e-business

CICS & AD TOOLS

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IBM

Preface

- The following terms are trademarks or registered trademarks of the International Business Machines Corporation in the United States and/or other countries:
  - CICS, CICS for MVS/ESA, CICS/ESA, CICSPlex SM
  - DB2
  - DFSMS/MVS
  - IBM
  - MQSeries
  - MVS/ESA
  - OS/390
  - RMF, Resource Measurement Facility
  - S/390, z/OS
  - WebSphere
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Agenda

- Overview of zSeries Enterprise AD and Runtime tools portfolio
- CICS Performance Analyzer - features and benefits
- CICS Online Transmission Time Optimizer - features and benefits
- CICS Interdependency Analyzer - features and benefits
- Fault Analyzer
- File Manager
- WebSphere Studio Asset Analyzer

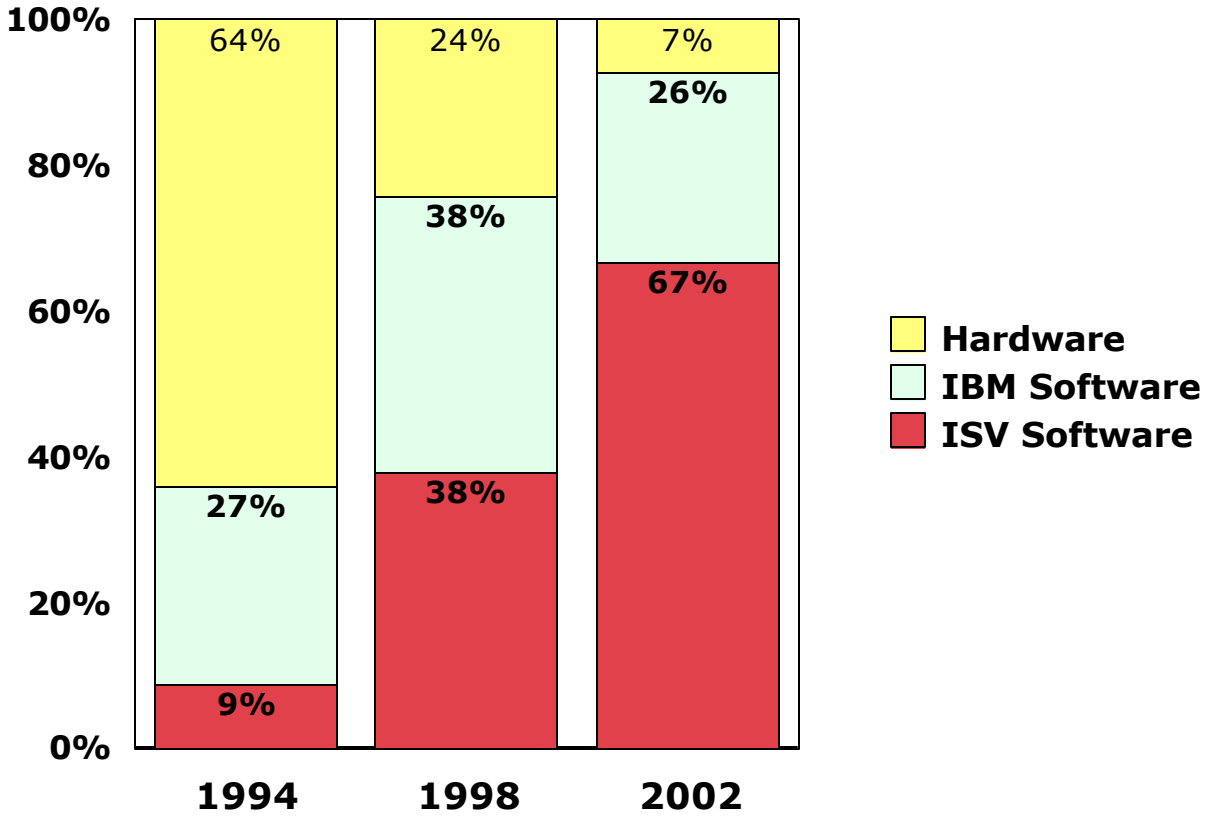
S/390 COT

- Software costs are making a major impact on cost of s/390 ownership
  - ISV tool and utilities vendors (among them BMC, CA, Compuware) are major contributors to the problem
  - Customers are forced to consider other platforms for application hosting or affordable tools and utilities
- New e-business development requirements continue to fuel the demand for more sophisticated tools
  - Support for e-business runtime like WebSphere & MQ
  - Web performance monitoring & analysis

zSeries Tools Strategy

- Ease enterprise customer transition to e-business by
  - creating new e-business applications based on CICS, WebSphere and MQSeries
  - leveraging on their existing asset for e-business
- Team based development using Common Development Tooling for both core and e-business applications
  - accelerates e-business team delivery
- Provide significant productivity for integrating core and e-business applications
  - Web to application integration (Connectors, SOAP)
  - Application to application integration (XML, SOAP, etc.)
  - e-RAD
- Leverage new runtime technologies supporting e-business
  - EJB Support in WebSphere, IMS, and CICS

