

This is the tutorial for IBM's Fault Analyzer for z/OS[®], one of the IBM zSeries[®] problem determination tools.



■ CICS®, DB2® and IMS™ support

- CICS support
- Using the CICS on-line interface
- DB2 support
- IMS support

■ Working with fault entries

- Creating and using a fault history file
 - Moving or copying fault entries
 - Transmitting fault entries to another system
 - Writing to your own history file

This section describes additional information reported for CICS applications, IMS applications, and for applications that access DB2 databases.

CICS transaction support



- Additional information available for CICS applications
 - CICS control blocks
 - Transaction storage
 - Last screen buffer
 - CICS trace table
 - CICS abend code explanation
- View in real-time report or with reanalysis
- Additional information is automatically generated by Fault Analyzer

For CICS abends, fault analyzer will report CICS control blocks, transaction storage, a picture of the last screen buffer, the CICS trace table, and an explanation of the CICS abend code. CICS information is available automatically in the real time report and in reanalysis.

Select CICS information



```
File View Services Help
Interactive Reanalysis Report                               Line 1 Col 1 80
Command ==> _____ Scroll ==> HALL
TRANID: EPSL          CICS ABEND: 4038          DEMOMVS   2010/02/23  08:52:29

Fault Summary:
Module EPSL03, program EPSL03, source line # 123 : CICS abend 4038 .

Select one of the following options to access further fault information:
 1. Synopsis
 2. Event Summary
 3. CICS Information
 4. Storage Areas
 5. Messages
 6. Language Environment Heap Analysis
 7. Abend Job Information
 8. Fault Analyzer Options

{Fault Analyzer maximum storage allocated: 3.61 megabytes.}
{DeferredReport processing execution time was 1.36 seconds (0.34 seconds CPU)}

Enter
```

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When you use interactive reanalysis, there is a point-and-shoot link for CICS information on the interactive reanalysis main menu. Put your cursor on the CICS Information field, and press enter.

Select CICS control blocks



```
File View Services Help
CICS Information Line 1 Col 1 80
Command ==> Scroll ==> HALP
TRANID: EPSL CICS ABEND: 4038 DEMOMVS 2010/02/23 08:52:29

CICS Release. . . . . : 0660
Application ID. . . . . : CICSACB5
CICS Transaction ID . . . . . : EPSL
CICS Task Number. . . . . : 00423
CICS Terminal ID. . . . . : 0065
CICS Terminal Netname . . . . . : TCP00065

Select one of the following:
1. CICS Control Blocks
2. CICS Transaction Storage
3. Last CICS 3270 Screen Buffer
4. Last CICS 3270 Screen Buffer Hex
5. Summarized CICS Trace
6. CICS Trace Formatting
7. CICS Recovery Manager
8. CICS Levels, Commareas, and Channels

*** Bottom of data.
```

Enter

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That takes you to the CICS information panel, where the CICS point and shoot fields are shown. For example, you can select the “CICS control blocks” field. Enter.

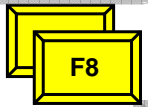
CICS control blocks are displayed



```
File View Services Help
CICS Control Blocks                                     Line 1 Col 1 80
Command ==>                                           Scroll ==> HALF
TRANID: EPSL      CICS ABEND: 4038      DEMOMVS  2010/02/23  08:52:29

System EXEC Interface Block (SYSEIB) at Address 00ADDC14 :
Task Start Time      : 08:52:29      (EIBTIME - HH:MM:SS)
Task Start Date     : 2010/02/23    (EIBDATE - YYYY/MM/DD)
Transaction ID      : EPSL          (EIBTRNID)
Task Number         : 423           (EIBTASKN)
Terminal ID         : 0065         (EIBTRMID)
Cursor Position     : 0257         (EIBCPOSN)
Communication Area Length : 112     (EIBCALEN)
Attention ID        : ENTER         (EIBAID)
Last CICS Command   : ADDRESS      (EIBFN)
RESP Condition      : NORMAL        (EIBRESP)
RESP Condition Reason : 00000000    (EIBRESP2)
Data Set ID         : n/a          (EIBDS)
Request ID          : n/a          (EIBREQID)
Resource ID         : n/a          (EIBRSRCE)
Syncpoint Required  : No           (EIBSYNC)
Facility Free Required : No        (EIBFREE)
Continue Receiving Data : No       (EIBRECV)
```

Control blocks:
EIB
Commarea
CSA
TCA
EIS
TCTTE
and others



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Several control blocks may be available, like EIB (the execute interface block), commarea, CSA and others. The EIB shows useful information, including the transaction id and the terminal id. When you are working on 3270 applications, the attention id shows the last attention key that was pressed by the user. In this case it was "enter". It could also be a PF or PA key. That is good information because it helps you understand what the user was doing that may have caused the abend. By scrolling forward, F8...

