



Advanced Technical Support

System z Problem Determination Tools

Overview

Milano/Roma, 17/18 Aprile 2007

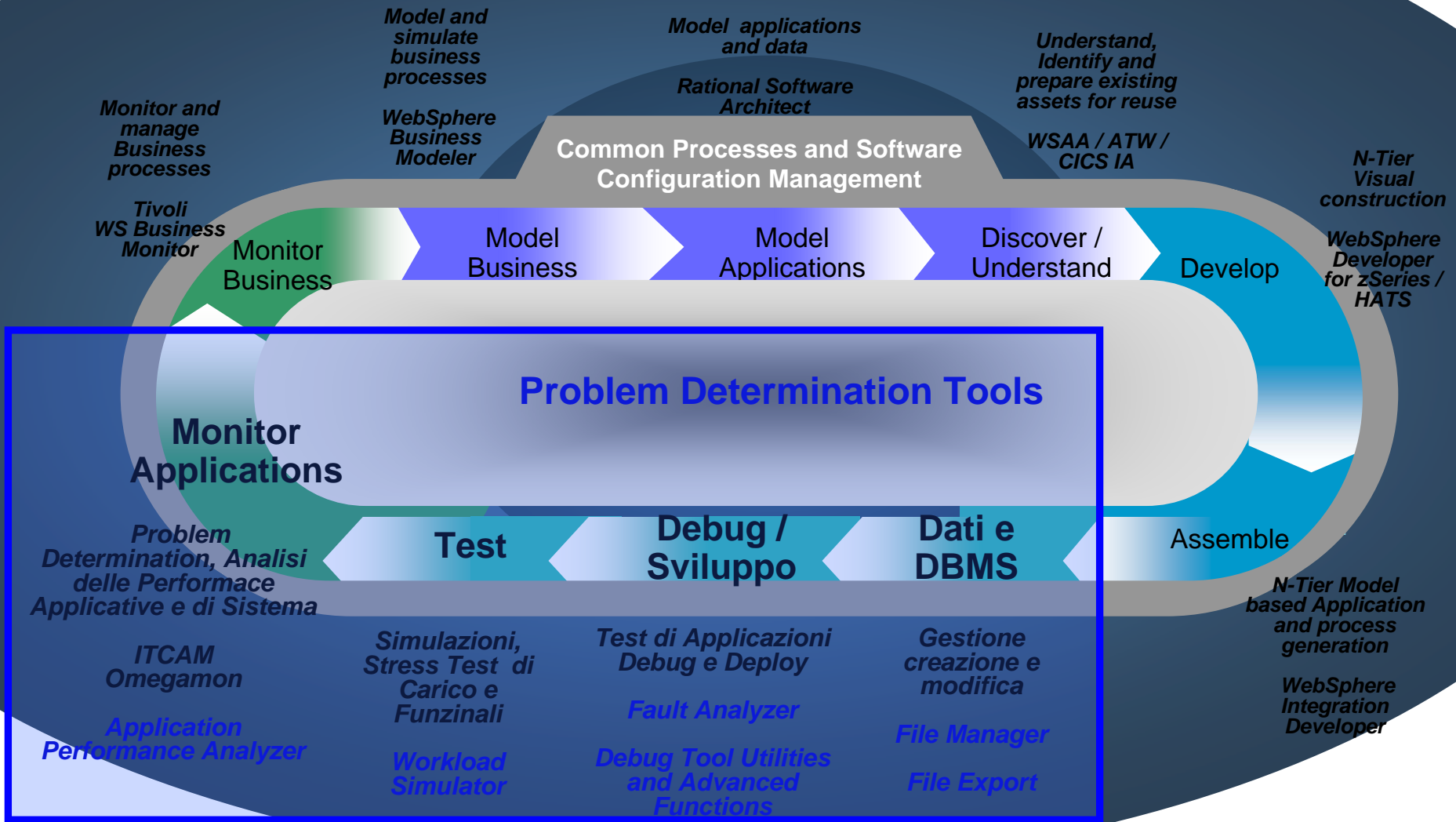


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WebSphere. software

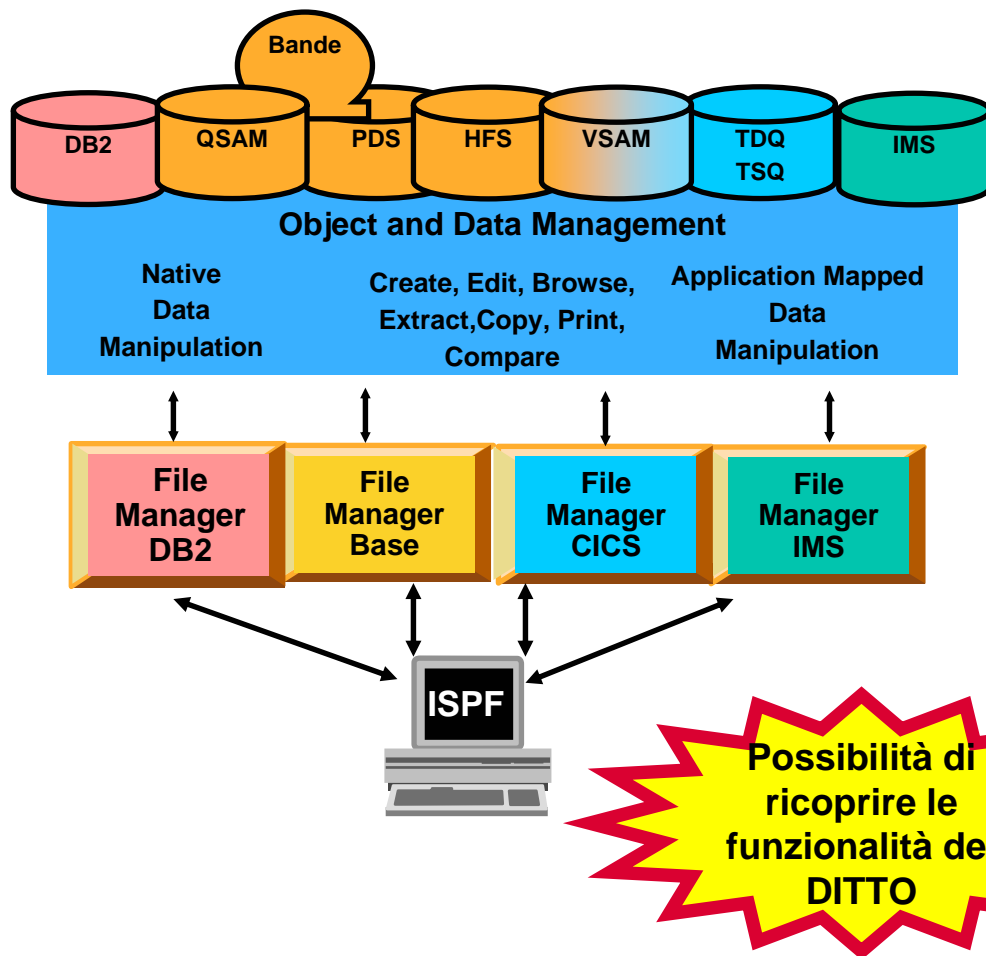
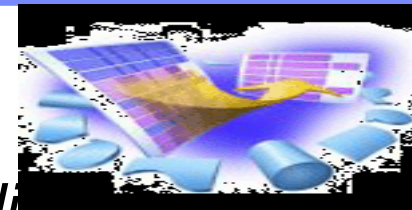
Rational. software

Ciclo di vita delle Applicazioni in ambiente z/OS



File Manager

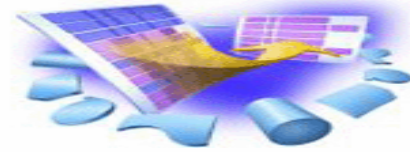
Supporta una varietà di dati enterprise e strutture di files



File Manager Features:

- Supporta molti formati di data in files (VSAM, QSAM, HFS and zFS), DB2 tables (V9), IMS databases (V10), CICS (TDQ, TSQ and VSAM)
- Possibilità di visualizzare le copybook COBOL come:
 - Una Tabella, con il nome della colonna in "Testata"
 - Un record singolo per pannello, con il valore subito dopo il nome del campo
- Selezione dei records utilizzando logica Booleana (selection expression REXX + DFSORT e Multiple Member selection criteria)
- Select a livello Field
- Copiare record e campi sotto specifiche condizioni, con Funzione di insert/reformat dei campi
- Creare dati di Test in funzione di patterns definiti dall'Utente
- Compare tra datasets utilizzando patterns specificati
- Gestione di Records SMF (Mapping)
- Formattazione del LOADMODULE

File Manager MVS - Features principali



- **Pannelli ISPF-like**
- **Funzioni per l'Editing e Browsing dei dati**
 - Table
 - Single
- **Flessibilità nei criteri di selection**
 - Lavora con copybooks o templates
- **Modalità Operative**
 - Interactive
 - TSO ISPF
 - CICS
 - Batch
- **Edit di file senza limiti di size**
- **Create e Print di dati**
- **Copy dei dati**
 - Con possibilità di “File reformatting”
- **Catalog services**
- **Lavora con la VTOC**
- **Search abbinata alla Change dei dati**
 - Insert automatica della “continuation” in statement JCL
- **Compare dei Dati**
- **View o Print di Copybooks e Templates**
- **XML generation**
 - La funzione di Data Set Copy ha un “Output mode” con l'opzione XML.
 - File e template
 - FM può generare testo XML per tutti i tipi di dati in input
 - Option per generare Unicode.

File Manager MVS: Menu principale

Process Options Help

File Manager

Primary Option Menu

0	Settings	Set processing options	User ID . . : ERIC
1	Browse	Browse data	System ID . : ZT01
2	Edit	Edit data	Appl ID . . : FMN
3	Utilities	Perform utility functions	Version . . : 7.1.0
4	Tapes	Tape specific functions	Terminal. . : 3278
5	Disk/VSAM	Disk track and VSAM CI functions	Screen. . . : 1
6	OAM	Work with OAM objects	Date. . . . : 2007/01/16
7	Templates	Template and copybook utilities	Time. . . . : 11:35
8	HFS	Access Hierarchical File System	
X	Exit	Terminate File Manager	

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Edit: Formattazione e Mapping dei Dati

```

Process  Options  Help
-----
Edit      FILEMGR.V7R1.SFMNSAM1(FMNGDATA  +          Rec 0 of 40
          Col 1      Insert length 80          Format CHAR
          ---+---1---+---2---+---3---+---4---+---5---+---6---+---7---
000000  **** Top of data ****
000001  01Grant Smith
000002  01Andrew Apple      .5...&.....
000003  01Graham Prestcott
000004  01Bill Somers
000005  01Ted Dexter
000006  01Roddy Armstrong
000007  01Cliff Roberts     .R.....
000008  01James Browne     .).....
000009  01Silvia Carrot     . / .....
000010  01Dan Peters        ".....
000011  01John Laws         ;.....
000012  01Liz Childs        ?.....
000013  01Bill McCork       .N.....
000014  01Keith Sampson
000015  01John Neptune
000016  01Brian Van Der Velde  ....d&.....
000017  01Ann Norwich
000018  01Michael Bevan     !...c.....
000019  01Mary Sands        >.....
000020  01Antony Burke
000021  02Grant Smith      Developer      22  Montrose St      Thornlie
000022  02Andrew Apple     Developer      44  Eagle Rise       Riverton
000023  02Graham Prestcott Developer      256 Hay St        Cannington
000024  02Bill Somers       Developer      84  Murchison Rd     Dianella
000025  02Ted Dexter        Developer      92  Smith St         Belmont
000026  02Roddy Armstrong  Manager        184 Alexander Dve Swan View
000027  02Cliff Roberts     Manager        28  Bern Rd          Middleswan
000028  02James Browne     Manager        123 Wellington St Guildford
000029  02Silvia Carrot    Programmer      48  Small Lane       Mt Pleasant
000030  02Dan Peters        Programmer     661 Auton Way     Floreat Park

```

Due tipi record

Supporto ai files *HFS e alla generazione in XML

```

Process  Options  Help
-----
File Manager                Primary Option Menu

0 Settings      Set processing options      User ID . : ERIC
1 Browse        Browse data                  System ID : ZT01
2 Edit          Edit data                    Appl ID . : FMN
3 Utilities     Perform utility functions   Version . : 7.1.0
4 Tapes        Tape specific functions     Terminal. : 3278
5 Disk/VSAM    Disk track and VSAM CI functions
6 OAM          Work with OAM objects       Screen. . : 1
7 Templates    Template and copybook utilities
8 HFS          Access Hierarchical File System
X Exit
    
```

```

File Manager                Browse Entry Panel

Input Partitioned, Sequential or VSAM Data Set, or HFS file:
Data set/path name /usr/lpp/Fault_Analyzer/
Member . . . . . *          Blank or pattern for member list
Volume serial . . . . .    If not cataloged
Start pos
Record li
    
```

```

File Manager                Browse File Selection                Row 1 of 4
PATH /V1R7/usr/lpp/Fault_Analyzer

Sel Name                    Type      Size   Created   Changed   Owner
- .                          Dir       8192   06/05/30 06/09/01 18:02:47 CIRE
- ..                         Dir       20480  95/01/10 07/01/11 13:34:47 STC
- idipbrws.so                File     139264 06/05/30 07/01/10 14:52:16 CIRE
- idipbrws.so.ira            File     163840 06/09/01 06/09/01 17:24:15 STC
**** End of data ****
    
```

***HFS(Hierarchical File System)**, basato sulla struttura dei B-Tree. I B-Alberi (o B-Tree) sono strutture dati ad albero, vengono comunemente utilizzati nell'ambito di database e filesystem. Il vantaggio dei B-Tree è che essi mantengono automaticamente i nodi bilanciati permettendo operazioni di inserimento, cancellazione e ricerca in tempi ammortizzati logaritmicamente.