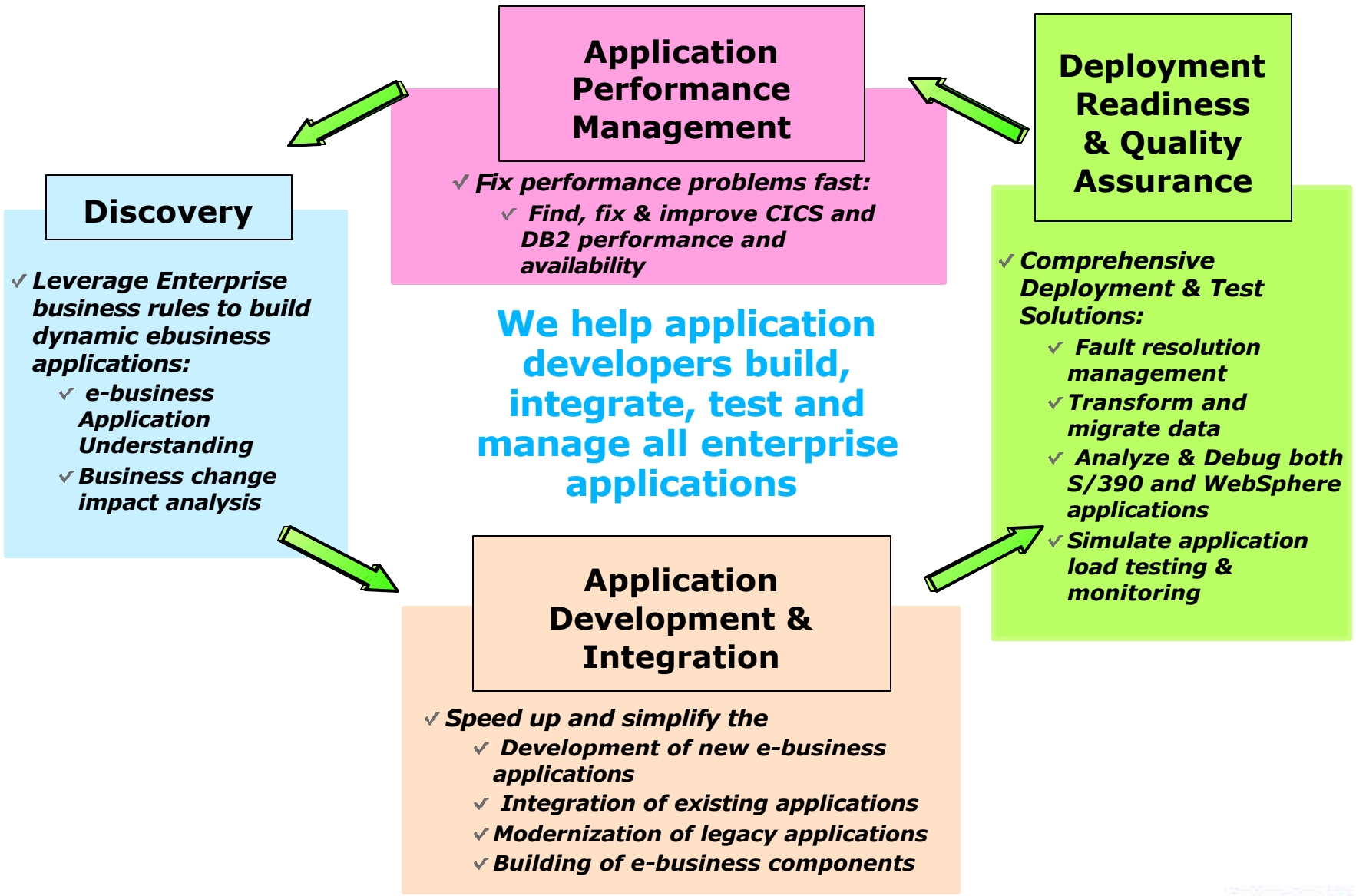
Total Cost of S/390 Ownership



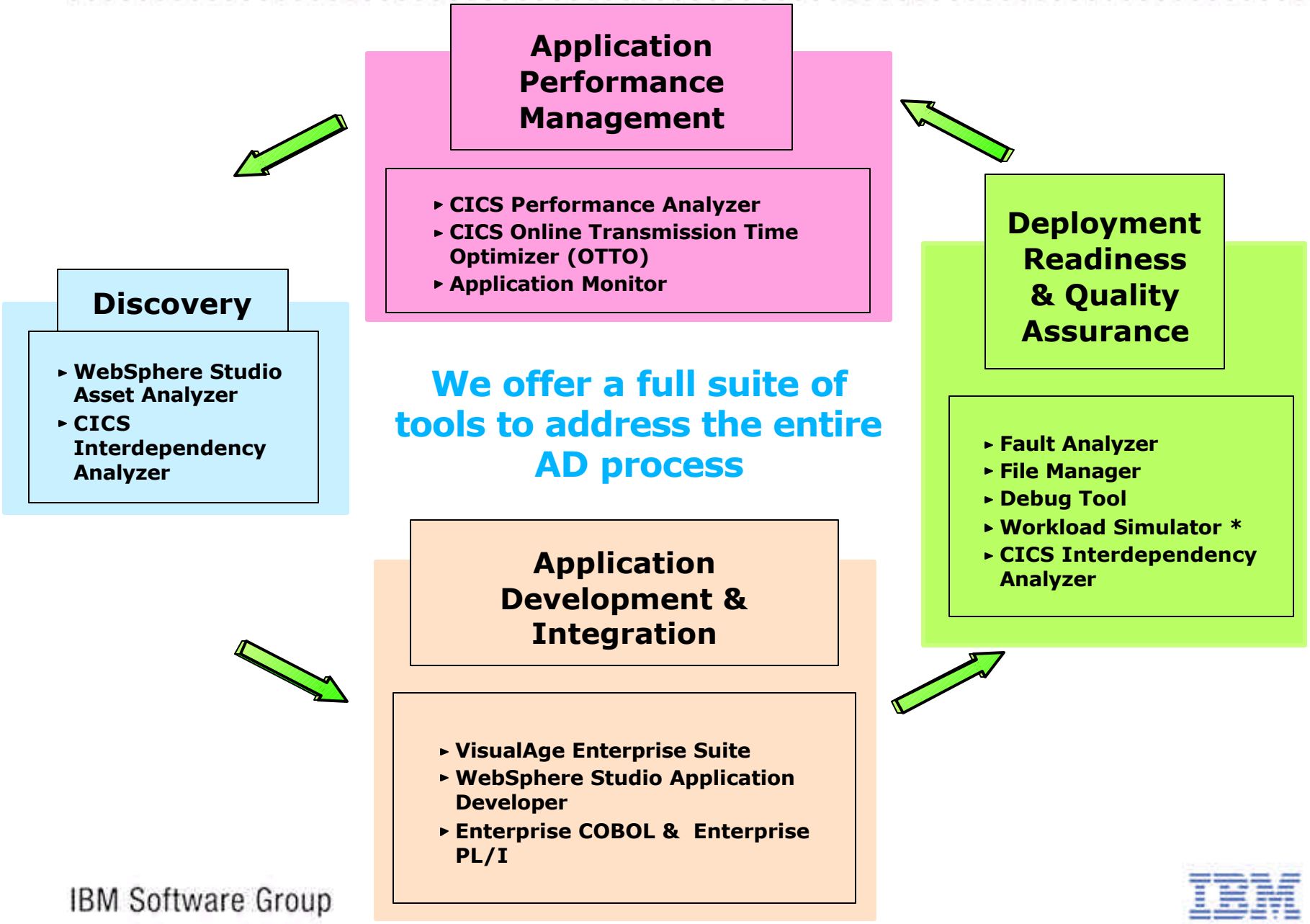
The opportunity for winback is significant!

1994 & 1998: actuals
2002: forecast

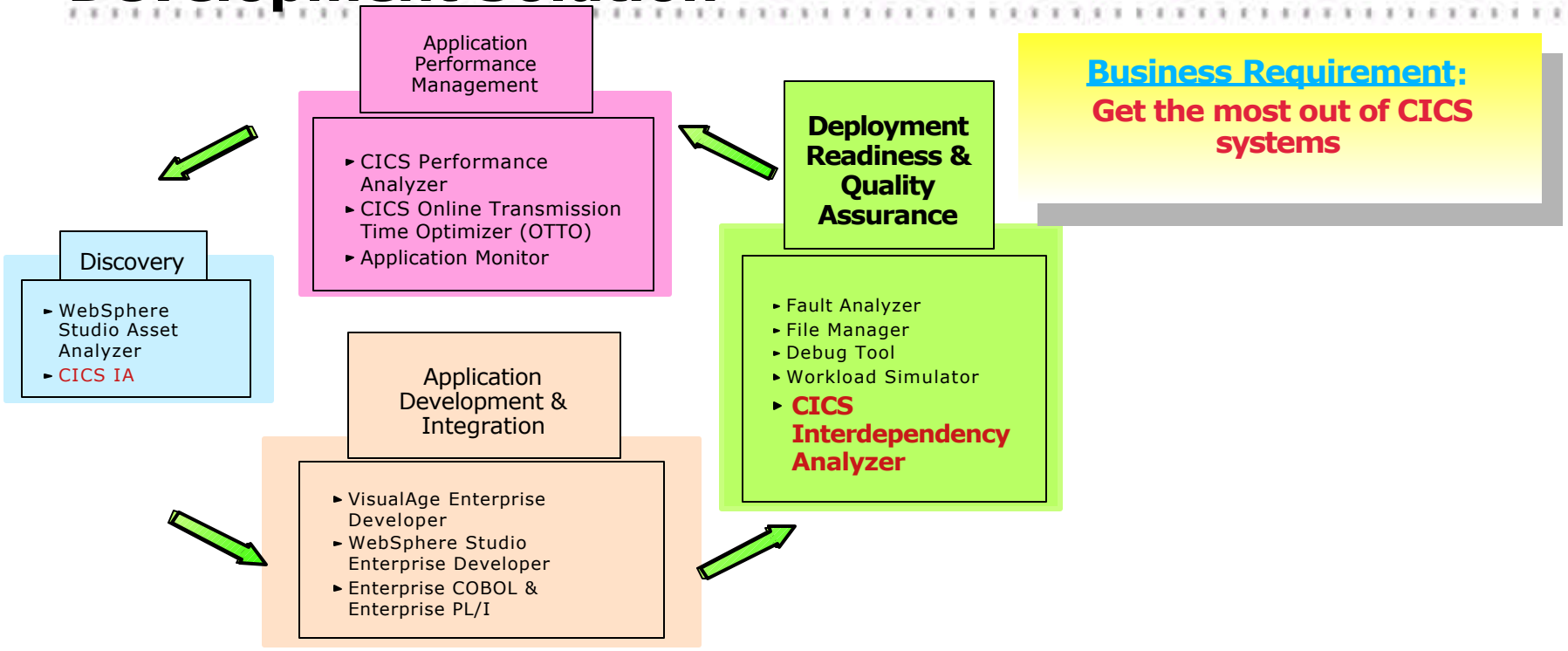
IBM Enterprise Application Development Solution



Tools for the IBM Enterprise Application Development Solution



Tools for the IBM Enterprise Application Development Solution



Product: CICS Interdependency Analyzer

- reports on CICS system resource usage
- helps plan for
  - workload balancing
  - maintenance/enhancement/migration of applications

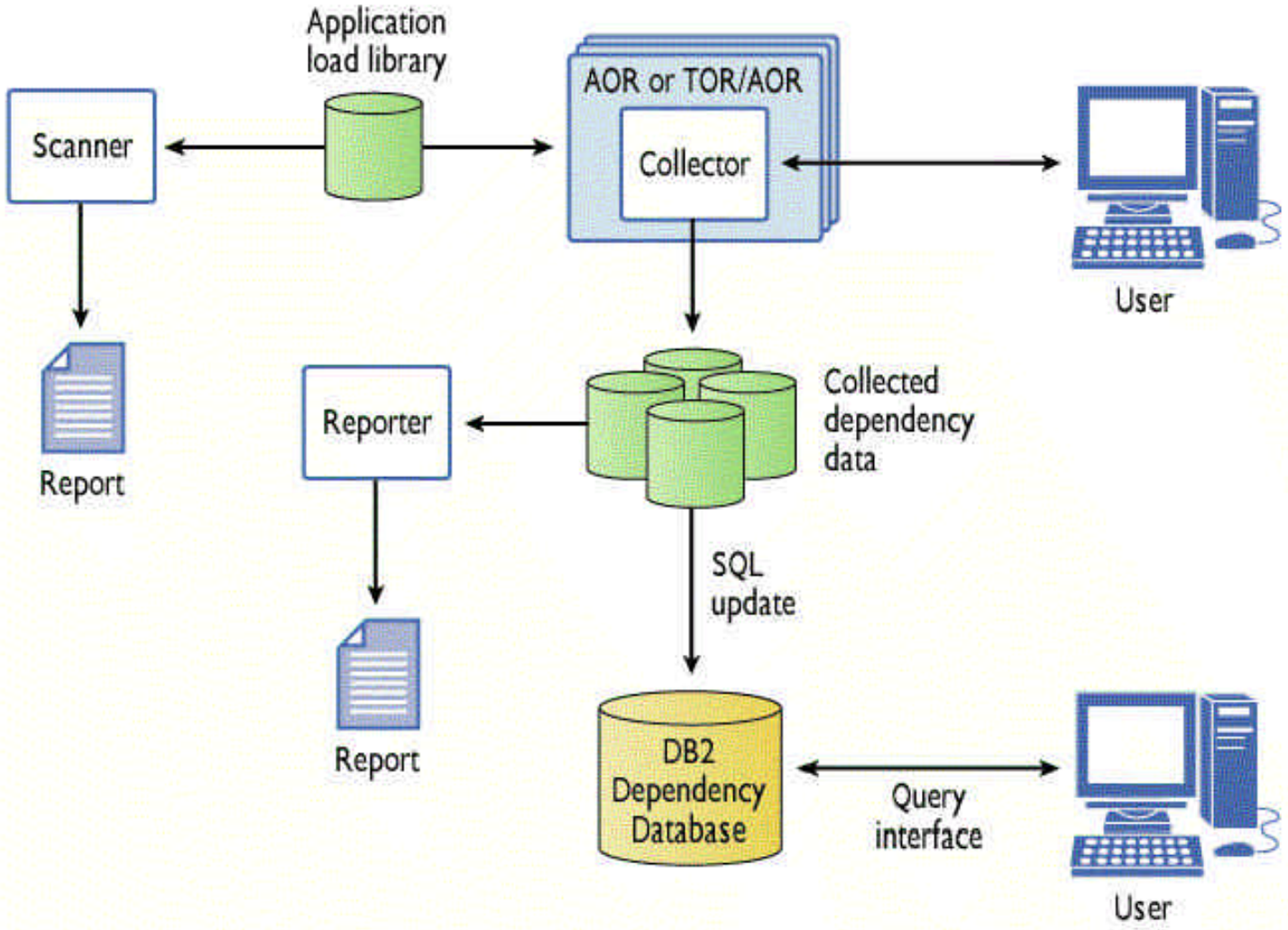
What is CICS IA ?