CICS communication and common system areas



```

File View Services Help
CICS Control Blocks                                     Line 55 Col 1 80
Command ==>                                           Scroll ==> HALF
TRANID: EPSL      CICS ABEND: 4038                    DEMOMVS  2010/02/23 08:52:29
Error Code Received . . . . : No                      (EIBERRCD)
SYNCPOINT ROLLBACK Req'd. : No                      (EIBSYNRB)
No Data Sent. . . . . : No                          (EIBNODAT)
Rollback. . . . . : No                              (EIBRLDBK)

Communication Area (COMMAREA) at Address 22364008 :
Address  Offset  Hex                                     EBCDIC
22364008                                     4040F0F0 F0F0F0F0 *          000000*
22364010      +8  F0F0F040 40404040 40404040 40404040 *000          *
22364020     +18 40404040 40404040 40404040 40404040 *          *
22364030     +28 40404040 40404040 40404040 40404040 *          *
22364040     +38 40404040 40404040 40404040 4040C5D9 *          ER*
22364050     +48 D9D6D940 C9D540C3 C1D3D340 E3D640C3 *ROR IN CALL TO C*
22364060     +58 C5C5C4C1 E3C54040 40404040 F2F0F9F5 *EEDATE      2095*
22364070     +68 E4F0F0F0 F0F4F2F3          *U0000423    *

Common System Area (CSA) at Address 00050300 :
Address  Offset  Hex                                     EBCDIC
00050300          00000200 0004C020 000504A0 A12E3F32 *.....{.....~...*
    
```

You can see other CICS control blocks that fault analyzer captured. Addresses can be selected with point and shoot selection.

CICS transaction storage



File	View	Services	Help	File	View	Services	Help
CICS Information				CICS Transaction Storage			
Command ==>				Command ==>			
TRANID: EPSL CICS ABEN				TRANID: EPSL CICS ABEND: 4038 DEMONVS 2010/02/23 08:52:29			
CICS Release				Transaction Storage (USER31) at Address 223886A0 : length X'FD0'			
Application ID				Address Offset Hex EBCDIC			
CICS Transaction ID				223886A0 00000000 00000000 00000000 *U0000423.....*			
CICS Task Number				223886B0 +10 00000000 00000000 00000000 *.....*			
CICS Term				Lines 223886C0-223887F0 same as above			
CICS Term				22388800 +160 1DF8C5D7 E240E3D6 D6D3E240 C2C9D9E3 * 8EPS TOOLS BIRT*			
Select one of the following				22388810 +170 C8C4C1E8 61D9C5E3 C9D9C5D4 C5D5E340 *HDAY/RETIREMENT *			
1. CICS Control Blocks				22388820 +180 C5E7C1D4 D7D3C500 00000000 00000000 *EXAMPLE.....*			
2. CICS Transaction Storage				22388830 +190 00000000 00000000 00000000 *.....*			
3. Last CICS 3270 Screen				Lines 22388840-223888D0 same as above			
4. Last CICS 3270 Screen				223888E0 +240 00000000 0000001D F0D7D3C5 C1E2C540 *.....OPLEASE *			
5. Summarized CICS Trace				223888F0 +250 C5D5E3C5 D940C2C9 D9E3C8C4 C1E3C57A *ENTER BIRTHDATE:*			
6. CICS Trace Formatting				22388900 +260 1DC1F1F9 F6F5F0F5 F1F21DF0 00000000 *.A19650512.0....*			
7. CICS Recovery Manager				22388910 +270 00000000 00000000 00000000 00000000 *.....*			
8. CICS Levels, Commareas				Lines 22388920-22388930 same as above			
*** Bottom of data.				22388940 +2A0 00000000 00000000 00000000 1D6CD7D3 *.....%PL*			
				22388950 +2B0 C5C1E2C5 40D9C560 C5D5E3C5 D96B40C4 *EASE RE-ENTER, D*			
				22388960 +2C0 C1E3C540 D4E4E2E3 40C2C540 E8E8E8E8 *ATE MUST BE YYYY*			

Enter

Select the "CICS transaction storage" point-and-shoot field to see storage that was allocated by application programs or by the system for the transaction.

Last CICS 3270 screen buffer



File	View	Service	File	View	Services	Help
CICS Information			Last CICS 3270 Screen Buffer			Line 1 Col 1 80
Command ==>			Command ==>			Scroll ==> HALF
TRANID: EPSL	CIC		TRANID: EPSL	CICS ABEND: 4038	DEMOMVS	2010/02/23 08:52:29
CICS Release.			Column			
Application ID.			Row	-----1-----2-----3-----4-----5-----6-----7----		
CICS Transaction ID			1	.....	
CICS Task Number.			2	.....	
CICS Terminal ID.			3	.....	
CICS Terminal Netname			4	.....	
			5	.....EPS TOOLS BIRTHDAY/RETIREMENT EXAMPLE.....		
			6	.....	
1	Enter		7	.....	
2	Control		8	.....PLEASE ENTER BIRTHDATE: .19650512.....		
3	CICS Transaction		9	.....	
4	Last CICS 3270 S		10	..... .2...ENTER A 1 TO SEE YOUR BIRTHDAY ..		
5	Last CICS 3270 S		11	.....ENTER A 2 TO CALCULATE YOUR RETIREMENT ..		
6	Summarized CICS		12	.....	
7	CICS Trace Forma		13	.....	
8	CICS Recovery Ma		14	.....	
			15	.....	
			16	.....	
*** Bottom of data.						F3

The “last CICS 3270 screen buffer” point-and-shoot field shows the user’s screen display. This lets you see where the user was in the application and what they were doing just before the abend occurred. Notice that it even shows the input data that they typed onto their screen.

