Problem Determination Tools V8 Update
- Managing Mainframe Composite Applications

September 19, 2007

Discover
Performance
Develop
Simplified management
Deploy
Quality
CICS, WebSphere Application Server, IMS and batch applications

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WebSphere. software

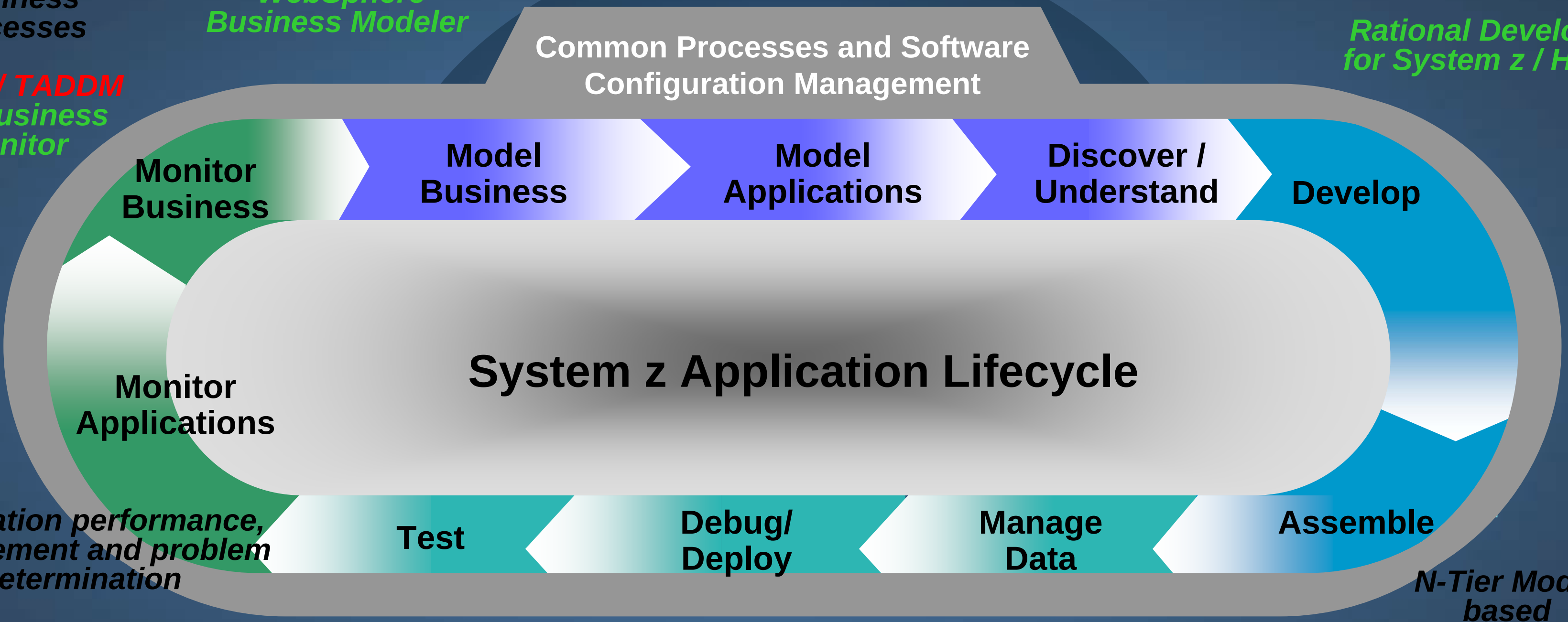
Rational. software

Agenda

- **Overview of the Application Development Tools**
- **Overview of Problem Determination Tools**
  - Fault Analyzer V8 – What's New
  - File Manager V8 – What's New
  - Debug Tool UAF V8 – What's New
  - Application Performance Analyzer V8 – What's New
- **Summary of Tools**
- **Polling Questions**
- **Question & Answer session**

System z Application Lifecycle

CICS Tools
PD Tools
Tivoli Tools
Other System z Tools


Common Processes and Software Configuration Management
Monitor Business
Model Business
Model Applications
Discover / Understand
Develop
Assemble
Manage Data
Debug/ Deploy
Test
Monitor Applications
System z Application Lifecycle

Monitor and manage Business processes

TBSM / TADDM
WS Business Monitor

Model and simulate business processes

WebSphere Business Modeler

Model applications and data

Rational Software Architect

Understand, Identify and prepare existing assets for reuse

WSAA / ATW / CICS IA

N-Tier Visual construction

Rational Developer for System z / HATS

N-Tier Model based Application and process generation

WebSphere Integration Developer

Data Creation, update

File Manager
File Export
CICS VSAM Transparency
CICS VSAM Recovery

Application Test, Debug, and Deploy

Debug Tool Utilities and Advanced Functions
CICS Configuration Mgr
IBM Session Manager
CICS OTTO
CICS Batch Application Control

Functional and Load Testing

RPT/RFT
Workload Simulator

Application performance, management and problem determination

ITCAM
OMEGAMON XE
Fault Analyzer
Application Performance Analyzer
CICS Performance Analyzer

System z IBM Application Development

Application Reuse / Data Migration

CICS Business Event Publisher for MQ

CICS VSAM Transparency

Application / Performance Management

Application Performance Analyzer

CICS Performance Analyzer

Operational Efficiency

CICS OTTO

IBM Session Manager

CICS Batch Application Control

Resource Recovery

CICS VSAM Recovery

CICS VSAM Copy

COBOL Modernization

Debug Tool Utilities Adv Functions

Migration Utility

IBM Rational COBOL Generation Extension for zSeries

IBM Rational COBOL Runtime for zSeries

Software Configuration Management

SCLM Advanced Edition

Rational ClearCase

Rational ClearQuest

Test, Deploy, Manage Data Environment

Fault Analyzer

File Manager

File Export

Debug Tool Utilities Adv Functions

Rational Developer for System z

ISPF Productivity Tool

Application Time Facility

CICS V2V

CICS Interdependency Analyzer

CICS Configuration Analyzer

CICS Performance Analyzer

Testing

Workload Simulator

Rational Performance Tester z/OS

Rational Functional Tester Terminal Based Apps

Core COBOL, PL/I, Assembler, C++, DB2, IMS, CICS, MQ, WAS/z Applications

Why Switch to IBM Now?

- **Price & Flexible Licensing=** ***$avings***
- **Single product vs. cost options (DB2, IMS, CICS, MVS, Assembler, COBOL, PL/I, etc)**
- **Function rich compared to ISVs**
  - Compliments WebSphere, MQ, Delivery with 64-bit z/Arch
  - Performance ready for heavy workloads especially CICS / DB2
  - Tools integrate with other PD tools and expanding to other IBM zTools, ie: RDz (aka WDz) / APA and Omegamon CICS
- **Immediately tolerates new platforms DB2 V9, IMS V10, CICS TS V3.2 z/OS, MQ, etc**
- **Within 90 days or less typically Exploits new platforms**
- **Continued expansion of investment in tools:**
  - Lab, sales, technical support, trainers
- **SMPE install, No passwords / authorization keys**
- **Fortune 500 references**
- **Training options to fit each customer**
  - Lecture, lab based hands on live, webcast, self-based CD
- **IBM = Reliability = Stability**
- **Partnership/Responsibility**
- **Software Strategies independent software analyst ranks IBM #1 in PDT Space**

IBM Problem Determination Tools

- **Fault Analyzer for z/OS**
  - Helps you rapidly pinpoint cause of failed application (abends)
- **File Manager for z/OS**
  - Data management tool supporting key file structures like VSAM, DB2, CICS, and IMS
- **Debug Tool Utilities & Advanced Functions for z/OS**
  - Source code debugging to improve development productivity
- **Application Performance Analyzer**
  - Monitor performance at the application level
- **Workload Simulator for z/OS and OS/390**
  - Regression and Load testing of interactive z/OS applications
- **File Export for z/OS**
  - Export and import related sets of DB2, IMS, VSAM and sequential data

PD Tools

IBM 2007 OFFERINGS

IMS V10
DB2 V9
CICS TSV3.2

Fault Analyzer V8

WASz

File Manager V8

RDz

Debug Tool Utilities AF V8

COBOL Modernization

Application Performance Analyzer (APA) V8

E2E Performance

Workload Simulator
Rational Functional Tester Ext
Rational Performance Tester z/OS

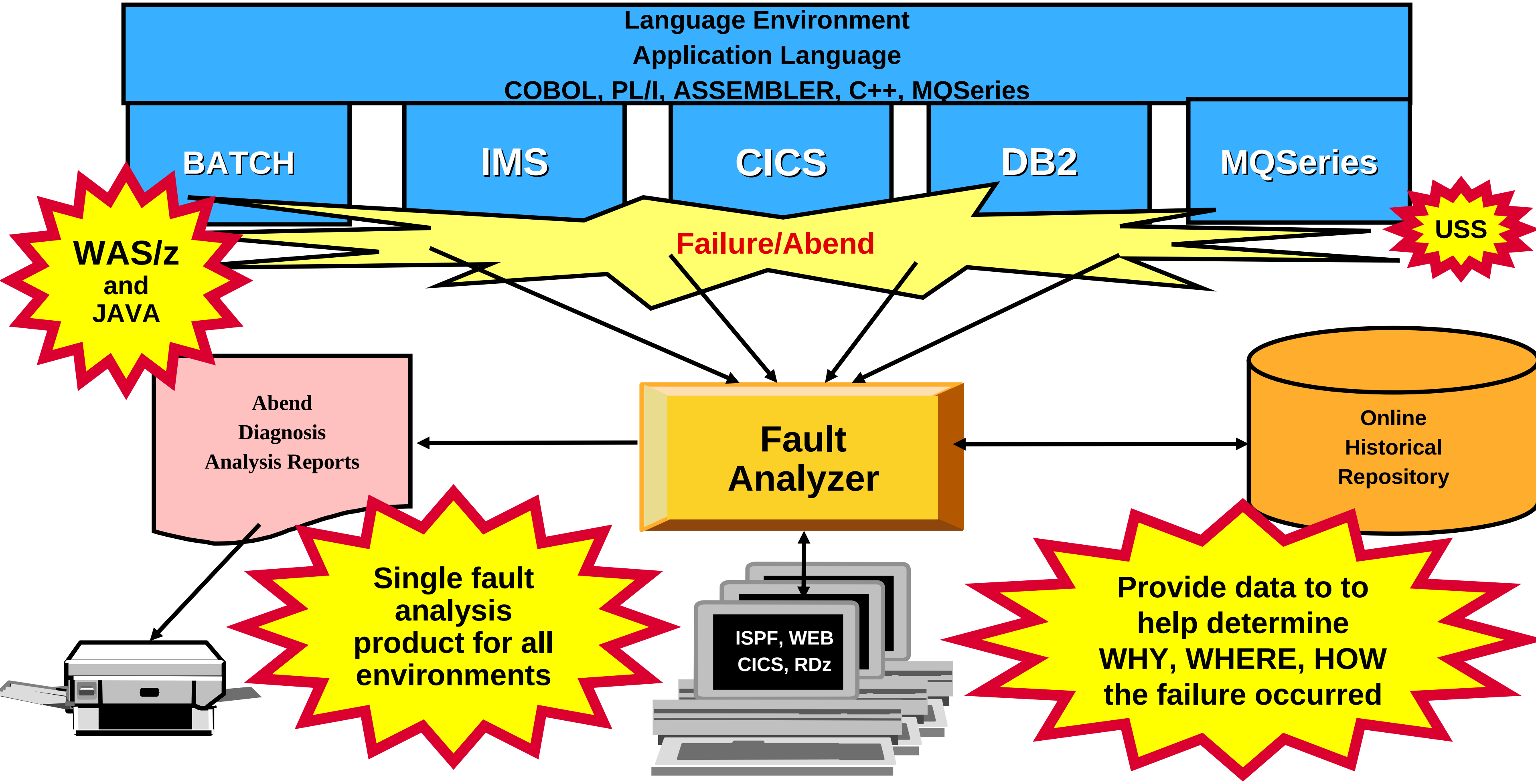
File Export

Application Time Facility

ISPF Productivity Tool

IBM Fault Analyzer V8

Fault Analyzer - Helps you rapidly pinpoint why and where an enterprise application failed - and offers suggestions on how to resolve


Language Environment
Application Language
COBOL, PL/I, ASSEMBLER, C++, MQSeries
BATCH
IMS
CICS
DB2
MQSeries
WAS/z
and
JAVA
USS
Failure/Abend
Abend
Diagnosis
Analysis Reports
Fault
Analyzer
Online
Historical
Repository
ISPF, WEB
CICS, RDz
Single fault
analysis
product for all
environments
Provide data to to
help determine
WHY, WHERE, HOW
the failure occurred

Fault Analyzer Highlights

- **Analysis at application level**
- **Information gathered at time of abend**
- **Translates low-level dump information into application-level information**
- **Expands abend code and message descriptions**
- **No recompile of applications**
- **No JCL changes**
- **No performance overhead**
- **Integrated 64-bit DB2 support**
- **Modes Of Operation**
  - Real-time analysis
  - Batch dump re-analysis
  - Interactive dump re-analysis
- **Interfaces**
  - ISPF
  - RDz
  - CICS
  - Web browser
- **Interface to File Manager**

Fault Analyzer V8.1 Key Enhancements

- **INTEGRATION WITH IBM RATIONAL DEVELOPER FOR SYSTEM Z**

- **CICS SUPPORT ENHANCEMENTS**
  - CICS Transaction Server V3.2 support, including channels and containers in 64-bit storage
  - CICS containers with XML data that are formatted for ease of reviewing the XML information

- **JAVA ENHANCEMENTS**
  - Use of Java-supplied Diagnostic Tooling Framework for Java (DTFJ) interface to improve Java information displayed and debugging integration.

Fault Analyzer V8.1 Key Enhancements

- **USABILITY ENHANCEMENTS**
  - History file authorization management gives you greater control over fault entry create/access/delete rules.

  - A call interface from the SDSF job display provides rapid invocation of interactive abend analysis from the joblog

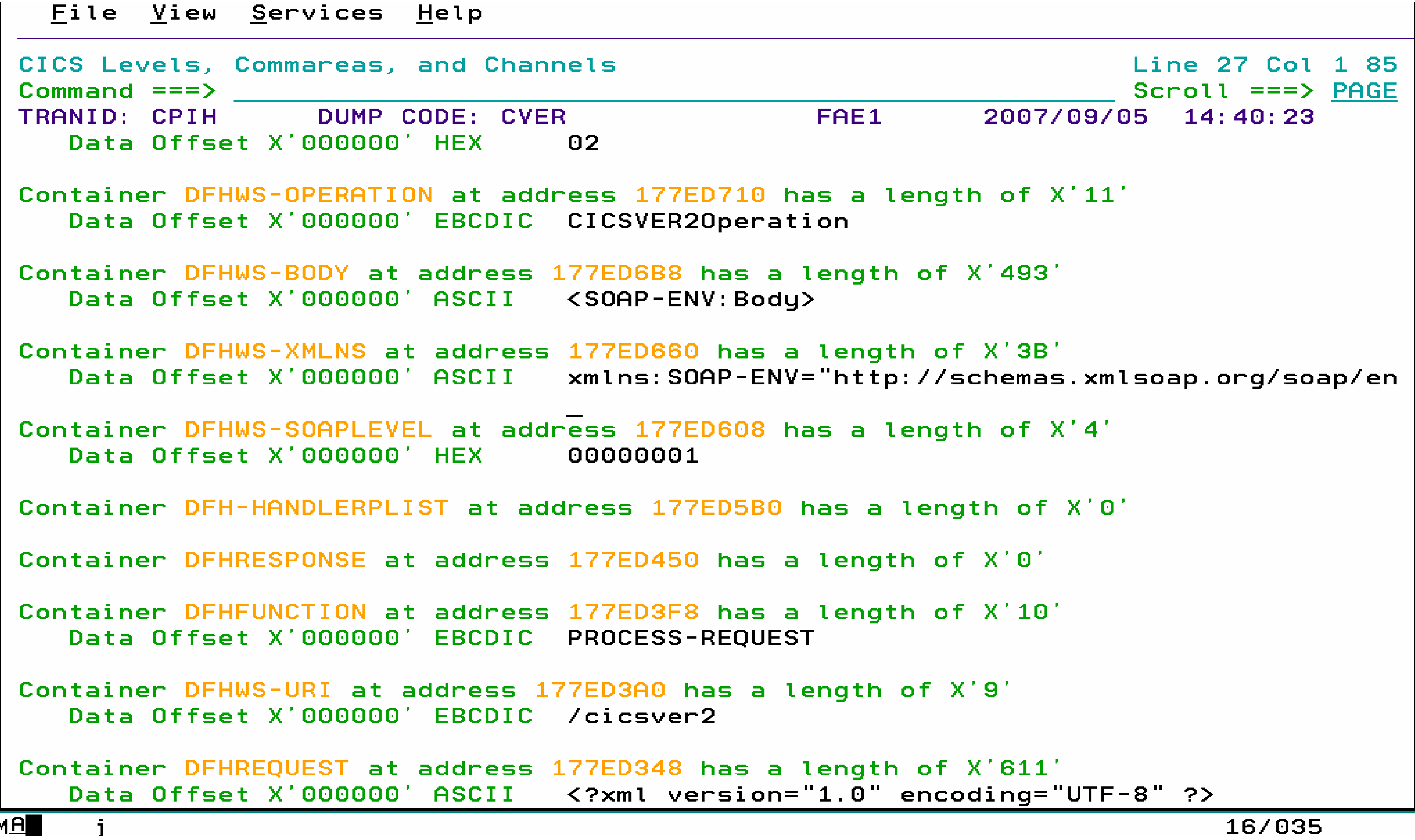
- **REPORT ENHANCEMENTS**
  - Enhancements to PL/I data structure formatting