- CICS Interdependency Analyzer for z/OS and OS/390 (CICS IA)
  - resource interdependencies analysis
    - what a CICS region has in it
    - what resources a transaction needs to run
    - which programs use which resources
    - what resources are no longer used
  - report data stored in a DB2 data base
  - run-time tool
- Program Number - 5655-G76
  - Not part of CICS Transaction Server for z/OS

CICS IA Benefits

- Helps to understand resource usage in your CICS systems to assist in:
  - making an informed decision on the best way to split workload and move applications to more CICS regions
  - fully exploiting the benefits of Workload Balancing across CICSPlex and Sysplex
  - improving your ability to maintain, enhance, and migrate your business applications
- Easy to use
  - Interface, familiar to any CICS customer
- Cross-System
  - Transactions
  - Programs
  - Applications
- Optimized for run-time use

CICS IA Overview



CICS IA - CINT Transaction, The Collector Component

```
CINT01 Version 1.1       CICS Interdependency Analyzer       Applid IYCLZC0D

 Press Start key (F5) to start detection.
 Press Options key (F4) to modify the CINT operation options.


 CINT state . . . . . :       STOPPED by user CICSUSER
 Number of pauses . . . . . :  0
 Number of saves. . . . . :   1
 Records written last save. :153
 Total records on file. . . :     153

 Date/time of last start. . :    11/14/01 10:48:30 (MM/DD/YY HH:MM:SS)
 Date/time of last save . . :  11/14/01 10:49:41 (MM/DD/YY HH:MM:SS)
 Date/time of last change . :11/14/01 10:49:34 (MM/DD/YY HH:MM:SS)

 Total time RUNNING . . . . : 0000:01:12  (HHHH:MM:SS)
 Total time PAUSED. . . . . :             (HHHH:MM:SS)

 Table dataspace name . . . :                        % full


5696582R (C) Copyright IBM Corp. 1995
F1=Help F3=Exit F4=Options F5=Start F6=Stop F7=Pause F8=Continue F12=Cancel
```

CICS IA - Controlling the Collector

```
CINT02          CINT Operation Options              Applid IYCLZC0D

 Modify the options and press Enter to update, or press Cancel (F12)

 Control options
   Perform periodic saves . . . . . Y      (Y=Yes or N=No)
   Restore data on start. . . . . . N      (Y=Yes or N=No)
   Maintain usage counts. . . . . . Y      (Y=Yes or N=No)
   Size of dataspace. . . . . . .   16__  (10 to 2000 Mbytes)
   Transid prefix (optional). . . .  ____  (1 to 4 characters)

 Detect command types  (Y=Yes or N=No)

   BMS  . . . . . Y   File Control . . . Y   DTP . . . . . Y
   LINK . . . . . Y   Temporary Storage. Y   START . . . . . Y
   XCTL . . . . . Y   Transient Data . . Y   RETURN TRANSID . Y
   LOAD . . . . . Y   INQ/SET/DSC File . Y   INQ/SET/DSC Tran. Y
   INQ/SET/DSC Prg. Y HANDLE ABEND PGM.. Y   Journal Commands. Y
   INQ/SET TDQueue. Y


Last updated by CICSUSER on 11/02/01 10:47:44

F1=Help                                   F12=Cancel
```

CICS IA - Using Query Interface - Main Menu

```
CICS IA V1.1     CICS Interdependency Analyzer for z/OS and OS/390      CIUM000


     Select the resource type to query:    _

     1. Transactions
     2. Programs
     3. TSQs
     4. TDQs
     5. Maps
     6. Files
     7. Applications
     8. Regions

     OR display all resources in application  ___

     Enter the application's 3 character code or
     ? for a list of applications available.

     WARNING : Option 7 may take a long time.

5655-G76 (C) Copyright IBM Corp. 2001

PF1=Help PF3=Exit
```

CICS IA - Query Interface Resource Menu

```
CICS IA V1.1     CICS Interdependency Analyzer for z/OS and OS/390      CIUM010

Query  TRANSACTIONS

Select the option that best suits your query by entering the resource
details in the field provided for each option. Use % as a wildcard
character to specify a generic name.

Note: Only one option can be chosen.

 1. Start transaction....     ____    (e.g.. TRN1 or TRN%)
 2. Used by tran.....         ___
 3. Use program.....          ________
 4. Used by program.....      ________
 5. Use TDQ.....              ________ Detailed TDQ output?  N
 6. Use TSQ.....              ________ Detailed TSQ output?  N
 7. Use map.....              ________
 8. Use file (ddname)....     ________  Detailed file output?  N
 9. In region.....            ____
10. DTP to transaction...     ____
11. In application.....       ___   (enter ? for a list of application codes)


PF1=Help PF3=End PF4=Exit
```

CICS IA - Query Interface output screen

```
CICS IA V1.1    CICS Interdependency Analyzer for z/OS and OS/390      CIUM100

For your query     WHICH TRANS ARE IN REGION CORD

    HOME    TRAN                    HOME    TRAN
    SYSID                           SYSID
    CORD    CINT
            EHLP
            EQRH
            EQRM
            EQSS
            VA10
            VA12
            VA20
            VA21
            VA30
            VA33
            V200
            V220
            V800
            V884

 No more details to display
PF3=End PF4=Exit PF7=Up PF8=Down                  Page   1 of  1
```

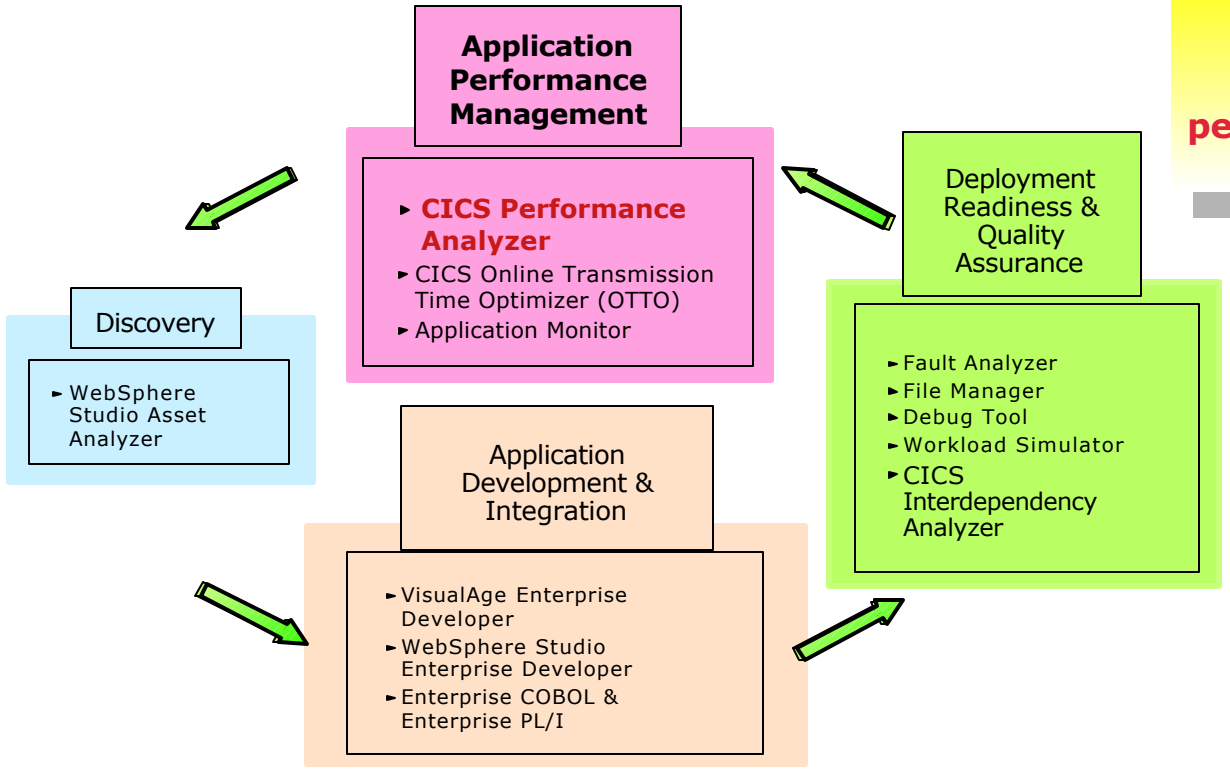
CICS IA - Output screen - Which Resources are in an Application?

```
CICS IA V1.1    CICS Interdependency Analyzer for z/OS and OS/390     CIUM300

For your query  WHICH RESOURCES ARE IN Test application 1

 In      Tran    Program   Links/XCTL    Strts DTP to Remote File    Map      Inquire      Retn
Regn                        Loads         Tran   Tran  Sysid                  /Set         Tran
CORD  VA10 CAMA100C CAMA120C
      VA10 CAMA100C CAMA800C
      VA10 CAMA100C                                                CAM1001
      VA10 CAMA120C CAMI725C
      VA10 CAMA120C                                                        CAM1201
      VA10 CAMA120C                                                CAM1201
      VA10 CAMA120C                                                                 VA12
      VA10 CAMA800C                                                CAM8001
      VA10 CAMA800C                                                        EZPSCCIL
      VA10 CAMA800C                                                                 V800
      VA10 CAMI725C                                                        CAMIMROC
      VA10 CAMI725C                                                        EZPSCCIL
      VA12 CAMA100C CAMA115C
      VA12 CAMA100C CAMI725C
      VA12 CAMA100C                                                CAM1001


PF3=End    PF4=Exit    PF7=Up    PF8=Down                                    Page   1 of   7
```

CICS IA Summary

- CICS IA Version 1.1 - Product information
  - Program Product - 5655-G76
  - Releases Supported ...
    - CICS Transaction Server for z/OS, Version 2.1 and 2.2
    - CICS Transaction Server for OS/390, Version 1
    - CICS for MVS/ESA, Version 4.1
- OTC pricing model

Tools for the IBM Enterprise Application Development Solution



Business Requirement:
Understand and analyze performance of CICS systems

Product: CICS Performance Analyzer

- provides comprehensive off-line performance reporting
- helps plan, tune and manage CICS systems for maximum efficiency