CICS trace table



File	View	Services	File	View	Services	Help
CICS Information			Summarized CICS Trace			Line 1 Col 1 80
Command ==>			Command ==>			Scroll ==> HALF
TRANID: EPSL	CI		TRANID: EPSL	CICS ABEND: 4038	DEMOMVS	2010/02/23 08:52:29
CICS Release. . . .	00423 QR	AP 00E1 EIP	ENTRY	WRITEQ-TD		
Application ID. . .	Called-from-address 00545A52 : Module CEECCICS + X'5A52'					
CICS Transaction ID	00423 QR	AP F600 TDA	ENTRY	WRITE_TRANSIENT_DATA	CESE,2212E790 , 00000001	
CICS Task Number. .	00423 QR	AP 00E1 EIP	EXIT	WRITEQ-TD	OK	
CICS Initial ID. . .						
CICS Initial Name	00423 QR	AP 00E1 EIP	ENTRY	WRITEQ-TD		
	Called-from-address 00545A52 : Module CEECCICS + X'5A52'					
Select one of the following	00423 QR	AP F600 TDA	ENTRY	WRITE_TRANSIENT_DATA	CESE,2212E790 , 00000001	
1. CICS Control Bl	00423 QR	AP 00E1 EIP	EXIT	WRITEQ-TD	OK	
2. CICS Transactio						
3. Last CICS 3270	00423 QR	AP 00E1 EIP	ENTRY	WRITEQ-TD		
4. Last CICS 3270	Called-from-address 00545A52 : Module CEECCICS + X'5A52'					
5. Summarized CICS	00423 QR	AP F600 TDA	ENTRY	WRITE_TRANSIENT_DATA	CESE,2212E790 , 00000001	
6. CICS Trace Form	00423 QR	AP 00E1 EIP	EXIT	WRITEQ-TD	OK	
7. CICS Recovery M						
8. CICS Levels, Co	00423 QR	AP 00E1 EIP	ENTRY	WRITEQ-TD		
	Called-from-address 00545A52 : Module CEECCICS + X'5A52'					
*** Bottom of data.	00423 QR	AP F600 TDA	ENTRY	WRITE_TRANSIENT_DATA	CESE,2212E790	

Enter (arrow pointing to option 5)

F3 (key)

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When you select the "Summarize CICS trace table" point-and-shoot field, you see the internal CICS trace table. This shows the EXEC CICS statements that your program issued before the abend. This can also be useful information because it gives you a history of what the program did leading up to the abend.

View CICS abend code description



```
File View Services Help
Interactive Reanalysis Report                               Line 1 Col 1 80
Command ==>                                               Scroll ==> HALF
TRANID: EPSL          CICS ABEND: 4038                    DEMOMVS  2010/02/23  08:52:29

Fault Summary:
Module EPSL03, program EPSL03, source line # 123 : CICS abend 4038 .

Select one of the following options to access further fault information:
 1. Synopsis
 2. Event Summary
 3. CICS Information
 4. Storage Areas
 5. Messages
 6. Language Environment Heap Analysis
 7. Abend Job Information
 8. Fault Analyzer Options

{Fault Analyzer maximum storage allocated: 3.61 megabytes.}
{DeferredReport processing execution time was 1.36 seconds (0.34 seconds CPU)}

*** Bottom of data.
```

To view the CICS abend code description, start with the synopsis

Enter

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Fault analyzer can look up your CICS abend codes. For example, starting at the reanalysis main menu, you can go to the synopsis section. Enter.

Cursor select the abend code



File View Services Help

Synopsis Line 1 Col 1 80
Command ==> Scroll ==> HALF
TRANID: EPSL CICS ABEND: 4038 DEMOMVS 2010/02/23 08:52:29

A CICS abend **4038** occurred in module CEEPLPKA at offset X'C85F0'.

The cause of the failure was program EPSL03 in module EPSL03. The COBOL source code that immediately preceded the failure was:

Source
Line #
000123 MOVE FC-MSG TO COMM-PROGRAM-RETCODE

The COBOL source code for data fields involved in the failure:

Source
Line #
000031 10 FC-MSG PIC S9(4) COMP.
000054 10 COMM-PROGRAM-RETCODE PIC 9(4).

Data field values at time of abend:

Enter

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Then put your cursor on the abend code point-and-shoot field. When you press Enter...

Abend code description is displayed



File View Services Help

CICS Abend Code 4038 Explanation Line 1 Col 1 80
Command ==> Scroll ==> HALF
TRANID: EPSL CICS ABEND: 4038 DEMOMVS 2010/02/23 08:52:29


U4038 (X'FC6')

Explanation: Language Environment has encountered a software-raised or user-raised unhandled condition of severity 2 or greater and will terminate. If the TERMTHDACT run-time option is set appropriately, a Language Environment dump (CEEDUMP) will be generated, however, no system dump will be generated for this abend.