- **SUPPORT FOR IBM SOFTWARE**
  - DB2 V9

  - IMS V10

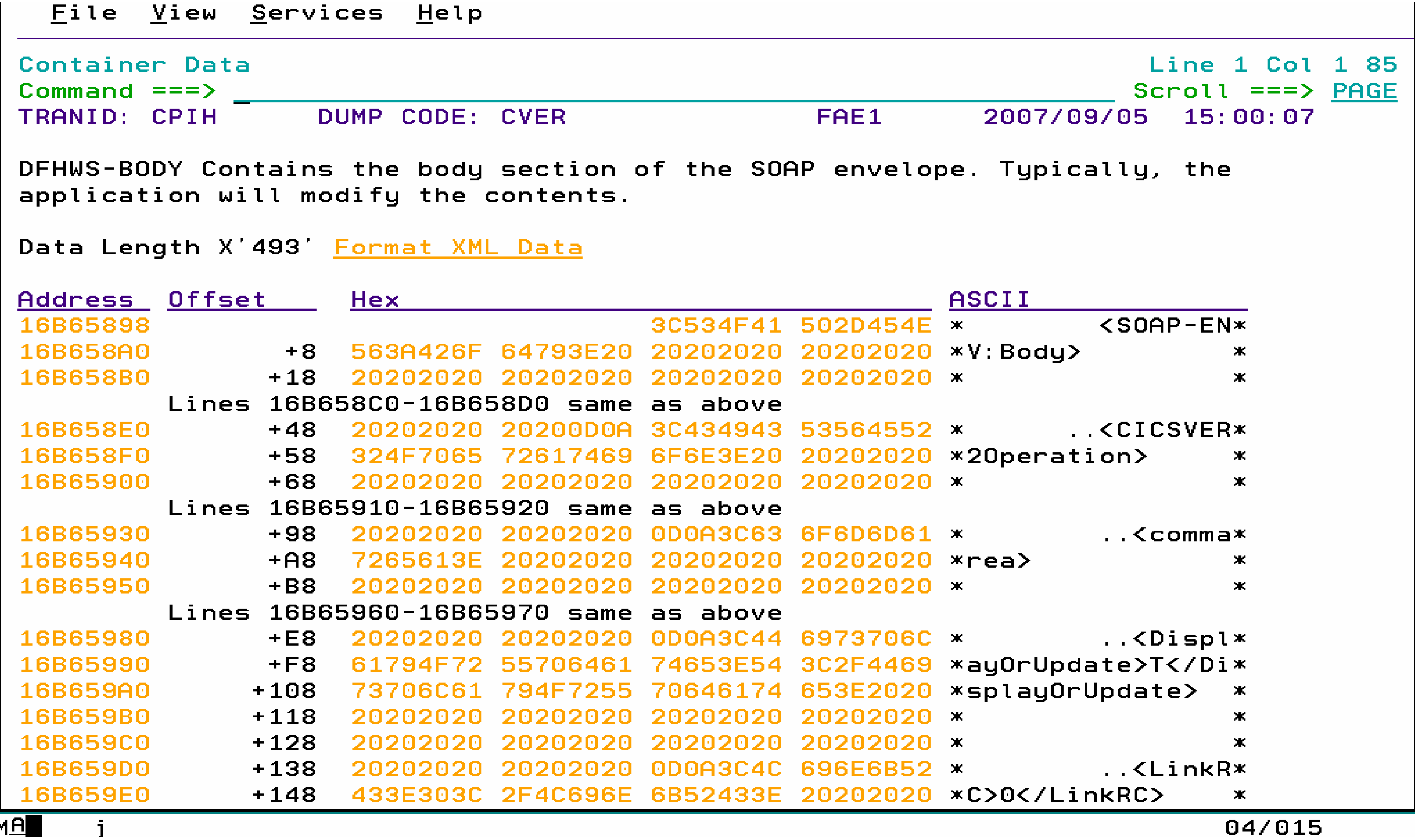
  - CICS Transaction Server V3.2

CICS Container Support



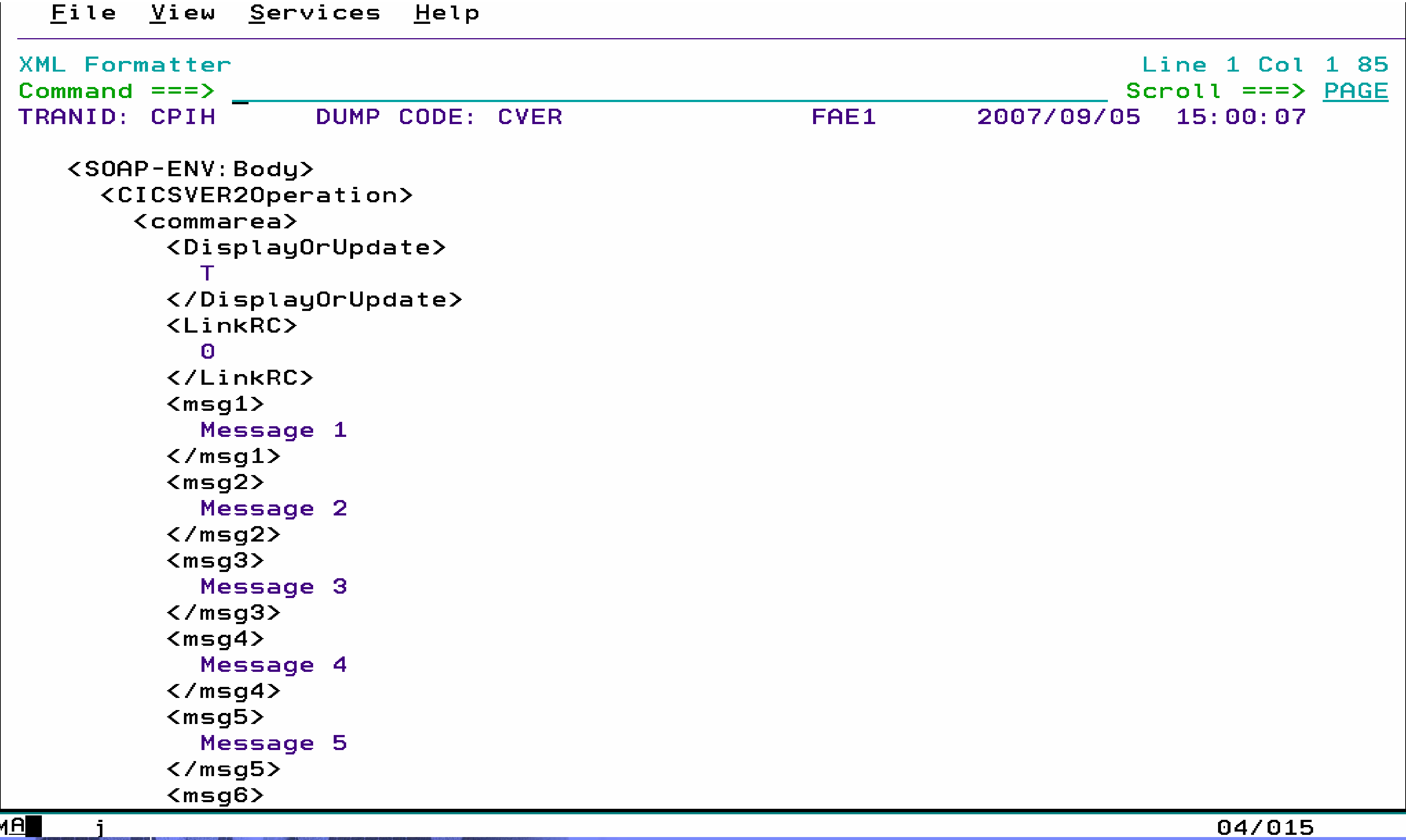
```
CICS Levels, Commareas, and Channels                                Line 27 Col 1 85
Command ===> _____________________________________________________  Scroll ===> PAGE
TRANID: CPIH      DUMP CODE: CVER              FAE1      2007/09/05   14:40:23
   Data Offset X'000000' HEX      02

Container DFHWS-OPERATION at address 177ED710 has a length of X'11'
   Data Offset X'000000' EBCDIC   CICSVER2Operation

Container DFHWS-BODY at address 177ED6B8 has a length of X'493'
   Data Offset X'000000' ASCII    <SOAP-ENV:Body>

Container DFHWS-XMLNS at address 177ED660 has a length of X'3B'
   Data Offset X'000000' ASCII    xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/en

Container DFHWS-SOAPLEVEL at address 177ED608 has a length of X'4'
   Data Offset X'000000' HEX      00000001

Container DFH-HANDLERPLIST at address 177ED5B0 has a length of X'0'

Container DFHRESPONSE at address 177ED450 has a length of X'0'

Container DFHFUNCTION at address 177ED3F8 has a length of X'10'
   Data Offset X'000000' EBCDIC   PROCESS-REQUEST

Container DFHWS-URI at address 177ED3A0 has a length of X'9'
   Data Offset X'000000' EBCDIC   /cicsver2

Container DFHREQUEST at address 177ED348 has a length of X'611'
   Data Offset X'000000' ASCII    <?xml version="1.0" encoding="UTF-8" ?>
MA     j                                                                   16/035
```

XML Data Formatting



```
  File  View  Services  Help
--------------------------------------------------------------------------------
Container Data                                                    Line 1 Col 1 85
Command ===> ______________________________________________________ Scroll ===> PAGE
TRANID: CPIH     DUMP CODE: CVER               FAE1      2007/09/05  15:00:07

DFHWS-BODY Contains the body section of the SOAP envelope. Typically, the
application will modify the contents.

Data Length X'493' Format XML Data

Address   Offset     Hex                                 ASCII
16B65898                               3C534F41 502D454E *         <SOAP-EN*
16B658A0        +8   563A426F 64793E20 20202020 20202020 *V:Body>          *
16B658B0       +18   20202020 20202020 20202020 20202020 *                 *
         Lines 16B658C0-16B658D0 same as above
16B658E0       +48   20202020 20200D0A 3C434943 53564552 *        ..<CICSVER*
16B658F0       +58   324F7065 72617469 6F6E3E20 20202020 *2Operation>      *
16B65900       +68   20202020 20202020 20202020 20202020 *                 *
         Lines 16B65910-16B65920 same as above
16B65930       +98   20202020 20202020 0D0A3C63 6F6D6D61 *          ..<comma*
16B65940       +A8   7265613E 20202020 20202020 20202020 *rea>             *
16B65950       +B8   20202020 20202020 20202020 20202020 *                 *
         Lines 16B65960-16B65970 same as above
16B65980       +E8   20202020 20202020 0D0A3C44 6973706C *          ..<Displ*
16B65990       +F8   61794F72 55706461 74653E54 3C2F4469 *ayOrUpdate>T</Di*
16B659A0      +108   73706C61 794F7255 70646174 653E2020 *splayOrUpdate>   *
16B659B0      +118   20202020 20202020 20202020 20202020 *                 *
16B659C0      +128   20202020 20202020 20202020 20202020 *                 *
16B659D0      +138   20202020 20202020 0D0A3C4C 696E6B52 *          ..<LinkR*
16B659E0      +148   433E303C 2F4C696E 6B52433E 20202020 *C>0</LinkRC>     *
MA█     j                                                              04/015
```

XML Data Formatted

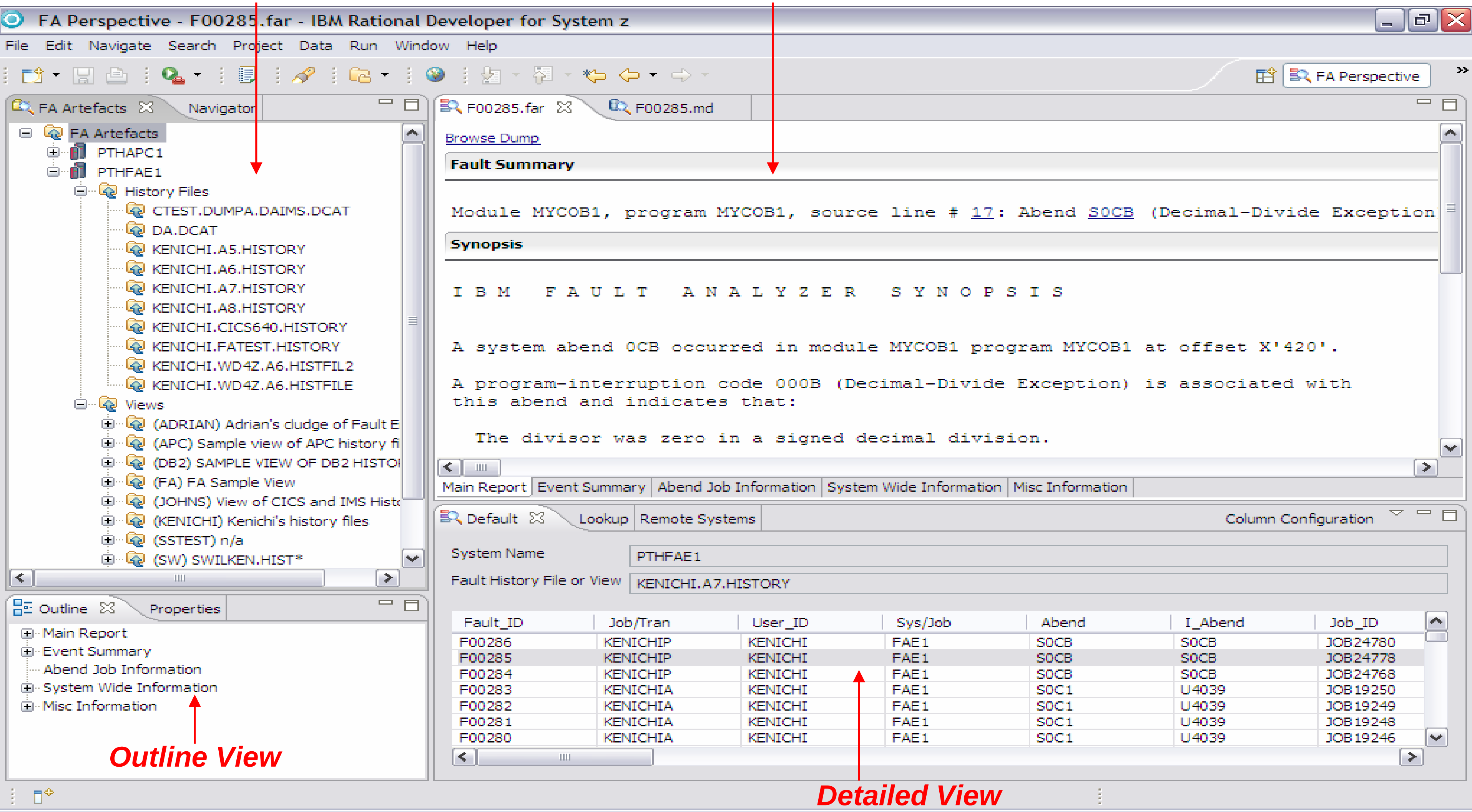


```
XML Formatter                                                      Line 1 Col 1 85
Command ===> _____________________________________________________ Scroll ===> PAGE
TRANID: CPIH      DUMP CODE: CVER               FAE1      2007/09/05   15:00:07

   <SOAP-ENV:Body>
     <CICSVER2Operation>
       <commarea>
         <DisplayOrUpdate>
           T
         </DisplayOrUpdate>
         <LinkRC>
           0
         </LinkRC>
         <msg1>
           Message 1
         </msg1>
         <msg2>
           Message 2
         </msg2>
         <msg3>
           Message 3
         </msg3>
         <msg4>
           Message 4
         </msg4>
         <msg5>
           Message 5
         </msg5>
         <msg6>
MA     j                                                                  04/015
```

Fault Analyzer and Rational Developer for System z Integration

Artifacts View

Multi-tabbed Report View


FA Perspective - F00285.far - IBM Rational Developer for System z
File
Edit
Navigate
Search
Project
Data
Run
Window
Help
FA Perspective
FA Artefacts
Navigator
FA Artefacts
PTHAPC1
PTHFAE1
History Files
CTEST.DUMPA.DAIMS.DCAT
DA.DCAT
KENICHI.A5.HISTORY
KENICHI.A6.HISTORY
KENICHI.A7.HISTORY
KENICHI.A8.HISTORY
KENICHI.CICS640.HISTORY
KENICHI.FATEST.HISTORY
KENICHI.WD4Z.A6.HISTFIL2
KENICHI.WD4Z.A6.HISTFILE
Views
(ADRIAN) Adrian's cludge of Fault E
(APC) Sample view of APC history fi
(DB2) SAMPLE VIEW OF DB2 HISTO
(FA) FA Sample View
(JOHNS) View of CICS and IMS Hist
(KENICHI) Kenichi's history files
(SSTEST) n/a
(SW) SWILKEN.HIST*
F00285.far
F00285.md
Browse Dump
Fault Summary
Synopsis
Main Report
Event Summary
Abend Job Information
System Wide Information
Misc Information
Outline
Properties
Main Report
Event Summary
Abend Job Information
System Wide Information
Misc Information
Default
Lookup
Remote Systems
Column Configuration

```
Module MYCOB1, program MYCOB1, source line # 17: Abend S0CB (Decimal-Divide Exception

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 0CB occurred in module MYCOB1 program MYCOB1 at offset X'420'.

A program-interruption code 000B (Decimal-Divide Exception) is associated with
this abend and indicates that:

  The divisor was zero in a signed decimal division.
```

