET

## Application Exceptions

This section lists the format and definitions of the Application Exceptions.

### Format of Application Exceptions

The format for Application Exceptions is:

```
status subsystem_name conn/plan_type exception_text
```

Application Exceptions can have three different Exception Message Text entries, one for each of the following Exception types:

- SUM – for summarized historical exceptions
- REAL – for Exception Monitoring, logging, and notifications
- SQL – for SQL exceptions
- IND – for all other online panels

## List of Application Exceptions

These are the Application Exceptions:

Status	Subsystem Name	Conn/Plan	Type	Exception Text
INACT	****	*****	SQL	Long running SQL: PLAN=&PLANNAM, AUTH=&AUTHIDX, CONN=&CONNNAM, CORR=&CORRELATION, Resp=&VALUEXX
INACT	****	*****	REAL	Application is running with repeatable read
INACT	****	*****	SUM	Low virtual to hiper pool success ratio, &VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM
			REAL	Low virtual to hiper pool success ratio: &VALUEXX
INACT	****	*****	SUM	Low hiper to virtual pool success ratio, &VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM
			REAL	Low hiper to virtual pool success ratio: &VALUEXX
INACT	****	*****	SUM	High average "IN DB2" time per unit of work, &VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM
			REAL	High avg. "IN DB2" time per unit of work: &VALUEXX
INACT	****	***** DB2CALL	SUM	High average "IN DB2" time per unit of work, &VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM
			REAL	High avg. "IN DB2" time per unit of work: &VALUEXX
INACT	****	***** CICS*	SUM	High average "IN DB2" time per unit of work, &VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM
			REAL	High avg. "IN DB2" time per unit of work: &VALUEXX
INACT	****	***** BATCH	SUM	High average "IN DB2" time per unit of work, &VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM
			REAL	High avg. "IN DB2" time per unit of work: &VALUEXX
INACT	****	***** DB2CALL	SUM	High average "IN DB2" time per unit of work, &VALUEXX, for PLAN="IFI/CMD" and CONN=&CONNNAM
			REAL	High avg. "IN DB2" time per unit of work: &VALUEXX

Status	Subsystem Name	Conn/Plan	Type	Exception Text
INACT	****	***** BINDCT	SUM  REAL	High average "IN DB2" time per thread, &VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM High "IN DB2" response time: &VALUEXX
INACT	****	***** UTILITY	SUM  REAL	High average "IN DB2" time per thread, &VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM High "IN DB2" response time: &VALUEXX
INACT	****	*****	REAL	&VALUEXX% resource limit used by current SQL stmt
INACT	****	*****	SUM  REAL	High percent last agent requests/commit:&VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM High percent last agent requests/commit: &VALUEXX
INACT	****	*****	SUM  REAL	High percentage of maximum resource limit, &VALUEXX%, used by PLAN=&PLANNAM and CONN=&CONNNAM &VALUEXX% of maximum resource limit used
INACT	****	*****	SUM  REAL	High number parallel groups reduced: &VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM High number parallel groups reduced: &VALUEXX
INACT	****	*****	SUM  REAL	High number parallel groups failed: &VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM High number parallel groups failed: &VALUEXX
INACT	****	***** TSO	SUM  REAL	High average "IN DB2" time per unit of work, &VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM High avg. "IN DB2" time per unit of work: &VALUEXX
INACT	****	***** DB2CALL	SUM  REAL	High average "IN DB2" time per unit of work, &VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM High avg. "IN DB2" time per unit of work: &VALUEXX
INACT	****	***** CICS*	SUM  REAL	High average "IN DB2" time per unit of work, &VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM High avg. "IN DB2" time per unit of work: &VALUEXX