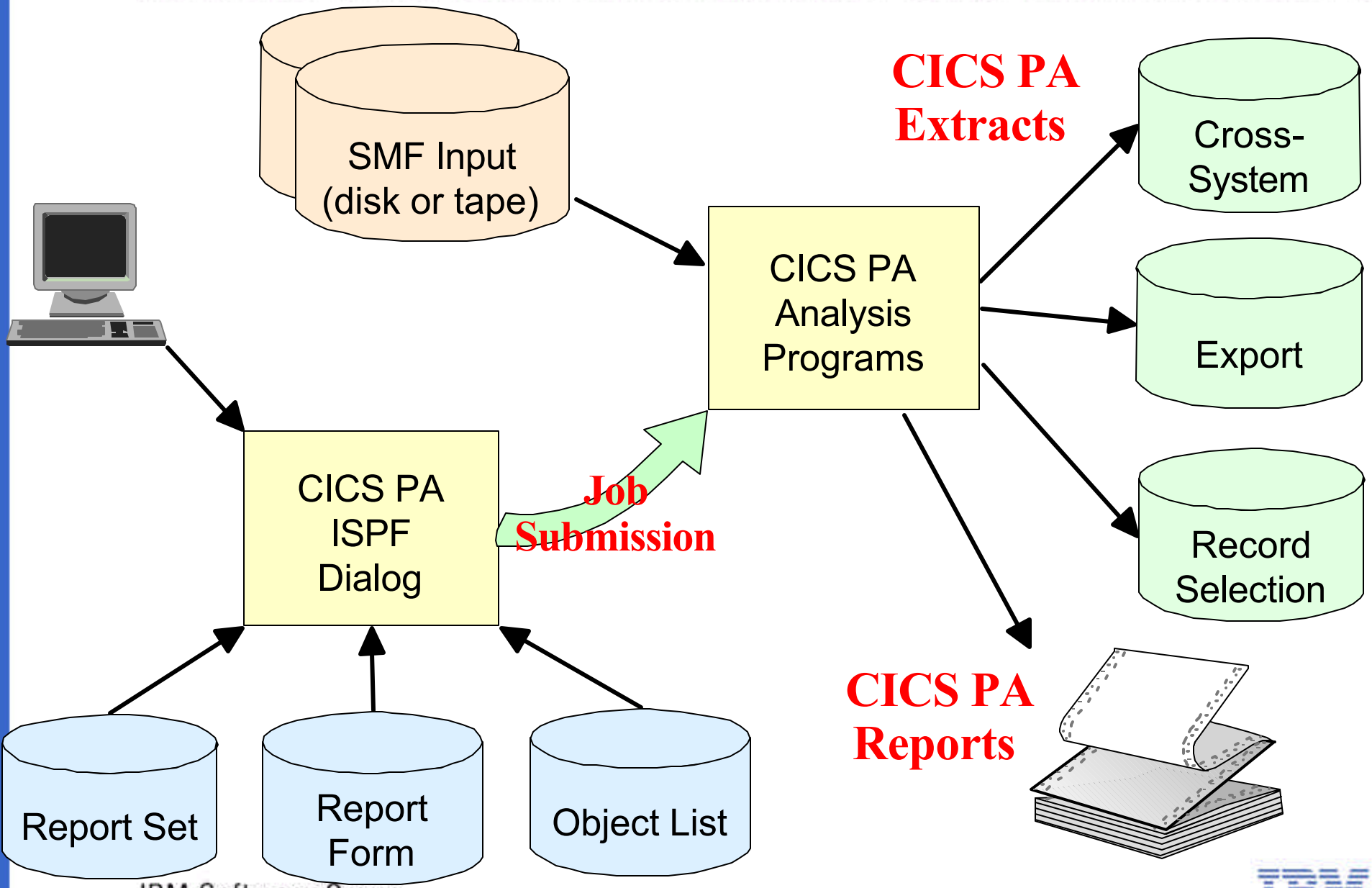
What is CICS PA ?

- CICS Performance Analyzer for OS/390
  - Comprehensive Performance Reporting for CICS
  - It is **NOT** an Online Monitor - Batch Reporting Only!
  - Uses the CICS Monitoring Facility (CMF) data (SMF 110)
  - DB2 Accounting records (SMF 101)
  - MVS System Logger records (SMF 88)
- Program Number - 5655-F38
  - Not part of CICS Transaction Server for z/OS
- Complements the existing CICS utilities .....
  - DFH$MOLS, DFHSTUP and DFH0STAT

CICS PA Benefits ...

- CICS PA can help ....
  - Analyze CICS application performance
  - Improve CICS resource usage
  - Evaluate the effects of CICS system tuning efforts
  - Improve transaction response time
  - Provide ongoing system management and measurement reports
  - Increase availability of resources
  - Increase the productivity of system and application programmers
  - Provide awareness of usage trends
    - assisting future growth estimates

CICS PA Overview



CICS PA Reports and Extracts

- CICS PA reports and data extracts to analyze all aspects of your CICS systems, including:
  - CICS application performance
  - CICS system resource usage
  - Transaction Groups
    - including CICS Web Support, IIOP, ECI over TCP/IP
  - Cross-System performance
    - including MRO, ISC and DB2 Subsystems
  - CICS Business Transaction Services (BTS)
  - MVS Workload Manager (WLM)
  - External Subsystems - including DB2 and IMS
  - DB2 reports using DB2 accounting data
  - MVS Logger reports
  - Exception events that cause performance degradation

Performance Summary by Time of Day

V1R2M0 CICS Performance Analyzer

Performance Summary

SUMM0001 Printed at 16:18:47 1/21/2002 Data from 11:10:29 2/04/1999 to 08:10:06 2/16/1999 Page 1

Stop Interval	Tran	#Tasks	Avg Response Time	Max Response Time	Avg Dispatch Time	Avg User CPU Time	Avg Suspend Time	Avg DispWait Time	Avg FC Wait Time	Avg FCAMRq	Avg IR Wait Time	Avg SC24UHWM	Avg SC31UHWM
11:10:00	CEMT	6	.0608	.1877	.0579	.0105	.0029	.0011	.0000	0	.0000	0	0
11:10:00	CGRP	2	.5862	.7601	.0571	.0076	.5291	.4134	.0000	0	.0000	0	0
11:10:00	CLQ2	2	2.0731	3.8259	.0628	.0068	2.0103	.0820	.0000	0	1.9054	0	0
11:10:00	CLR2	2	.0604	.0946	.0030	.0020	.0574	.0000	.0000	0	.0135	0	0
11:10:00	CPLT	2	18.3106	20.6297	.3495	.0372	17.9611	.0176	.0000	0	.0000	0	0
11:10:00	CRSQ	2	.0731	.0818	.0416	.0039	.0315	.0313	.0000	0	.0000	0	0
11:10:00	CSAC	5	.5138	.5217	.0023	.0011	.5115	.0001	.0000	0	.0000	0	0
11:10:00	CSFU	2	2.7193	3.7417	2.2322	.1714	.4871	.0232	.0000	0	.0000	0	0
11:10:00	CSSY	18	2.5720	20.7042	1.3231	.3193	1.2489	.2908	.1534	269	.0000	0	180
11:10:00	CSTE	2	.1338	.1420	.1250	.0125	.0088	.0086	.0000	0	.0000	0	0
11:10:00	CWBG	2	.0267	.0273	.0255	.0039	.0012	.0010	.0000	0	.0000	0	0
11:10:00	CXRE	2	.1275	.2255	.0265	.0049	.1010	.1008	.0000	0	.0000	0	0
11:10:00	CZUX	1	.0344	.0344	.0331	.0078	.0013	.0016	.0000	0	.0000	0	43552
11:10:00	CZXS	1	.0907	.0907	.0340	.0078	.0567	.0016	.0000	0	.0000	0	43712
11:10:00		49	1.9914	20.7042	.6140	.1292	1.3773	.1347	.0564	99	.0783	0	1847
11:11:00	ABRW	1	.5819	.5819	.0783	.0121	.5037	.0127	.0000	0	.4908	1072	0
11:11:00	AMNU	1	.1724	.1724	.1720	.0091	.0004	.0004	.0000	0	.0000	512	0
11:11:00	CATA	4	.0409	.0537	.0253	.0084	.0156	.0003	.0000	0	.0000	0	0
11:11:00	CEMT	4	2.1512	4.3841	.0047	.0019	2.1465	.0000	.0000	0	.0000	0	0
11:11:00	CESN	8	.0319	.0806	.0304	.0094	.0015	.0014	.0000	0	.0000	0	0
11:11:00	CQRY	7	.3709	.7437	.0114	.0020	.3595	.0009	.0000	0	.0000	0	0
11:11:00	CSMI	1	.5116	.5116	.4563	.0395	.0552	.0032	.0056	6	.0246	96	0
11:11:00	CZUX	1	.0092	.0092	.0056	.0050	.0037	.0003	.0000	0	.0000	0	29792
11:11:00		27	.4776	4.3841	.0428	.0073	.4348	.0013	.0002	0	.0191	62	1103

Performance List Extended - DB2

V1R1M0 CICS Performance Analyzer
Performance List Extended

LSTX0001 Printed at 9:19:43 8/06/2001 Data from 12:10:51 2/04/1999 to 12:34:13 2/04/1999 Page 1
Bad DB2 transaction response time

Tran	Response Time	Userid	Program	Stop Time	Dispatch Time	User CPU Time	Suspend Time	DispWait Time	DB2ConWt Time	DB2ThdWT Time	DB2 Reqs	DB2SQLWt Time
CRD4	114.574	JOHN	CORD04P	12:26:25.765	4.9961	4.6084	109.578	3.7039	.0000	90.2326	9178	19.3442
CRD4	95.2259	STEVE	CORD04P	12:26:04.243	5.1529	4.6320	90.0730	9.0971	.0000	.0000	8436	90.0727
CRD4	94.8672	CHRIS	CORD04P	12:26:04.954	5.0842	4.6390	89.7829	8.0275	.0000	.0000	8574	89.7826
CRD4	93.6422	SHIRLEY	CORD04P	12:26:01.425	5.1434	4.6228	88.4988	8.7084	.0000	.0000	8465	88.4984
CRD4	81.5987	DAVID	CORD04P	12:22:21.938	4.9596	4.5885	76.6391	6.4075	.0000	.0000	8335	76.6388
CRD4	81.2668	KATH	CORD04P	12:22:22.820	4.9766	4.5806	76.2901	6.3358	.0000	.0000	9346	76.2898
CRD4	80.0224	MIKE	CORD04P	12:22:18.958	5.2067	4.6592	74.8158	6.0739	.0000	.0000	8690	74.8154
CRD4	38.3645	JAMES	CORD04P	12:16:12.420	5.0326	4.6100	33.3319	5.4501	.0000	.0000	9124	33.3315
. . . .												
. . . .												
CRD5	102.066	JOHN	CORD05P	12:22:44.565	4.8183	4.4576	97.2478	4.4576	.0000	76.4557	6573	20.7892
CRD5	36.3721	CHRIS	CORD05P	12:16:22.814	5.0605	4.5812	31.3116	4.4883	.0000	.0000	9102	31.3103
CRD5	23.2860	DAVID	CORD05P	12:12:04.661	5.4456	4.6209	17.8404	3.9595	.0000	.0000	8221	17.7935
CRD5	1.0671	SHIRLEY	CORD05P	11:49:21.077	.4447	.0405	.6223	.0037	.0000	.0000	1	.6192
CRD5	.6346	MIKE	CORD05P	11:43:43.859	.1315	.0443	.5032	.3209	.0000	.0000	1	.1821
. . . .												
. . . .												