System Name: PTHFAE1

Fault History File or View: KENICHI.A7.HISTORY

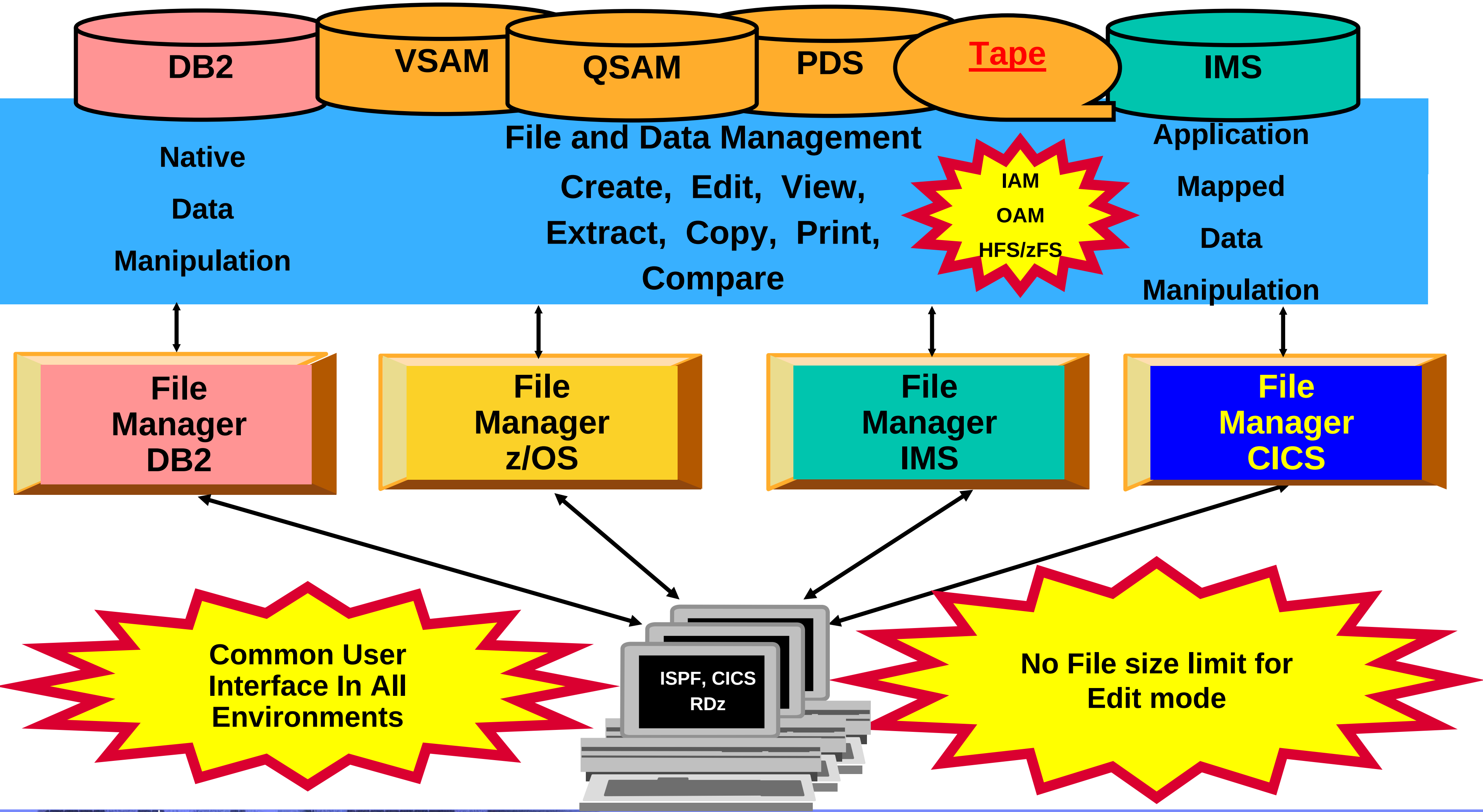
Fault_ID	Job/Tran	User_ID	Sys/Job	Abend	I_Abend	Job_ID
F00286	KENICHIP	KENICHI	FAE1	S0CB	S0CB	JOB24780
F00285	KENICHIP	KENICHI	FAE1	S0CB	S0CB	JOB24778
F00284	KENICHIP	KENICHI	FAE1	S0CB	S0CB	JOB24768
F00283	KENICHIA	KENICHI	FAE1	S0C1	U4039	JOB19250
F00282	KENICHIA	KENICHI	FAE1	S0C1	U4039	JOB19249
F00281	KENICHIA	KENICHI	FAE1	S0C1	U4039	JOB19248
F00280	KENICHIA	KENICHI	FAE1	S0C1	U4039	JOB19246

Outline View

Detailed View

IBM File Manager V8

File Manager - Manage a variety of enterprise data file structures



DB2

VSAM

QSAM

PDS

Tape

IMS

Native

Data

Manipulation

File and Data Management

Create, Edit, View,

Extract, Copy, Print,

Compare

IAM

OAM

HFS/zFS

Application

Mapped

Data

Manipulation

File Manager DB2

File Manager z/OS

File Manager IMS

File Manager CICS

ISPF, CICS

RDz

Common User Interface In All Environments

No File size limit for Edit mode

File Manager Highlights

- **Find and change data within specific fields**
- **Identify fields that contain invalid values**
- **Use selection criteria and/or sampling to limit the number/type of records in Browse/Edit**
- **Edit entire files regardless of size**
- **Copy or print selected records and fields**
- **Test data generation based on record layouts**
- **Compare data between datasets using field level mapping**

File Manager V8.1 Key Enhancements

- **INTEGRATION WITH IBM RATIONAL DEVELOPER FOR SYSTEM Z**

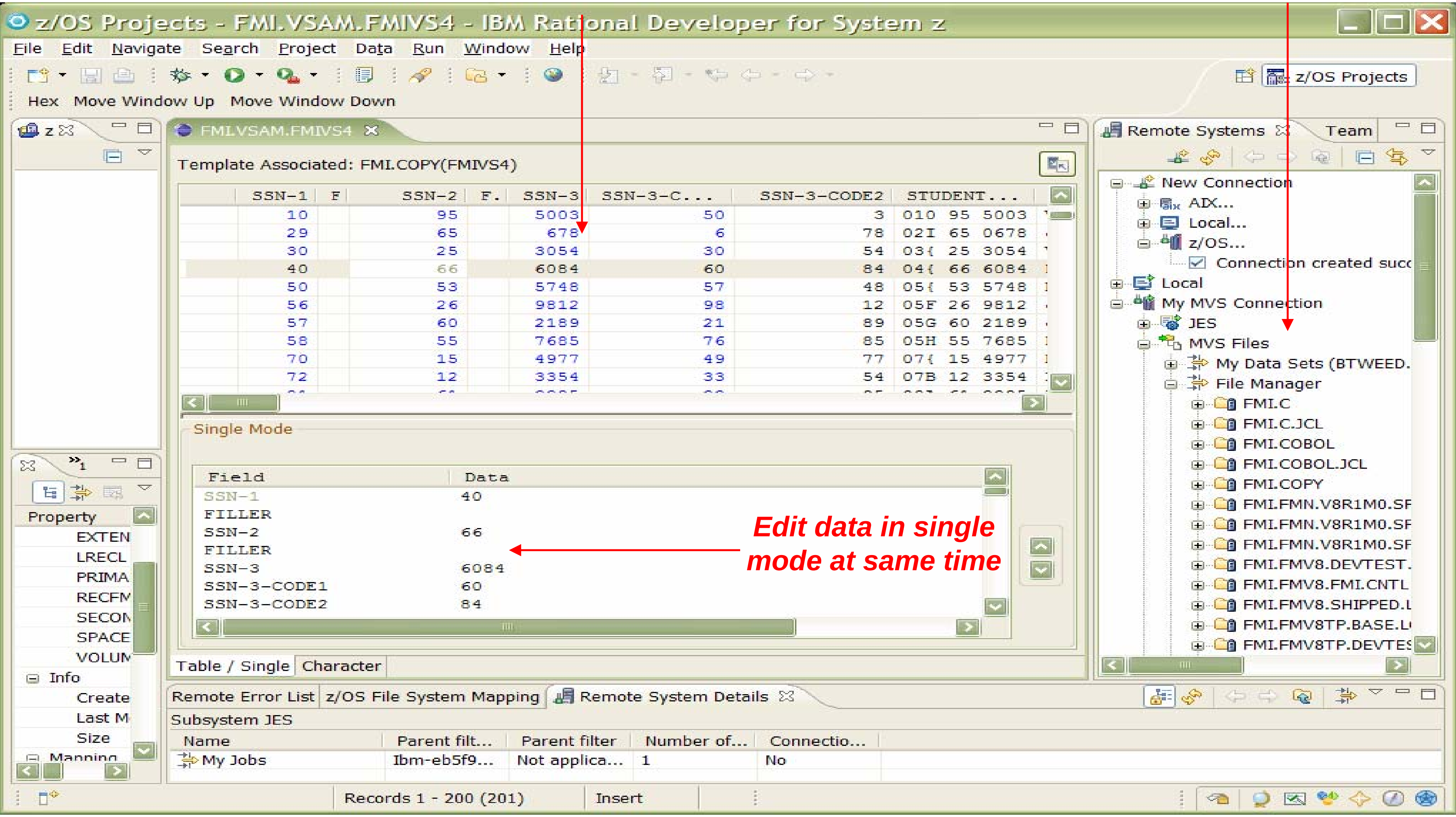
- **SUPPORT FOR IBM SOFTWARE**
  - File Manager CICS is enhanced to support extended addressability Entry Sequenced Data Sets (ESDSs), a new capability in CICS V3.2.
  - File Manager DB2 is enhanced to support the new features in DB2 V9
    - New data types: BINARY, VARBINARY, DECFLOAT, and BIGINT.
    - The enhanced DB2 V9 SQL syntax, in File Manager DB2 Advanced SQL Prototyping,
    - New and changed DB2 V9 catalog tables

- **NEW FUNCTIONS**
  - File Manager scrambling support to provide a "scrambling" algorithm for field level scrambling.
  - The File Manager Base editor is enhanced to provide CREATE, REPLACE, APPEND, and SAVEAS commands.

File Manager V8.1 Key Enhancements

- **NEW FUNCTIONS (cont.)**
  - The File Manager editor and viewer CHANGE command is enhanced to allow File Manager to change the record length if the data set contains variable length records.
  - File Manager Template processing allows record identification criteria and selection criteria to be specified for individual array elements or for all array elements on the "by field" panels.
  - The File Manager Compare utility is extended to compare load modules and load libraries.
  - The File Manager DB2 editor related edit (REDIT) command is extended in File Manager DB2 to support non-error situations.
- **SUPPORT FOR IBM SOFTWARE**
  - DB2 V9
  - IMS V10
  - CICS Transaction Server V3.2

File Manager and Rational Developer for System z Integration



Edit data in table mode (mapped to template/copybook)

View files associated with MVS system

Edit data in single mode at same time

z/OS Projects - FMI.VSAM.FMIVS4 - IBM Rational Developer for System z
File
Edit
Navigate
Search
Project
Data
Run
Window
Help
Hex
Move Window Up
Move Window Down
z/OS Projects
FMI.VSAM.FMIVS4
Remote Systems
Team
Single Mode
Table / Single
Character
Property
EXTEN
LRECL
PRIMA
RECFM
SECON
SPACE
VOLUM
Info
Create
Last M
Size
Mapping
New Connection
AIX...
Local...
z/OS...
Connection created succ
Local
My MVS Connection
JES
MVS Files
My Data Sets (BTWEED.
File Manager
FMI.C
FMI.C.JCL
FMI.COBOL
FMI.COBOL.JCL
FMI.COPY
FMI.FMN.V8R1M0.SF
FMI.FMN.V8R1M0.SF
FMI.FMN.V8R1M0.SF
FMI.FMV8.DEVTEST.
FMI.FMV8.FMI.CNTL
FMI.FMV8.SHIPPED.L
FMI.FMV8TP.BASE.L
FMI.FMV8TP.DEVTES
Remote Error List
z/OS File System Mapping
Remote System Details
Records 1 - 200 (201)
Insert

Template Associated: FMI.COPY(FMIVS4)

SSN-1	F	SSN-2	F.	SSN-3	SSN-3-C...	SSN-3-CODE2	STUDENT...
10		95		5003	50	3	010 95 5003
29		65		678	6	78	02I 65 0678
30		25		3054	30	54	03{ 25 3054
40		66		6084	60	84	04{ 66 6084
50		53		5748	57	48	05{ 53 5748
56		26		9812	98	12	05F 26 9812
57		60		2189	21	89	05G 60 2189
58		55		7685	76	85	05H 55 7685
70		15		4977	49	77	07{ 15 4977
72		12		3354	33	54	07B 12 3354

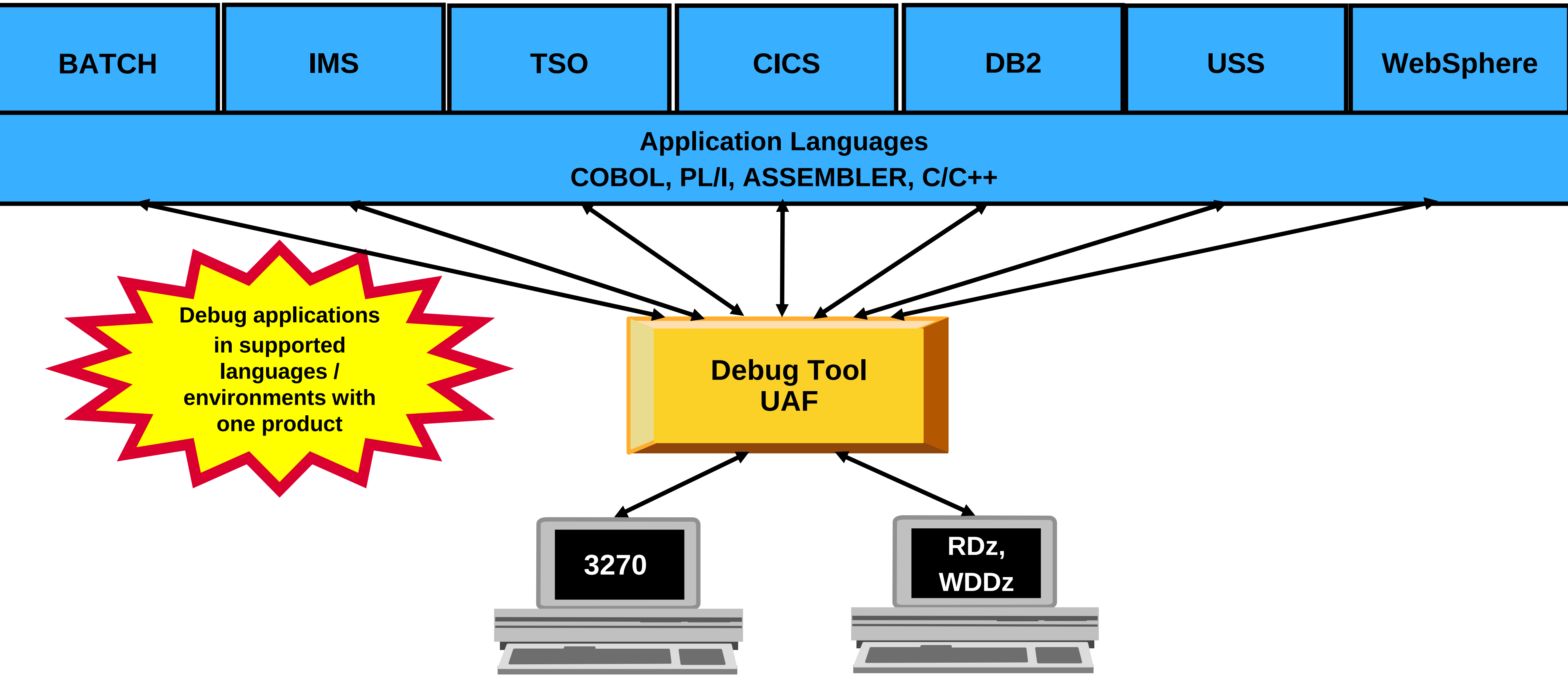
Field	Data
SSN-1	40
FILLER	
SSN-2	66
FILLER	
SSN-3	6084
SSN-3-CODE1	60
SSN-3-CODE2	84

Subsystem JES

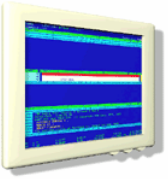
Name	Parent filt...	Parent filter	Number of...	Connectio...
My Jobs	Ibm-eb5f9...	Not applica...	1	No

IBM Debug Tool Utilities and Advanced Functions V8

Debug Tool UAF – Provides debugging of enterprise applications


BATCH
IMS
TSO
CICS
DB2
USS
WebSphere
Application Languages
COBOL, PL/I, ASSEMBLER, C/C++
Debug applications in supported languages / environments with one product
Debug Tool UAF
3270
RDz, WDDz

Debug Tool Utilities and Advanced Functions Highlights



- **Common User Interface Across Systems And Subsystems**
- **Consistent Across Languages**
  - –COBOL (all versions), C/C++, PL/I, Assembler
- **Environments Supported**
  - –CICS, TSO, JES/Batch, IMS Including IMS/TM, DB2 Including Stored Procedures, Unix System Services (USS), MQSeries
- **Order Debug Tool Utilities and Advanced Functions PID**
  - –5655-S16

- **Debug Tool Utilities and Advanced Functions Features:**
  - –Interactive “Playback” support
  - –Object level “disassembly” interactive debug support
  - –Automonitor support for COBOL, PL/I, and Assembler programs
  - –An interface to the Fault Analyzer tool
  - –Code coverage tool for unit and regression testing
  - –Support for OS/VS COBOL source programs
  - –Load module analysis reporting
  - –Uses the GUI debug interface built into products such as:
    - •*Rational Developer for System z (RDz)*
    - •*Websphere Dev. Debugger for System z (WDDz)*

- **Information Available At** www.ibm.com/software/awdtools/deployment

Debug Tool V8.1 Key Enhancements

- **CICS-RELATED ENHANCEMENTS**
  - Ability to detect storage violations under CICS
  - A new CHKSTGV command helps CICS programmers diagnose storage violations.
  - New DTST transaction provides a CICS memory editor and browser
  - Ability to display CICS channel and containers
  - New commands are added (DESCRIBE CHANNEL and LIST CONTAINER) so you can display CICS channels and containers, including containers which hold Web Services state information. You can display the information even if it is not being referenced by the application program being debugging.