Utilities – Copy di Dati - XML Export

Process Options Help

Copy from ALLANS2.FMDEMO.SIMPLE

Command ==>

More: +

To Partitioned, Sequential or VSAM Data Set, or HFS file:

Data set/path name . . . 'ALLANS2.FMDEMO.XML' +
 Member name (or mask) . . . _____
 Volume serial _____

Processing Options:

Disposition

- 1 1. Old or Reuse
 2. Mod

ISPF Packing

- 1 1. Asis
 2. Pack
 3. Unpack
 4. None
 5. Skip

Format

- 1 1. XML

Execution "/" options

- Replace members
 — Binary mode, reclen _____
 — Stats Off
 — Include fillers
 — Include redefines
 — Convert to Unicode
 — Split output line

Indent step 1

Non-print. characters

- 1 1. Asis
 2. Hex
 3. Replace with _____
 4. Skip

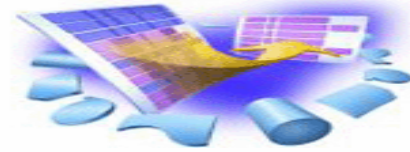
Special characters

- 1 1. Escape
 2. CData
 3. Hex
 4. Replace with _____

Invalid data

- 1 1. Hex
 2. Replace with * _____

File Manager DB2 Main Features



- **Edit e Browse dei dati**
 - Edit di tabelle DB2 o View
 - Select di righe e colonne visualizzate
- **Print**
 - In formato Table o Single
 - Select di righe e colonne
- **Create e Drop di oggetti DB2**
- **Copy**
 - Select di righe
 - “Mapping” di colonne da una tab. In INPUT ad un'altra in OUTPUT.
 - Reformat e generate dei dati in fase di copia
- **Lavorare con una lista di oggetti DB2**
 - Utilizzo della line commands per attivare le funzioni
- **Grant e Revoke di privileges DB2**
- **Import ed Export dei dati**
 - Select di righe
 - Export in files in formato FM/DB2 (default), oppure in un formato definito nella copybook, o file (comma-delimited) CSV.
 - Import da un file generato con una funzione di Export, oppure un file descritto con una copybook
- **Generare JCL da utilities DB2**
 - COPY, LOAD, REBUILD, RECOVER, REORG e RUNSTATS
- **Creare ed Eseguire statements SQL**
 - Due metodi: Basic ed Advanced

File Manager DB2: Menu principale

Process Options Utilities Help

FM/DB2 (DB21)

Primary Option Menu

```

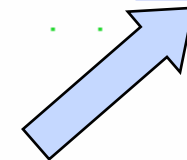
0  Settings          Set processing options
1  Browse            Browse DB2 table or view
2  Edit              Edit DB2 table
3  Utilities         Perform utility functions
4  SQL               Prototype, execute and analyze SQL
5  DB2I             Start DB2 Interactive
X  Exit              Terminate FM/DB2
  
```

```

User ID . : ERIC
System ID : ZT01
Appl ID . : FMN2
Version . : 7.1.0
Terminal . : 3278
Screen . . : 1
Date . . . : 2007/01/16
Time . . . : 11:54
  
```

```

DB2 SSID . DB21
SQL ID . . LC +
  
```



```

IBM* File Manager for z/OS Version 7 Release 1 DB2 Component
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(C) Copyright IBM Corporation 2001, 2006 - All Rights Reserved.
* Trademark of International Business Machines
  
```

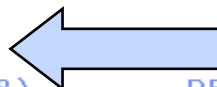
Edit: Come utilizzare le Template (Format: Single)

```

Process   Options   Utilities   Help
-----
FM/DB2 (DB0A)
TABLE DELAHAY.EMP
      FIRSTNAME      LASTNAME      JOB      SALARY      BONUS
      £2              £4            £8      £12         £13
      VARCHAR(12)    VARCHAR(15)   CH(8)    DEC(9,2)    DEC(9,2)
      <----+-----1-> <----+-----1-----> <----+--> <----+-----1> <----+-----1>

000000 **** Top of data ****
000001 MICHAEL<      THOMPSON<      MANAGER    41250.00    800.00
000002 SALLY<        KWAN<          MANAGER    38250.00    800.00
000003 IRVING<    STERN<         MANAGER    32250.00    600.00
000004 BRUCE<     ADAMSON<       DESIGNER    25280.00    500.00
000005 ELIZABETH<  PIANKA<        DESIGNER    22250.00    400.00
000006 MASATOSHI< YOSHIMURA<    DESIGNER    24680.00    500.00
000007 MARILYN<   SCOUTTEN<      DESIGNER    21340.00    500.00
000008 JAMES<     WALKER<        DESIGNER    20450.00    400.00
000009 DAVID<    BROWN<         DESIGNER    27740.00    600.00
000010 WILLIAM<   JONES<         DESIGNER    18270.00    400.00
000011 JENNIFER<   LUTZ<          DESIGNER    29840.00    600.00
000012 EVA<     PULASKI<       MANAGER    36170.00    700.00
000013 JOHN<    GEYER<         MANAGER    40175.00    800.00
000014 EILEEN<   HENDERSON<     MANAGER    29750.00    600.00
000015 THEODORE< SPENSER<       MANAGER    26150.00    500.00
000016 **** End of data ****

Command ==>
F1=Help      F2=Zoom      F3=Exit      F4=CRetriev  F5=RFind     F6=RChange
F7=Up        F8=Down      F9=Swap      F10=Left     F11=Right    F12=Cancel
    
```



Referential Integrity

```

FM/DB2 (DB21)                                0 of 47
TABLE BLAIR.EMP                                Format IABL
EMPNO  FIRSTNAME  MIDINIT  LASTNAME  WORKDEPT  PHONENO  HIRESDATE
£1     £2         £3       £4        £5        £6       £7
CH(6)  VARCHAR(12) CH(1)    VARCHAR(15) CH(3)    CH(4)    DATE
PU-->  <---+----1->  -          <---+----1-----> <-NF    <-->    <---+---->
000000 ***** Top of data *****
e530 R 000010 CHRISTINE< I          HAAS<      ERC        3978      1965-01-01
000002 000020 MICHAEL< L          THOMPSON<  B01       3476      1973-10-10
    
```

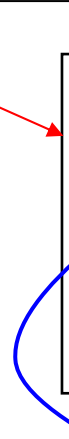
```

Process  Options  Utilities  Help
FM/DB2 (DB21) DB2 Save Error Action Row 1 to 1 of 1
Command ===> REDIT
DB2 reported a No Primary Key error while attempting to save this row.
Relationship      : RED (See below for key column details)
Parent table     : BLAIR.DEPT
Dependent table  : BLAIR.EMP
Explanation: The insert or update operation on this line would have resulted
in a foreign key value for which there is no corresponding primary key value.
Instructions: Type REDIT on the command line to edit the parent table shown
above. Press ENTER or enter EXIT to return to the edit session and correct
the error. Press the CANCEL key to terminate the edit session. Any changes
made since the last commit point will be lost.
Parent Column Name  Depndnt Column Name  Value
DEPTNO             WORKDEPT             ERC
***** END OF DB2 DATA *****
    
```

```

Process  Options  Utilities  Help
FM/DB2 (DB21) Table Edit (related) Parent table
14 rows fetched
DEPTNO  DEPTNAME  MGRNO  ADMRDEPT  LOCATION
£1     £2        £3     £4        £5
CH(3)  VARCHAR(36) CH(6)  CH(3)    CHARACTER(1)
PU>    <---+----1-----2-----3-----+> <-NF+> <-NF    <---+----1-
000000 ***** Top of data *****
000001 A00      PUFFY COMPUTER SERVICE DIV.< 000010 A00
000002 B01      PLANNING< 000020 A00
000003 C01      INFORMATION CENTER< 000030 A00
000004 D01      DEVELOPMENT CENTER< 000040 A00
000005 D11      MANUFACTURING SYSTEMS< 000060 D01
000006 D21      ADMINISTRATION SYSTEMS< 000070 D01
000007 E01      SUPPORT SERVICES< 000050 A00
000008 E11      OPERATIONS< 000090 E01
000009 E21      SOFTWARE SUPPORT< 000100 E01
000010 F22      BRANCH OFFICE F2< 000000 E01
000011 G22      BRANCH OFFICE G2< 000000 E01
000012 H22      BRANCH OFFICE H2< 000000 E01
000013 I22      BRANCH OFFICE I2< 000000 E01
000014 J22      BRANCH OFFICE J2< 000000 E01
000015 ***** End of data *****
    
```

e



SQL Prototyping

Process Options Utilities Help

FM/DB2 (DF52)

SQL Prototyping, Execution and Analysis

Command ==> 1

- | | | |
|---|-----------------|---|
| 1 | Basic | Prototype SELECT statements (basic) |
| 2 | Advanced | Prototype SELECT statements (advanced) |
| 3 | Enter | Enter, execute and explain SQL statements |
| 4 | Edit | Edit and execute SQL statements from a data set |
| 5 | Utility | Manage tables used by SQL explain |

SQL Prototyping

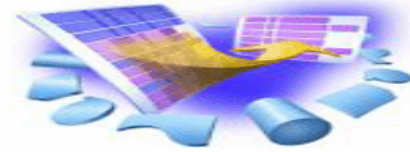
File Edit Edit_Settings Menu Utilities Compilers Test Help

```

EDIT          SYS04269.T002550.RA000.ALLANT.R0249007          Columns 00001 00072
Command ==> create          Scroll ==> PAGE
***** ***** Top of Data *****
=NOTE= All changes made during this edit session will be discarded at the end
=NOTE= of the edit session.
=NOTE= Use the CREATE or REPLACE commands to take a copy of the SQL.
c90001 SELECT #1.EMPNO, #1.FIRSTNME, #1.MIDINIT, #1.LASTNAME, #1.WORKDEPT, #1.
000002          JOB, #2.DEPTNAME
000003 FROM      DSN8610.EMP #1, DSN8610.DEPT #2
000004 WHERE     #1.WORKDEPT = #2.DEPTNO AND #1.WORKDEPT = 'C01'
000005 ORDER    BY #1.LASTNAME ASC
***** ***** Bottom of Data *****

```

File Manager IMS – Features principali



- **Utilities Online per il DB IMS**
 - Edit ed Browse dei dati
 - Extract di segmenti dal database
 - Load dei segmenti nel database
- **Supporto per utilizzare il database in modalità:**
 - Physical DBD
 - Logical DBD
- **Accesso al databases con :**
 - Static PSBs
 - Dynamic PSBs
- **Processare I dati del database utilizzando indici secondari**
- **Supporto per HDAM, HIDAM, HISAM, HSAM, DEDB. MSDB**
- **Supporto ai layouts COBOL o PL/I per il formattamento dei dati**
 - Edit e Browse dei segmenti in formato “tabular o character”
 - Accesso ai source in PDS, PDSE, o librerie Panvalet
- **Lavorare con segmenti che hanno layouts multipli.**
- **Usare criteri di selezione flessibili sui segments per selezionare oppure estrarre I dati da processare in browse o edit.**
- **Cambiare i criteri di selezione e formattare “al volo” I dati, mentre si è in fase di browsing o editing.**

Primary Commands (esempi)

```

FM/IMS                               Browse : Database Positioning
Command ==> _____ Scroll CSR

Database DI21PART                      Key sequence          Format TABL
View   ERIC.FMN.VIEW(DI21VU01)         Key
Cmd  SX Level Segment Description len Key value
_  S  X  1  PARTROOT 17  02AN960C10
_  X  X  2  STANINFO  2  ..
_  X  X  2  STOKSTAT 16  ..
_  X  X  3  CYCCOUNT  2  ..
_  X  X  3  BACKORDR 10  ..
**** End of data ****
    
```

```

Process Options Help
FM/IMS                               Edit : Database Positioning
Command ==> HIER                      Scroll CSR

Database DI21PART                      Key sequence          Format TABL
View   ERIC.FMN.VIEW(DI21VU01)         Key
Cmd  SX Level Segment Description len Key value
_  S  X  1  PARTROOT 17  02AN960C10
_  X  X  2  STANINFO  2  ..
_  X  X  2  STOKSTAT 16  ..
_  X  X  3  CYCCOUNT  2  ..
_  X  X  3  BACKORDR 10  ..
**** End of data ****
    
```

Posizionarsi, con la chiave, all'inizio del segmento per visualizzare i dati

Come visualizzare una rappresentazione grafica della struttura del Database.

```

FM/IMS                               Browse : IMS Database DI21PART
Command ==> _____ Scroll CSR
                                SHOW SUP OFF Scope DB
                                Format TABL

Cmd Level Segment £4 £5 £6 £7
_ 1 PARTROOT 02 AN960C10 WASHER
_ 2 STANINFO 1 segment
_ 2 STOKSTAT 3 segments
_ 1 PARTROOT 02 CK05CW181K CAPACITOR
_ 2 STANINFO 1 segment
_ 2 STOKSTAT 3 segments
_ 1 PARTROOT 02 CSR13G104KL KR1J50KS
_ 2 STANINFO 1 segment
_ 2 STOKSTAT 3 segments
    
```

```

Process Options Help
FM/IMS                               Database Hierarchy
Command ==> _____ Scroll CSR

Database DI21PART

*****
* PARTROOT*
*****001*
!-----!
!-----!
*****
* STANINFO* * STOKSTAT*
*****002* * *****003*
!-----!
*****
* CYCCOUNT* * BACKORDR*
*****004* * *****005*
    
```

EDIT: TS Queue (Manipolazione dei dati)

```

Process  Options  Help
-----
FM/CICS          List CICS Resources Entry Panel

CICS File, Transient Data, Temporary Storage Queue, or Enqueue Name:
Resource name . . *
Sysid . . . . .
TS pool name . . .

Processing Options:
CICS Resource
2 1. File
   2. Temporary Storage
   3. Transient Data
   4. Enqueue
    
```

Per listare le code TSQ

```

Process  Options  Help
-----
FM/CICS          CICS Temporary Storage Selection List          Row 1 of 1

Queue      Loc  Items  Size  Max  Min Tran  Last Sys  Pool
-ERIC      AUX   7      704  128  64 FM    31
**** End of data ****
    
```