Cross-System Work Report

V1R2M0 CICS Performance Analyzer

Cross-System Work

CROS0001 Printed at 12:09:28 1/24/2002 Data from 11:10:51 2/04/1999 to 08:10:28 2/16/1999 Page 3

Tran	Userid	SC	TranType	Term	LUName	Request Type	Program	Fcty T/Name	Conn Name	NETName	UOW Seq	APPLID	Task	R T	Stop Time	Response Time	A B
ABRW	BRENNER	TP	U	S23D	IGCS23D	AP:	DFHúABRW	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	61	T	11:13:20.275	.0080	
CSMI	CBAKER	TO	UM	R11	IYK2Z1V1	FS:F---	DFHMIRS	T/R11	CJB1	GBIBMIYA.IGCS23D	1	IYK2Z1V3	57	T	11:13:20.274	.0044	
ABRW	BRENNER	TP	U	S23D	IGCS23D	AP:	DFHúABRW	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	62	T	11:13:21.332	.0064	
CSMI	CBAKER	TO	UM	R11	IYK2Z1V1	FS:F---	DFHMIRS	T/R11	CJB1	GBIBMIYA.IGCS23D	1	IYK2Z1V3	58	T	11:13:21.331	.0039	
CEDA	BRENNER	TO	U	S23D	IGCS23D	AP:	DFHEDAP	T/S23D		GBIBMIYA.IGCS23D	3	IYK2Z1V1	72	T	11:16:28.284	1.1025	
CEDA	BRENNER	TO	U	S23D	IGCS23D	AP:	DFHEDAP	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	72	C	11:16:27.181	3.0046	
CEDA	BRENNER	TO	U	S23D	IGCS23D	AP:	DFHEDAP	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	72	C	11:16:24.177	2.2127	
CEDA	BRENNER	TO	U	S23D	IGCS23D	AP:	DFHEDAP	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	72	C	11:16:21.964	46.5125	
CEDA	BRENNER	TO	U	S23D	IGCS23D	AP:	DFHEDAP	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	72	C	11:15:35.451	.6794	
CEMT	BRENNER	TO	U	S23D	IGCS23D	AP:	DFHEMTP	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	140	T	11:21:24.062	51.3442	
CEMT	BRENNER	TO	U	S23D	IGCS23D	AP:	DFHEMTP	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	140	C	11:20:32.718	8.3481	
CEMT	BRENNER	TO	U	S23D	IGCS23D	AP:	DFHEMTP	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	140	C	11:20:24.370	.0042	
CEMT	BRENNER	TO	U	S23D	IGCS23D	AP:	DFHEMTP	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	174	T	11:21:28.662	1.1930	
CEMT	BRENNER	TO	U	S23D	IGCS23D	AP:	DFHEMTP	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	174	C	11:21:27.469	.0041	
RMST	BRENNER	TO	U	S23D	IGCS23D	TR:CJB3		T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	178	T	11:22:38.447	48.9210	
STAT	CBAKER	TO	U	R11	IYK2Z1V1	AP:	DFH0STAT	S/S23D	CJB1	GBIBMIYA.IGCS23D	1	IYK2Z1V3	349	T	11:22:38.433	66.7720	
RMST	BRENNER	TO	U	S23D	IGCS23D	TR:CJB3		T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	178	C	11:21:49.526	10.0524	
RMST	BRENNER	TO	U	S23D	IGCS23D	TR:CJB3		T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	178	C	11:21:39.473	7.8027	
RMST	BRENNER	TO	U	S23D	IGCS23D	TR:CJB3		T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	178	C	11:21:31.671	.0110	
STAT	BRENNER	TO	U	S23D	IGCS23D	AP:	DFH0STAT	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	195	T	11:22:52.663	2.0203	
STAT	BRENNER	TO	U	S23D	IGCS23D	AP:	DFH0STAT	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	195	C	11:22:50.642	8.9745	

Exception Summary Report

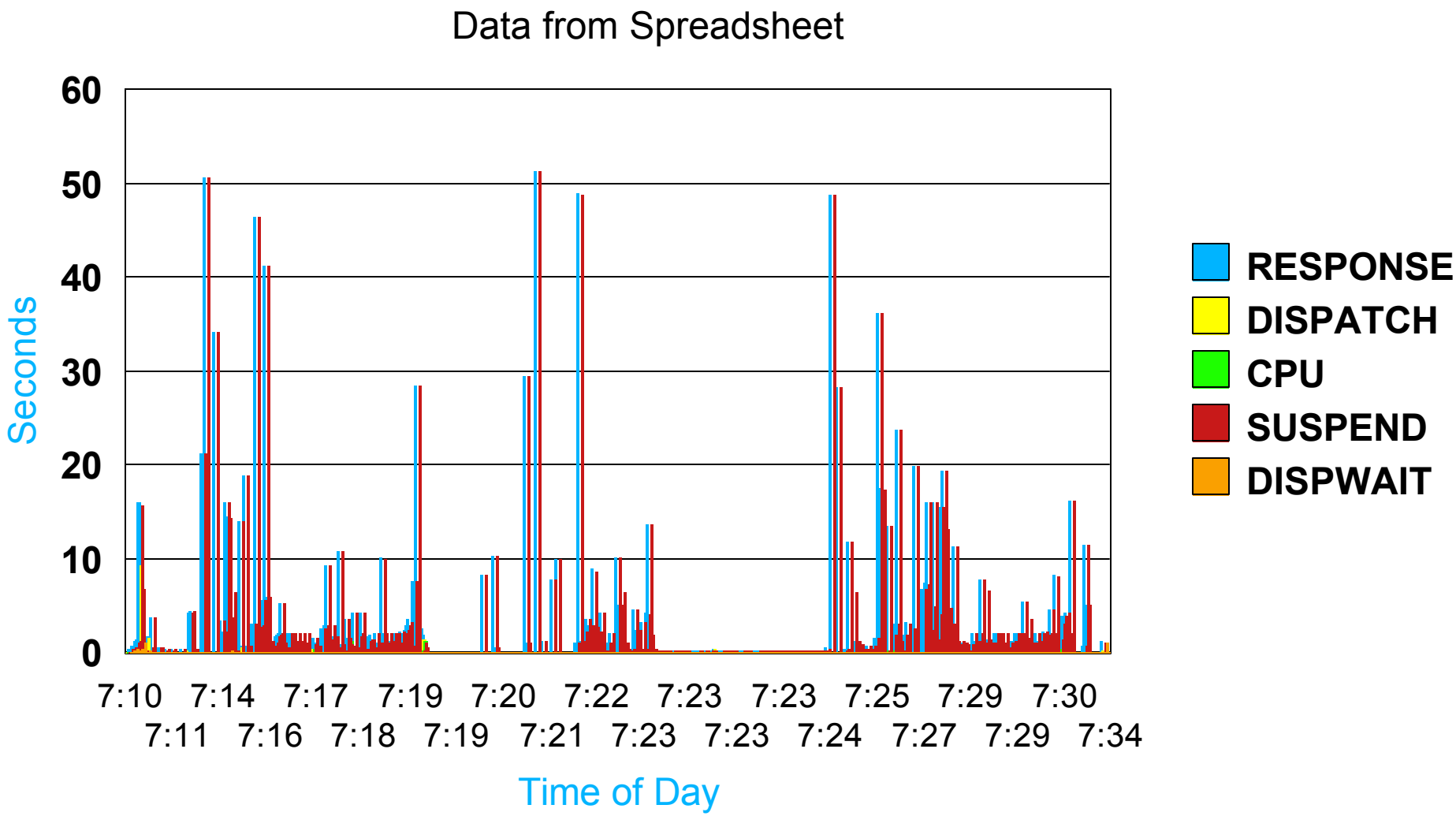
V1R2M0 CICS Performance Analyzer

Exception Summary

XSUM0001 Printed at 9:57:34 1/22/2002 Data from 08:08:15 2/16/1999 to 08:12:14 2/16/1999 Page 1

Tran ID	Total Excepts	TS-Buffer-Wait Average	TS-Buffer-Wait Count	TS-String-Wait Average	TS-String-Wait Count	Pool-Buffr-Wait Average	Pool-Buffr-Wait Count	Pool-Strng-Wait Average	Pool-Strng-Wait Count	File-Strng-Wait Average	File-Strng-Wait Count	..Temp Storage. Average	..Temp Storage. Count	..Main Storage. Average	..Main Storage. Count
ABRW	3									6.810	3				
CEBR	16			.003	16										
CECI	257	.006	256	.003	1										
TOTAL	276	.006	256	.003	17					6.810	3				