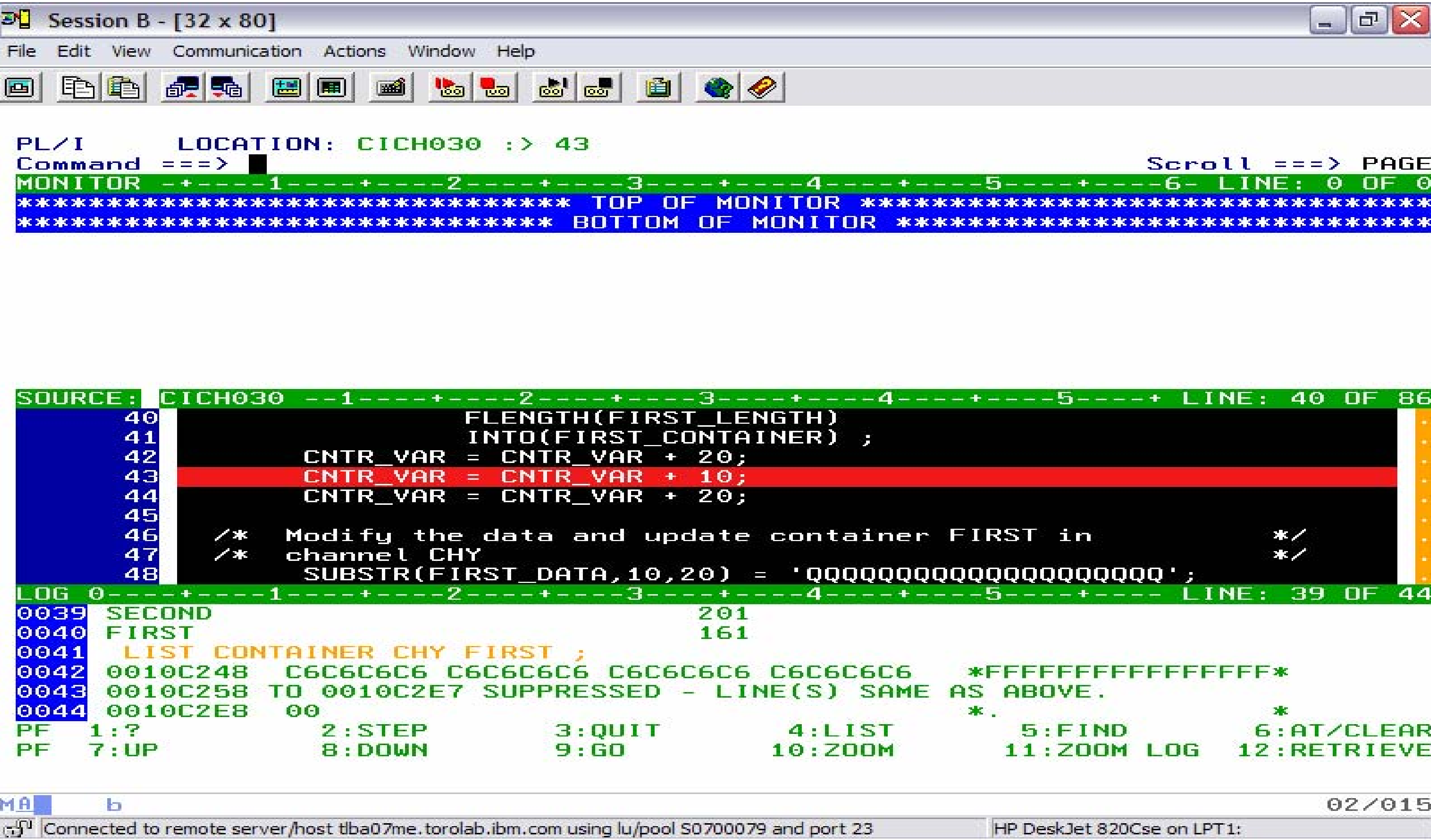
Debug Tool V8.1 Key Enhancements

- **AUTOMONITOR ENHANCEMENTS**
  - Debug Tool will display values in character format regardless of whether or not the string contains unprintable characters.
  - You can use HEX and DEF prefix commands in the AUTOMONITOR section of the Monitor window.
  - Assembler AUTOMONITOR output displays the user register names, when possible

- **64-BIT REGISTER SUPPORT FOR ASSEMBLER APPLICATIONS**

- **SUPPORT FOR IBM SOFTWARE**
  - DB2 V9
  - IMS V10
  - CICS Transaction Server V3.2

Displaying contents of a container (CICS)



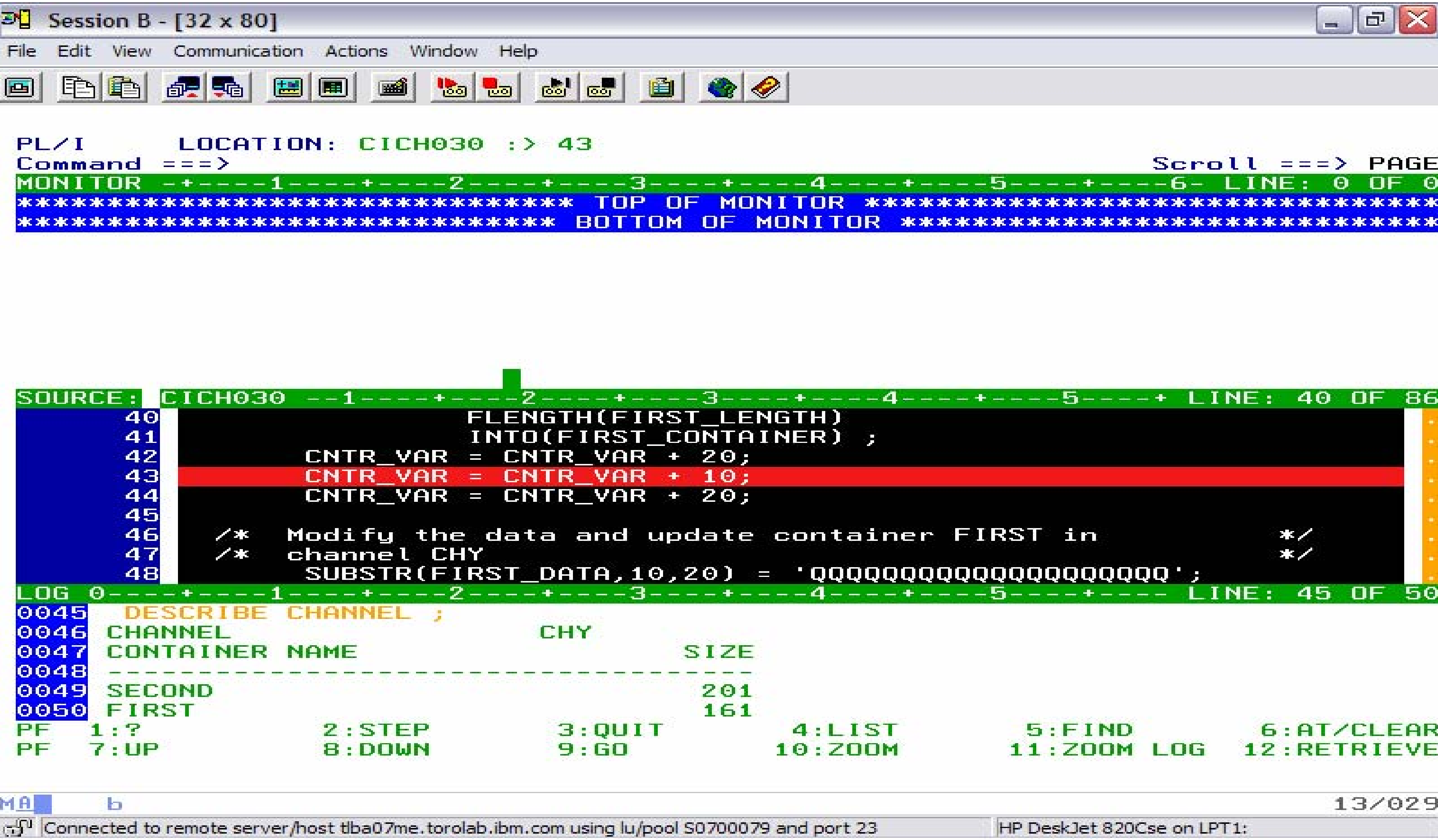
```
PL/I      LOCATION: CICH030 :> 43
Command ===>                                                         Scroll ===> PAGE
MONITOR -+----1----+----2----+----3----+----4----+----5----+----6- LINE: 0 OF 0
******************************* TOP OF MONITOR ****************************
****************************** BOTTOM OF MONITOR ***************************






SOURCE: CICH030 --1----+----2----+----3----+----4----+----5----+ LINE: 40 OF 86
     40                 FLENGTH(FIRST_LENGTH)                              .
     41                 INTO(FIRST_CONTAINER) ;                            .
     42        CNTR_VAR = CNTR_VAR + 20;                                   .
     43        CNTR_VAR = CNTR_VAR + 10;                                   .
     44        CNTR_VAR = CNTR_VAR + 20;                                   .
     45                                                                    .
     46    /*  Modify the data and update container FIRST in           */  .
     47    /*  channel CHY                                             */  .
     48       SUBSTR(FIRST_DATA,10,20) = 'QQQQQQQQQQQQQQQQQQQQ';           .
LOG 0----+----1----+----2----+----3----+----4----+----5----+---- LINE: 39 OF 44
0039 SECOND                             201
0040 FIRST                              161
0041  LIST CONTAINER CHY FIRST ;
0042 0010C248  C6C6C6C6 C6C6C6C6 C6C6C6C6 C6C6C6C6   *FFFFFFFFFFFFFFFF*
0043 0010C258 TO 0010C2E7 SUPPRESSED - LINE(S) SAME AS ABOVE.
0044 0010C2E8  00                                   *.              *
PF  1:?          2:STEP        3:QUIT        4:LIST       5:FIND      6:AT/CLEAR
PF  7:UP         8:DOWN        9:GO         10:ZOOM      11:ZOOM LOG 12:RETRIEVE
```

```
MA     b                                                                  02/015
```

Connected to remote server/host tlba07me.torolab.ibm.com using lu/pool S0700079 and port 23

HP DeskJet 820Cse on LPT1:

Describe Channel (CICS)

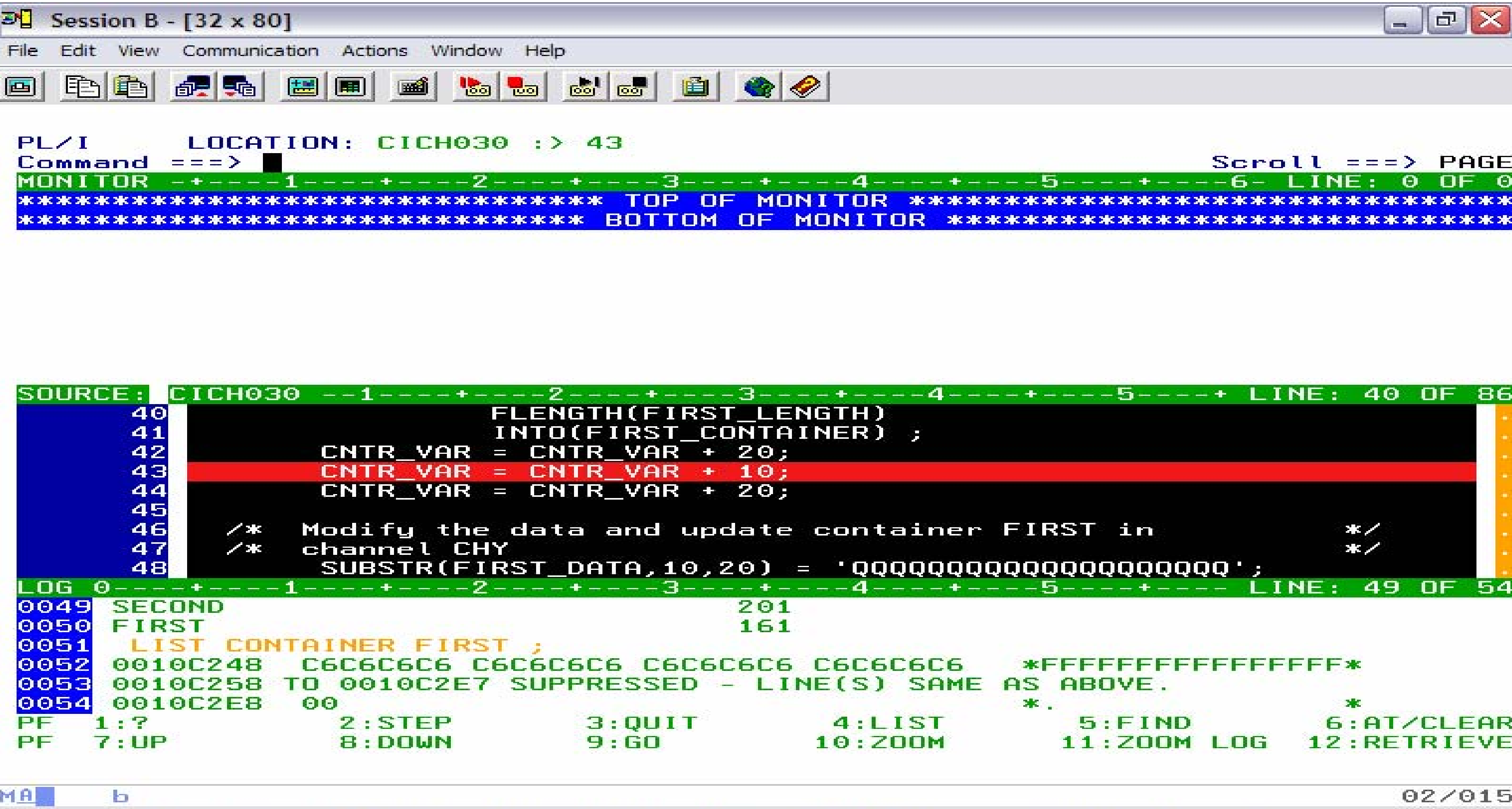


```
PL/I      LOCATION: CICH030 :> 43
Command ===>                                                     Scroll ===> PAGE
MONITOR -+----1----+----2----+----3----+----4----+----5----+----6- LINE: 0 OF 0
******************************* TOP OF MONITOR ******************************
****************************** BOTTOM OF MONITOR ****************************



SOURCE: CICH030 --1----+----2----+----3----+----4----+----5----+ LINE: 40 OF 86
      40                FLENGTH(FIRST_LENGTH)
      41                INTO(FIRST_CONTAINER) ;
      42         CNTR_VAR = CNTR_VAR + 20;
      43         CNTR_VAR = CNTR_VAR + 10;
      44         CNTR_VAR = CNTR_VAR + 20;
      45
      46      /*  Modify the data and update container FIRST in          */
      47      /*  channel CHY                                            */
      48         SUBSTR(FIRST_DATA,10,20) = 'QQQQQQQQQQQQQQQQQQQQ';
LOG 0----+----1----+----2----+----3----+----4----+----5----+---- LINE: 45 OF 50
0045  DESCRIBE CHANNEL ;
0046 CHANNEL                 CHY
0047 CONTAINER NAME                  SIZE
0048 --------------------------------------
0049 SECOND                           201
0050 FIRST                            161
PF  1:?        2:STEP      3:QUIT      4:LIST      5:FIND      6:AT/CLEAR
PF  7:UP       8:DOWN      9:GO       10:ZOOM     11:ZOOM LOG 12:RETRIEVE

MA          b                                                        13/029
```