Per Editare le code TSQ

```

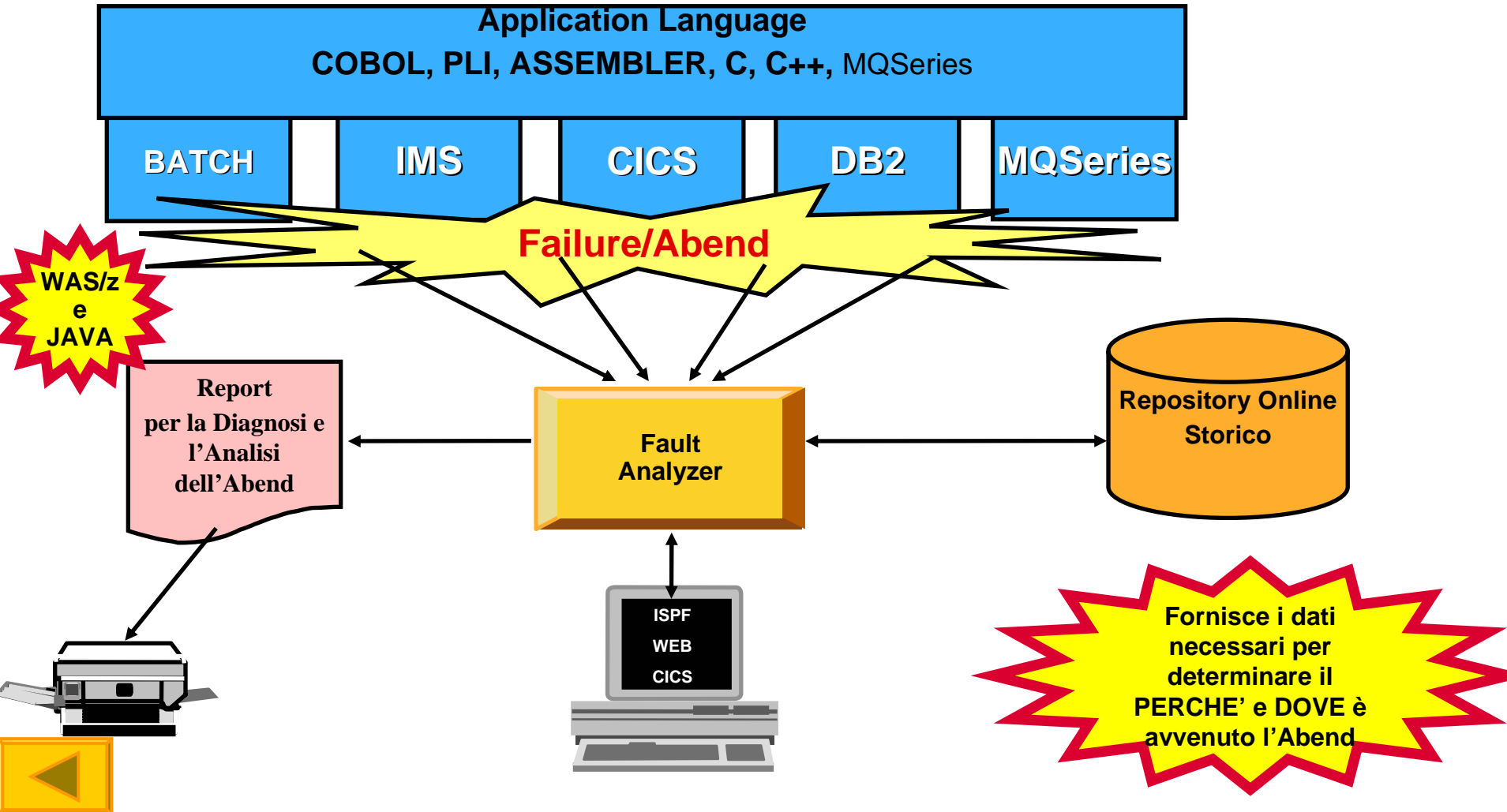
Process  Options  Help
-----
Edit          TS:ERIC          Rec 0 of 7
Col 1      Insert length 128          Format CHAR
-----1-----2-----3-----4-----5-----6-----7-----
000000 **** Top of data ****
000001 THIS IS A SAMPLE
000002 THIS IS A SAMPLE
000003 THIS IS A SAMPLE
000004 EXEC CICS WRITEQ QUEUE('""CI0028') FROM(&DFHC)
000005 EXEC CICS WRITEQ QUEUE('""CI0029') FROM(&DFHC)
000006 EXEC CICS READQ QUEUE('""CI0028') INTO(&DFHC)
000007 EXEC CICS READQ QUEUE('""CI0029') INTO(&DFHC)
000008 **** End of data ****
    
```



Fault Analyzer

Cod: 5655-P16

Aiuta a trovare rapidamente il punto dove l'applicazione va in errore ed offre consigli su come risolvere l'abend



Funzionalità principali di Fault Analyzer



- **Un singolo Prodotto per tutti gli Ambienti**
- **Modalità Operative**
 - Real Time Analysis
 - Batch Dump Re-analysis
 - Interactive Dump Re-analysis

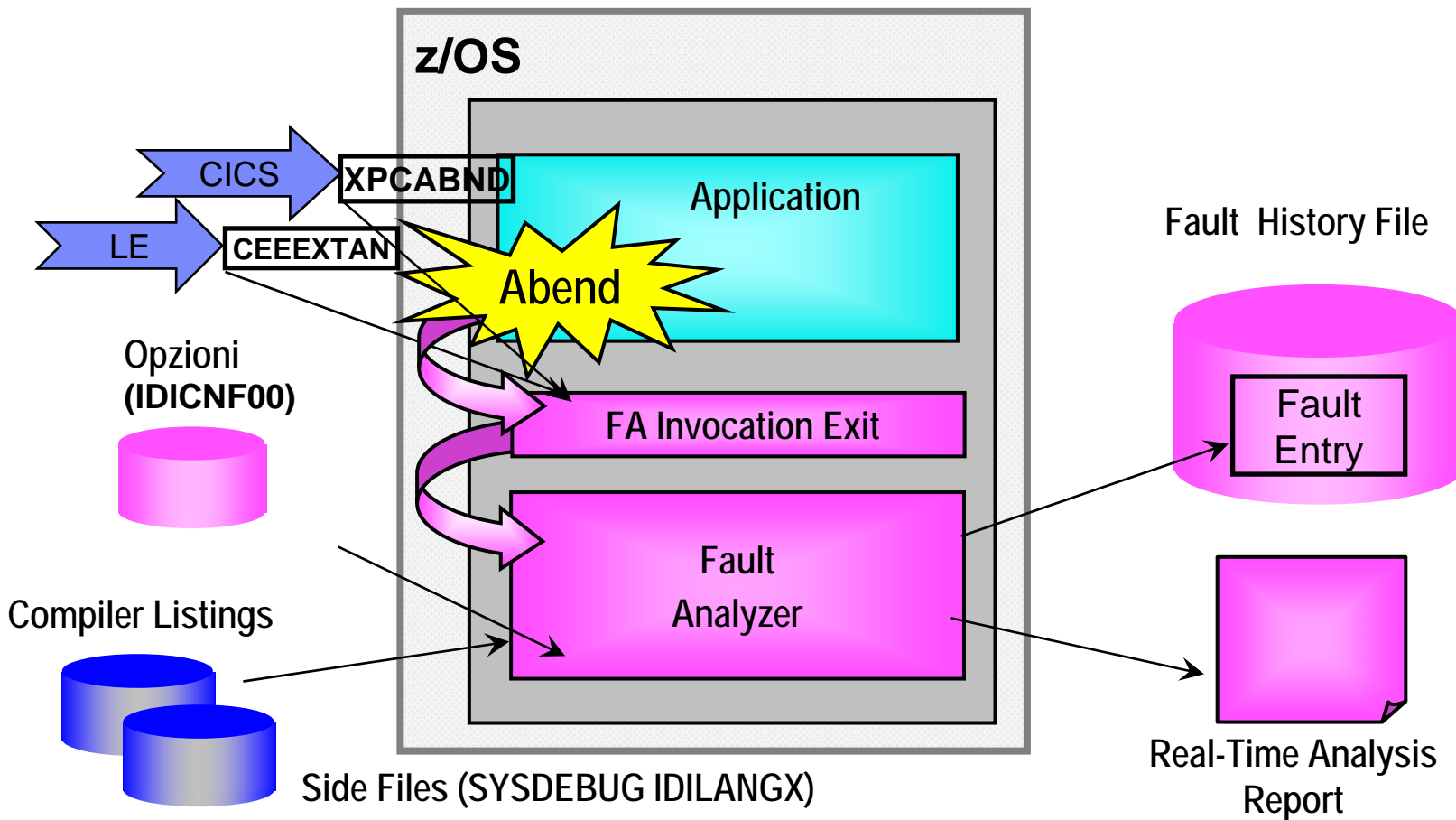


- **Principali Features:**
 - Analisi a Livello Applicazione
 - Informazioni raccolte al momento dell' Abend
 - Traduzione del "Dump" da un basso livello ad informazioni di tipo Application-level
 - Decodifica dell'Abend Code e descrizione dei Messages
 - Non è necessario Ri-compilare le Applicazioni
 - No modifiche ai JCL
 - Nessuna alterazione alle Performance
 - Fault History su ISPF e Log Facility
 - Supporto a qualsiasi livello di Compilatore Cobol e DB2 integrato 64-bit
- **Informazioni ulteriori su:**
www.ibm.com/software/awdtools/deployment

Real-Time Analysis



Quando un'Applicazione va in ABEND, un exit invoca FA. Quest'ultimo genererà un Report per l'analisi del Dump.



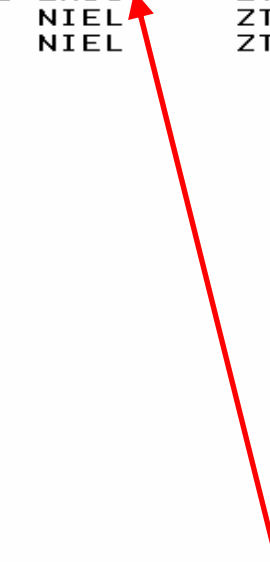
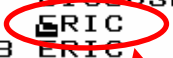
Fault Analyzer: Filtering

```

File Options View Services Help
IBM Fault Analyzer - Fault Entry List                               Line 1 Col 1 80
Fault History File of 'ADTCFG.IDI.HIST'
éThe following line commands are available: ? (Query), V or S (View real-time
report), I (Interactive reanalysis), B (Batch reanalysis), D (Delete), H
(Duplicate history).è

Fault ID Job/Tran User ID Sys/Job Abend Date CICS Trn Program His
---
F00624 LE01 CICSUSER ADTTOR AEIV 2007/01/08 LE01 LE0001 ADT
F00619 TRAD CICSUSER ADTMONO AED3 2007/01/08 TRAD MYTRADD ADT
F00615 S001 CICSUSER ADTMONO AEIS 2007/01/08 S001 S001TRAM ADT
F00377 TRAD CICSUSER ADTMONO 4038 2006/10/12 TRAD EQA50XIO ADT
F00376 TRAD CICSUSER ADTMONO 4038 2006/10/12 TRAD MYTRADM ADT
F00360 ERIC2 ERIC ZT01 S0C7 2006/10/10 n/a SAM2 ADT
F00359 IDIVPCOB ERIC ZT01 S0C7 2006/10/09 n/a IDISCBL1 ADT
F00111 NIELR2 NIEL ZT01 S0C7 2006/04/04 n/a SAM2 ADT
F00105 NIELR2 NIEL ZT01 S0C7 2006/04/04 n/a SAM2 ADT

*** Bottom of data.
    
```



Configurazione delle colonne

```

Command ==>
F1=Help      F3=Exit      F4=MatchCSR  F5=RptFind  F6=Actions  Scroll ==> CSR
F8=Down     F10=Left    F11=Right   F12=MatchALL F7=Up
    
```

Interactive Reanalysis: Menu Principale

```

File  View  Services  Help
-----
Interactive Reanalysis Report                               Line 1 Col 1 80
JOBNAME: ERIC2      SYSTEM ABEND: 0C7                    ZT01      2006/10/10  10:58:49

Fault Summary:
Module SAM2, program SAM2, offset X'486': Abend S0C7 (Data Exception).

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

éFault Analyzer maximum storage alloc
*** Bottom of data.

```

Ogni field **marrone** ha un link hypertext.

Offset o **line number** se è disponibile il source code

```

File  View  Services  Help
-----
Interactive Reanalysis Report                               Line 1 Col 1 80
JOBNAME: ERIC2      SYSTEM ABEND: 0C7                    ZT01      2006/10/10  10:58:49

Fault Summary:
Module SAM2, program SAM2, source line $ 55 : Abend S0C7 (Data Exception).

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

éFault Analyzer maximum storage allocated: 1.48 megabytes.è
*** Bottom of data.

```

Analisi dell'abend: Synopsis

```

File View Services Help
Interactive Reanalysis Report
JOBNAME: ERIC2 SYSTEM ABEND: 0C7 ZT01 2006/10/10 10:58:49
Line 1 Col 1 80

Fault Summary:
Module SAM2, program SAM2, offset X'486': Abend S0C7 (Data Exception).

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

Fault Analyzer maximum s
*** Bottom of data.
    
```

```

File View Services Help
Synopsis
JOBNAME: ERIC2 SYSTEM ABEND: 0C7 ZT01 2006/10/10 10:58:49
Line 1 Col 1 80

A system abend 0C7 occurred in module SAM2 program SAM2 at offset X'486'.

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:

NOTE: Program SAM2 was compiled on 2006/10/09 at 17:23:55. The program listi
for SAM2 was created on 2006/10/10 at 11:43:54.

Source
Line #
000055 ADD LOCATION-PREFIX TO ORD-ITEM-CODE GIVING LOOKUP-CODE.

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

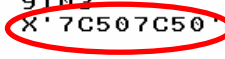
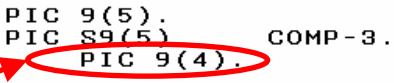
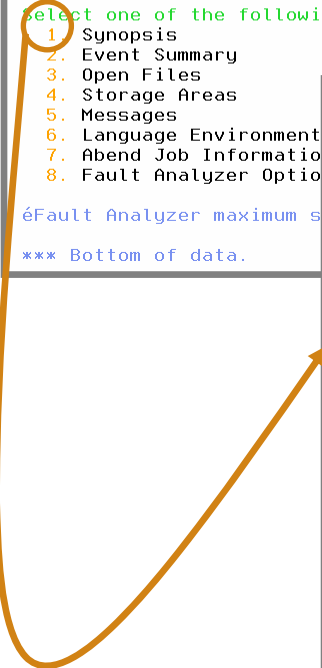
Source
Line #
000018
000019
000037

Data field values at time of abend:

LOCATION-PREFIX = 9000
LOOKUP-CODE = 9102
ORD-ITEM-CODE = X'7C507C50' *** Cause of error ***

PIC 9(5).
PIC S9(5) COMP-3.
PIC 9(4).
    
```

Per accedere al Source code



*** Cause of error ***



Source Code

File View Services Help

```
Program SAM2 Compiler Listing                               Line 21 Col 1 80
JOBNAME: ERIC2      SYSTEM ABEND: 0C7                     ZT01      2006/10/10 10:58:49
000017              05  WORK-COUNT                        PIC 9(5)   VALUE 999.
000018              05  LOOKUP-CODE                       PIC 9(5).
000019              05  LOCATION-PREFIX                   PIC S9(5)   COMP-3.
000021      01  ITEM-TABLE.
000022              05  ITEMS                               OCCURS 6 TIMES
000023                                     INDEXED BY ITEM-INDEX.
000024              10  ITEM-CODE                           PIC S9(5)   COMP-3.
000025              10  ITEM-DESCRIP                       PIC X(15).
000027      LINKAGE SECTION.
000028      COPY ORDREC.
000029      01  ORDER-RECORD.
000030              05  ORD-NUMBER                          PIC 9(5).
000031              05  FILLER REDEFINES ORD-NUMBER.
000032              10  ORDER-REC-COMMENT                   PIC X.
000033              10  FILLER                              PIC X(4).
000034              05  FILLER                              PIC XX.
000035              05  ORD-LOCATION-CODE                    PIC 9.
000036              05  FILLER                            PIC XX.
000037      05  ORD-ITEM-CODE                              PIC 9(4).
000038              05  FILLER                              PIC X.
000039              05  ORD-CUST-ID                        PIC X(10).
000040              05  ORD-NUM-ITEMS                      PIC 9(5).
000041              05  FILLER                            PIC X.
000042              05  ORD-SALE-AMOUNT                    PIC 9(5)V99.
```

Calling Program: Source Code

File View Services Help

Program SAM1 Compiler Listing CHARS 'order-record' fou
JOBNAME: ERIC2 SYSTEM ABEND: 0C7 ZT01 2006/10/10 10:58:49

The listing file used for the following was found via Compiler TEST option in ERIC.IDI.COBLIST(SAM1).