Programmer response: Examine the resulting Language Environment dump (CEEDUMP), if available, or the Language Environment message file to help determine the cause of the unhandled condition. Refer to the z/OS Language Environment Debugging Guide for information on collecting and using Language Environment dumps. Refer to the z/OS Language Environment Programming Reference for details on the TERMTHDACT run-time option.

System action: Enclave terminated.

*** Bottom of data.

[Return to synopsis](#) 

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It looks it up in book manager and shows the description of the CICS abend code. F3 returns to the synopsis.

Scroll forward in synopsis



File View Services Help

Synopsis Top of data
Command ==> Scroll ==> HALF
TRANID: EPSL CICS ABEND: 4038 DEMOMVS 2010/02/23 08:52:29

A CICS abend 4038 occurred in module CEEPLPKA at offset X'C85F0'.

The cause of the failure was program EPSL03 in module EPSL03. The COBOL source code that immediately preceded the failure was:

Source
Line #
000123 MOVE FC-MSG TO COMM-PROGRAM-RETCODE

The COBOL source code for data fields involved in the failure:

Source
Line #
000031 10 FC-MSG PIC S9(4) COMP.
000054 10 COMM-PROGRAM-RETCODE PIC 9(4).

Data field values at time of abend:

F8

Scrolling down from the top of the synopsis section.

Cursor select a message id



```
File View Services Help
Synopsis Line 10 Col 1 80
Command ==> Scroll ==> HALF
TRANID: EPSL CICS ABEND: 4038 DEMOMVS 2010/02/23 08:52:29

The COBOL source code for data fields involved in the failure:

Source
Line #
000031 10 FC-MSG PIC S9(4) COMP.
000054 10 COMM-PROGRAM-RETCODE PIC 9(4).

Data field values at time of abend:

COMM-PROGRAM-RETCODE = 423
FC-MSG = 2512

Important messages:
IG20037S The flow of control in program EPSL03 proceeded beyond the last
line of the program.

The following general problems were identified during analysis of this
```

Enter

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For some abends there may be other important messages that were issued. They are displayed in the synopsis, and to see one, tab your cursor to it and press enter.

Message description is displayed



```
File View Services Help
Message IGZ0037S Explanation Line 1 Col 1 80
Command ==> Scroll ==> HALF
TRANID: EPSL CICS ABEND: 4038 DEMOMVS 2010/02/23 08:52:29

IGZ0037S The flow of control in program EPSL03 proceeded beyond the last line
of the program.

IGZ0037S The flow of control in program program-name proceeded beyond the la
line of the program.

Explanation: The program did not have a terminator (STOP, GOBACK, or EXIT),
and control fell through the last instruction.

Programmer response: Check the logic of the program. Sometimes this error
occurs because of one of the following logic errors:

* The last paragraph in the program was only supposed to receive control as
the result of a PERFORM statement, but due to a logic error it was branched
to by a GO TO statement.

* The last paragraph in the program was executed as the result of a
"fall-through" path, and there was no statement at the end of the paragraph
```

The message is looked up in book manager and the explanation text is displayed.

- **CICS, DB2 and IMS support**

- CICS support
- Using the CICS on-line interface
- DB2 support
- IMS support



- **Working with fault entries**

- Creating and using a fault history file
 - Moving or copying fault entries
 - Transmitting fault entries to another system
 - Writing to your own history file

Fault Analyzer provides other interfaces in addition to access from TSO interface. Next, you will see how to use the CICS interface.

IBM

**In CICS, enter an IDI transaction
to start the Fault Analyzer interface**

idi |

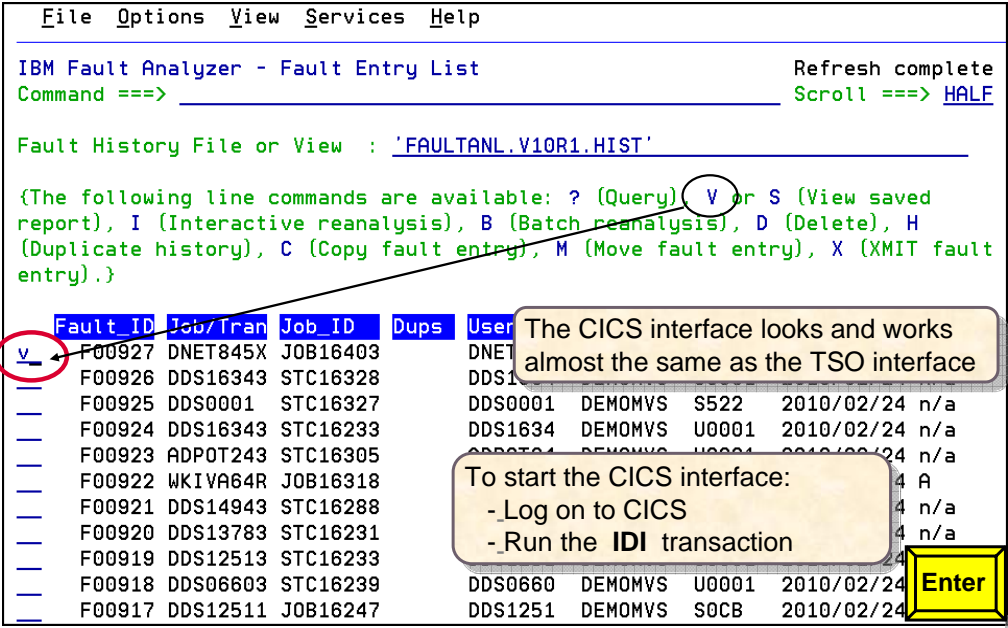
Enter

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The CICS interface may or may not have been installed on your system. If you are not sure, and prefer to access fault analyzer from CICS, contact your systems programmer or help desk to find out.

