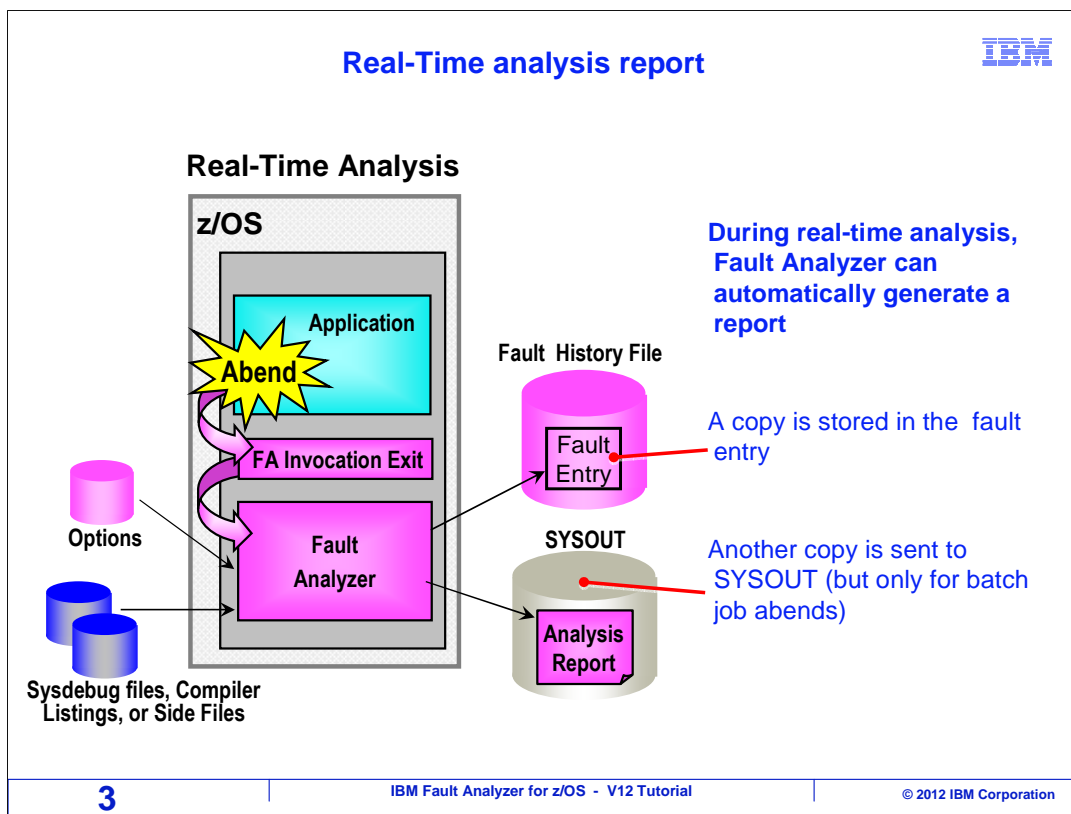# IBM Fault Analyzer for z/OS

Program number 5655-W69

Tutorial

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

Fault Analyzer tutorial

IBM

- **Introduction**
  - Fault Analyzer overview

- **Fault Analyzer files**
  - Fault history files
  - Program side files and compiler listings

- **Real-time abend processing**
  - Real-time fault analysis

- **Using the on-line interface**
  - Opening a fault history file and using a view
  - Getting help
  - Finding and matching fault entries
  - Getting information about a fault entry
  - Customizing the columns displayed

In this section, you will see an example of Fault Analyzer performing real-time analysis when an abend occurs.
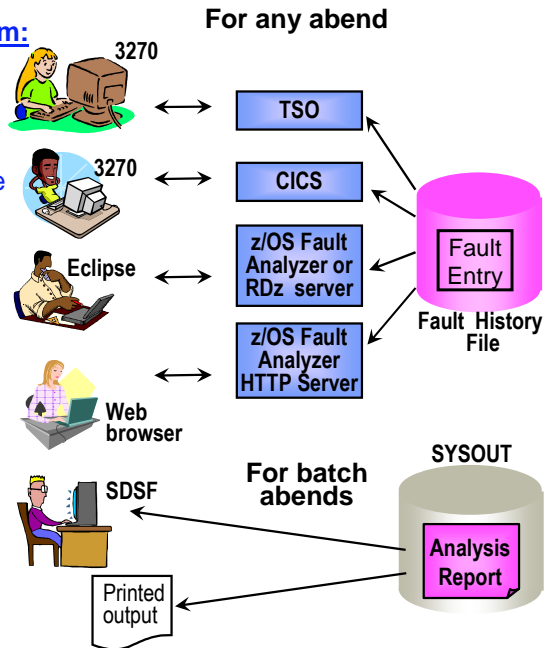
Real-Time analysis report

IBM

Real-Time Analysis

z/OS

Application

Abend

FA Invocation Exit

Options

Fault Analyzer

Sysdebug files, Compiler Listings, or Side Files

Fault History File

Fault Entry

SYSOUT

Analysis Report

During real-time analysis, Fault Analyzer can automatically generate a report

A copy is stored in the fault entry

Another copy is sent to SYSOUT (but only for batch job abends)

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When Fault Analyzer detects an abend, it performs real-time analysis and can automatically generate a report. A copy is always stored in the fault entry in the fault history file, and for batch jobs a copy may also be written to SYSOUT.