Source

Line

```
000001 * -----
000002 *   PROGRAM   S A M 1 (COBOL)
000003 *
000004 *   SAMPLE PROGRAM
000005 * -----
000006 *
000007 IDENTIFICATION DIVISION.
000008 PROGRAM-ID.   SAM1.
000009 *
000010 ENVIRONMENT DIVISION.
000012 INPUT-OUTPUT SECTION.
000013 FILE-CONTROL.
000014     SELECT ORDERS-FILE
000015     ASSIGN TO ORDERS
000016     ACCESS IS SEQUENTIAL.
000017     SELECT REPORT-FILE
000018     ASSIGN TO SUMMARY
000019     ACCESS IS SEQUENTIAL.
000020 *
000021 DATA DIVISION.
000023 FILE SECTION.
000024 FD ORDERS-FILE
000025     RECORD CONTAINS 80 CHARACTERS
000026     RECORDING MODE IS F
000027     LABEL RECORDS OMITTED.
000028 COPY ORDREC.
000029 01 ORDER-RECORD.
000030     05 ORD-NUMBER                               PIC 9(5).
000031     05 FILLER REDEFINES ORD-NUMBER.
```

Open Files

```

File View Services Help
System-Wide Open Files                               Line 1 Col 1 80
JOBNAME: ERIC2          SYSTEM ABEND: 0C7           ZT01          2006/10/10  10:58:49

Event 1 Program SAM1 Open Files
File Name . . . . . ORDERS
File Name . . . . . SUMMARY
Non-Event-Related Open Files
File Name . . . . . SYSOUT
*** Bottom of data.
    
```

Hypertext a **File Manager** per la modifica del file.

Hypertext per accedere ai records del file

Causa dell'Abend

```

File Information                               Line 1 Col 1 80
JOBNAME: ERIC2          SYSTEM ABEND: 0C7           ZT01          2006/10/10  10:58:49

File Name . . . . . ORDERS
Data Set Name . . . . . ERIC.IDI.LAB(ORDERS2)
File Attributes . . . . . ORGANIZATION=SEQUENTIAL, ACCESS MODE=SEQUENTIAL,
                                RECFM=FIXED
Last I/O Function . . . . . READ
Open Status . . . . . INPUT
File Status Code . . . . . 0

Previous Record . . . . . : Record data length 80
Address Offset           Hex
1A1C1DA0                F0F0F0F0 F44040F9 4040F0F1 F0F340C4 *00004 9 0103 D*
1A1C1DB0                C1E5C9E2 40404040 40F0F0F0 F0F740F0 *AVIS 00007 0*
1A1C1DC0                F0F0F2F0 F0F0404C 7E7E7DF0 F0F0F0F0 *002000 <='00000'*
1A1C1DD0                7DC9D540 7BC9E3C5 D4E240C3 C1E4E2C5 *'IN £ITEMS CAUSE*
1A1C1DE0                E240E2F0 C3C24040 C9D540E2 C1D4F140 *S SOCB IN SAM1 *

Current Record . . . . . : Record data length 80
Address Offset           Hex
1A1C1DF0                F0F0F0F0 F54040F9 40407C50 7C5040E2 *00005 9 à&à& S*
1A1C1E00                E3D6E4E3 40404040 40F0F0F0 F0F14050 *TOUT 00001 0*
1A1C1E10                F0F0E1E0 F0E0404C 7E7E7DF0 507C50D *001000 <='à&à&'*
1A1C1E20                40C9D540 C9E3C5D4 C3E6C405 40C201E4 * IN ITEMCODE CAU*
1A1C1E30                E2C5E240 E2F0C3F7 40C9D540 E2C1D4F2 *SES SOC7 IN SAM2*

Next Record . . . . . : Record data length 80
Address Offset           Hex
1A1C1E40                F0F0F0F0 F64040F9 4040F0F1 F0F440E2 *00006 9 0104 S*
1A1C1E50                C5D5D540 40404040 40F0F0F2 F5F040F0 *ENN 00250 0*
1A1C1E60                F2F0F0F0 F0F04040 40404040 40404040 *200000 *
1A1C1E70                40404040 40404040 40404040 40404040 *
Line 1A1C1E80 same as above
*** Bottom of data.
    
```


Fault Analyzer: Informazioni CICS

■ Synopsis

- Disponibile il “Source code” precedente al punto dell’abend
- Source code relativo ai dati
- Valori dei “Data field”

■ Event Summary

– Event Details

- “Source code” precedente al failure
- “Source code” dei dai coinvolti
- Valori dei “Data field”
- Registri
- EXEC Interface Block
- Messaggi
- Aree di Memoria
 - Working Storage
 - Linkage Section
 - Commarea

■ Informazioni CICS

- ☑ CICS Control Blocks
- ☑ Memoria relativa alla Transazione CICS
- ☑ Buffer dell’ultima Mappa CICS 3270 (Hex)
- ☑ Formattazione della “Trace” CICS
- ☑ CICS Recovery Manager

■ Area di Memoria

■ Messaggi

■ Language Environment Heap Analysis

■ Ulteriori Informazioni sull’abend:

- ✗ Concatenazione DFHRPL
- ✗ Concatenazione JOBLIB / STEPLIB

■ Opzioni attive al momento dell’abend

Fault Analyzer: Informazioni CICS

```

File View Services Help
CICS Information
TRANID: TRAD      CICS ABEND: 4038

CICS Release. . . . . : 0640
Application ID. . . . . : ADTEMONO
CICS Transaction ID . . . . . : TRAD
CICS Task Number. . . . . : 00337
CICS Terminal ID. . . . . : 0085
CICS Terminal Netname . . . . . : TCP00085

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.

```

```

CICS Control Blocks
TRANID: TRAD      CICS ABEND: 4038      ZT01      2006/10/12 15:15:34

User EXEC Interface Block (EIB) at Address 00100000 :
Task Start Time . . . . . : 15:15:07      (EIBTIME - HH:MM:SS)
Task Start Date . . . . . : 2006/10/12      (EIBDATE - YYYY/MM/DD)
Transaction ID. . . . . : TRAD      (EIBTRMID)
Task Number . . . . . : 337      (EIBTASKN)
Terminal ID . . . . . : 0085      (EIBTRMID)
Cursor Position . . . . . : 0539      (EIBGPOSN)
Communication Area Length . . . . . : 158      (EIBALEN)
Attention ID. . . . . : ENTER      (EIBAIID)
Last CICS Command . . . . . : RETURN      (EIBFN)
RESP Condition. . . . . : NORMAL      (EIBRESP)
RESP Condition Reason . . . . . : 00000000      (EIBRESP2)
Data Set ID . . . . . : n/a      (EIBDS)
Request ID. . . . . : n/a      (EIBREQID)
Program Name. . . . . : n/a      (EIBSRCE)
Syncpoint Required. . . . . : No      (EIBSYNC)
Facility Free Required. . . . . : No      (EIBFREE)
Continue Receiving Data . . . . . : No      (EIBRECV)
Attach Header Data in RU. . . . . : No      (EIBATT)
RU Indicates End-of-Chain. . . . . : No      (EIBEOC)
User Data Contains FMM. . . . . : No      (EIBFMM)
Data is Complete. . . . . : No      (EIBCOMPL)
Signal Received . . . . . : No      (EIBSIG)
CONFIRM Request Received. . . . . : No      (EIBCONF)
Error Code Received . . . . . : No      (EIBERRCD)
SYNCPPOINT ROLLBACK Req'd. . . . . : No      (EIBSYNRB)
No Data Sent. . . . . : No      (EIBNODAT)
Rollback. . . . . : No      (EIBRLDBK)

Communication Area (COMMAREA) at Address 1B3037E8 :
Address_Offset Hex      EBCDIC
1B3037E8      00000003 C79381A2 *      ....Glas*

```

PF8: CSA, CWA, TCA, TACB, EIS, TCTTE, ...

```

File View Services Help
CICS Trace Selection Parameters
Specify CICS trace selection parameters and press Enter.
Format . . . . . : A (Abbrev/Short/Full)
Exception Only . . . . . : N (Yes/No)
Sequence Start . . . . . : 000001
Highlight Interval 0.128 (0-99.9999999999 secs)
Task IDs . . . . . :
KE Task Numbers . . . . . :
Terminal IDs . . . . . : Caps Y
Transaction IDs . . . . . : Caps Y
Time Start . . . . . : (HHMMSS)
End . . . . . : (HHMMSS)
Domain/Point IDs . . . . . :

00000010,MYTR
TACB,CICS
60

00337 QR AP 0742 ABAB EXIT CREATE_ABEND_RECORD/OK 1B562008
00337 QR AP 0741 ABAB ENTRY START_ABEND 1B562008,NO,YES
00337 QR DU 0500 DUDT ENTRY INQUIRE_TRAN_DUMPCODE 4038
00337 QR DU 0600 DUTH ENTRY INQUIRE_TRAN_DUMPCODE 4038
00337 QR DU 0601 DUTH EXIT INQUIRE_TRAN_DUMPCODE/EXCEPTION DUMPCODE_NOT_F
00337 QR DU 0501 DUDT EXIT INQUIRE_TRAN_DUMPCODE/EXCEPTION DUMPCODE_NOT_F
00337 QR AP 1942 APLI *EXEC* Abend-Percolate START_PROGRAM,MYTRADD,CE
00337 QR AP 0741 ABAB ENTRY INQUIRE_ABEND_RECORD LATEST
00337 QR AP 0742 ABAB EXIT INQUIRE_ABEND_RECORD/OK 0000000000000000,4038,
00337 QR AP 1941 APLI EXIT START_PROGRAM/EXCEPTION TRANSACTION_ABEND,4038
00337 QR LD 0001 LDLD ENTRY RELEASE_PROGRAM 1B5F258,9BCE6020
00337 QR LD 0002 LDLD EXIT RELEASE_PROGRAM/OK 1BCE6000,4070,ERDSA
00337 QR PG 1700 PGCH ENTRY DELETE_OWNED_CHANNELS
00337 QR PG 1701 PGCH EXIT DELETE_OWNED_CHANNELS/OK
00337 QR PG 1102 PGLE EXIT LINK_EXEC/EXCEPTION TRANSACTION_ABEND,,,403

```

```

Last CICS 3270 Screen Buffer
TRANID: TRAD      CICS ABEND: 4038      ZT01      2006/10/12 15:15:34

Column
Row 1 Share Trading Demonstration .....TRADER
2
3
4 Share Trading Manager: Options
5
6 1. New Real-Time Quote
7
8 2. Buy Shares
9
10 3. Sell Shares
11
12
13
14
15
16
17 Please select an option (1,2 or 3): 1
18
19
20
21
22
23
24 .PF8=Return.....PF1

*** Bottom of data.

```

Fault Analyzer: Informazioni DB2

- **Synopsis**
- **Event Summary**
 - Event Details
 - SQL Communications Area
 - SQLCODE Explanation
 - SQLSTATE Explanation
- **Informazioni DB2**
 - Subsystem ID
 - Versione
 - Nome del Plan/Package bind e Time-Stamp
 - Ultimo Statement SQL eseguito
 - Host Variables
 - SQL Communications Area
 - Spiegazione di SQLCODE e SQLSTATE
- **Informazioni (Job) sull'Abend**
- **Opzioni attive al momento**

Fault Analyzer: Informazioni DB2

DB2 Information Line 1 Col 1 80
 TRANID: TRAD CICS ABEND: 4038 ZT01 2006/10/12 15:15:34

DB2 Subsystem DB21

```
DB2 Version . . . . . : V8R1M5
Plan Name . . . . . : MYTRADD (Bound 2005/12/02 17:50:52)
Plan Owner . . . . . : DB2ADM
Database Request Module Name: ADTCFG.DB21.DBRMLIB(MYTRADD)
Consistency Token . . . . . : X'17B09AAB015C12DF'
Primary Authorization ID. . . : ERIC
Current SQL ID. . . . . : ERIC
Precompiler Statement No. . . : 477
Last Executed SQL Statement : SELECT NO_SHARES INTO
                             :DCLCUSTOMER-DETAILS.NO-SHARES FROM
                             CUSTOMER_DETAILS WHERE CUSTOMER =
                             :DCLCUSTOMER-DETAILS.CUSTOMER AND COMPANY =
                             :DCLCUSTOMER-DETAILS.COMPANY-CUST
```

Input Host Variables:

```
Name and Data Type. . . . . : DCLCUSTOMER-DETAILS.CUSTOMER CHARACTER(25)
At Address. . . . . : 1B312830
Data Value. . . . . : ERIC
```

```
Name and Data Type. . . . . : DCLCUSTOMER-DETAILS.COMPANY-CUST CHARACTER(20)
At Address. . . . . : 1B312849
Data Value. . . . . : Glass_and_Luget_plc
```

Output Host Variables:

```
Name and Data Type. . . . . : DCLCUSTOMER-DETAILS.NO-SHARES INTEGER
At Address. . . . . : 1B31285D
Data Value. . . . . : 0
```

DB2 Control Blocks

SQL Communications Area (SQLCA) for Subsystem DB21

Offset	Field	Value	EBCDIC
Dec	Hex	Name	Hex
0	(0)	SQLCAID	E2D8D3C8 C1404040
8	(8)	SQLCABC	00000088
12	(C)	SQLCODE	FFFFFFC78
<u>SQLCODE -904 Explanation</u>			
16	(10)	SQLERRML	003B
18	(12)	SQLERRMC	F0F0C4F7 F0F0F2F4 FFF0F0F0 F0F0F2F2
34	(22)		F0FFC4C2 F2F0C3C1 E34BC4E2 D5C4C2C3
50	(32)		4BE3D9C1 C4C5D9C4 C24BE3D9 C1C4C5D9
66	(42)		4BC9F0F0 F0F14BC1 F0F0F140 40404040
82	(52)		40404040 4040
88	(58)	SQLERRP	C4E2D5E7 D9D9C340
96	(60)	SQLERRD	00000066 00C9000A 00000000 FFFFFFFF
112	(70)		00000000 00C20042
120	(78)	SQLWARN	40404040 40404040 404040
131	(83)	SQLSTATE	F5F7F0F1 F1
<u>SQLSTATE 57011 Explanation</u>			