Connected to remote server/host tlba07me.torolab.ibm.com using lu/pool S0700079 and port 23

HP DeskJet 820Cse on LPT1:

Defaulting to current channel: List Container first (CICS)


Session B - [32 x 80]
File Edit View Communication Actions Window Help

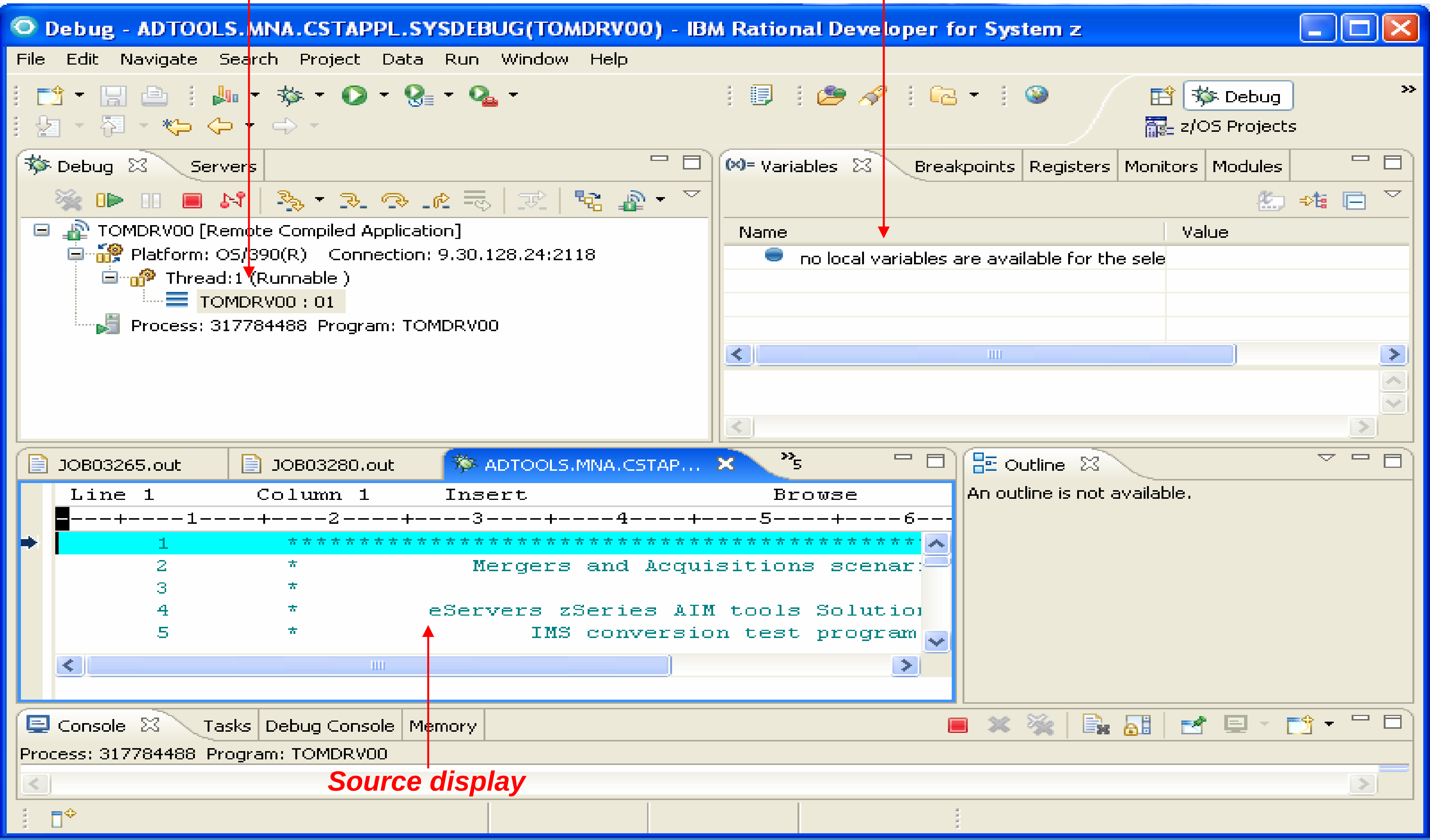
```
PL/I       LOCATION: CICH030 :> 43
Command ===>                                                      Scroll ===> PAGE
MONITOR --+----1----+----2----+----3----+----4----+----5----+----6- LINE: 0 OF 0
******************************** TOP OF MONITOR ****************************
******************************* BOTTOM OF MONITOR **************************







SOURCE: CICH030 --1----+----2----+----3----+----4----+----5----+ LINE: 40 OF 86
     40                    FLENGTH(FIRST_LENGTH)                              .
     41                    INTO(FIRST_CONTAINER) ;                            .
     42          CNTR_VAR = CNTR_VAR + 20;                                    .
     43          CNTR_VAR = CNTR_VAR + 10;                                    .
     44          CNTR_VAR = CNTR_VAR + 20;                                    .
     45                                                                       .
     46      /*  Modify the data and update container FIRST in          */    .
     47      /*  channel CHY                                            */    .
     48          SUBSTR(FIRST_DATA,10,20) = 'QQQQQQQQQQQQQQQQQQQQ';           .
LOG 0----+----1----+----2----+----3----+----4----+----5----+---- LINE: 49 OF 54
0049  SECOND                                201
0050  FIRST                                 161
0051   LIST CONTAINER FIRST ;
0052  0010C248  C6C6C6C6 C6C6C6C6 C6C6C6C6 C6C6C6C6   *FFFFFFFFFFFFFFFF*
0053  0010C258 TO 0010C2E7 SUPPRESSED - LINE(S) SAME AS ABOVE.
0054  0010C2E8  00                                   *.             *
PF  1:?           2:STEP        3:QUIT        4:LIST        5:FIND        6:AT/CLEAR
PF  7:UP          8:DOWN        9:GO         10:ZOOM       11:ZOOM LOG   12:RETRIEVE
```

MA b 02/015
Connected to remote server/host tlba07me.torolab.ibm.com using lu/pool S0700079 and port 23
HP DeskJet 820Cse on LPT1:

RD/z Variable Window Auto Monitor (Default)

Program being debugged

Variables display



Debug - ADTOOLS.MNA.CSTAPPL.SYSDEBUG(TOMDRV00) - IBM Rational Developer for System z
File Edit Navigate Search Project Data Run Window Help
Debug
z/OS Projects
Debug
Servers
Variables
Breakpoints
Registers
Monitors
Modules
JOB03265.out
JOB03280.out
ADTOOLS.MNA.CSTAP...
Outline
Console
Tasks
Debug Console
Memory

```
TOMDRV00 [Remote Compiled Application]
  Platform: OS/390(R)   Connection: 9.30.128.24:2118
    Thread:1 (Runnable )
      TOMDRV00 : 01
  Process: 317784488  Program: TOMDRV00
```

Name	Value
no local variables are available for the sele	

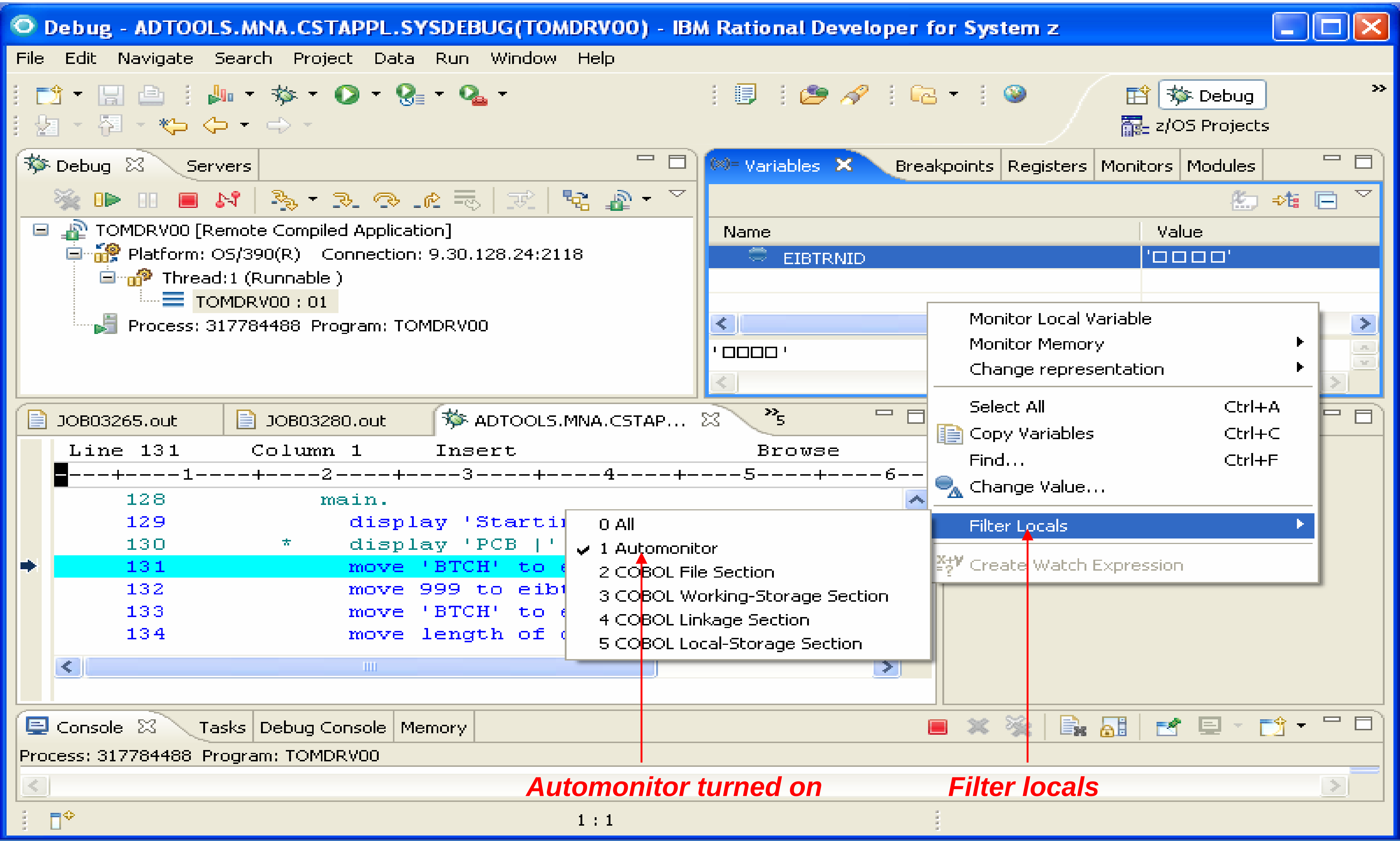
```
 Line 1          Column 1        Insert               Browse
----+----1----+----2----+----3----+----4----+----5----+----6---
          1      *******************************************
          2      *          Mergers and Acquisitions scenar
          3      *
          4      *       eServers zSeries AIM tools Solutio
          5      *            IMS conversion test program
```

An outline is not available.

Process: 317784488 Program: TOMDRV00

Source display

RD/z Selecting a Filter



Debug - ADTOOLS.MNA.CSTAPPL.SYSDEBUG(TOMDRV00) - IBM Rational Developer for System z
File Edit Navigate Search Project Data Run Window Help
Debug
z/OS Projects
Debug
Servers
Variables
Breakpoints
Registers
Monitors
Modules
Name
Value
Monitor Local Variable
Monitor Memory
Change representation
Select All Ctrl+A
Copy Variables Ctrl+C
Find... Ctrl+F
Change Value...
Filter Locals
Create Watch Expression
0 All
✓ 1 Automonitor
2 COBOL File Section
3 COBOL Working-Storage Section
4 COBOL Linkage Section
5 COBOL Local-Storage Section
JOB03265.out
JOB03280.out
ADTOOLS.MNA.CSTAP...
Console
Tasks
Debug Console
Memory
1 : 1

```
TOMDRV00 [Remote Compiled Application]
  Platform: OS/390(R)   Connection: 9.30.128.24:2118
    Thread:1 (Runnable )
      TOMDRV00 : 01
  Process: 317784488  Program: TOMDRV00
```

Name	Value
EIBTRNID	'□□□□'

'□□□□'

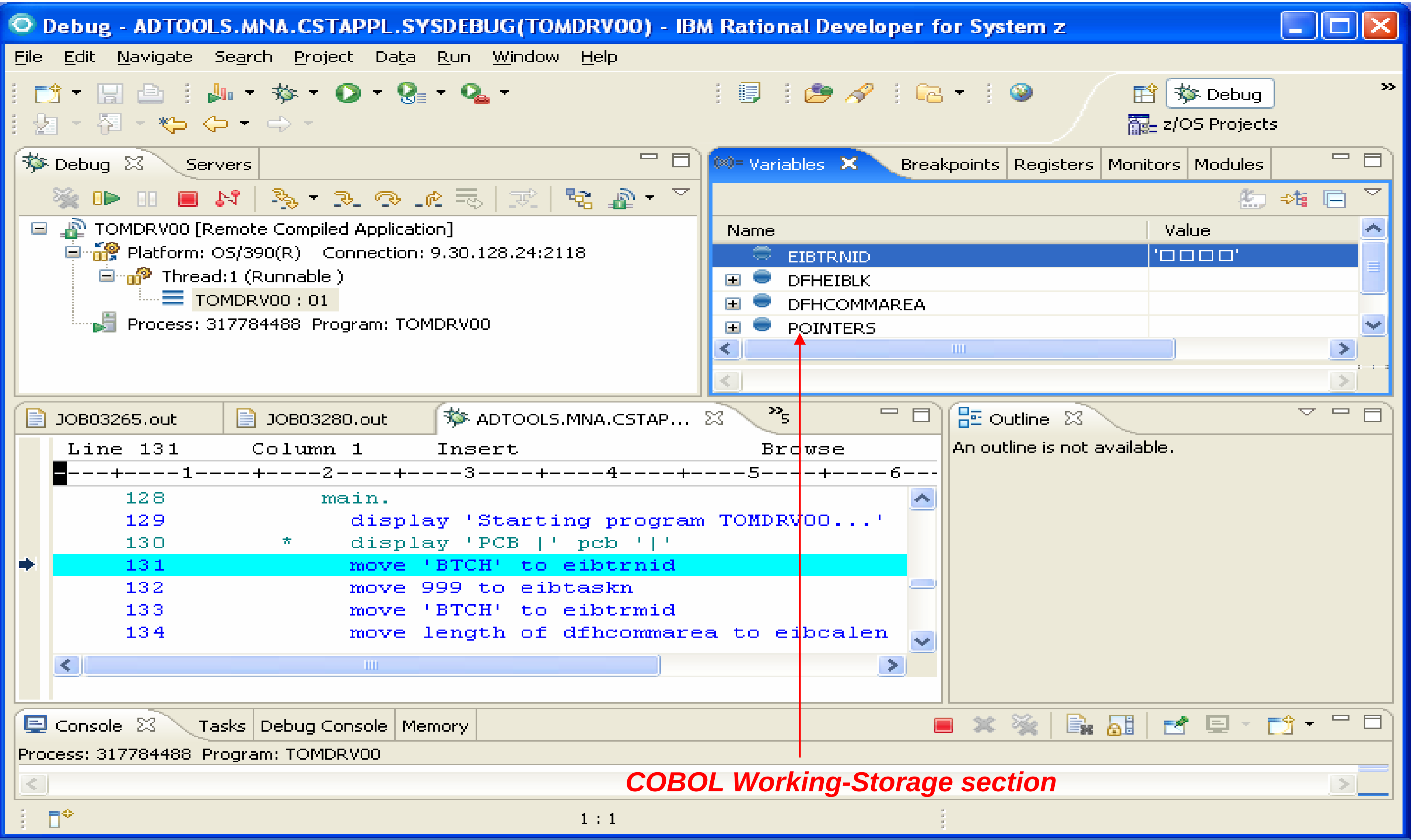
```
 Line 131       Column 1       Insert                   Browse
----+----1----+----2----+----3----+----4----+----5----+----6--
      128            main.
      129              display 'Starti
      130          *   display 'PCB |'
      131              move 'BTCH' to e
      132              move 999 to eib
      133              move 'BTCH' to e
      134              move length of
```

```
Process: 317784488  Program: TOMDRV00
```

Automonitor turned on

Filter locals

RD/z after selecting Working-Storage Section Filter


Debug - ADTOOLS.MNA.CSTAPPL.SYSDEBUG(TOMDRV00) - IBM Rational Developer for System z
File Edit Navigate Search Project Data Run Window Help
Debug
z/OS Projects
Debug Servers
Variables Breakpoints Registers Monitors Modules
JOB03265.out JOB03280.out ADTOOLS.MNA.CSTAP...
Outline
Console Tasks Debug Console Memory

TOMDRV00 [Remote Compiled Application]
  Platform: OS/390(R)   Connection: 9.30.128.24:2118
    Thread:1 (Runnable)
      TOMDRV00 : 01
  Process: 317784488 Program: TOMDRV00

Name	Value
EIBTRNID	'□□□□'
DFHEIBLK	
DFHCOMMAREA	
POINTERS	

```
 Line 131      Column 1       Insert                 Browse
----+----1----+----2----+----3----+----4----+----5----+----6---
              main.
                display 'Starting program TOMDRV00...'
           *    display 'PCB |' pcb '|'
                move 'BTCH' to eibtrnid
                move 999 to eibtaskn
                move 'BTCH' to eibtrmid
                move length of dfhcommarea to eibcalen
```

An outline is not available.