Status	Subsystem Name	Conn/Plan	Type	Exception Text
INACT	****	***** BATCH	SUM  REAL	High average "IN DB2" time/unit of work, &VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM  High avg. "IN DB2" time per unit of work: &VALUEXX
INACT	****	***** DB2CALL	SUM  REAL	High average "IN DB2" time/unit of work, &VALUEXX, for PLAN="IFI/CMD" and CONN=&CONNNAM  High avg. "IN DB2" time per unit of work: &VALUEXX
INACT	****	***** BINDCT*	SUM  REAL	High average "IN DB2" time per thread, &VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM  High "IN DB2" response time: &VALUEXX
INACT	****	UTILITY *****	SUM  REAL	High average "IN DB2" time per thread, &VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM  High "IN DB2" response time: &VALUEXX
INACT	****	*****	REAL	&VALUEXX% resource limit used by current SQL stmt
INACT	****	*****	SUM  REAL	High percent last agent requests/commit:&VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM  High percent last agent requests/commit: &VALUEXX
INACT	****	*****	SUM  REAL	High percentage of maximum resource limit, &VALUEXX%, used by PLAN=&PLANNAM and CONN=&CONNNAM  &VALUEXX% of maximum resource limit used
INACT	****	*****	SUM  REAL	High number parallel groups reduced: &VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM  High number parallel groups reduced: &VALUEXX
INACT	****	*****	SUM  REAL	High number parallel groups failed: &VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM  High number parallel groups failed: &VALUEXX
INACT	****	*****	SUM  REAL	High number remote threads gone indoubt:&VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM  High number times remote thread indoubt: &VALUEXX
INACT	****	*****	IND  REAL	Exc lock escalation: PLAN=&PLANNAM, AUTH=&AUTHIDX, CONN=&CONNNAM, CORR=&CORRELATION, count=&VALUEXX  High number exclusive lock escalations: &VALUEXX

Status	Subsystem Name	Conn/Plan	Type	Exception Text
INACT	****	*****	IND	Shr lock escalation: PLAN=&PLANNAM, AUTH=&AUTHIDX, CONN=&CONNNAM, CORR=&CORRELATION, count=&VALUEXX
			REAL	High number of shared lock escalations: &VALUEXX
INACT	****	*****	SUM	High number of timeouts encountered, &VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM
			IND	Timeout(s) encountered for PLAN=&PLANNAM, AUTH=&AUTHIDX, CONN=&CONNNAM, CORR=&CORRELATION
			REAL	Timeout(s) encountered = &VALUEXX
INACT	****	*****	SUM	High number of deadlocks encountered, &VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM
			IND	Deadlock encountered for PLAN=&PLANNAM, AUTH=&AUTHIDX, CONN=&CONNNAM, CORR=&CORRELATION
			REAL	Deadlock encountered
INACT	****	*****	SUM	High number of incremental binds, &VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM
			REAL	High number of incremental binds: &VALUEXX
INACT	****	*****	SUM	High number conditional getpage failures:&VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM
			REAL	High number conditional getpage failures: &VALUEXX
INACT	****	*****	SUM	High average max-page-locks per thread, &VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM
			REAL	High maximum number of page locks held: &VALUEXX
INACT	****	CICS* *****	SUM	High average number of BP getpage requests/commit, &VALUEXX, for PLAN=&PLANNAM and CONN=&CONNNAM
			REAL	High average number of buffer pool getpage requests per commit: &VALUEXX

## IQL-Based Exceptions (Shadow Definitions)

This section lists the format and definitions of the IQL-based Exceptions.

### Format of IQL-Based Exceptions

The format for IQL-based Exceptions is:

```
status subsystem_name iql_request_name
```

### List of IQL-Based Exceptions

These are the IQL-based Exceptions:

Status	Subsystem Name	IQL Request Name	Description
Active	****	WARMSTRT	Recovery log name changed at warm start.
Active	****	WAITPOOL	Recovery log name changed at warm start.
Active	****	WAITNTRY	Tran waiting for a dedicated thread.
Active	****	THREADAB	Approaching ABEND threshold for tran.
Active	****	SYNCFAIL	Sync point protocol error.
Active	****	SNAERROR	Protocol error during indoubt resolution.
Active	****	RESYNCH	Restart resynchronization error.
Active	****	RESOLVE	CICS/FMS indoubt resolution failure.
Active	****	RECSSORT	Rows sorted.
Active	****	RBNDRQRD	Rebind required.
Active	****	POOLTHRD	Pool threads used near max.
Active	****	OVERFLOW	Tran overflowing the pool.
Active	****	LOGXCHNG	Protocol error during exchange log names.
Active	****	LESSPIO	Parallel I/O degree reduced.
Active	****	HEUDCSN	Heuristic decision made for indoubt thread.
Active	****	HEUDAMAG	Heuristic damage detected.
Active	****	COMFAIL	Communication failed after commit phase 1.
Active	****	COLDSTRT	Attempt to connect to a cold-started DB2.

## Defined Exceptions

---

<b>Status</b>	<b>Subsystem Name</b>	<b>IQL Request Name</b>	<b>Description</b>
Active	****	DSCONN	Connect to a group buffer pool failed.
Active	****	****	(Catch-all for other IQL-based exceptions)



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