*** Bottom of data.

Sulla nuova Versione anche informazioni WebSphere

File View Services Help

System-Wide Information

Line 1 Col 1 80

Command ==>

Scroll ==> CSR

JOBNAME: BBOS001S SYSTEM ABEND: OCB

STLABF1

2004/03/02

13:22:58

Storage Areas

Java Information

WebSphere Information

Language Environment Heap Analysis

*** Bottom of data.

Enter

Fault Analyzer: Web Browser Interface

Fault entries for history file 'ADTCFG.IDL.HIST'

Column Configuration

<u>FAULT_ID</u>	<u>JOB/TRAN</u>	<u>USER_ID</u>
FOO296	ADTS1012	ADTS101
FOO292	DMSRSD	DMSRS
FOO290	AJRW	AJRW
FOO288	ADTS201B	ADTS201
FOO286	ARYSJ002	PIERRE
FOO283	LYSTE16	LYSTE1
FOO276	AJRWRVCV	AJRW
FOO275	EQAYSESM	STC
FOO274	CEMT	CICSUSER
FOO111	NIELR2	NIEL
FOO105	NIELR2	NIEL

```

IBM FAULT ANALYZER SYNOPSIS
IBM FAULT ANALYZER EVENT SUMMARY
IBM FAULT ANALYZER EVENT DETAILS
- EVENT 1 OF 5: CALL (DSA ADDRESS 1A191030)
- EVENT 2 OF 5: CALL (DSA ADDRESS 1A191208)
- EVENT 3 OF 5: ABEND SOC7
SYSTEM-WIDE INFORMATION
- OPEN FILES
- STORAGE AREAS
- LANGUAGE ENVIRONMENT HEAP ANALYSIS
IBM FAULT ANALYZER ABEND JOB INFO
IBM FAULT ANALYZER OPTIONS
*****
* IBM Fault Analyzer for z/OS V6R1M0 (UK16955 2006/08/11) *
* *
* (C) Copyright IBM Corp. 2000, 2005. All rights reserved. *
*****
JOBNAME: ADTS1012  SYSTEM ABEND: OC7           ZT01      2006/09/15  14:01:02

  I B M   F A U L T   A N A L Y Z E R   S Y N O P S I S
  top

A system abend OC7 occurred in module SAM2 program SAM2 at offset X'462'.

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:

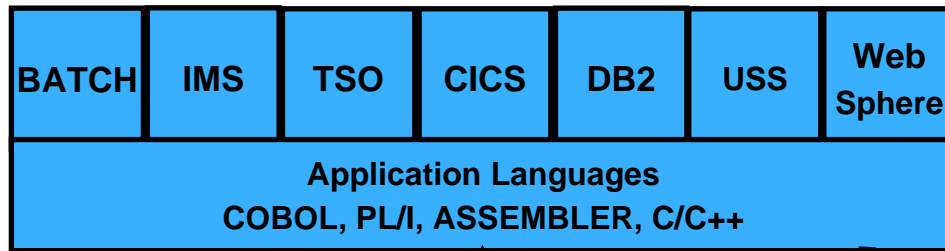
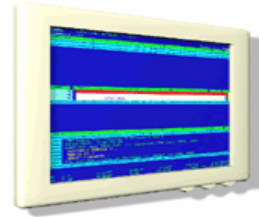
Source
Line #
-----
000055          ADD LOCATION-PREFIX TO ORD-ITEM-CODE GIVING LOOKUP-CODE.

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

Source
Line #
-----
000019          05 LOCATION-PREFIX          PIC S9(5)      COMP-3.
000037          05 ORD-ITEM-CODE           PIC 9(4).
  
```

Debug Tool U&AF

Analisi logica del sorgente di applicazioni enterprise e per individuare problematiche di coding



Debug di applicazioni scritte in linguaggi misti e ambienti diversi

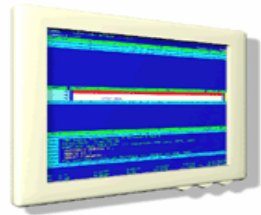
Debug Tool UAF

3270

GUI

- **Interfaccia unica e comune per diversi Sistemi e Subsystems**
- **Linguaggi supportati**
 - COBOL (tutte le versioni), C/C++, PL/I, assembler, Java (OS/390)
- **Ambienti Supportati**
 - CICS, TSO, JES/Batch, IMS
Incluso IMS/TM, DB2 Incluso Stored Procedures, Unix System Services (USS), MQSeries
- **Debug Tool Utilities and Advanced Functions**

Debug Tool U&AF Features principali



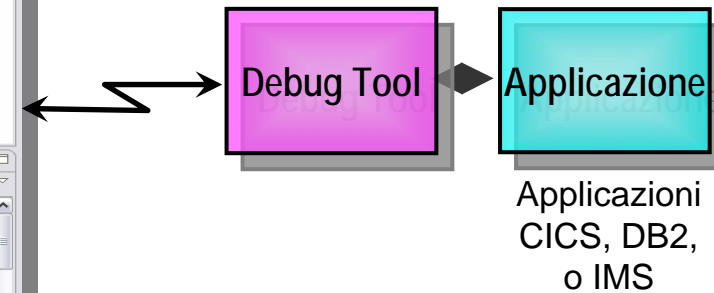
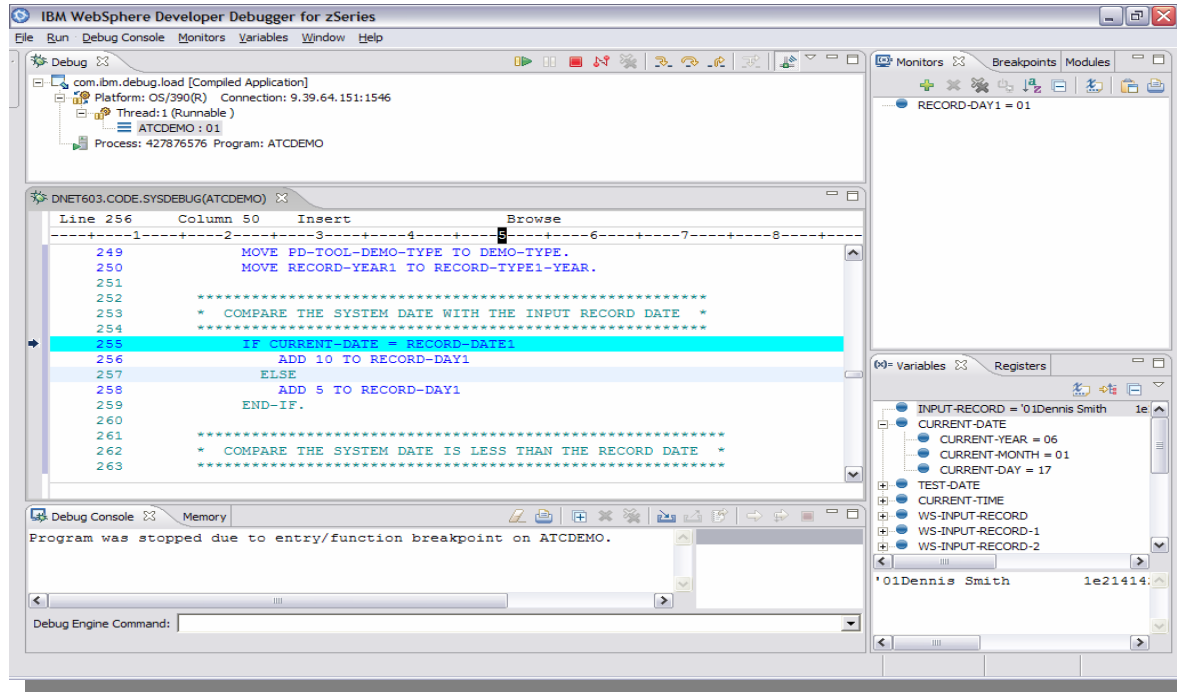
■ Debug Tool Features:

- Tool per il Debug a livello “Source”
- Supporto ai Breakpoints multipli
- Utilizzo dei servizi del “LE”:
 - Breakpoints a condizioni LE
 - Recovery in fase dell’Abend del programma
- Debug in modalità “Step”
- Disponibilità del Log , con relativi Comandi, durante la sessione di Debug
- Patching dinamico
- Supporto al comando Frequency

■ Debug Tool U&AF Features:

- Supporto Interattivo al “Playback”
- Supporto all’Automonitor per i programmi COBOL, PL/I e Assembler
- Interfaccia al Tool Fault Analyzer
- Supporto il “Code coverage” per il “regression testing”
- Supporto per il “Sorgente” di programmi OS/VS COBOL
- Analisi “Reporting” per “Load module”
- Preparazione automatica per :
 - Compile e link
 - Conversione OS/VS COBOL
- Supporto interattivo per “Object level disassembly”
- Comandi per interrogare ed allocare files durante il Debug

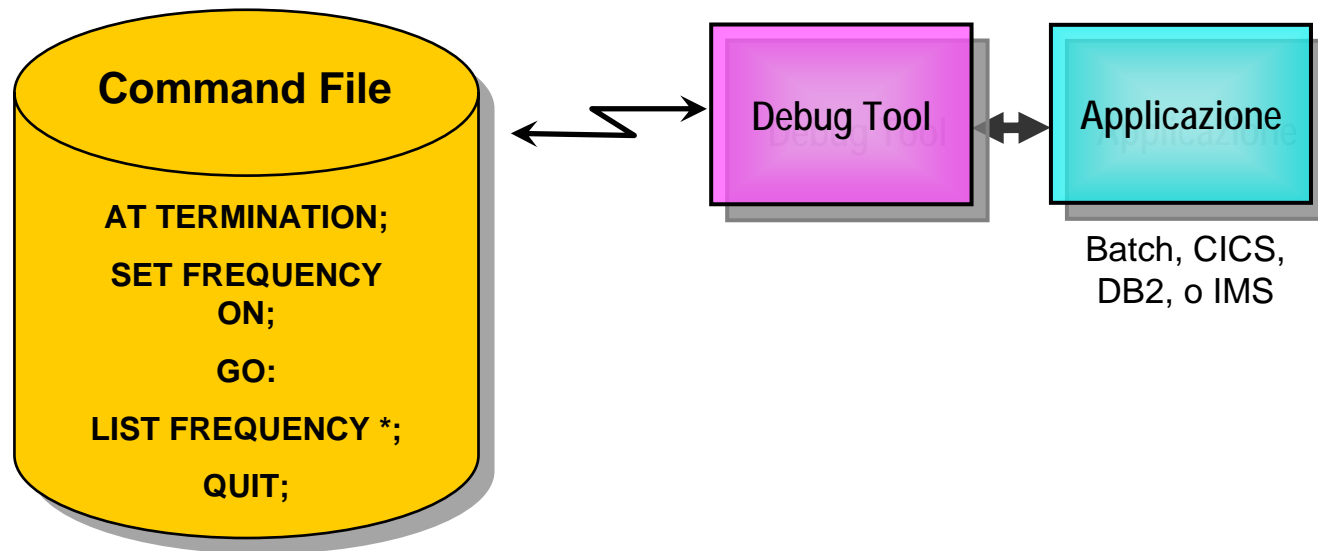
Come si può interfacciare Debug Tool?



■ **WebSphere Developer Debugger for zSystems (WDDz):**

- Un’applicazione host attiva Debug Tool, il quale si connette ad un debugger remoto sulla tua workstation
- “Point and Click” semplice da usare
- Utilizza l’interfaccia “GUI” definita all’interno di prodotti come:
 - **Eclipsed based WebSphere Developer for zSystems (WDz)**

Come si può interfacciare Debug Tool?



■ Modalità “Batch”, utilizzando il “Command File”

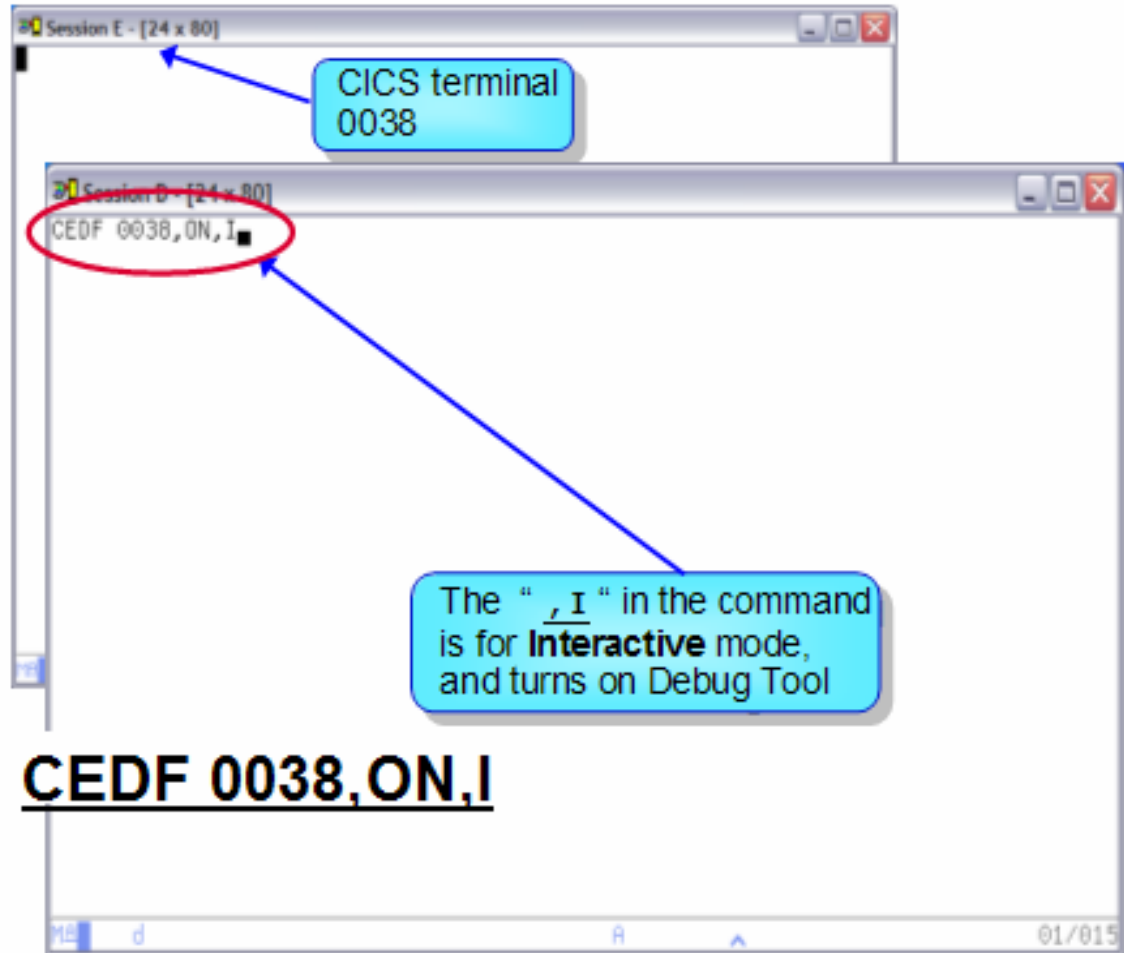
- L'applicazione viene attivata in modalità **background** sotto il controllo dei comandi del “Debug Tool” .
- Possibilità di guidare il processo e la logica del Programma tramite I comandi presenti sul “Command file” e verificare I risultati sul “Log” per diagnosi successive
- Per la creazione di:
 - Regression Test cases
 - Diagnosi di problematiche in ambiente di Produzione