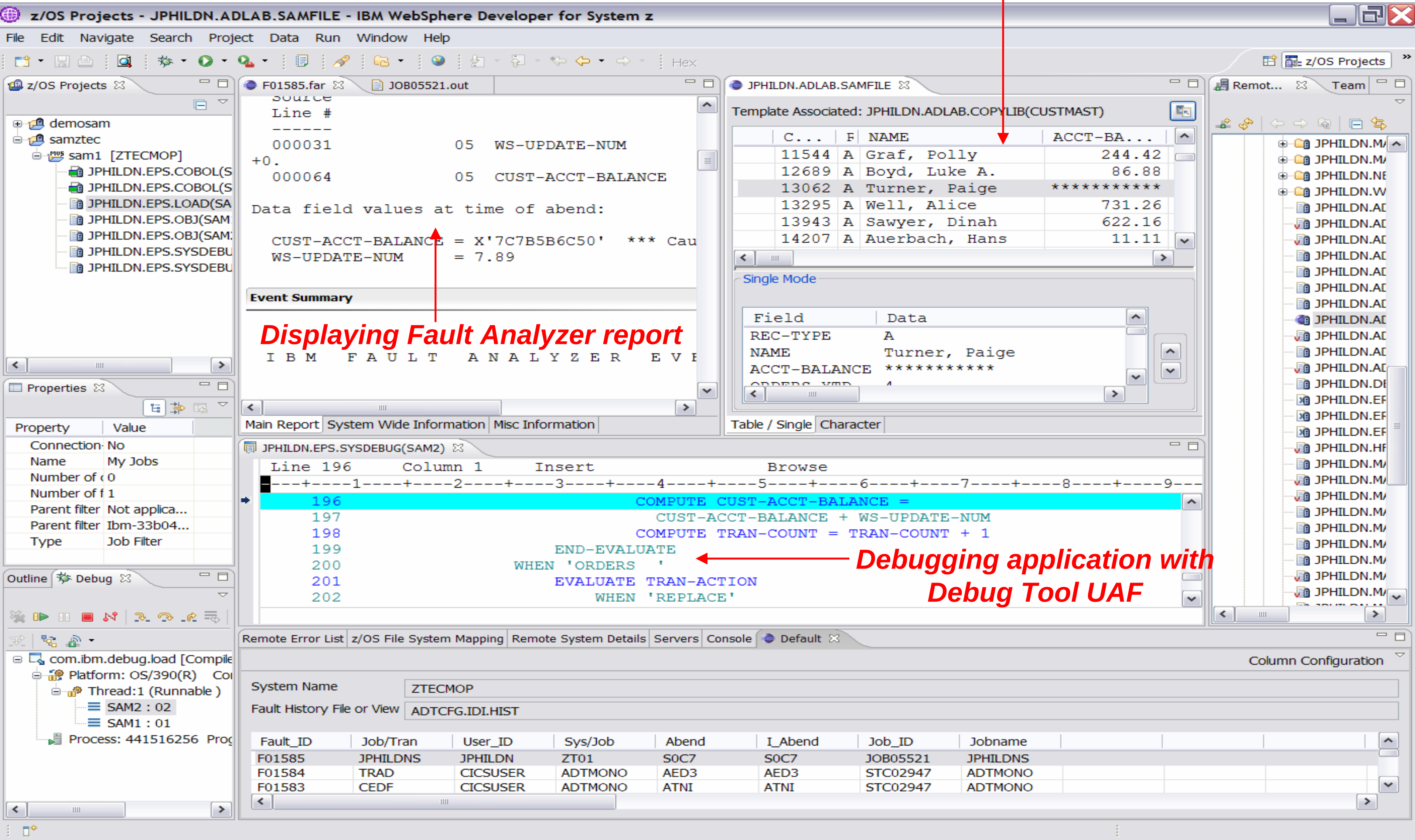
Process: 317784488 Program: TOMDRV00

1 : 1

COBOL Working-Storage section

Integration of File Manager, Fault Analyzer and Debug Tool UAF with Rational Developer for System z

Sample of PD Tools in RDz


z/OS Projects - JPHILDN.ADLAB.SAMFILE - IBM WebSphere Developer for System z
File Edit Navigate Search Project Data Run Window Help
Hex
z/OS Projects
z/OS Projects
demosam
samztec
sam1 [ZTECMOP]
JPHILDN.EPS.COBOL(S
JPHILDN.EPS.COBOL(S
JPHILDN.EPS.LOAD(SA
JPHILDN.EPS.OBJ(SAM
JPHILDN.EPS.OBJ(SAM
JPHILDN.EPS.SYSDEBU
JPHILDN.EPS.SYSDEBU
F01585.far
JOB05521.out
JPHILDN.ADLAB.SAMFILE
Remot...
Team
Main Report
System Wide Information
Misc Information
Single Mode
Table / Single
Character
Properties
Outline
Debug
com.ibm.debug.load [Compile
Platform: OS/390(R) Co
Thread:1 (Runnable)
SAM2 : 02
SAM1 : 01
Process: 441516256 Prog
JPHILDN.EPS.SYSDEBUG(SAM2)
Remote Error List
z/OS File System Mapping
Remote System Details
Servers
Console
Default
Column Configuration

Editing data with File Manager

Template Associated: JPHILDN.ADLAB.COPYLIB(CUSTMAST)

C...	F	NAME	ACCT-BA...
11544	A	Graf, Polly	244.42
12689	A	Boyd, Luke A.	86.88
13062	A	Turner, Paige	***********
13295	A	Well, Alice	731.26
13943	A	Sawyer, Dinah	622.16
14207	A	Auerbach, Hans	11.11

Field	Data
REC-TYPE	A
NAME	Turner, Paige
ACCT-BALANCE	***********

Displaying Fault Analyzer report

```
   Source
   Line #
   ------
   000031            05   WS-UPDATE-NUM
+0.
   000064            05   CUST-ACCT-BALANCE

Data field values at time of abend:

   CUST-ACCT-BALANCE  = X'7C7B5B6C50'   *** Cau
   WS-UPDATE-NUM      = 7.89
```

Event Summary

```
 I B M   F A U L T   A N A L Y Z E R   E V E
```

Debugging application with Debug Tool UAF

```
 Line 196     Column 1      Insert                Browse
----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8----+----9---
      196                        COMPUTE CUST-ACCT-BALANCE =
      197                          CUST-ACCT-BALANCE + WS-UPDATE-NUM
      198                        COMPUTE TRAN-COUNT = TRAN-COUNT + 1
      199                END-EVALUATE
      200            WHEN 'ORDERS  '
      201                EVALUATE TRAN-ACTION
      202                    WHEN 'REPLACE'
```

Property	Value
Connection	No
Name	My Jobs
Number of (	0
Number of f	1
Parent filter	Not applica...
Parent filter	Ibm-33b04...
Type	Job Filter

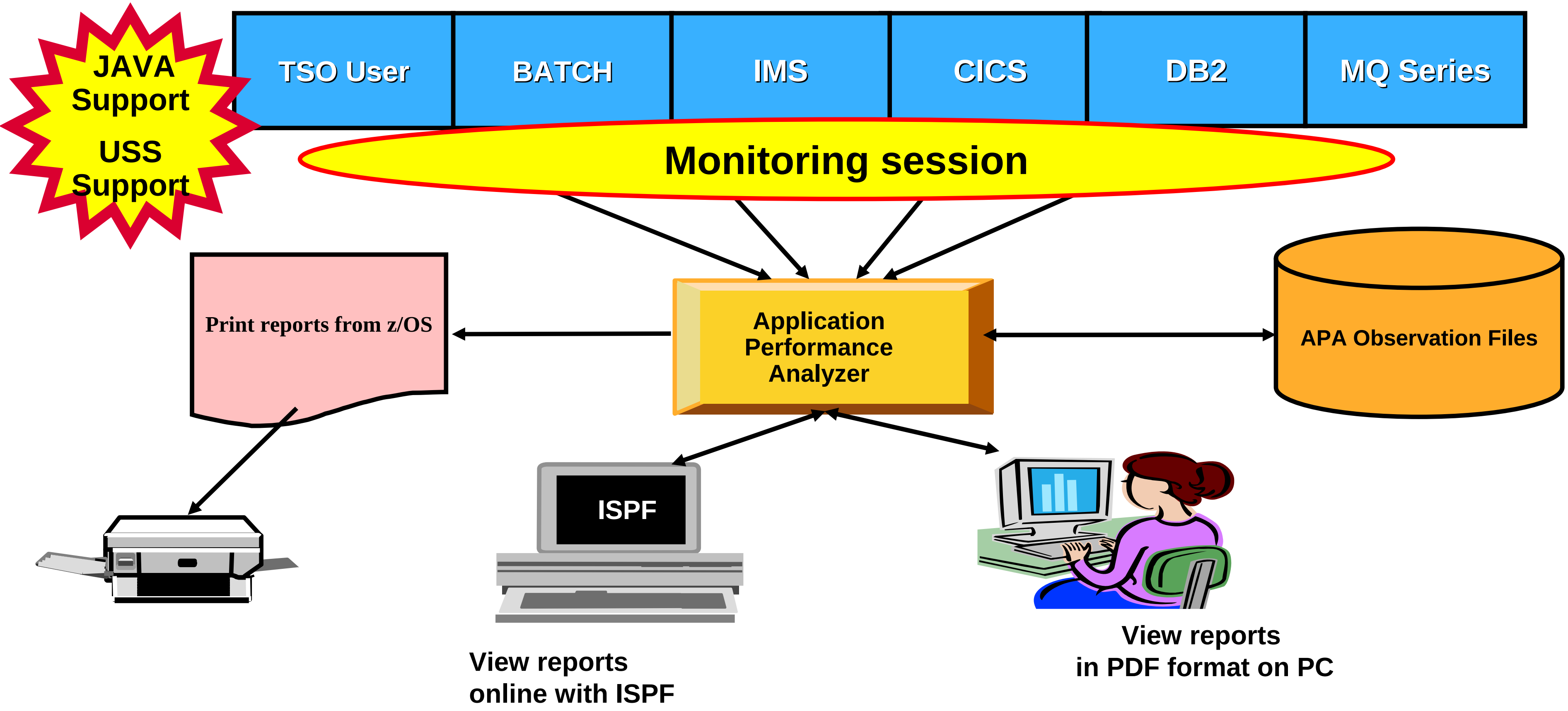
System Name: ZTECMOP

Fault History File or View: ADTCFG.IDI.HIST

Fault_ID	Job/Tran	User_ID	Sys/Job	Abend	I_Abend	Job_ID	Jobname
F01585	JPHILDNS	JPHILDN	ZT01	S0C7	S0C7	JOB05521	JPHILDNS
F01584	TRAD	CICSUSER	ADTMONO	AED3	AED3	STC02947	ADTMONO
F01583	CEDF	CICSUSER	ADTMONO	ATNI	ATNI	STC02947	ADTMONO

IBM Application Performance Analyzer V8

Application Performance Analyzer – Provides application performance analysis tooling for app developers



JAVA Support

USS Support

TSO User

BATCH

IMS

CICS

DB2

MQ Series

Monitoring session

Application Performance Analyzer

Print reports from z/OS

APA Observation Files

View reports online with ISPF

View reports in PDF format on PC

Application Performance Analyzer Highlights

- **Types of Observation Sessions**
  - Real-Time
  - Scheduled
  - Via batch submission
- **Non-intrusive performance analyzer for applications and systems programmers to**
  - Improve response time in online applications
  - Improve batch turn around time
  - Identify excessive I/O activity
  - Identify excessive CPU usage
  - Test the effects of increasing workload
  - Isolate performance problems in new and existing applications

Application Performance Analyzer Highlights

- Summary/Profile reports with drill down into detailed levels via an ISPF interface or PDF hardcopy
- CPU, Load Module, and CSECT analysis of all modules in the address space
- Source statement (COBOL or PL/I) or instruction utilization in each CSECT
- Supports Fault Analyzer / Debug Tool Sidefiles
- Wait time analysis by category, task/module, or attribution
- DASD I/O analysis by device, DDNAME, dataset and dataset attributes, EXCP’s, VSAM with buffer pool, I/O wait, over time
- SYSPLEX coupling facility reports

APA V8.1 Key Enhancements

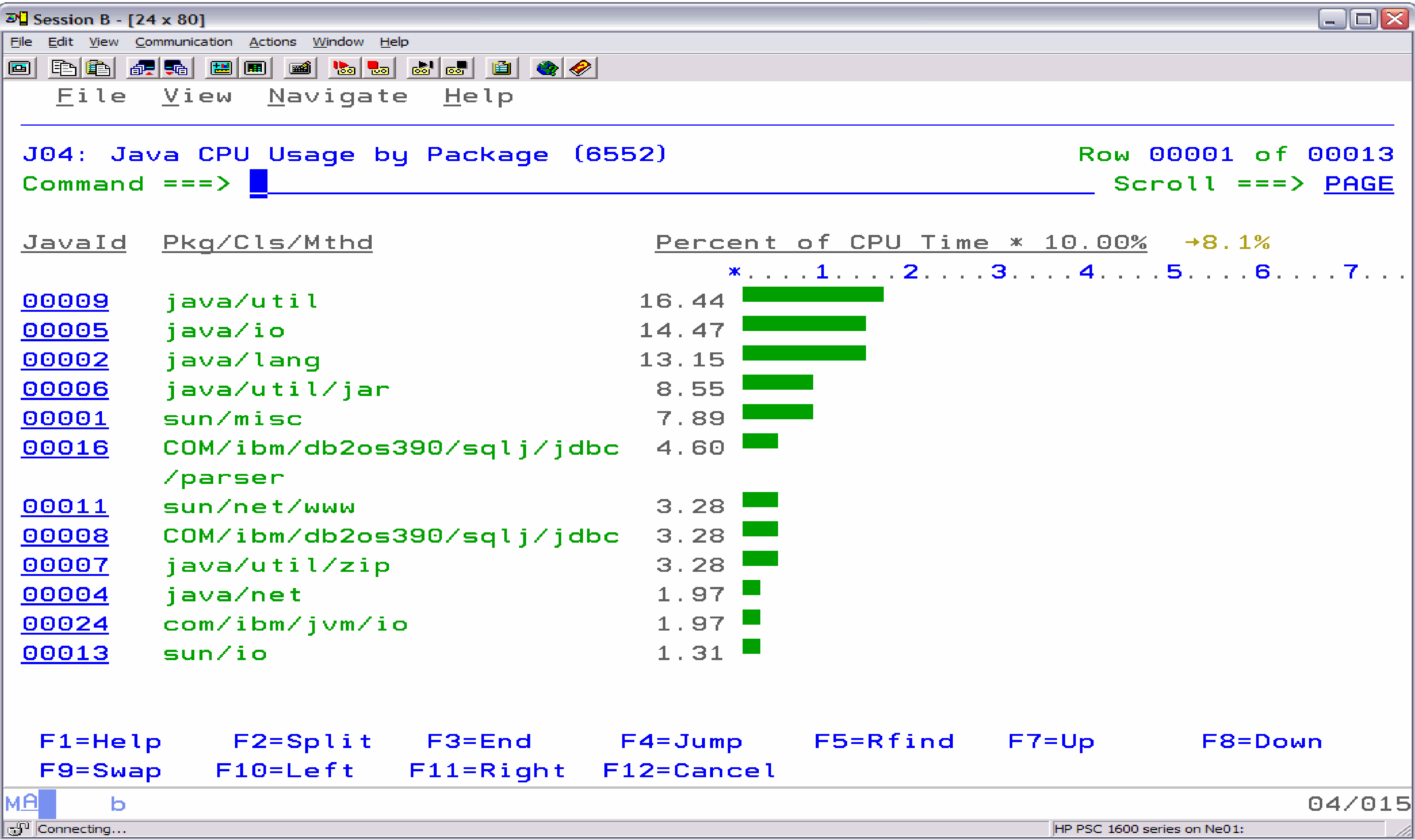
- **JAVA ENHANCEMENTS**
  - Java Just-In-Time (JIT) compiler support for Java 1.4.2
  - Mapping to Java source to facilitate identification of performance bottlenecks

- **PERFORMANCE COMPARISON**
  - Comparison performance between two samples, for benchmarking before and after performance analysis