To start the CICS interface, first, log on to CICS, clear the screen, and enter an IDI transaction.

The CICS online interface is similar to the TSO interface



File Options View Services Help

IBM Fault Analyzer - Fault Entry List Refresh complete
Command ==> Scroll ==> HALF

Fault History File or View : 'FAULTANL.V10R1.HIST'

{The following line commands are available: ? (Query), V or S (View saved report), I (Interactive reanalysis), B (Batch reanalysis), D (Delete), H (Duplicate history), C (Copy fault entry), M (Move fault entry), X (XMIT fault entry).}

Fault ID	Job/Tran	Job ID	Dups	User	
V F00927	DNET845X	JOB16403		DNET	
— F00926	DDS16343	STC16328		DDS1	
— F00925	DDS0001	STC16327		DDS0001	DEMOMVS S522 2010/02/24 n/a
— F00924	DDS16343	STC16233		DDS1634	DEMOMVS U0001 2010/02/24 n/a
— F00923	ADPOT243	STC16305		ADPOT24	DEMOMVS U0001 2010/02/24 n/a
— F00922	WKIVA64R	JOB16318			4 A
— F00921	DDS14943	STC16288			4 n/a
— F00920	DDS13783	STC16231			4 n/a
— F00919	DDS12513	STC16233			4
— F00918	DDS06603	STC16239		DDS0660	DEMOMVS U0001 2010/02/24
— F00917	DDS12511	JOB16247		DDS1251	DEMOMVS SOCB 2010/02/24

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The CICS interface looks and works the same as the TSO on-line interface. There are only very minor differences that affect a few options settings, and you may not notice any difference at all. Regardless of which interface you use, you will see all of the abends in the fault history files. So you can see batch, CICS, and all other types of abends from either interface. Use which ever interface you prefer.

Just as in the TSO interface, an I line command starts interactive re-analysis. In this example, a V line command is entered to view a real-time analysis report.

Real-time analysis report



```
File View Services Help
Saved Report Line 1 Col 1 80
Command ==> Scroll ==> HALF
- Collapse all / + Expand all
*****
* IBM Fault Analyzer for z/OS V10R1M0 (HADQA10 2009/10/22) *
* *
* Copyright IBM Corp. 2000, 2009. All rights reserved. *
*****
JOBNAME: DNET845X SYSTEM ABEND: 0C7 DEMOMVS 2010/02/23 15:45:02

- <H1> I B M F A U L T A N A L Y Z E R S Y N O P S I S

A system abend 0C7 occurred in module SAM2 program SAM2 at offset X'39A'.
A program-interruption code 0007 (Data Exception) is associated with this abend
and indicates that:

A decimal digit or sign was invalid.
```

The real-time report is displayed. You see the same abend information in the CICS interface as you do in the TSO interface.

- **CICS, DB2 and IMS support**

- CICS support
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- **Working with fault entries**

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For applications that use DB2, Fault Analyzer makes additional information available.

DB2 analysis



- Additional information available for DB2 applications
 - DB2 subsystem
 - Plan information
 - Owner and authorization IDs
 - Last executed SQL statement
 - Host variables
 - SQL communications area
 - SQLCode and SQLState explanations
- View in real-time report or with reanalysis
- Additional information is automatically generated by Fault Analyzer

Depending on the application and type of abend, you may see the DB2 subsystem, the name of the Plan, owner and authorization IDs, the last executed SQL statement, and explanations of SQL code and SQL state. This information shows up automatically in the real-time report and in reanalysis.

Select DB2 information



```
File View Services Help
Interactive Reanalysis Report                               Line 1 Col 1 80
Command ==>                                              Scroll ==> CSR
JOBNAME: DNET074Y  SYSTEM ABEND: OCA                      DEMOMVS  2006/12/20  12:08:00

Fault Summary:
Module PHONEP01, program PHONEP01, compiler listing file
DNET074.DEMOS.PLI.LISTING(PHONEP01) statement # 48 : Abend SOCA
(Decimal-Overflow Exception).

Select one of the following options to access further fault information:
 1. Synopsis
 2. Event Summary
 3. DB2 Information
 4. Open Files
 5. Storage Areas
 6. Messages
 7. Language Environment Heap Analysis
 8. Abend Job Information
```

Enter

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When you use interactive reanalysis, a point-and-shoot field for DB2 information appears automatically. Tab to it and press enter.