Debug Tool Invoke con CEDF

■ CICS

– Debug Tool Invoked via CEDF :

- **CEDF** è una transazione che è parte del CICS, utilizzata in fase di interactive debugging di una applicazione CICS
- **CEDF** visualizzerà le sue informazioni tramite i pannelli CICS
- Debug Tool è stato generato all'interno della transazione CEDF per consentire il debug interattivo del SOURCE, tra le EXEC CICS



I Comandi base

- Puoi specificare una variabile per il MONITOR oppure LIST posizionando il cursore sulla variabile stessa e digitare successivamente il "comando" relativo*

```

COBOL  LOCATION: DTDEMO :> 34.1
Command ==> mon li
MONITOR ---1-----2-----3-----4-----5-----6 LINE: 1 OF 1
***** TOP OF MONITOR *****
0001  1 PERFORM-COUNT  00001
***** BOTTOM OF MONITOR *****

SOURCE: DTDEMO ---1-----2-----3-----4-----5----- LINE: 30 OF 47
30      MOVE 'PERFORM LOOP' TO PROGRAM-STATUS
31      MOVE 0 TO PERFORM-COUNT
32      PERFORM 2 TIMES
33          ADD 1 TO PERFORM-COUNT
34          ADD 2 TO ACCUM-A
35      END-PERFORM

LOG 0-----1-----2-----3-----4-----5----- LINE: 33 OF 36
0033  LIST PERFORM-COUNT ;
0034  PERFORM-COUNT = 00001
0035  MONITOR
0036  LIST PERFORM-COUNT ;
PF 1: ?      2: STEP      3: QUIT      4: LIST      5: FIND
PF 7: UP     8: DOWN     9: GO      10: ZOOM     11: ZOOM LOG  12: RETRIEVE
    
```

Comando MONITOR LIST

Metti il cursore sul nome della variabile

Enter

Aggiungere la variabile "accum-a" al monitor .

Run

The screenshot displays the IBM WebSphere Developer Debugger for zSeries interface. The main window shows the source code of a program with a breakpoint set at line 264. The code is as follows:

```

Line 263      Column 1      Insert      Browse
-----+-----+-----+-----+-----+-----+
260
261      *****
262      *   COMPARE THE SYSTEM DATE IS LESS THAN THE RECOR
263      *****
264      IF CURRENT-DATE LESS THAN RECORD-DATE1
265          CALL 'ATCDEM2'
266          ADD 10 TO RECORD-DAY1
267      ELSE
268          ADD 10 TO RECORD-YEAR1
    
```

The Debug Console at the bottom shows the message: "Program was stopped due to line/statement breakpoint". The Breakpoints pane on the right shows a breakpoint set on the statement "Statement [DNET603.CODE.SYS]". The Variables pane shows the current state of variables, including "CURRENT-DATE", "TEST-DATE", "CURRENT-TIME", "WS-INPUT-RECORD", "WS-INPUT-RECORD-1", "WS-INPUT-RECORD-2", "PARM-VALS", "DATE-SW = 'N'", and "TEST-RI IF = 'N'".

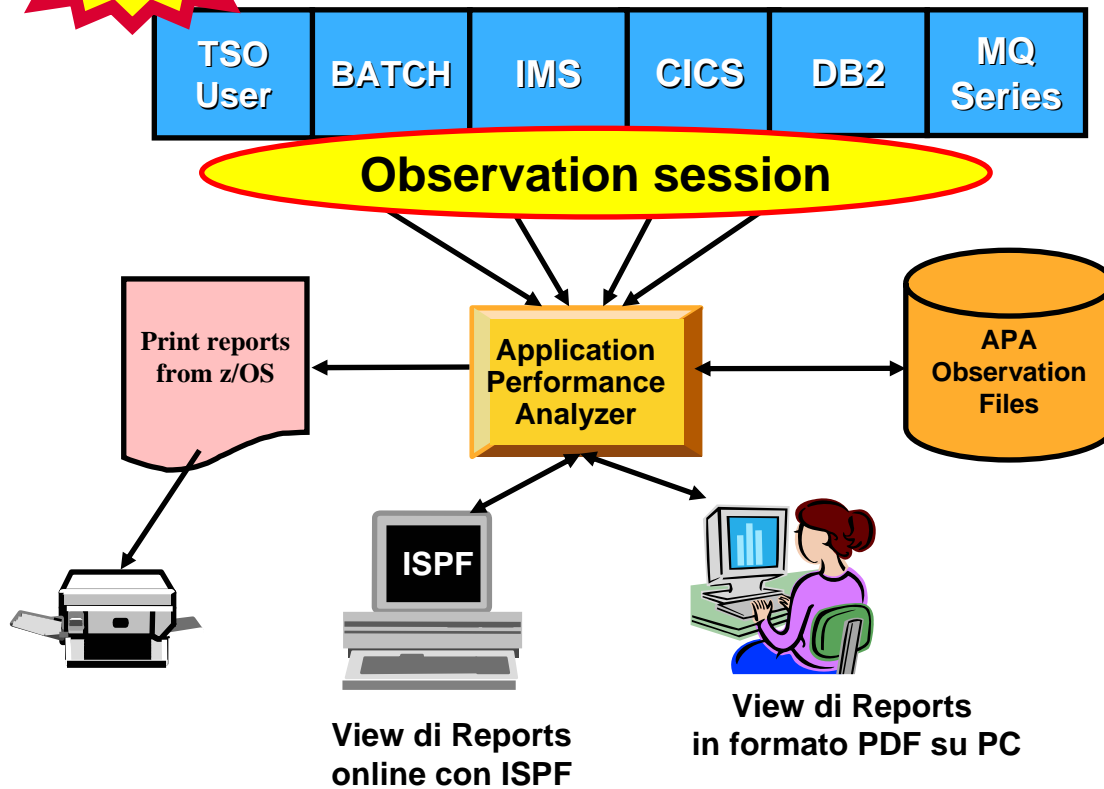
Utilities : COBOL Modernization

- **Identifica su dei reports quali sono i “sorgenti” che riciedono la conversione dal COBOL 68 e 74 al COBOL 85**
- **Conversione da standard 68 e 74 a standard 85**
 - ❖ Analizza e converte Sorgenti COBOL (incluso le copybooks)
- **Identifica gli elementi del linguaggio COBOL e I comandi CICS che nel “Source “ del Programma sono:**
 - ❖ Non supportati dal linguaggio target
 - ❖ Supportati in diversa maniera
- **Converte qualsiasi compilatore COBOL alla versione corrente (identificando le nuove KEYWORDS, etc)**
- **Converte il Sorgente**
 - ❖ Converte il sorgente di programmi COBOL
 - ❖ Converte le Copy COBOL dei files

Application Performance Analyzer

Tool per l'analisi delle performance per programmatori di Sistema ed Applicativi

Supporto
su JAVA



Features:

- ▶ Reports a livello di dettaglio consultabili via ISPF o PDF con navigazione orizzontale e verticale “drill down”
- ▶ Analisi su CPU, Load Module e CSECT per tutti i moduli presenti nell’“Address space”
- ▶ Supporto a livello “Statement” per Sorgenti COBOL or PL1 o Istruzioni Assembler in ogni CSECT
- ▶ Supporto ai “SIDEFILE” di Fault Analyzer / Debug Tool
- ▶ Analisi “Wait Time” per “Category”, “Task/Module” o “Attribution”
- ▶ Analisi I/O sui DASD a livello Device, DD Name, Dataset e Attributi, EXCP’s, VSAM con h Buffer Pool, I/O Wait
- ▶ Analisi DB2 per SQL – Static e Dynamic – Service Times – Dynamic Explain
- ▶ Analisi DB2 per DBRM, Statement e Plan
- ▶ Statistiche sulla sessione CICS, analisi della Transazione per utilizzo di CPU, Mean and Total Service Time, e Waits
- ▶ Analisi per CPU e “Service Time” in IMS
- ▶ Analisi per “Queue”, “Request”, e Transaction in MQ Series
- ▶ Analisi e supporto per “DB2 Stored Procedures” scritte in COBOL o Java

Cos'è un APM (application performance monitor)?



- Gli Obbiettivi sono quelli di fornire informazioni sulle prestazioni del Sistema e dare una possibilità costante alle applicazioni di offrire il massimo in Disponibilità e Performance.
- Che cosa si può fare con APA :
 - Monitorare (*stored*) Procedure e applicazioni 'batch o *active*' e le loro transazioni associate per vedere ed analizzarne i comportamenti
 - Isolare problematiche di performance
 - Identificare l'eccessiva attività di I/O
 - Identificare l'uso eccessivo di CPU
 - Determinare le Performances del Sistema in caso di carico di lavoro



Reports (1/2)

CPU

- Usage by Category
- Usage by Procedure
- Usage by Module
- Referred Attribution
- Usage by Code Slice
- Usage Timeline
- Usage Task/Category
- Usage Task/Module
- Usage by PSW/ObjCode

Storage & Statistics

- Measurement Profile
- Load Module Attributes
- Load Module Summary
- TCB Summary
- Memory Usage Timeline
- Data Space Usage Timeline
- TCB Execution Summary
- Processor Utilization Summary

DASD

- Usage by Device
- Activity Timeline
- Usage by DDNAME
- I/O Wait Time
- Usage by Dataset
- VSAM Buffer Pool Usage
- Dataset Attributes
- Summary
- DASD VSAM Statistics

Wait

- Time by Task/Category
- Time by Task/Module
- Time Referred Attribution

Coupling Facility

- Summary
- Mean Times
- Facility Total Times

Reports (2/2)

IMS

Measurement Profile
 DL/I Call Timeline
 Transaction Timeline
 Transaction Activity Timeline
 CPU Usage by DL/I Call
 CPU Usage by Transaction
 CPU Usage by PSB
 Wait Time by DL/I Call
 Wait Time by Transaction
 Wait Time by PSB
 DL/I Activity by PSB
 DL/I Activity by Transaction
 DL/I Activity by DL/I Call
 PSB/PCB Attributes
 DL/I Call Attributes
 Transaction Service Times
 Transaction DL/I Counts
 CPU/Svc Time by DL/I Call
 CPU/Svc Time by PCB
 CPU/Svc Time by Transaction
 CPU/Svc time by PSB

Java

Java Summary and Attributes
 CPU Usage by Package
 CPU Usage by Class
 CPU Usage by Method
 CPU Usage by Call Path
 Service Time by Package
 Service Time by Class
 Service Time by Method
 Service Time by Call Path
 Wait Time by Package
 Wait Time by Class
 Wait Time by Method
 Wait Time by Call Path

DB2

Measurement Profile
 SQL Wait Time by Statement
 SQL Activity Timeline
 SQL Wait Time by Plan
 SQL Activity by DBRM
 SQL CPU/Svc Time by DBRM
 SQL Activity by Statement
 SQL CPU/Svc Time by Stmt
 SQL Activity by Plan
 SQL CPU/Svc Time by Plan
 SQL CPU/Svc Time by Loc (DDF)
 SQL Statement Attributes
 SQL Threads Analysis
 SQL Wait Time by DBRM
 CPU by Plan/Stored Proc

CICS

Session Statistics
 CPU Usage by Txn
 Mean Service Time by Txn
 Total Service Time by Txn
 Service Time by Task Id
 Wait Time by Txn
 Mean Service Time by Trm
 Total Service Time by Trm

MQSeries

Activity Summary
 CPU Usage by Txn
 CPU Usage by Queue
 CPU Usage by Request
 Wait Time by Txn
 Wait Time by Queue
 Wait Time by Request
 Serv Time by Txn
 Serv Time by Queue
 Serv Time by Request

Primary Option Menu

File View Navigate Help

R02: IBM APA for z/OS Observation List (CAZ1)

Row 00001 of 00009

<u>ReqNum</u>	<u>Owned By</u>	<u>Description</u>	<u>Job Name</u>	<u>Date/Time</u>	<u>Samples</u>	<u>Status</u>
<u>R</u> <u>0366</u>	ERIC	Batch Cobol & D	ERICDB2	Feb-9 10:35	18,494	Ended
<u>0366</u>	ERIC		ERIC	Feb-9 10:15	1	Ended
<u>0360</u>	ERIC		IMA1MSG1	Feb-5 12:34	60,994	Cancel
<u>0359</u>	ERIC	RUN 3	ERIC	Feb-5 12:24	1	Ended
<u>0358</u>	ERIC	RUN 2	ERIC	Feb-5 12:21	1	Ended
<u>0357</u>	ERIC	RUN 1	ERIC	Feb-5 12:19	1	Ended
<u>0344</u>	ERIC	SPARTAD (FOR WI	ERIC	Feb-2 16:26	1	Ended
<u>0343</u>	VHECKE	TEST FOR PERFOR	VHECKE	Feb-1 16:18	1	Ended
<u>0342</u>	OLSSON	test leo	OLSSONQ	Jan-31 10:53	7,371	Ended

Welcome to IBM APA for z/OS ISPC Version 7.100C. You are currently connected to measurement task id CAZ1. Enter CONNECT for an alternate connection, VERSION for version information, NEW to start a measurement.

View del Pannello di "Measurement"

File View Navigate Help

R01: IBM APA for z/OS Performance Reports (0370) 00007

Select a category from the list to the right to view the available reports in the selection list below.