View a real-time analysis report

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You can view an analysis report from:

For any abend

- The Fault Analyzer TSO interface
    - OR -
- The Fault Analyzer CICS® interface
    - OR -
- The Fault Analyzer Eclipse GUI plug-in
    - OR -
- A web browser
    - OR -
- Your batch job's SYSOUT
    - Default is `SYSOUT=*`
    - DD name is IDIREPRT

3270 — TSO

3270 — CICS

Eclipse — z/OS Fault Analyzer or RDz server

Web browser — z/OS Fault Analyzer HTTP Server

Fault Entry — Fault History File

For batch abends

SDSF — SYSOUT — Analysis Report

Printed output

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In this example, the real-time report is viewed from SYSOUT.

A batch job is submitted. This job abends, and fault analyzer automatically processes it.

Display the job with a SYSOUT viewer

Most systems have a SYSOUT viewer you can use to read a job's output. SDSF is used in this example, although you may have a different SYSOUT viewer on your system. The job that just ran is viewed.

Fault Analyzer messages display in the job's log

```
   Display  Filter  View  Print  Options  Search  Help
 ---------------------------------------------------------------------
 SDSF OUTPUT DISPLAY DNET074F JOB07951  DS┌──────────────────────┐81
 COMMAND INPUT ===> █                      │Fault Analyzer puts   │CSR
 ******************************* TOP OF DA │messages in the JES   │*****
                   J E S 2   J O B   L O G │message Log           │O D E
                                           └──────────────────────┘
 12.10.51 JOB07951 ---- FRIDAY,    29 JUN 2012 ----
 12.10.51 JOB07951  IRR010I  USERID DNET074  IS ASSIGNED TO THIS JOB.
 12.10.51 JOB07951  ICH70001I DNET074  LAST ACCESS AT 12:09:53 ON FRIDAY, JUNE 29
 12.10.51 JOB07951  $HASP373 DNET074F STARTED - INIT 30   - CLASS A - SYS MVSA
 12.10.51 JOB07951  IEF403I DNET074F - STARTED - TIME=12.10.51
 12.10.52 JOB07951  +IDI0001I Fault Analyzer V12R1M0 (HADQC10 2012/04/24) invoked
 12.10.52 JOB07951  +IDI0002I Module SAM2, program SAM2, offset X'39E': Abend S0C
 12.10.53 JOB07951  +IDI0003I Fault ID F00784 assigned in history file FAULTANL.V
 12.10.53 JOB07951  IEF450I DNET074F RUNSAM1 - ABEND=S0C7 U0000 REASON=00000007
    888             TIME=12.10.53
 12.10.53 JOB07951  -                                    --TIMINGS (MINS.)--
 12.10.53 JOB07951  -JOBNAME  STEPNAME PROCSTEP   RC   EXCP    CPU    SRB  CLOCK
 12.10.53 JOB07951  -DNET074F          RUNSAM1  *S0C7   1658    .00    .00    .01
 12.10.53 JOB07951  IEF404I DNET074F - ENDED - TIME=12.10.53
 12.10.53 JOB07951  -DNET074F ENDED.  NAME-IBM TOOLS WORKSHOP   TOTAL CP
 12.10.53 JOB07951  $HASP395 DNET074F ENDED                              [F3]
 ------ JES2 JOB STATISTICS ------
```

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Fault Analyzer writes messages in the system log when it processes an abend. These messages start with the letters IDI. One of the messages shows that the abend occurred in a program called SAM2 and it shows the source statement number. The next message shows the names of the fault entry and fault history file. That is good information, so you can determine which fault history file was written to. F3 returns to the sysout list.

View dd names of the batch job

```
  Display  Filter  View  Print  Options  Search  Help
 ------------------------------------------------------------------------
 SDSF HELD OUTPUT DISPLAY ALL CLASSES LINES 3,404        DATA SET DISPLAYED
 COMMAND INPUT ===> █                                    SCROLL ===> CSR
 NP   JOBNAME  JobID     Owner    Prty C ODisp Dest               Tot-Rec  Tot-
      DNET074A JOB09455 DNET074   144 H HOLD   LOCAL              1,157
      DNET074U JOB02989 DNET074   144 H HOLD   LOCAL                120
      DNET074U JOB02990 DNET074   144 H HOLD   LOCAL                120
      DNET074U JOB02991 DNET074   144 H HOLD   LOCAL                159
      DNET074A JOB03023 DNET074   144 H HOLD   LOCAL                308
      DNET074A JOB03032 DNET074   144 H HOLD   LOCAL                321
   ?  DNET074F JOB07951 DNET074   144 H HOLD   LOCAL              1,219
```

Enter

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The real time report is written to a DD name called IDIREPRT. In SDSF, the "?" line command shows a list of DD names for a job.

The IDIREPRT DD is selected. Press Enter.

The real-time analysis report

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```
   Display  Filter  View  Print  Options  Search  Help
 ----------------------------------------------------------------------------
 SDSF OUTPUT DISPLAY DNET074F JOB07951  DSID    107 LINE 10     COLUMNS 02- 81
 COMMAND INPUT ===>  _                                      SCROLL ===> CSR
<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'39E'.

A program-interruption code 0007 (Data Exception) is associated with this abend
and indicates that:

  A decimal digit or sign was invalid.

The cause of the failure was program SAM2 in module SAM2.  The COBOL source code
that immediately preceded the failure was:

  Source
  Line #
  ------
  000088      *    *** Add this customer's BALANCE to the grand total ***
  000089           COMPUTE BALANCE-TOTAL =
  000090              BALANCE-TOTAL + CUST-ACCT-BALANCE
```

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This is the real time report that was generated by Fault Analyzer. For batch jobs, you can research the abend by reading this report. In the next sections, you will see that you can view the same report from the on-line interface.

That is the end of this section, real-time abend processing.

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