DB2 information is displayed, scroll down to view



```
File View Services Help
DB2 Information
Command ==>
JOBNAME: DNET074Y  SYSTEM ABEND: OCA          DEMOMVS   2006/12/20  12:08:00
DB2 Subsystem DSNA

DB2 Version . . . . . : V7R1M0
Plan Name . . . . . : PHONEP01 (Bound 2006/12/20 12:07:57)
Plan Owner . . . . . : DNET424
Database Request Module Name: DNET074.DEMOS.DBRMLIB(PHONEP01)
Consistency Token . . . . . : X'17FC3AC107872A8E'
Primary Authorization ID. . . : DNET424
Current SQL ID. . . . . : DNET424

Last Executed SQL Statement:
List
Stmt #
000436          EXEC SQL UPDATE DSN8710.VEMLP
000436          SET PHONENUMBER = :NEWNO /- CHANGE PHONE NO
000436          WHERE EMPLOYEEENUMBER = :ENO

Fault Analyzer Event #. . . : 7 (Program PHONEP01)

Input Host Variables:
Name and Data Type. . . . : IOAREA.NEWNO CHARACTER(4)
At Address. . . . . : 1FD6424C
Data Value. . . . . : RAM

Name and Data Type. . . . : IOAREA.ENO CHARACTER(6)
At Address. . . . . : 1FD64246
Data Value. . . . . : E PROG
```

DB2 subsystem, plan, IDs

Last SQL statement

Host variables

F8

Several items are reported here including the DB2 subsystem, the plan name, authorization ID, and SQL ID. One of the most important things shown is the most recently executed SQL statement and host variables. Scroll forward with F8.

Cursor select SQLCode



File View Services Help

DB2 Information Line 30 Col 1 80
 Command ==> Scroll ==> CSR

JOBNAME: DNET074Y SYSTEM ABEND: OCA DEMOMVS 2006/12/20 12:08:00

DB2 Control Blocks

SQL Communications Area (SQLCA) for Event # 7 Program PHONEP01 at Address 1FD640E0 :

Offset	Field	Value	EBCDIC
Dec	Hex	Name	Hex
0	(0)	SQLCAID	E2D8D3C3 C1404040 *SQLCA *
8	(8)	SQLCABC	00000088 *...h *
12	(C)	SQLCODE	00000064 *... *
		SQLCODE 100 Explanation	
16	(10)	SQLERRML	0000 *.. *
18	(12)	SQLERRMC	40404040 40404040 40404040 40404040 * *
34	(22)		40404040 40404040 40404040 40404040 * *
50	(32)		40404040 40404040 40404040 40404040 * *
66	(42)		40404040 40404040 40404040 40404040 * *
82	(52)		40404040 4040 * *
88	(58)	SQLERRP	C4E2D5E7 D9C6C640 *DSNXRFF *
96	(60)	SQLERRD	FFFFFFFF92 00000000 00000000 FFFFFFFF *...k..... *
112	(70)		00000000 00000000 *..... *
120	(78)	SQLWARN	40404040 40404040 40404040 * *
131	(83)	SQLSTATE	F0F2F0F0 F0 *02000 *
		SQLSTATE 02000 Explanation	

SQL Communications Area (SQLCA) for subsystem DSNAP not shown as it is identical to the SQLCA for event # 7 program PHONEP01.

Enter

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Here is the SQLCA (or SQL communications area), which includes the SQL code and SQL state from that last executed SQL statement. You can look up the SQL code by putting your cursor on it and pressing enter.

SQLCode explanation is displayed



```
File View Services Help
SQLCODE 100 Explanation Line 1 Col 1 80
Command ==> Scroll ==> CSR
JOBNAME: DNET074Y SYSTEM ABEND: 0CA DEMOMVS 2006/12/20 12:08:00

+100 ROW NOT FOUND FOR FETCH, UPDATE OR DELETE, OR THE RESULT OF A QUERY
      IS AN EMPTY TABLE

Explanation: One of the following conditions occurred:

* No row met the search conditions specified in an UPDATE or DELETE
  statement.

* The result of a SELECT INTO statement was an empty table.

* The result of the subselect of an INSERT statement is empty.

* A FETCH statement was executed when the cursor was positioned after
  the last row of the result table.

When a SELECT statement is executed using SPUFI, this SQLCODE indicates
normal completion.

This SQLCODE is also issued when LOB data cannot be returned. This
situation can occur when an application is running with isolation level UR
and another application has locked the LOB table space.

System Action: No data was retrieved, updated, or deleted.

SQLSTATE: 02000
```

Return to DB2 information

F3

The SQL code was looked up in book manager and the description text is displayed. F3 returns to the previous screen.