Performance Data Extract



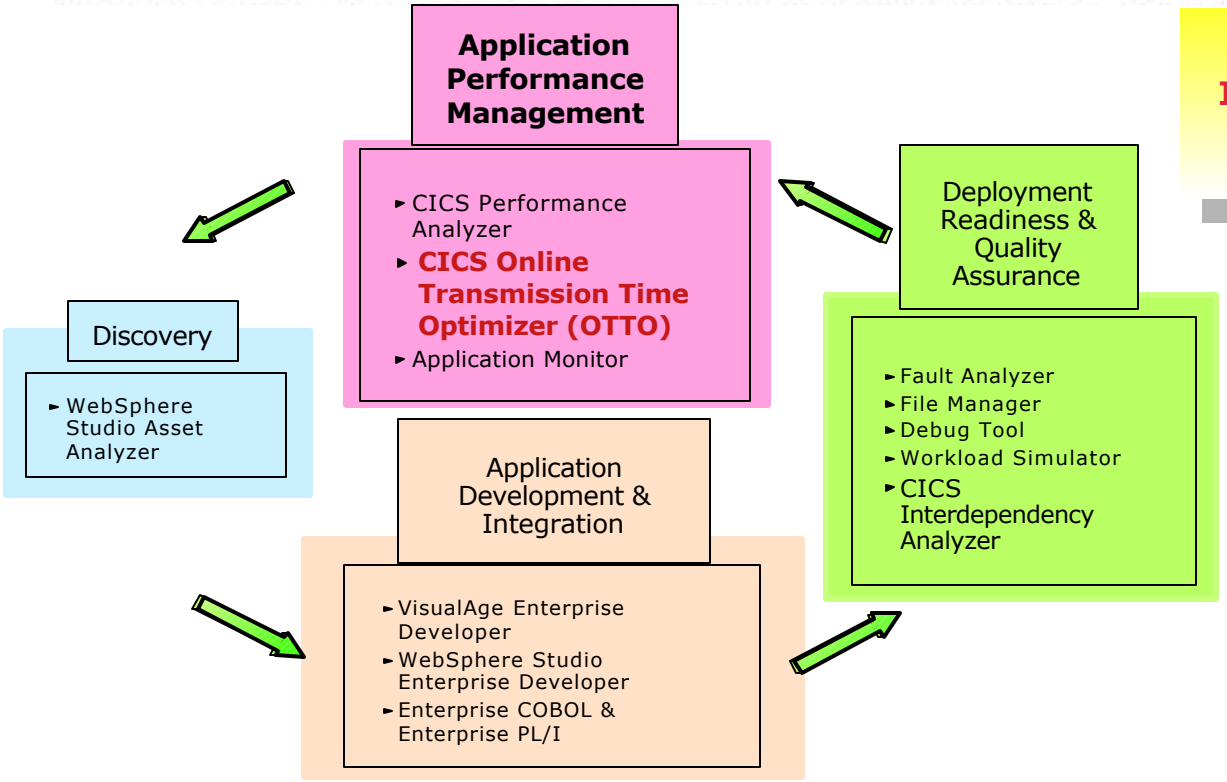
IBM

CICS PA Summary

- CICS PA Version 1.2 - Product information
  - Program Product - 5655-F38
  - Releases Supported ...
    - CICS Transaction Server for z/OS, Version 2.2 and 2.1
    - CICS Transaction Server for OS/390, Version 1
    - CICS for MVS/ESA, Version 4.1 *
  - OTC pricing model - IPLA product with a single charge

* To be discontinued December 31, 2002. Replace with CICS Transaction Server.

Tools for the IBM Enterprise Application Development Solution



Business Requirement:
Improve the utilization of the 3270 network

Product: CICS Online Transmission Time Optimizer (OTTO)

- identifies and removes repetitive data
- compresses 3270 datastreams

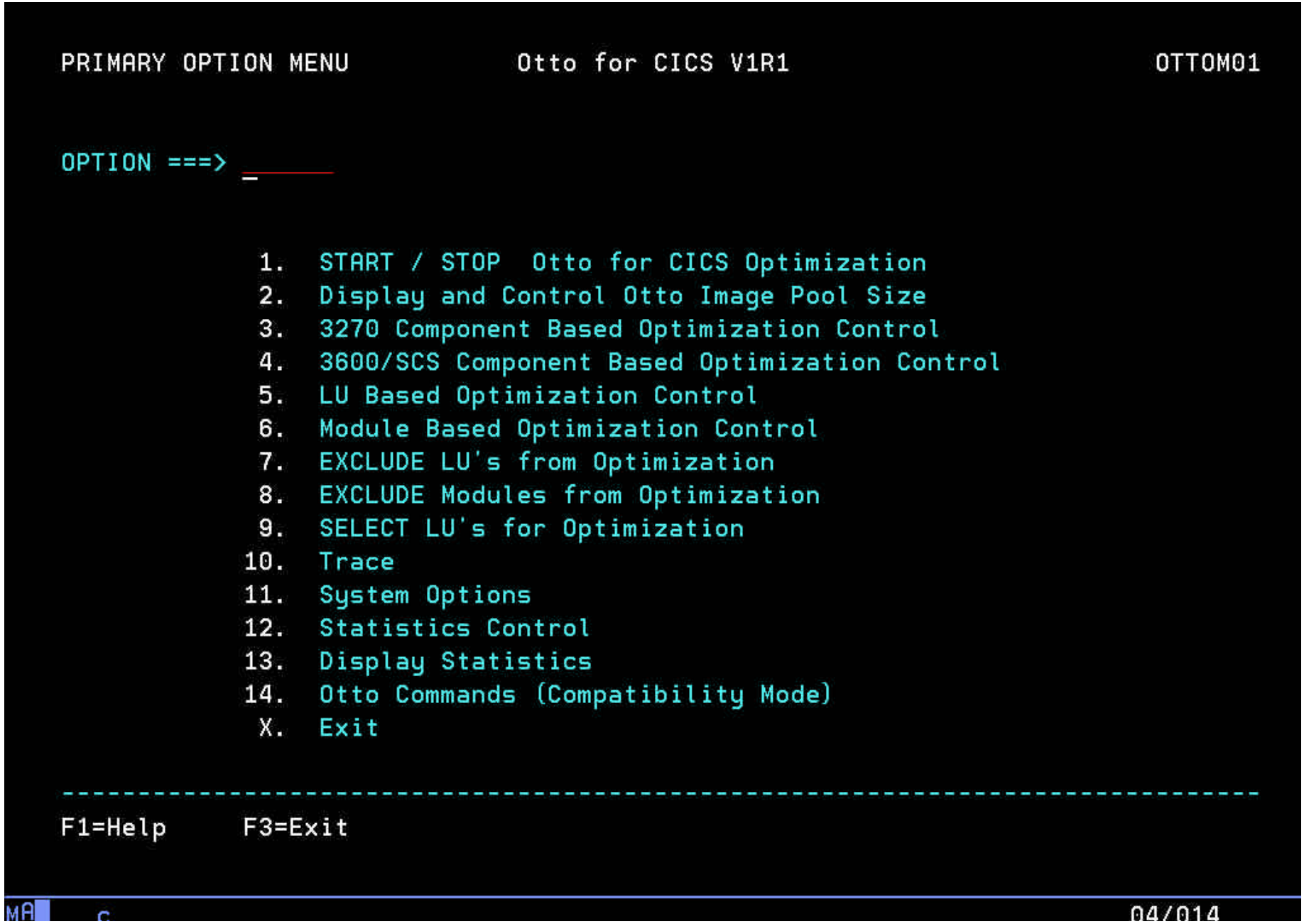
What is CICS OTTO ?

- CICS Online Transmission Time Optimizer for z/OS
  - compresses datastreams
    - 3270
      - screens
      - printers
    - SCS
      - printers
    - 3600
  - run-time tool
- Program Number - 5655-I05
  - Not part of CICS Transaction Server for z/OS

CICS OTTO Benefits

- Reduces network load
  - shorter messages go faster
  - end-user response time improvement
- Use device characteristics to create output quicker
  - tab characters on printers, for example
- Easy to install, customize and use
  - Interface, familiar to any CICS systems programmer
- Statistics maintained