_ A Admin/Miscellaneous	_ I IMS Measurement
_ S Statistics/Storage	_ E CICS Measurement
_ C CPU Usage Analysis	_ F DB2 Measurement
_ D DASD I/O Analysis	_ Q MQ Measurement
_ W CPU WAIT Analysis	_ G Coupling Facility
	_ J Java Measurement

Rosso Indica:

- Non sono stati catturati data per il reports
- L'opzione non era stata attivata

Enter S to make a selection or enter the report code on the command line

_ S01 Measurement Profile	_ S07 TCB Execution Summary
_ S02 Load Module Attributes	_ S08 Processor Utilization Summary
_ S03 Load Module Summary	
_ S04 TCB Summary	
_ S05 Memory Usage Timeline	
_ S06 Data Space Usage Timeline	

**Selezione del report S01
"Measurement Profile".**

Il pannello "CICS Transactions"

```

File View Navigate Help
R03: Schedule New Measurement Row 00001 of 00015
1. Job Information 3. Multi Steps 5. CICS Options 7. Schedule
2. Options 4. Active Jobs 6. Sysplex 8. Sched Options

Panel 5. CICS Transactions and Terminals

Specify up to 16 CICS trancodes for which measurement data is to be recorded.

01 * 02 03 04 05 06 07 08
09 10 11 12 13 14 15 16

Include CICS system transactions in measurement(Y/N): N

Wildcard character '*' can be specified at
'*' by itself specifies all transactions or

Specify up to 8 CICS terminal ids for which

01 * 02 03 04 05 06 07 08

Include CICS non-terminal transactions in measurement Y

```

Il pannello viene utilizzato per selezionare la transazione CICS o il terminale.

Usare una "wildcard" per specificare il nome di transazioni/ terminali.

Utilizzare Job batch per creare una richiesta

File View Navigate Help

R03: Schedule New Measurement Row 00001 of 00012
 Command ==> JCL Scroll ==> CSR

● 1. Job Information 3. Multi Steps ● 5. CICS Options 7. Schedule
 ● 2. Options 4. Active Jobs ● 6. Sysplex 8. Sched Options

Panel 1. Job Information Input more data or ENTER to submit

Job Name/Pattern . . . ADTMONO System Name . . . ZT01
 (Active)

Step Specification

Step No. _____ Specify
 Program Name _____ step nam
 Step Name _____ name. Us
 ProcStepName _____ than one

Description _____

Number of Samples . . 1000 Measure
 Duration (min:sec) . . 1:00 Delay by
 Notify TSO User . . . ERIC Retain f

File View Navigate Help

R03: Schedule New Measurement Row 00001 of 00020
 Command ==> Scroll ==> CSR

● 1. Job Information 3. Multi Steps ● 5. CICS Options 7. Schedule
 ● 2. Options 4. Active Jobs ● 6. Sysplex 8. Sched Options

JCL and Batch Command Syntax

The following control statement can be used for CAZBATCH

```
//CAZBATCH EXEC PGM=CAZBATCH,PARM='STCID=CAZ1'
//STEPLIB DD DISP=SHR,DSN=SCAZAUTH
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
NEW
JOBNAME=(ADTMONO)
DURATION=(1:00)
SAMPLES=(1000)
SYSCTRAN=(N)
NONCTERM=(Y)
RUNTOEOS=(N)
NOTIFY=(ERIC)
ACTIVE=(Y)
EXPDAYS=(30)
SYSTEMS=(ZT01)
FEATURES=(CICS,DB2,DB2+,IMS,IMS+,MQS)
CTRAN=(ALAD,TDB2)
CTERM=(TRM*)
;
/*
```

TNEW(Threshold) per attivare automaticamente una richiesta di misurazione

```
File View Navigate Help
-----
R03: Set Threshold Requirements                               Row 00001 of 00005
  ● 1. Job Information  ● 3. Criteria                       5. CICS Options
  ● 2. Options          4. Active Jobs                     6. Sysplex

Panel 3. Threshold Criteria                               Input more data or ENTER to submit

Enter Threshold Criteria

CPU Time Exceeds (min:sec) . . . . . 15
Elapsed Time Exceeds (min:sec) . . . . . 30
EXCP Count Exceeds . . . . .
```

F04 – Report "SQL Activity by Statement"

```

File View Navigate Help
-----
F04: SQL Activity by Statement (0232)                               Row 00001 of 00016
Seqno Program Stmt# SQL Function Percent of Time * 10.00% ±0.5%
*.....1.....2.....3.....4.....5.....6.....7...
EX 08 TRADERD 825 UPDATE 8.99 ██████████
  > UPDATE CUSTOMER_DETAILS SET NO_SHARES =
  > :DCLCUSTOMER-DETAILS.NO-SHARES WHERE CUSTOMER =
  > :DCLCUSTOMER-DETAILS.CUSTOMER AND COMPANY =
  > :DCLCOMPANY-DETAILS.COMPANY
S0005 TRADERD 742 FETCH 5.44 ██████████
S0010 TRADERD 774 FETCH 4.86 ██████████
S0002 TRADERD 854 FETCH 4.78 ██████████
S0006 TRADERD 761 CLOSE 3.95 ██████████
S0004 TRADERD 740 OPEN 3.17 ██████████
S0003 TRADERD 770 OPEN 3.09 ██████████
S0001 TRADERD 740 OPEN 3.06 ██████████
S0008 TRADERD 740 OPEN 3.03 ██████████
S0009 TRADERD 772 OPEN 3.17 ██████████
S0007 TRADERD 804 INSERT 0.33 ██████████
    
```

EX 08

:DCLCOMPANY-DETAILS.COMPANY

Il comando **Ex** viene usato per eseguire il Dynamic Explain.

Il nome della variabile sostituita al posto della :H

Come monitorare Distributed Data Facility?

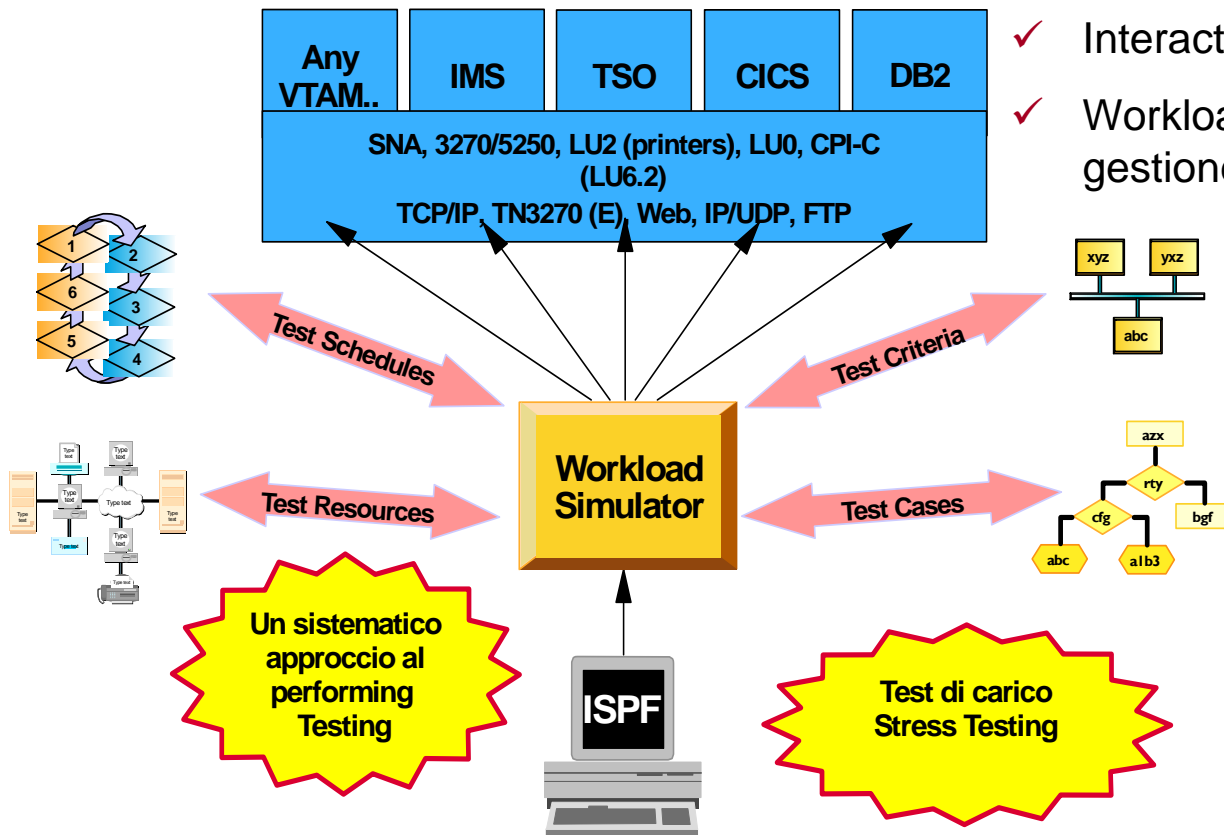
F15: DB2 SQL CPU/Svc Time by Rq Loc (0416) Row 00001 of 00043

Name	Plan/Pgm	Stmt#	SQL Functn	Nbr of SQL Calls	--CPU Time-- Total	Mean	--Svc Time-- Total	Mean
<u>9.173.153.17</u>				254	0.04	0.00018	0.06	0.00023
→ <u>D0004</u>	SYSSH200	0	PREPARE	64	0.01	0.00020	0.01	0.00021
			INSERT INTO DB2PM.DB2C_SYSTEM (
			> DB2CS_BLOCKNO, DB2CS_DATA) VALU					
→ <u>D0005</u>	SYSSH200	0	Remote SQL	64				0.00034
			> INSERT INTO DB2PM.DB2C_SYSTEM (
			> DB2CS_BLOCKNO, DB2CS_DATA) VALUES (?,?,?)					
			> (PREPARE of SQL was done at Stmt# 0 Seqno D0004)					
→ <u>D0006</u>	SYSSH200	0	PREPARE	20	0.00	0.00021	0.00	0.00021
→ <u>D0007</u>	SYSSH200	0	Remote SQL	20	0.00	0.00022	0.00	0.00037
→ <u>D0001</u>	SYSSH200	0	PREPARE	10	0.00	0.00030	0.00	0.00030
→ <u>D0003</u>	SYSSH200	0	FETCH	10	0.00	0.00015	0.00	0.00015

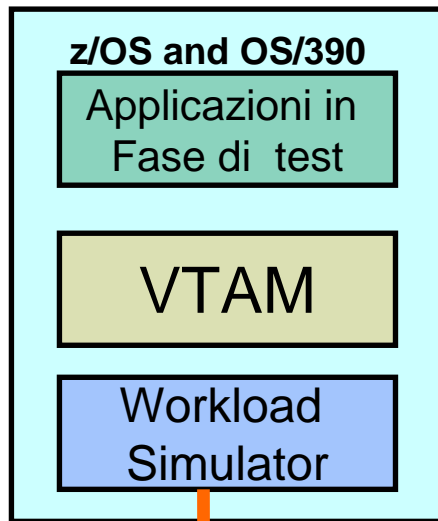
IP Address (Requester Location) del Client che effettua la richiesta

PD Tools - Workload Simulator

- ✓ Simula differenti terminali ed azioni di operatori.
- ✓ Supporta SNA, CPI-C (LU6.2) e TCP/IP.
- ✓ Interactive Data Capture
- ✓ Workload Simulator Test Manager per la gestione e la documentazione del test.



Overview delle Funzionalità di Workload Simulator



Features:

- Auto Generazione di Scripts simulazioni in Rete
- Controllo delle Risorse durante il Run
- Simula Differenti tipi di Azioni, Terminali o Programmi.
- Prevede Utility per l'Analisi Post-Test
- Cattura on_line le attività svolte dalle sessioni 3270 e crea automaticamente dei Test Scripts
- Un semplice linguaggio (STL) per modificare e creare scripts 3270 e TCP
- Run dello script per simulare il traffico di rete dal vivo delle applicazioni che girano sotto un Sistema Reale
 - ▶ Simulazione di un singolo user per testare la funzionalità applicativa
 - ▶ Simulare più users per generare un TEST di Carico
- Display e reports dei risultati del Test
- L'ultima PTF permette al Prodotto Rational TestManager di attivare Workload Simulator

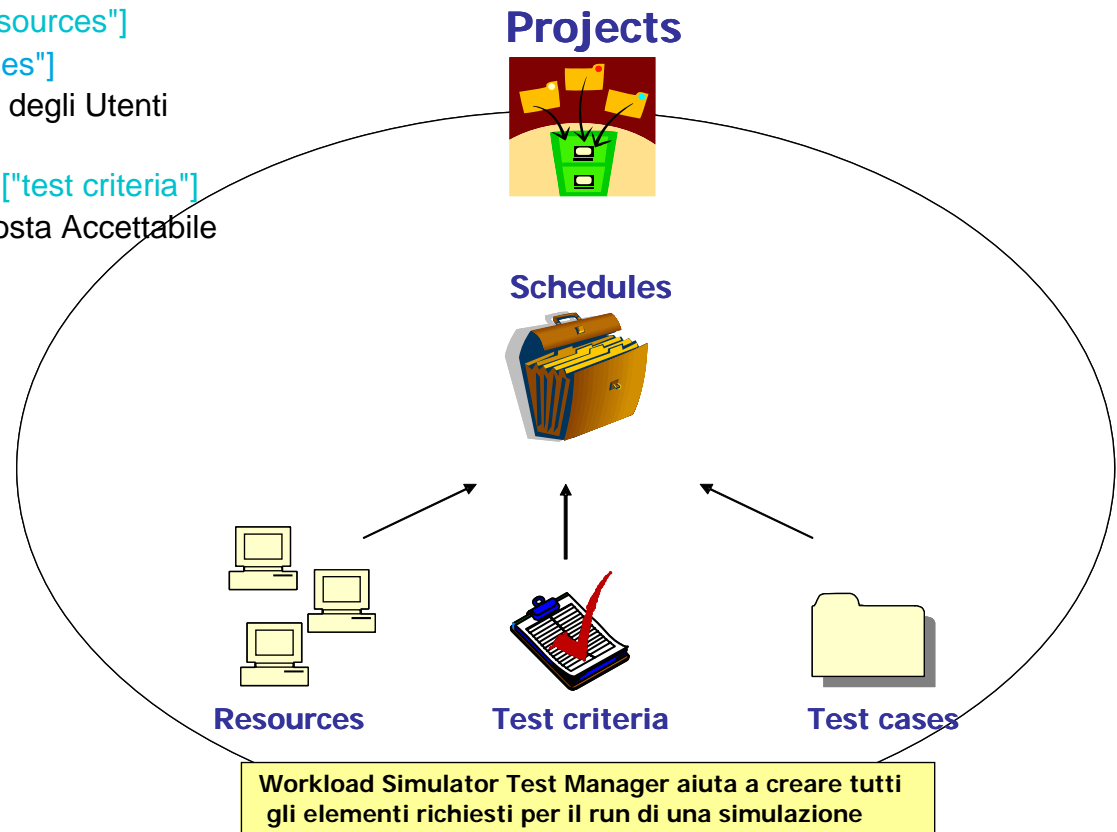
Benefits

- Consente di Analizzare e Realizzare (approccio sistematico) applicazioni di "Performance Testing"
- Simula "schedule multiple" per determinare l'impatto ambientale (nello specifico Sistema Operativo) dell'applicazione
- Utilizzato per Load-testing, Stress-testing, Regression Testing