- **USABILITY ENHANCEMENTS**
  - Recommendation support for DB2

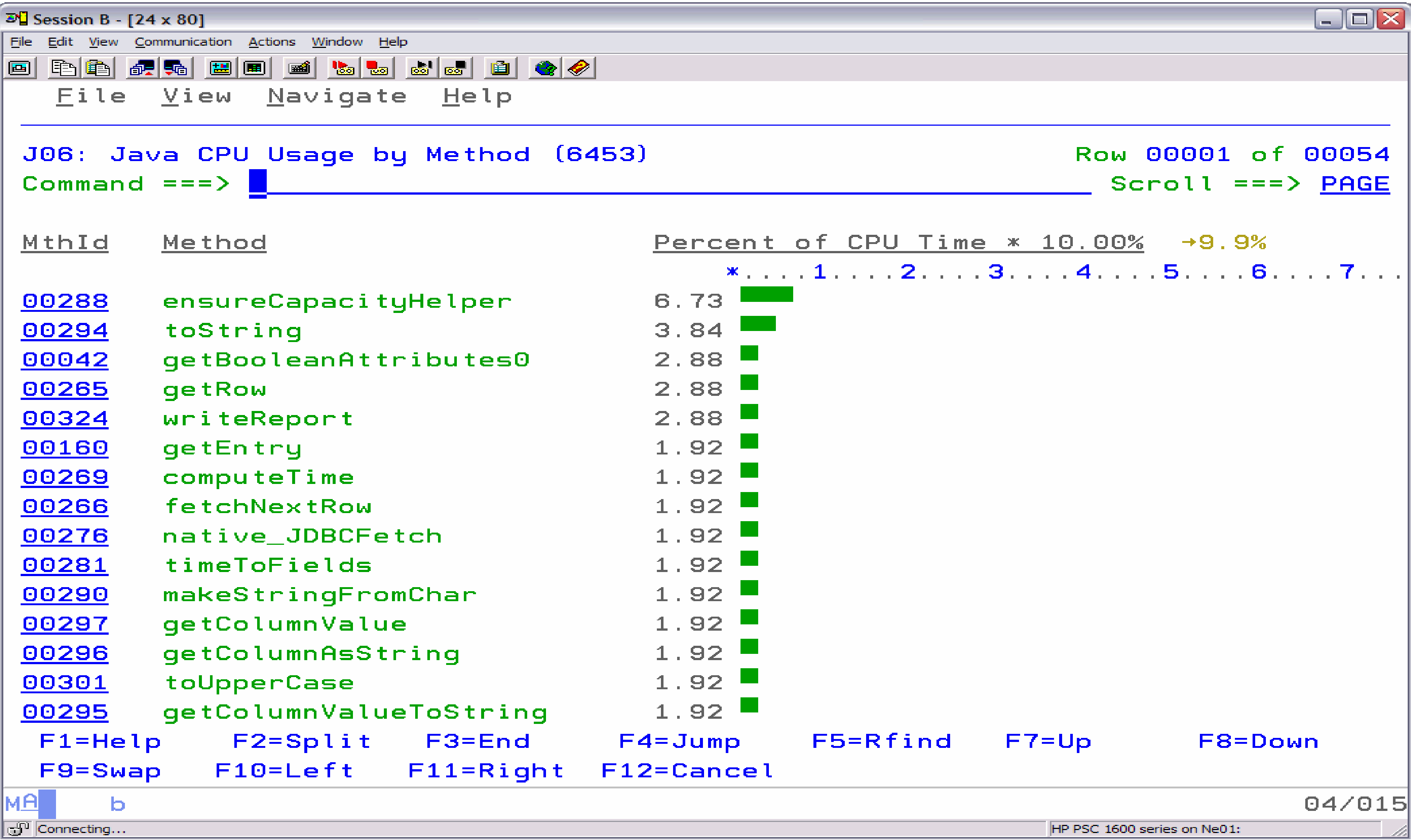
- **SUPPORT FOR IBM SOFTWARE**
  - DB2 V9
  - IMS V10
  - CICS Transaction Server V3.2

Java CPU Usage by Package


Session B - [24 x 80]
File
Edit
View
Communication
Actions
Window
Help
Connecting...
HP PSC 1600 series on Ne01:

```
   File   View   Navigate   Help
 ------------------------------------------------------------------------------
 J04: Java CPU Usage by Package (6552)                      Row 00001 of 00013
 Command ===> _                                               Scroll ===> PAGE

 JavaId  Pkg/Cls/Mthd                  Percent of CPU Time * 10.00%  ->8.1%
                                           *....1....2....3....4....5....6....7...
 00009   java/util                  16.44
 00005   java/io                    14.47
 00002   java/lang                  13.15
 00006   java/util/jar               8.55
 00001   sun/misc                    7.89
 00016   COM/ibm/db2os390/sqlj/jdbc  4.60
         /parser
 00011   sun/net/www                 3.28
 00008   COM/ibm/db2os390/sqlj/jdbc  3.28
 00007   java/util/zip               3.28
 00004   java/net                    1.97
 00024   com/ibm/jvm/io              1.97
 00013   sun/io                      1.31


  F1=Help    F2=Split   F3=End     F4=Jump    F5=Rfind   F7=Up      F8=Down
  F9=Swap   F10=Left   F11=Right  F12=Cancel
 MA      b                                                                04/015
```

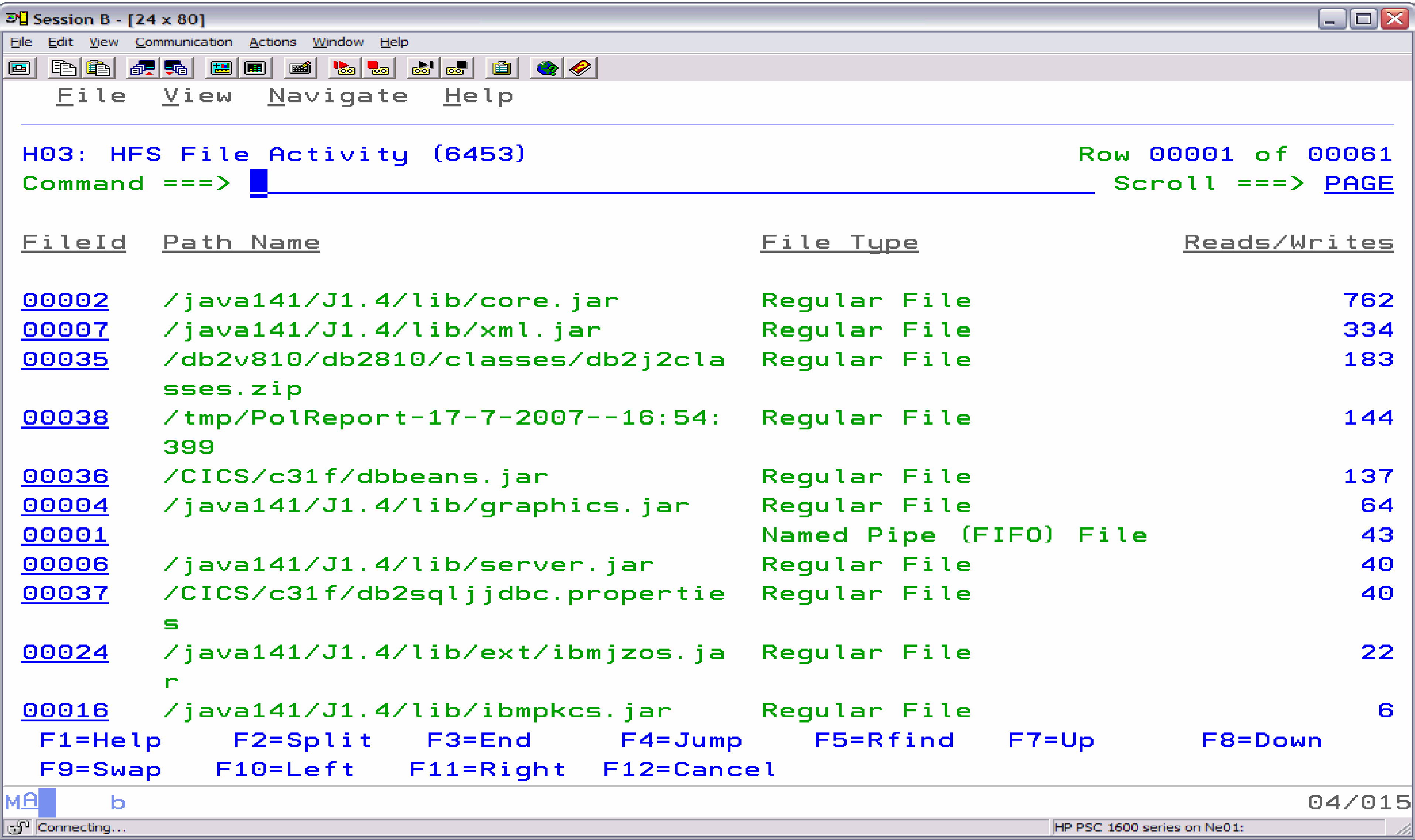
Java CPU Usage by Method


Session B - [24 x 80]
File
Edit
View
Communication
Actions
Window
Help

```
   File  View  Navigate  Help
 -----------------------------------------------------------------------------
 J06: Java CPU Usage by Method (6453)                       Row 00001 of 00054
 Command ===> _                                              Scroll ===> PAGE

 MthId   Method                       Percent of CPU Time * 10.00%  →9.9%
                                          *....1....2....3....4....5....6....7...
 00288   ensureCapacityHelper         6.73
 00294   toString                     3.84
 00042   getBooleanAttributes0        2.88
 00265   getRow                       2.88
 00324   writeReport                  2.88
 00160   getEntry                     1.92
 00269   computeTime                  1.92
 00266   fetchNextRow                 1.92
 00276   native_JDBCFetch             1.92
 00281   timeToFields                 1.92
 00290   makeStringFromChar           1.92
 00297   getColumnValue               1.92
 00296   getColumnAsString            1.92
 00301   toUpperCase                  1.92
 00295   getColumnValueToString       1.92
  F1=Help      F2=Split     F3=End       F4=Jump      F5=Rfind     F7=Up        F8=Down
  F9=Swap     F10=Left     F11=Right    F12=Cancel
MA      b                                                                   04/015
```

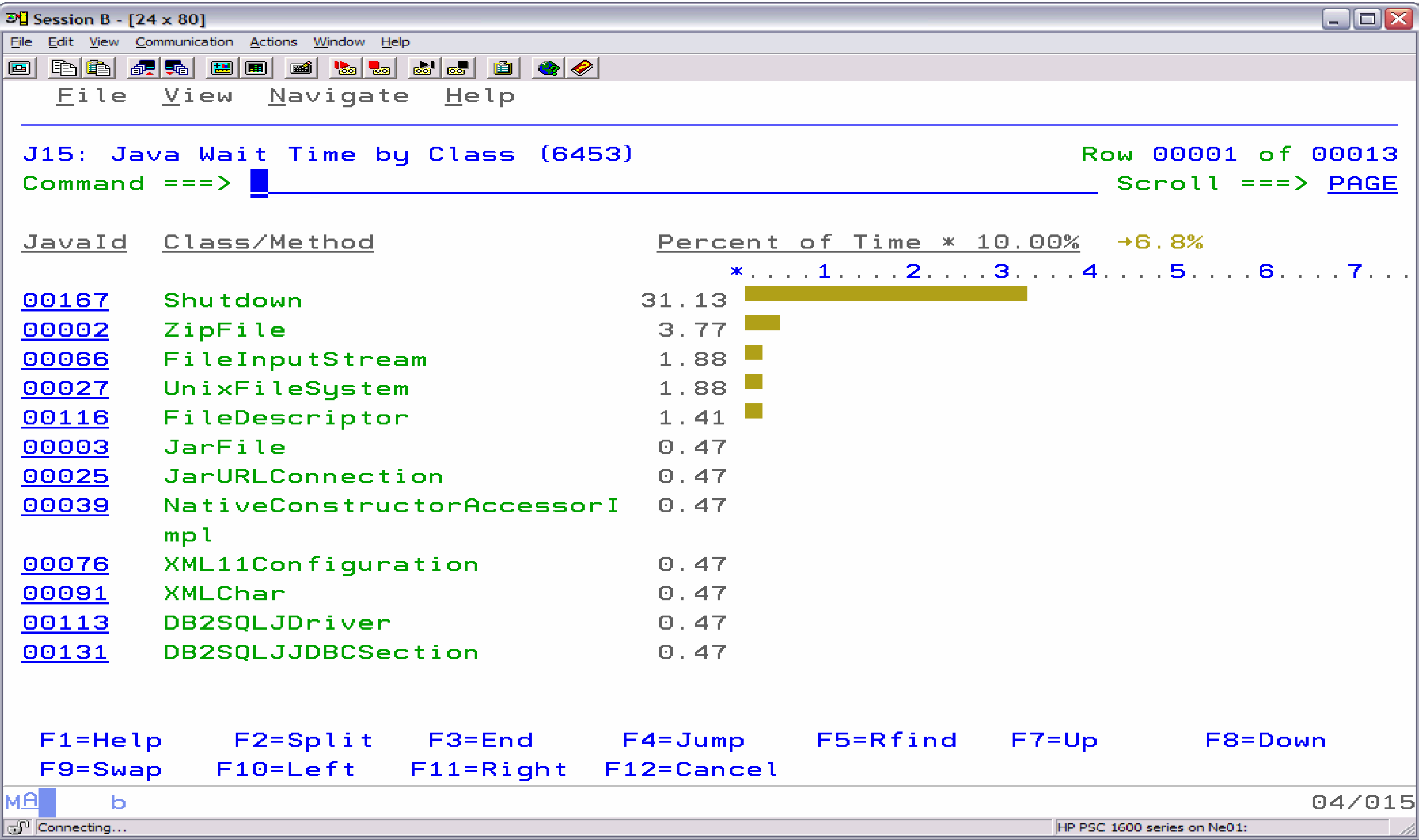
Connecting...
HP PSC 1600 series on Ne01:

HFS File Activity


Session B - [24 x 80]
File Edit View Communication Actions Window Help
MA b 04/015
Connecting...
HP PSC 1600 series on Ne01:

```
  File  View  Navigate  Help

H03: HFS File Activity (6453)                                Row 00001 of 00061
Command ===>                                                   Scroll ===> PAGE

FileId  Path Name                         File Type                Reads/Writes

00002   /java141/J1.4/lib/core.jar        Regular File                      762
00007   /java141/J1.4/lib/xml.jar         Regular File                      334
00035   /db2v810/db2810/classes/db2j2cla  Regular File                      183
        sses.zip
00038   /tmp/PolReport-17-7-2007--16:54:  Regular File                      144
        399
00036   /CICS/c31f/dbbeans.jar            Regular File                      137
00004   /java141/J1.4/lib/graphics.jar    Regular File                       64
00001                                     Named Pipe (FIFO) File             43
00006   /java141/J1.4/lib/server.jar      Regular File                       40
00037   /CICS/c31f/db2sqljjdbc.propertie  Regular File                       40
        s
00024   /java141/J1.4/lib/ext/ibmjzos.ja  Regular File                       22
        r
00016   /java141/J1.4/lib/ibmpkcs.jar     Regular File                        6
 F1=Help    F2=Split   F3=End     F4=Jump    F5=Rfind   F7=Up      F8=Down
 F9=Swap   F10=Left   F11=Right  F12=Cancel
```

Java Wait Time by Class

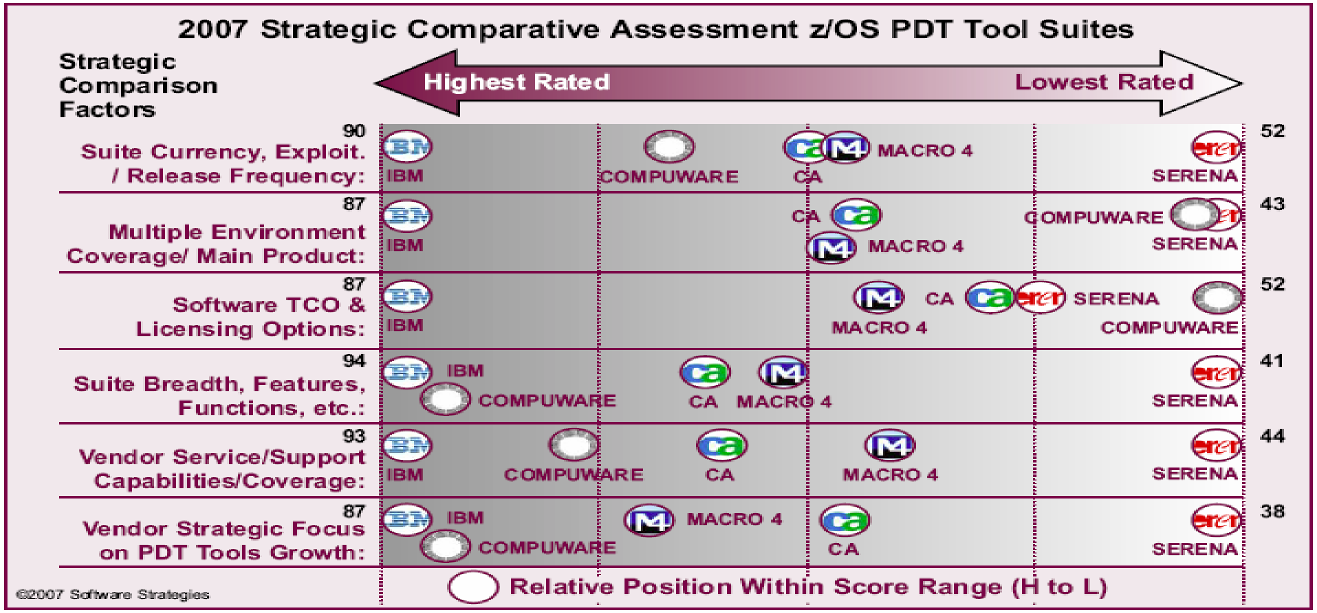

Session B - [24 x 80]
File Edit View Communication Actions Window Help
MA b
04/015
Connecting...
HP PSC 1600 series on Ne01:

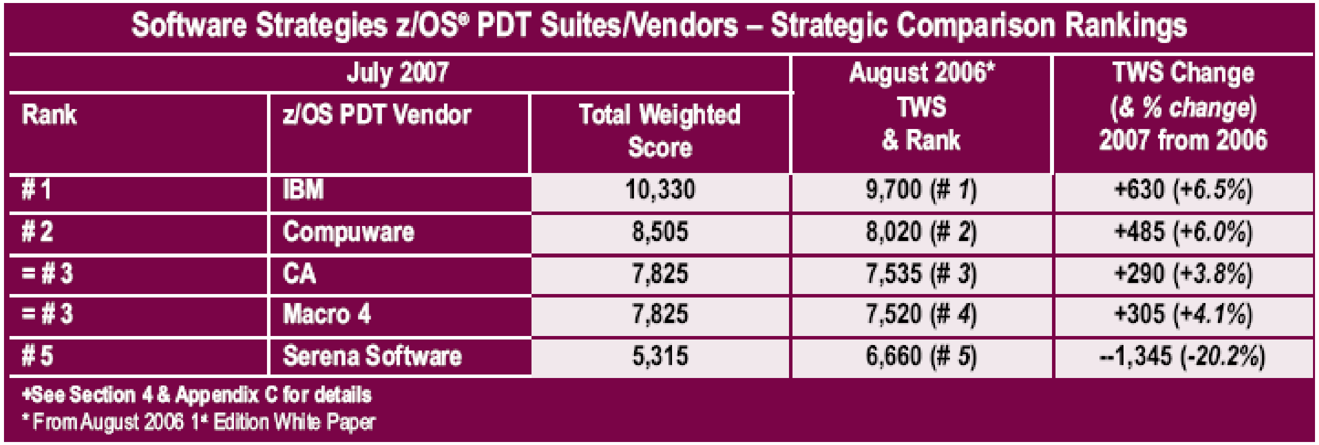
```
   File   View   Navigate   Help
 ------------------------------------------------------------------------------
 J15: Java Wait Time by Class (6453)                          Row 00001 of 00013
 Command ===> _                                                Scroll ===> PAGE

 JavaId  Class/Method                Percent of Time * 10.00%  →6.8%
                                         *....1....2....3....4....5....6....7...
 00167   Shutdown                    31.13
 00002   ZipFile                      3.77
 00066   FileInputStream              1.88
 00027   UnixFileSystem               1.88
 00116   FileDescriptor               1.41
 00003   JarFile                      0.47
 00025   JarURLConnection             0.47
 00039   NativeConstructorAccessorI   0.47
         mpl
 00076   XML11Configuration           0.47
 00091   XMLChar                      0.47
 00113   DB2SQLJDriver                0.47
 00131   DB2SQLJJDBCSection           0.47


  F1=Help     F2=Split    F3=End      F4=Jump     F5=Rfind    F7=Up       F8=Down
  F9=Swap    F10=Left    F11=Right   F12=Cancel
```

Software Strategies Analyst Report, July 2007

ftp://ftp.software.ibm.com/software/htp/pdtools/PD_Tools_WP_1st-edition_Jul07B.pdf

IBM PD Tools win top spot in Software Strategies analyst report





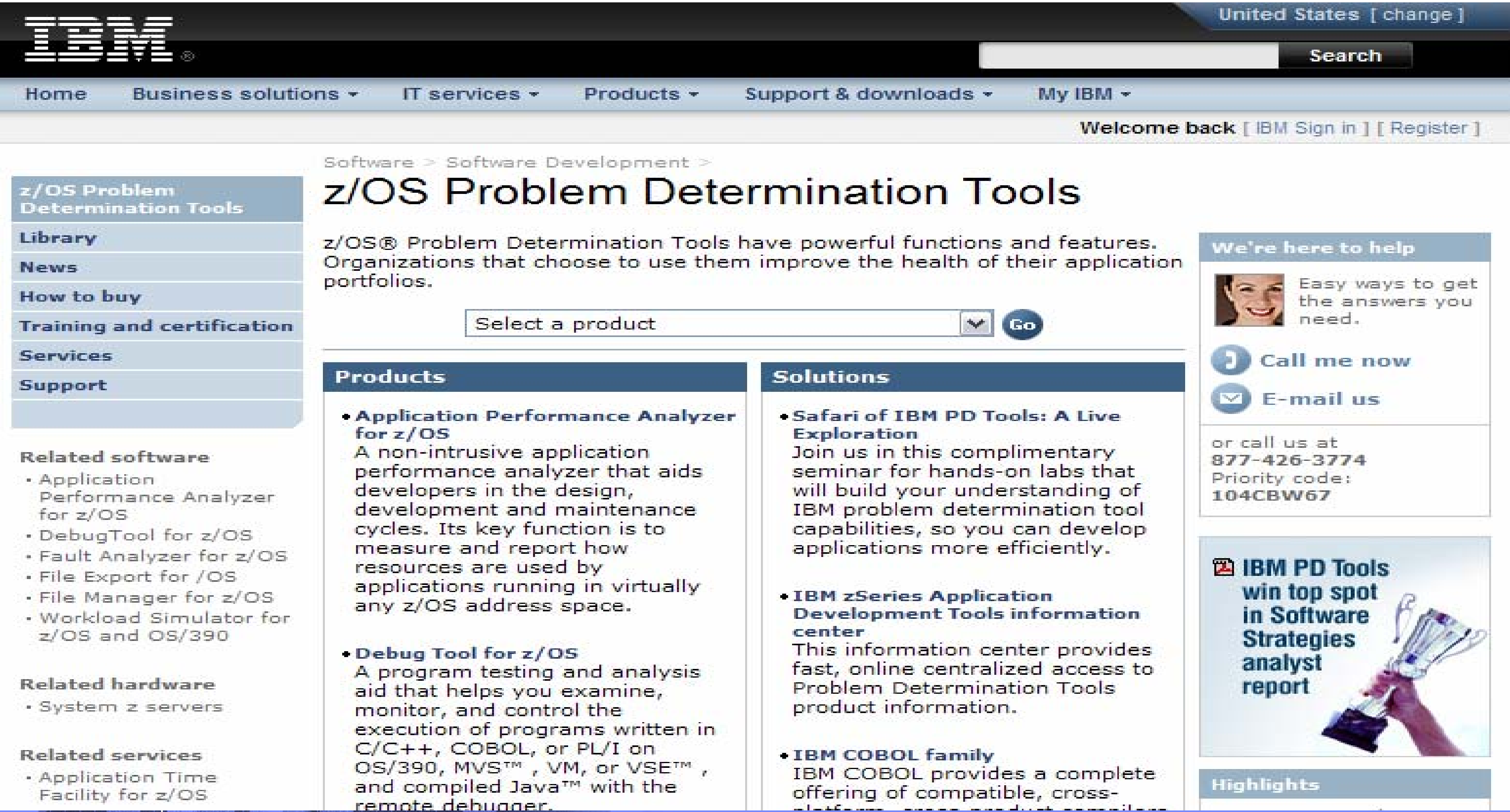
Software Strategies z/OS® PDT Suites/Vendors – Strategic Comparison Rankings

July 2007			August 2006* TWS & Rank	TWS Change (& % change) 2007 from 2006
Rank	z/OS PDT Vendor	Total Weighted Score		
# 1	IBM	10,330	9,700 (# 1)	+630 (+6.5%)
# 2	Compuware	8,505	8,020 (# 2)	+485 (+6.0%)
= # 3	CA	7,825	7,535 (# 3)	+290 (+3.8%)
= # 3	Macro 4	7,825	7,520 (# 4)	+305 (+4.1%)
# 5	Serena Software	5,315	6,660 (# 5)	--1,345 (-20.2%)

+See Section 4 & Appendix C for details
* From August 2006 1st Edition White Paper

Get more information about these tools at:

www.ibm.com/software/awdtools/deployment


United States [change]

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- How to buy
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- Services
- Support

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- DebugTool for z/OS
- Fault Analyzer for z/OS
- File Export for /OS
- File Manager for z/OS
- Workload Simulator for z/OS and OS/390

Related hardware
- System z servers

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- Application Time Facility for z/OS

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Products

- **Application Performance Analyzer for z/OS**
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- **Debug Tool for z/OS**
  A program testing and analysis aid that helps you examine, monitor, and control the execution of programs written in C/C++, COBOL, or PL/I on OS/390, MVS™ , VM, or VSE™ , and compiled Java™ with the remote debugger.

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Priority code:
104CBW67

IBM PD Tools win top spot in Software Strategies analyst report

Highlights

For more information

- **z/OS Problem Determination and Deployment Tools**
  - www.ibm.com/software/awdtools/deployment
  - www.ibm.com/software/awdtools/faultanalyzer
  - www.ibm.com/software/awdtools/filemanager
  - www.ibm.com/software/awdtools/debugtool
  - www.ibm.com/software/awdtools/apa
  - www.ibm.com/software/awdtools/workloadsimulator
  - www.ibm.com/software/awdtools/fileexport
  - www.ibm.com/software/awdtools/migration
  - www.ibm.com/software/awdtools/tictoc/
  - www.ibm.com/software/awdtools/ispfproductivitytool
  - zSeries Application Development Tools information center
  - Introduction to the IBM Application Development Tools on z/OS Redbook

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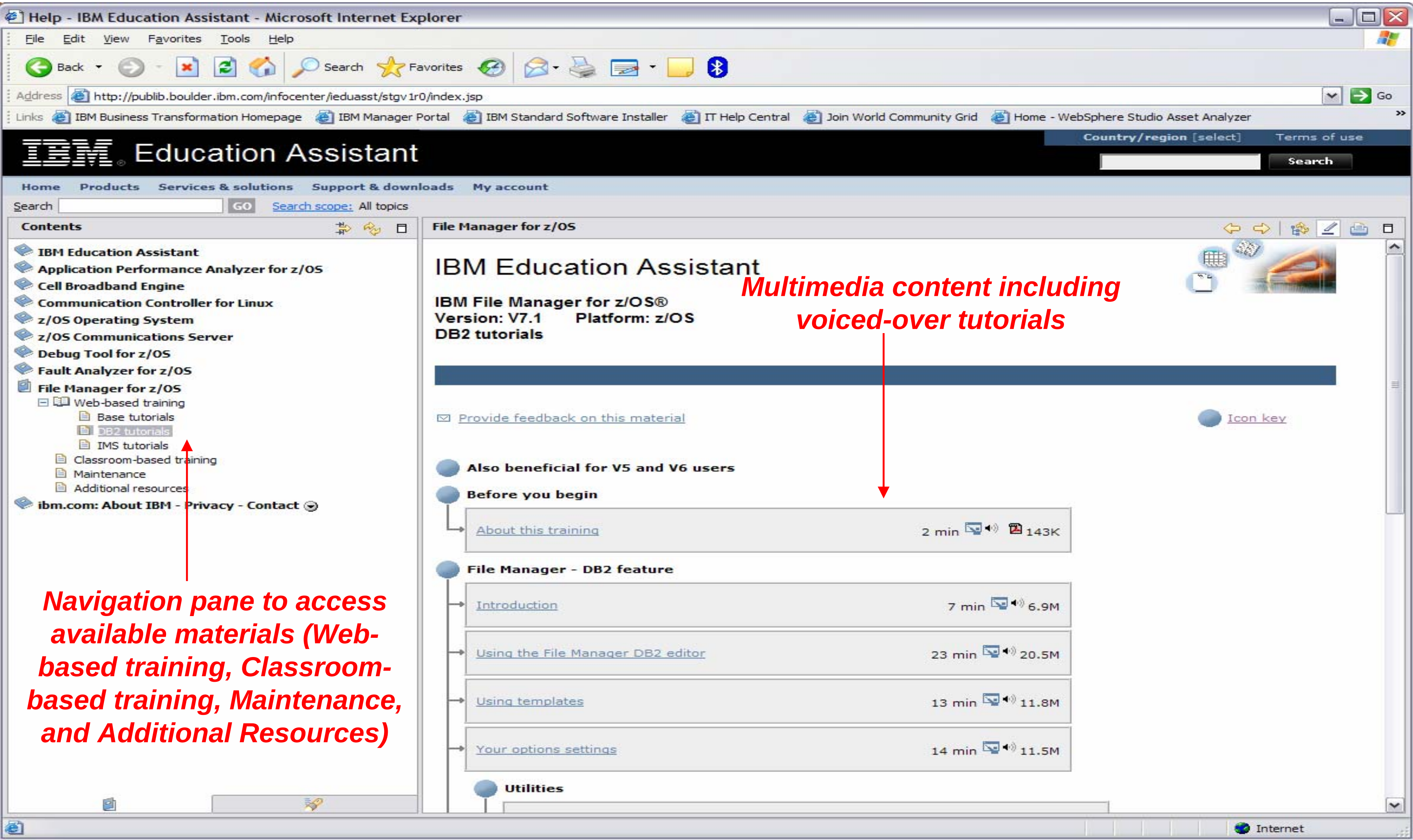
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- Cell Broadband Engine
- Communication Controller for Linux
- z/OS Operating System
- z/OS Communications Server
- Debug Tool for z/OS
- Fault Analyzer for z/OS
- File Manager for z/OS
  - Web-based training
    - Base tutorials
    - DB2 tutorials
    - IMS tutorials
  - Classroom-based training
  - Maintenance
  - Additional resources
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IBM File Manager for z/OS®
Version: V7.1   Platform: z/OS
DB2 tutorials

Provide feedback on this material

Icon key

Also beneficial for V5 and V6 users

Before you begin

About this training	2 min	143K

File Manager - DB2 feature

Introduction	7 min	6.9M
Using the File Manager DB2 editor	23 min	20.5M
Using templates	13 min	11.8M
Your options settings	14 min	11.5M

Utilities

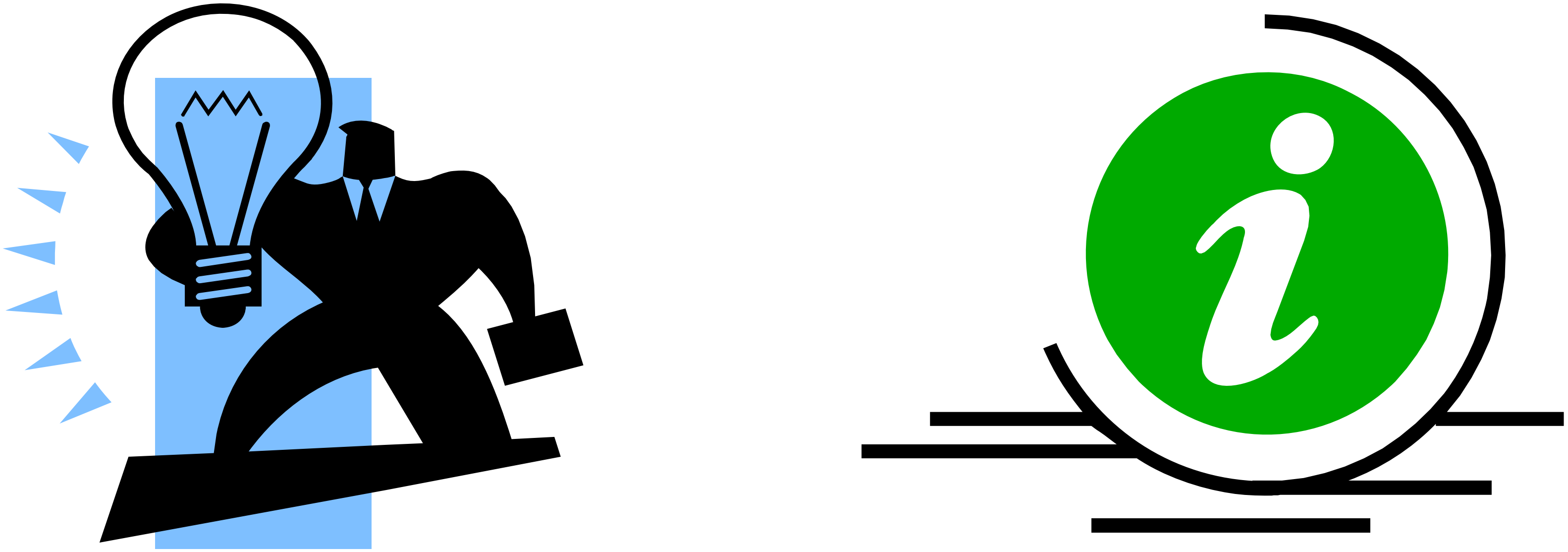
Multimedia content including voiced-over tutorials

Navigation pane to access available materials (Web-based training, Classroom-based training, Maintenance, and Additional Resources)

SUMMARY

- **IBM's Problem Determination Tools Version 8 will be made Generally Available on September 28, 2007.**
- **Technically excelling**
  - Continuing to address customer technical requests
  - Exploiting current IBM subsystems
  - Integration between PD Tools as well as other tools
  - Facilitates SOA exploitation
- **Financially attractive and packaged with support for subsystems and languages within the same tool**

Question and Answer



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