Select SQLState



```
File View Services Help
DB2 Information Line 30 Col 1 80
Command ==> Scroll ==> CSR
JOBNAME: DNET074Y SYSTEM ABEND: 0CA DEMOMVS 2006/12/20 12:08:00

DB2 Control Blocks

SQL Communications Area (SQLCA) for Event # 7 Program PHONEP01 at Address
1FD640E0 :
Offset Field Value
Dec Hex Name Hex EBCDIC
0 (0) SQLCAID E2D8D3C3 C1404040 *SQLCA *
8 (8) SQLCABC 00000088 *...h *
12 (C) SQLCODE 00000064 *... *
SQLCODE 100 Explanation
16 (10) SQLERRML 0000 *.. *
18 (12) SQLERRMC 40404040 40404040 40404040 40404040 * *
34 (22) 40404040 40404040 40404040 40404040 * *
50 (32) 40404040 40404040 40404040 40404040 * *
66 (42) 40404040 40404040 40404040 40404040 * *
82 (52) 40404040 4040 * *
88 (58) SQLERRP C4E2D5E7 D9C6C640 *DSNXRFF *
96 (60) SQLERRD FFFFFFF92 00000000 00000000 FFFFFFFF *...k..... *
112 (70) 00000000 00000000 *..... *
120 (78) SQLWARN 40404040 40404040 404040 * *
131 (83) SQLSTATE F0F2F0F0 F0 *Q2000 *
SQLSTATE 02000 Explanation

SQL Communications Area (SQLCA) for subsystem DSNB not shown as it is
identical to the SQLCA for event # 7 program PHONEP01.
```

Enter

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Put your cursor on the SQL state field and press enter...

SQLState explanation



```
File View Services Help
SQLSTATE 02000 Explanation                               Line 1 Col 1 80
Command ==> █                                         Scroll ==> CSR
JOBNAME: DNET074Y  SYSTEM ABEND: 0CA                    DEMOMVS   2006/12/20 12:08:00

One of the following exceptions occurred:

- The result of the SELECT INTO statement or the subselect of the INSERT
  statement was an empty table.
- The number of rows identified in the searched UPDATE or DELETE statement was
  zero.
- The position of the cursor referenced in the FETCH statement was after the
  last row of the result table.

*** Bottom of data.
```

... and it looks up the SQL state and shows the description.

- **CICS, DB2 and IMS support**

- CICS support
- Using the CICS on-line interface
- DB2 support
- IMS support



- **Working with fault entries**

- Creating and using a fault history file
 - Moving or copying fault entries
 - Transmitting fault entries to another system
 - Writing to your own history file

For applications that make IMS calls, Fault Analyzer captures additional information.

IMS analysis



- Additional information available for IMS applications
 - IMS subsystem
 - Region type
 - PSB
 - IOPCB
 - Database PCBs
 - Segment
 - Key feedback area
 - Call trace
 - Call counts
 - IMS abend code explanations
- View in real-time report or with reanalysis
- Additional information is automatically generated by Fault Analyzer

In real-time reports and reanalysis, you can see the IMS subsystem, the type of IMS region, the PSB, call count statistics, and an explanation of IMS abend codes.

Select IMS information



```
File View Services Help
Interactive Reanalysis Report
Command ==>
JOBNAME: DNET424I  SYSTEM ABEND: 0CB

Fault Summary:
Module TRADERI, program TRADERI, source line # 590 : Abend SOCB
(Decimal-Divide Exception).

Select one of the following options to access further fault information:
1. Synopsis
2. Event Summary
3. IMS Information
4. Open Files
5. Storage Areas
6. Messages
7. Language Environment Heap Analysis
8. Abend Job Information
9. Fault Analyzer Options

{Fault Analyzer maximum storage allocated: 1.82 megabytes.}

*** Bottom of data.
```

IMS Information option will display automatically.

Enter

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When using interactive reanalysis, select the “IMS information” point-and-shoot field, and press enter.

IMS information is displayed, scroll down to view



```
File View Services Help
IMS Information
Command ==>
JOBNAME: DNET424I  SYSTEM ABEND: 0CB
IMS Version . . . . . : V8R1M0
IMS Region Type . . . . . : DL/I Batch Region (DB)
IMS Subsystem Name . . . . . : n/a
Application Program Name . . . . . : TRADERI
PSB Name . . . . . : PTRDI

Last DL/I Call Parameter List

Note that storage addressed by individual parameters might no longer be valid.

Parameter 1 . . . . . : 0008DD38
  DL/I Call Function . . . . . : GU (Get Unique)
Parameter 2 . . . . . : 0009A180
  (See "IMS Control Blocks" for details of this PCB)
Parameter 3 . . . . . : 0008DED8
Parameter 4 . . . . . : 8008DE70
  SSA # 1 . . . . . : COMPANY *---(COMPKEY = Veck_Transport )

IMS Control Blocks

Input/Output Program Communications Block (IOPCB) (***) Current/Last U
  At Address . . . . . : 0005B084
  PCB Name . . . . . : IOPCB
```

Connection information

DL/I call parameter list
point and shoot addresses

F8

Information shown here include the IMS version, the IMS region type, the name of the PSB, and the parameter list from the last DLI call. Notice that the addresses of the parameters are point-and-shoot fields, so you can quickly reference them to see storage at those locations. Scroll forward with F8.