Workload Simulator Test Manager

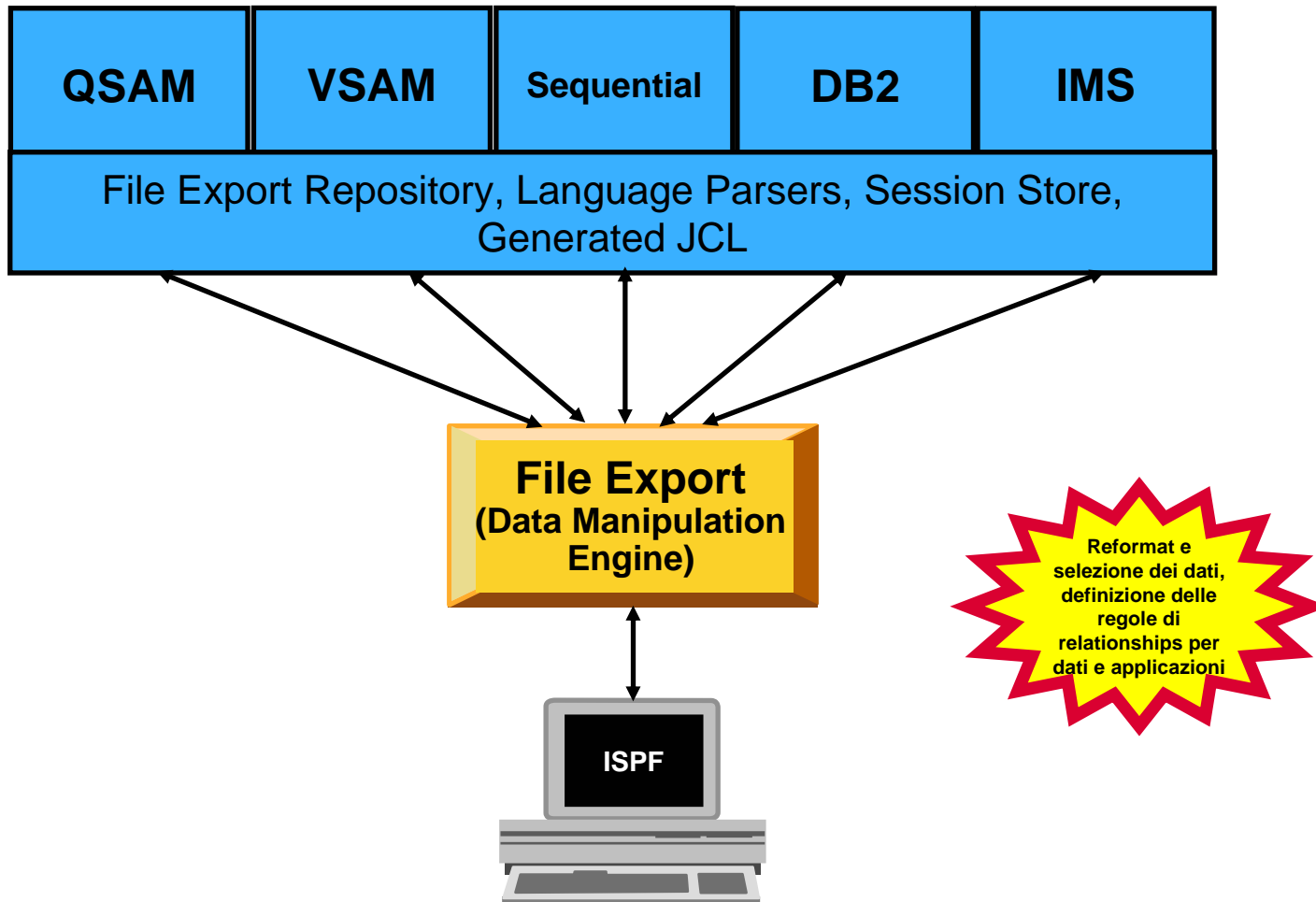
Come funziona?

- **Step 1:** Definire un "Test Schedule" per la simulazione
 - ✓ Quanti "Utenti Virtuali"? ["resources"]
 - ✓ Creare il Test case ["test cases"]
 - ◆ ripeteranno le azioni reali degli Utenti finali ["test schedules"]
 - ✓ Definire i parametri del Test ["test criteria"]
 - ◆ Esempio: il tempo di risposta Accettabile Response Time
- **Step 2:** Avvio del test (Run)
- **Step 3:** Analisi dei risultati
- **Step 4:** (optional)
 - ✓ Test are run again



File Export

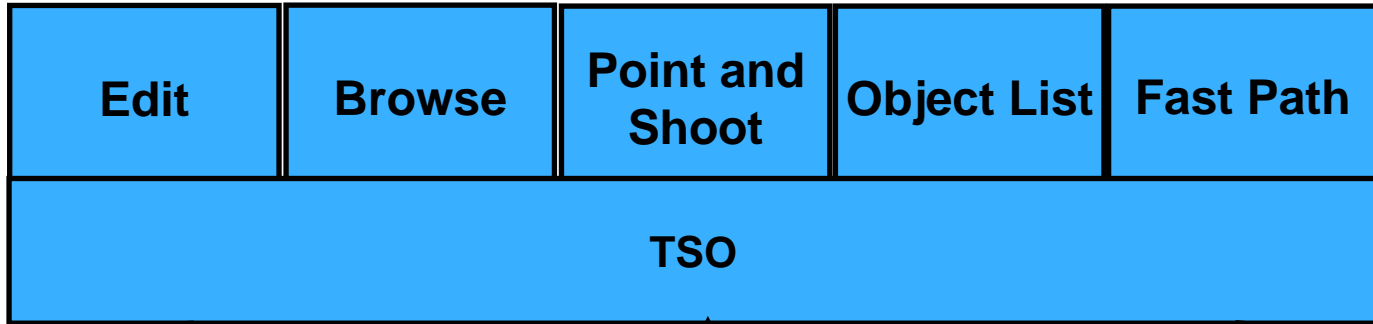
Una soluzione flessibile per esportare ed importare insiemi di dati relazionati



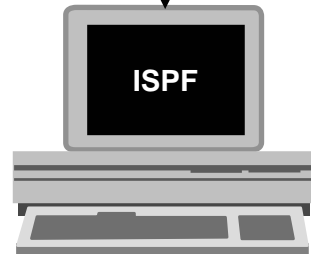
File Export : Utilities principali

- Utilizzato per esportare / importare insiemi di dati enterprise relazionati
- Consente la creazione di strutture dati del tipo “one-to-one”, “one-to-many” e “many-to-one”
- Supporta le regole di relationships già definite nelle applicazioni
- Include regole di trasformazione e “data selection” durante la fase di Import/Export
- Permette di proteggere I dati “sensibili”
- Supporta l’alterazione del contenuto dei dati durante la fase di copying
- Include un repository per la memorizzazione di informazioni persistenti relative ai dati memorizzati
- Offre utilities che aiutano a semplificare le attività di TEST o di migrazione di dati e Applicazioni su nuovi ambienti

ISPF Productivity Tool – Migliora la produttività in TSO ISPF



Migliorare la produttività degli User ISPF attraverso l'introduzione di ulteriori funzioni ISPF nelle aree più utilizzate durante il lavoro e la navigazione



IBM ISPF Productivity Tool (*Spiffy*)

- **Vantaggi su:**
 - ✓ action bar
 - ✓ pop-up windows
 - ✓ point-and-shoot.
- **Perfettamente Integrato con ISPF**
- **I comandi che sono stati aggiunti riducono e semplificano le utility ISPF e la navigazione tra i pannelli**
- **Ulteriori Funzioni TSO/ISPF**
- **OLIST per semplificare i comandi e ridurre la navigazione tra i pannelli nel caso di “Accesso frequente a utility o datasets”**
- **Riduce la CPU usage, EXCP counts, migliora il “response time” e le performance ISPF: Il Browsing, editing, copying, displaying lists ed il finding sui Dati diventano più veloci.**

EDIT – Point and Shoot

- Il membro XSAM viene visualizzato in Edit mode
- Sulla Command Line digitare: **Edit** (senza premere Enter)
- Posizionare il cursore sulle riga con il dataset CUSTFILE DD
 - *Nota: il nome del dataset conterrà il levels*
TEAM1.ADLAB.CUSTFILE
 - Press Enter
 - *Una sessione successiva parte automaticamente con il dataset*
TEAMn.ADLAB.CUSTFILE

```

Display Filter View Print Options Help
-----
ISFPCU41 UT DISPLAY AMINTORB JOB04526 DSID 4 LINE 127 COLS 02- 81
COMMAND INPUT ==> ef SCROLL ==> CSR
VOL SER NOS= TMP001
IGD103I SMS ALLOCATED TO DDNAME SYSLIB
IEF237I DMY ALLOCATED TO FMNADATA
IEF237I DMY ALLOCATED TO FMNIN
IGD101I SMS ALLOCATED TO DDNAME (FMNPRINT)
DSN (SYS06322.T222009.RA000.AMINTORB.R0113166 )
STORCLAS (SCTEMP) MGMTCLAS ( ) DATACLAS ( )
VOL SER NOS= TMP001
IGD104I AMINTOR.BOOK2006.COPYBOOK RETAINED, DDNAME=SYSLIB
IGD105I SYS06322.T222009.RA000.AMINTORB.R0113166 DELETED, DDNAME=FMNPRINT
IGD105I SYS06322.T222009.RA000.AMINTORB.R0113159 DELETED, DDNAME=FMNUT1
IGD105I SYS06322.T222009.RA000.AMINTORB.R0113160 DELETED, DDNAME=FMNUT2
IGD105I SYS06322.T222009.RA000.AMINTORB.R0113161 DELETED, DDNAME=FMNUT3
IGD105I SYS06322.T222009.RA000.AMINTORB.R0113162 DELETED, DDNAME=FMNUT4
IGD105I SYS06322.T222009.RA000.AMINTORB.R0113163 DELETED, DDNAME=FMNUT5
IGD105I SYS06322.T222009.RA000.AMINTORB.R0113164 DELETED, DDNAME=FMNUT6
IGD105I SYS06322.T222009.RA000.AMINTORB.R0113165 DELETED, DDNAME=FMNUT7
IGD104I AMINTOR.BOOK2006.CUSTFIL3 RETAINED, DDNAME=SYS00001
IGD104I AMINTOR.BOOK2006.COPYBOOK RETAINED, DDNAME=SYS00002

```



Edit sul File con invoke di File Manager

```

Process Options Help
-----
FMNPVED          AMINTOR.BOOK2006.CUSTFIL3          Rec 0 of 401
Command ==>                                           Scroll PAGE
                                                    Type KSDS   Format CHAR
Col 1          Insert length 136
<====+====1====+====2====+====3====+====4====+====5====+====6====+====7====
000000 **** Top of data ****
000001 b0115BGraham, Cinzia Home Phone112-555-6736      1234 5678
000002 b1209BLiszt, Mackenzie Home Phone481-555-4742      3456 7890
000003 b2130CKleiner, Rick Cell Phone54-11-5555-6298      1234 5678
000004 b3115CGraham, Holly Cell Phone135-555-2338      9012 3456
000005 b4115BGraham, Holly Home Phone112-555-6736      1234 5678
000006 b4120DParris, April Lynn Work Phone54-11-5555-4857      5678 9012
000007 b4200BDewitt, Howdy Work Phone642-555-3852      3456 7890
000008 b4300CDewitt, Howdy Cell Phone650-555-0547      1234 5678
000009 b5209CLiszt, Mackenzie Work Phone487-555-3261      1234 5678
000010 b6580BMoore, Adeline Work Phone161-555-4024      7890 1234
000011 b7580CMoore, Adeline Home Phone221-555-7598      5678 9012
000012 b7715CGraham, Holly Cell Phone135-555-2338      9012 3456
000013 b8580DMoore, Adeline Cell Phone138-555-2410      3456 7890
000014 b8815BGraham, Holly Home Phone112-555-6736      1234 5678
000015 b8815BGraham, Holly Home Phone112-555-6736      1235 5678

```

IBM Problem Determination Tools

File Manager for z/OS

- Tool utilizzato per gestire diverse tipologie di dati (VSAM, DB2, CICS, IMS) con formati e dispositivi di storage differenti

Fault Analyzer ile Manager for z/OS

- per aiutare ad individuare rapidamente la causa dell'abend Applicativo ed analizzare informazioni sul punto di failure

Debug Tool Utilities & Advanced Functions for z/OS

- Debug del Sorgente per migliorare la produttività degli Sviluppatori

Application Performance Analyzer

- Monitor delle performance a livello Applicativo

Workload Simulator for z/OS and OS/390

- Regression e Load testing di Applicazioni in ambiente z/OS

Migration Utility

- Converte I programmi CA-Easytrieve Plus® in standard IBM COBOL

IBM Problem Determination Tools

Rational Function Tester Extension

- a livello Workstation, per il regression testing di Applicazioni z/OS

Rational Performance Tester for z/OS

- Utilizza la potenza del Sistema z/OS per validare la scalabilità delle Applicazioni Web prima del rilascio

File Export for z/OS

- Export ed Import di SET di dati sequenziali DB2, IMS, VSAM correlati e relazionati dall'ambiente di Produzione per il Test delle Applicazioni

Application Time Facility

- Permette di effettuare simulazioni date/time in ambiente mainframe

ISPF Productivity Tool

- Tool integrato con ISPF, migliora e semplifica l'utilizzo delle funzioni esistenti

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bcc									
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Looks good.... Well done....

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<ul style="list-style-type: none"> IBM Redbooks@ Drafts Redbooks Redpapers Technotes Additional Materials Redbooks Domains Residencies Projects Workshops Redbooks on CD How to buy About Redbooks Contact Us 	<div style="text-align: center;"> </div> <h2 style="margin: 0;">IBM Application Development and Problem Determination Tools V7 for System z (APA, DT, FA, FE, FM, WS)</h2> <p style="margin: 5px 0;">This Draft</p> <p style="margin: 5px 0;"> Download PDF (19.1 MB) Get Adobe Reader </p> <p style="margin: 5px 0;">Abstract</p> <p style="margin: 5px 0;">This IBM Redbook introduces the IBM Application Development and Problem</p>	<p>Profile</p> <p>Last Update 12 March 2007</p> <p>Planned Publish Date 31 March 2007</p> <p>Rating: Not yet rated ★ Rate this Draft</p> <p>Author(s) Joe DeCarlo Amintore de Nardis Mark Duckworth Jennifer Nelson Adrian Simcock</p> <p>IBM Form Number SG24-7372-00</p> <p>Feedback</p>
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Thank You