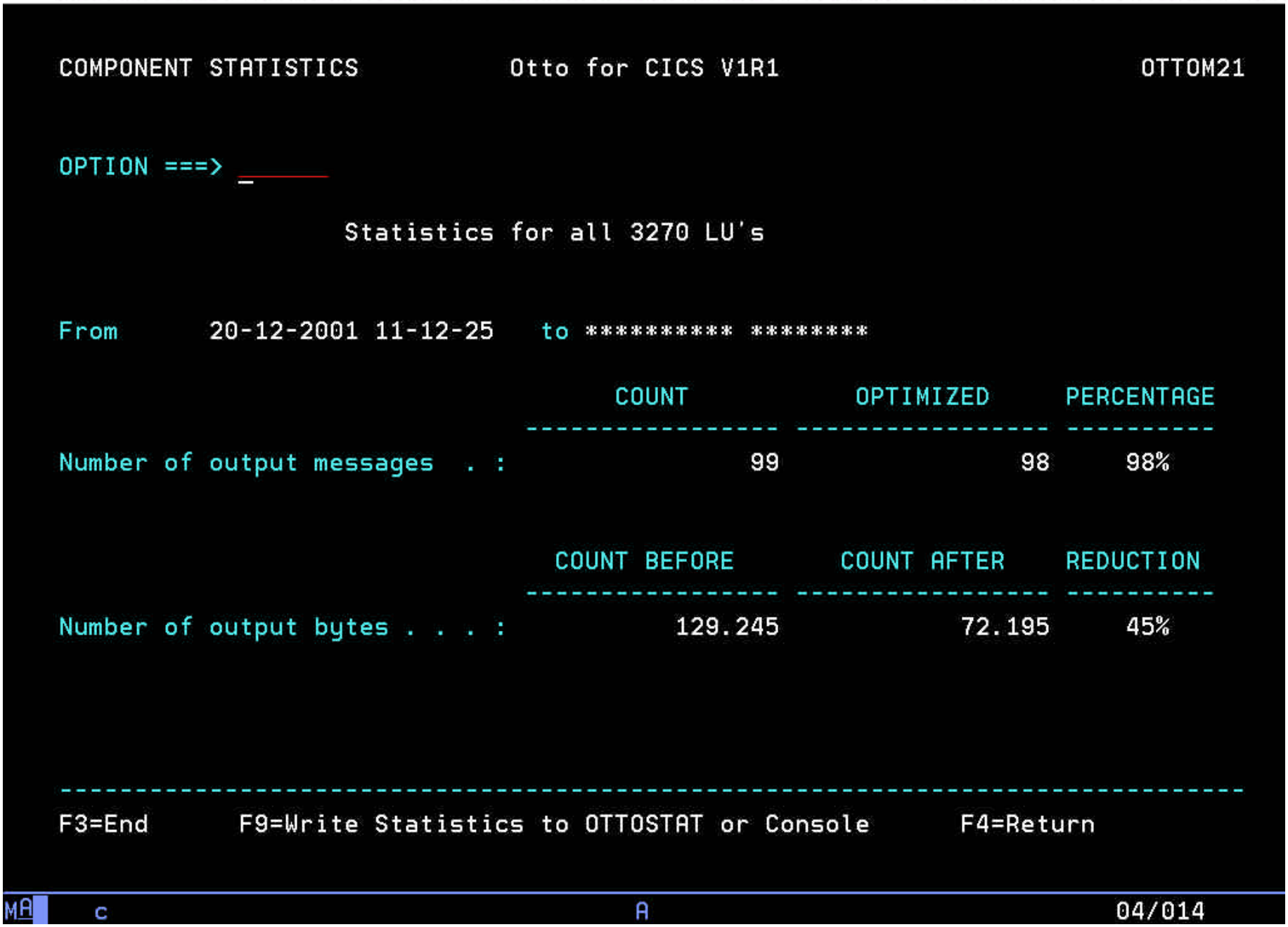
CICS OTTO - Operation



CICS OTTO - Status

CICS OTTO - Statistics summary

CICS OTTO - Statistics

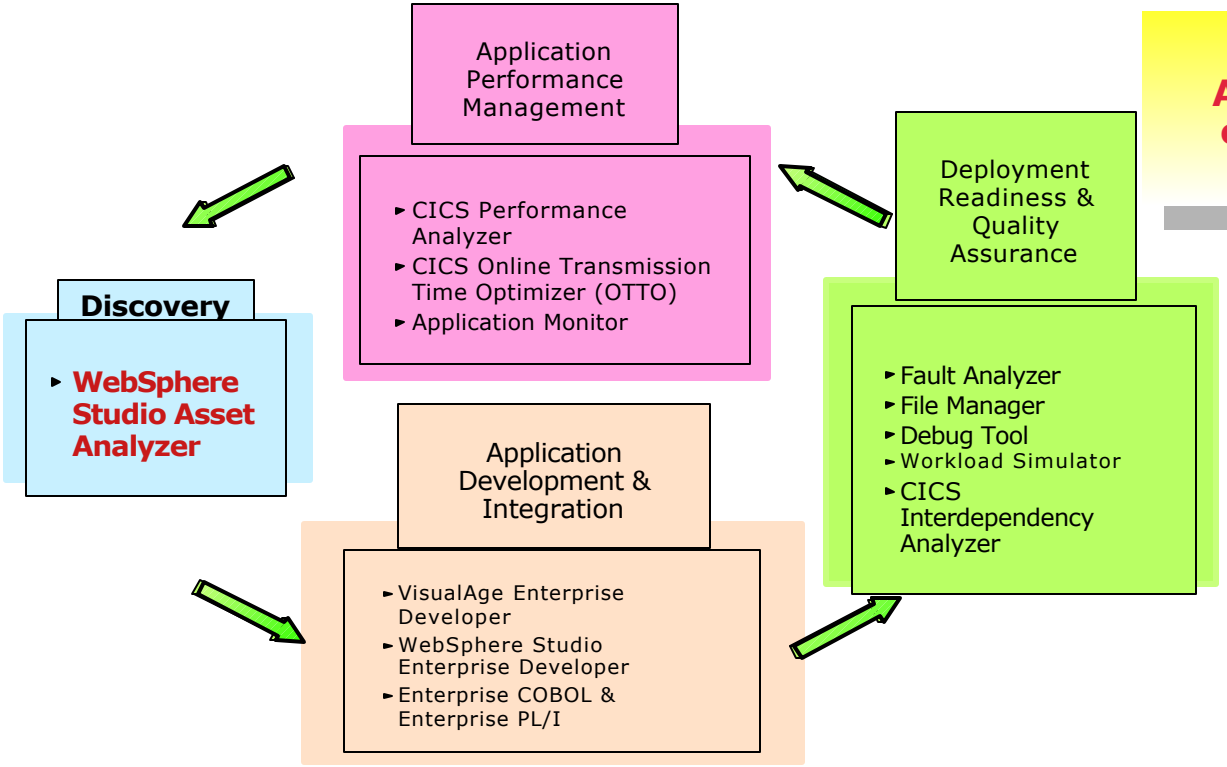


CICS OTTO Summary

- CICS OTTO Version 1.1 - Product information
  - Program Product - 5655-I05
  - Releases Supported ...
    - CICS Transaction Server for z/OS, Version 2.1 and 2.2
    - CICS Transaction Server for OS/390, Version 1
    - CICS for MVS/ESA, Version 4.1*
- OTC pricing model
  - IPLA product with a single charge based on Value Units

* To be discontinued December 31, 2002. Replace with CICS Transaction Server.

Tools for the IBM Enterprise Application Development Solution



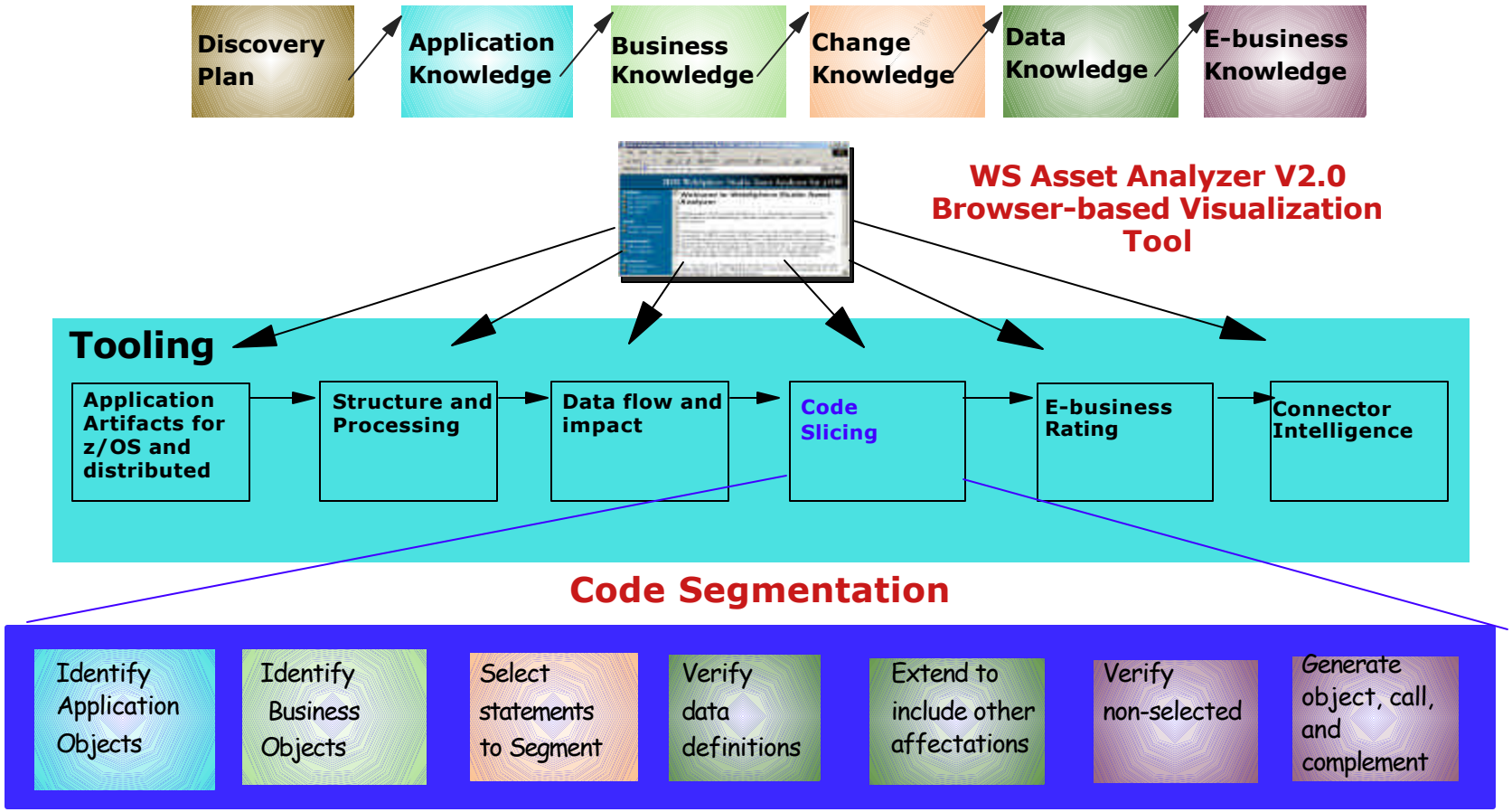
Business Requirement:
Analyze, extract, and re-use components for e-business applications

Product: WebSphere Studio Asset Analyzer

- analyzes, isolates and re-uses business logic from existing applications
- reduces or eliminates labor-intensive efforts to create connectors
- extracts code for re-use

WS Studio Asset Analyzer V1.0
Understand Business Rules for e-business Enablement

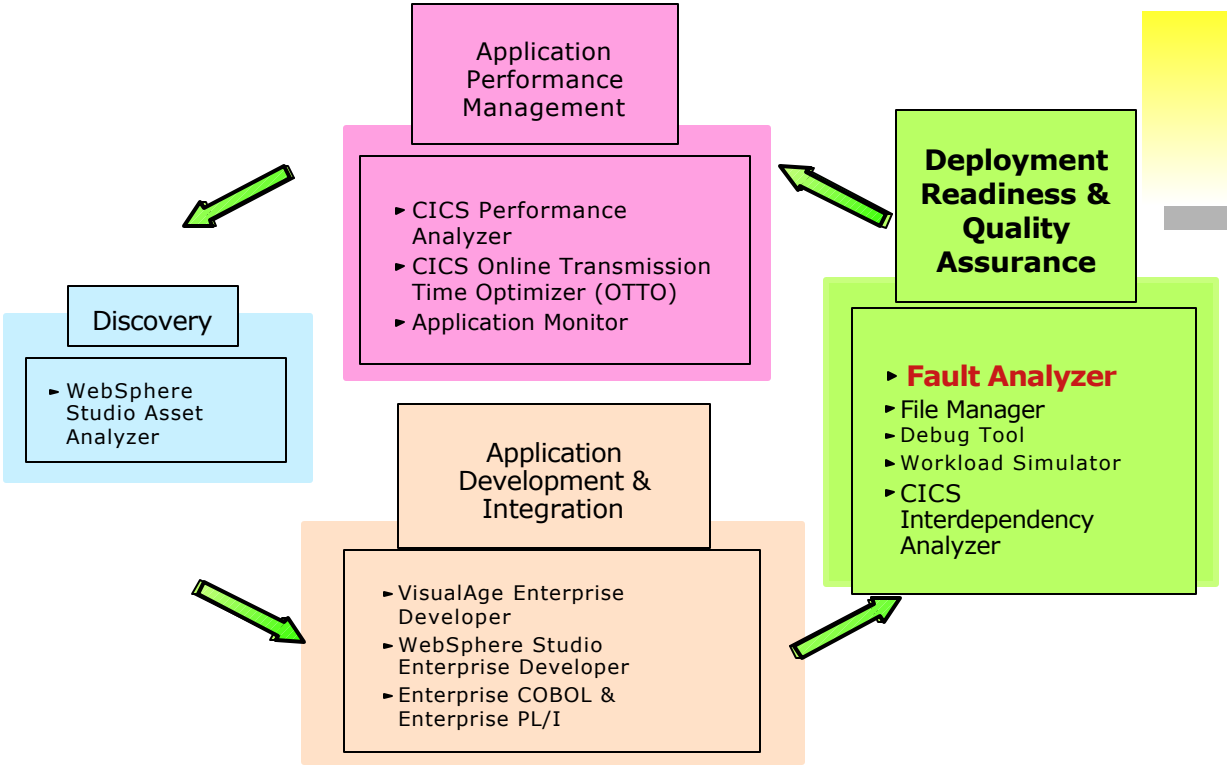
Analyzer, code slicing, and componentization tools simplify reuse