IMS data captured during abend is displayed



```
File View Services Help
IMS Information
Command ==>
JOBNAME: DNET424I SYSTEM ABEND: 0CB DEMO IO PCB information
Line 22 Col 1 80
CSR_ 32:03

IMS Control Blocks

Input/Output Program Communications Block (IOPCB) (** Current/Last Used **):
At Address. . . . . : 0005B084
PCB Name. . . . . : IOPCB
Relative PCB Number . . . : 1
PCB Type. . . . . : I/O
Logical Terminal ID . . . : n/a
Status Code . . . . . : ' ' (Normal status)
User ID . . . . . : n/a
Group Name. . . . . : n/a
Formatting Module Name. . . : n/a

Data Base Program Communications Block (DBPCB):
At Address. . . . . : 0009A4D0
PCB Name. . . . . : DBPCB01
Relative PCB Number . . . : 2
PCB Type. . . . . : Data Base or Online
Data Base Name. . . . . : DR1E
Segment Level . . . . . : n/a
Status Code . . . . . : ' ' (Normal status)
Processing Options. . . . : A
Segment Name. . . . . : HIDAM
Number of Segments. . . . : 2
Key Feedback Length . . . : 0

Database PCB
F8
```

Information about each of the PCBs are reported. In this example an I/O PCB is followed by a data base PCB. Scrolling forward again.

Continue to scroll down to view IMS information



```

File View Services Help
IMS Information
Command ==>
JOBNAME: DNET424I SYSTEM ABEND: 0CB DEMOMVS 2006/12/21 09:32:03
Data Base Program Communications Block (DBPCB) (** Current/Last Used **):
At Address. . . . . : 0009A180
PCB Name. . . . . : DBPCB02
Relative PCB Number . . . . : 3
PCB Type. . . . . : Data Base or Online
Data Base Name. . . . . : DR2E
Segment Level . . . . . : 01
Status Code . . . . . : ' ' (Normal status)
Processing Options. . . . . : G
Segment Name. . . . . : COMPANY
Number of Segments. . . . . : 1
Key Feedback Length . . . . : 20

Key Feedback Data:
Address Offset Hex EBCDIC
0009A1DC +10 E5858392 6DE39981 95A29796 99A34040 *Veck_Transport *
0009A1EC * 40404040 *

JCB DL/I Call Trace (Most recent call first):
Call Status
# Code Description Code Description
1 01 GHU or GU ' ' Status good.
2 01 GHU or GU ' ' Status good.
3 01 GHU or GU ' ' Status good.
4 01 GHU or GU ' ' Status good.
5 01 GHU or GU ' ' Status good.
6 01 GHU or GU ' ' Status good.
    
```

Annotations in the image:

- Second database PCB**: Points to the DBPCB header information.
- Key feedback area**: Points to the hexadecimal and EBCDIC data for key feedback.
- Call trace**: Points to the JCB DL/I Call Trace table.
- F8**: A yellow box containing the text 'F8' is located in the bottom right corner of the terminal window.

Here is a second data base PCB. Each PCB is reported. In this PCB, notice that the key feedback area is shown, which can be important information. Also notice that a DLI call trace is shown. This is also good information because it gives you a history of what your program did before the abend. Scrolling forward, F8.

IMS analysis



```
File View Services Help
IMS Information                               Line 78 Col 1 80
Command ==>                                Scroll ==> CSR
JOBNAME: DNET424I  SYS3  DEMON

Call counts  F8  Last page -Call Counts

IMS Accounting Information

DL/I Data Base Calls:
GU Calls. . . . . : 7
GN Calls. . . . . : 0
GNP Calls. . . . . : 0
GHU Calls. . . . . : 0
GHN Calls. . . . . : 0
GHNP Calls. . . . . : 0
ISRT Calls. . . . . : 0
DLET Calls. . . . . : 0
REPL Calls. . . . . : 0
Total Calls . . . . . : 7
DL/I Message Calls:
GU Calls. . . . . : 0
GN Calls. . . . . : 0
ISRT Calls. . . . . : 0
PURG Calls. . . . . : 0
CMD Calls. . . . . : 0
GCMD Calls. . . . . : 0
CHNG Calls. . . . . : 0
AUTH Calls. . . . . : 0
SETO Calls. . . . . : 0
DL/I System Service Calls:
APSB Calls. . . . . : 0
Purge Calls. . . . . : 0
CMD Calls. . . . . : 0
GCMD Calls. . . . . : 0
CHNG Calls. . . . . : 0
AUTH Calls. . . . . : 0
SETO Calls. . . . . : 0
DL/I System Service Calls:
APSB Calls. . . . . : 0
DPSB Calls. . . . . : 0
GMSG Calls. . . . . : 0
ICMD Calls. . . . . : 0
RCMD Calls. . . . . : 0
CHKP Calls. . . . . : 0
XRST Calls. . . . . : 0
ROLB Calls. . . . . : 0
ROLS Calls. . . . . : 0
SETS Calls. . . . . : 0
SETU Calls. . . . . : 0
INIT Calls. . . . . : 1
INQY Calls. . . . . : 0
LOG Calls. . . . . : 0

IMS Parameter Modules
Module DFSPRPX0 Address . . : 000078B0
```

Accounting information is shown. This is a set of statistics gathered from IMS internal control blocks, so you see, for example, how many Get Uniques, Get Nexts, GNPs, and other calls were made by the program.

That is the end of this section, working with CICS, IMS, and DB2 application abends.

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