VALUE

- **Analyze, isolate, and reuse existing business logic for the Web**
- **Reduce or eliminate labor intensive efforts to create connectors**
- **Use existing skills**

Tools for the IBM Enterprise Application Development Solution



Product: Fault Analyzer

- helps determine the causes of an application failure
- provides assistance on how to solve the problem
- eliminates the need for developers to interpret low-level system dumps

Benefits of Fault Analyzer

- Translates low-level "dump" information into application-level information. For example, where possible:
  - Source statement, not just an abend offset
  - For COBOL and PL/I: data item name and value, not just a storage offset
- No need to recompile applications or change JCL (you can optionally recompile and generate a more compact side file which can be used instead of a compiler listing)
- No performance overhead: Fault Analyzer only affects processing after an abend
- New Functions available with Version 2
  - MQ Series application support
  - CICS system abend support
    - Provides the CICS systems programmer with control block and analysis information to resolve CICS system abend problems
    - Analyzes the CICS abend SVC dump after the event
  - ISPF display dynamic column selection
  - History File maintenance and flexibility

Supported application environments

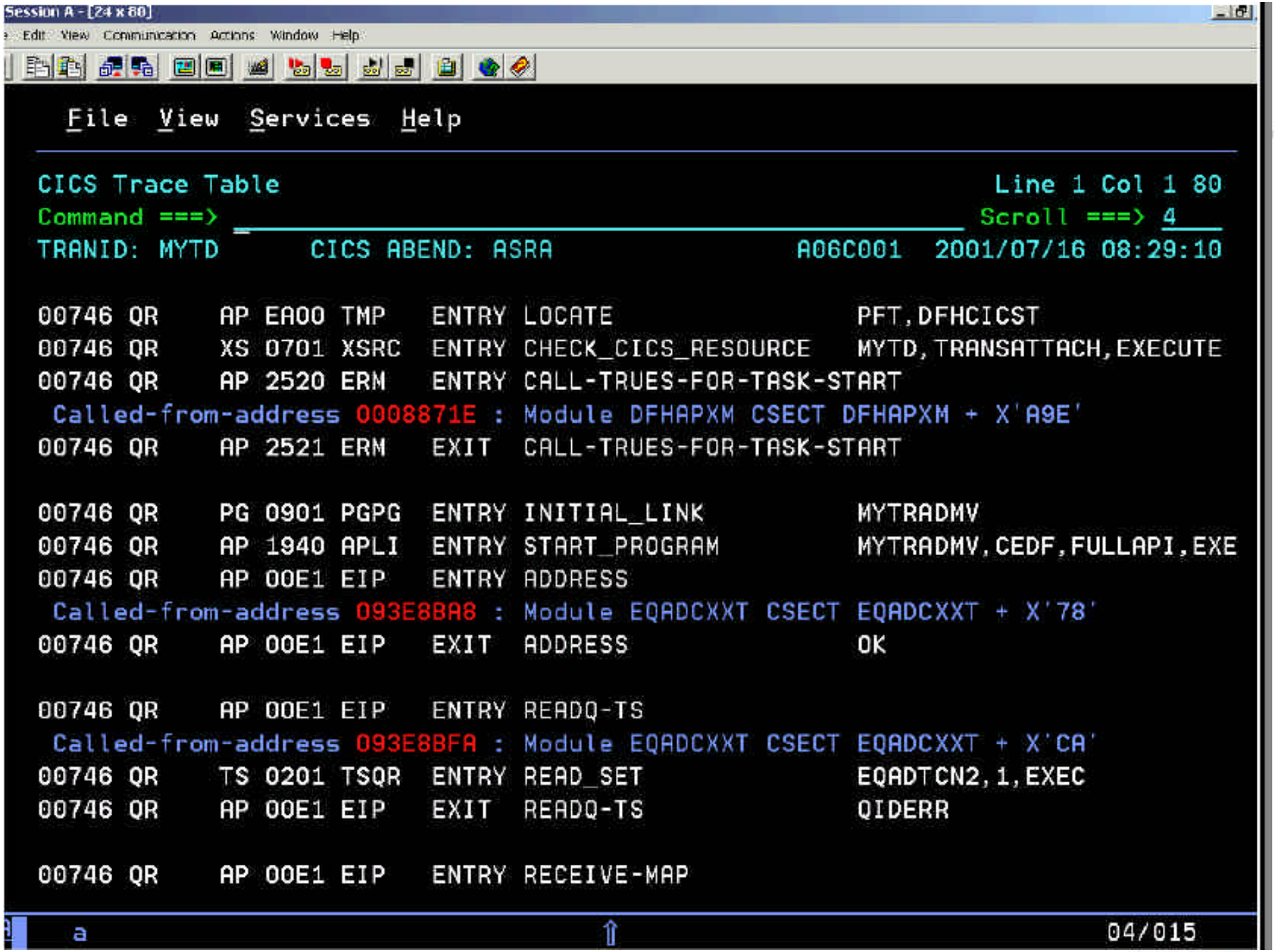
- z/OS and OS/390 2.6 (SMP/E 2.7) and above
- COBOL
- PL/I
- Assembler
- C/C++
- Language Environment
- Unix System Services
- CICS
- IMS
- DB2
- MQ Series

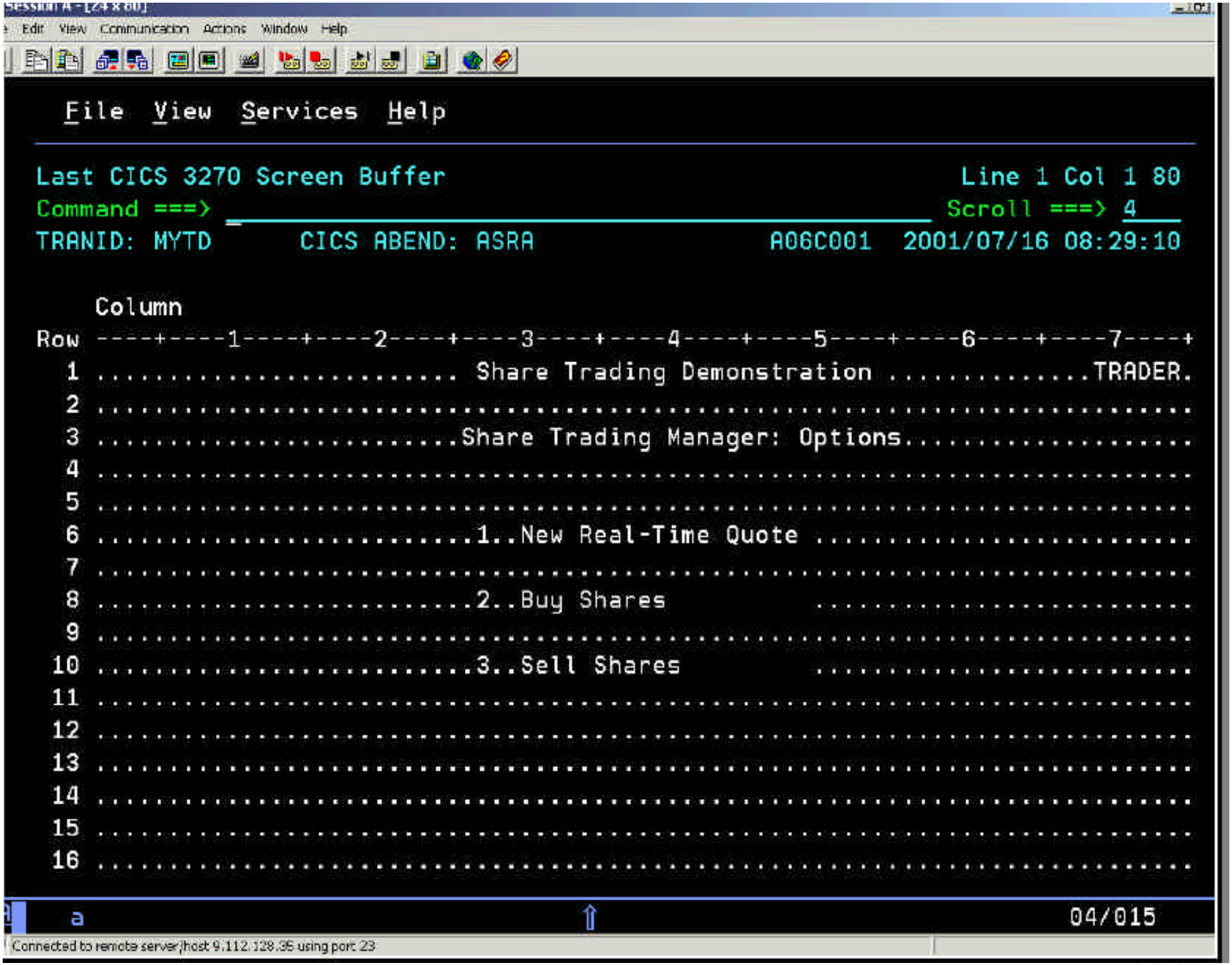
How do you use Fault Analyzer?

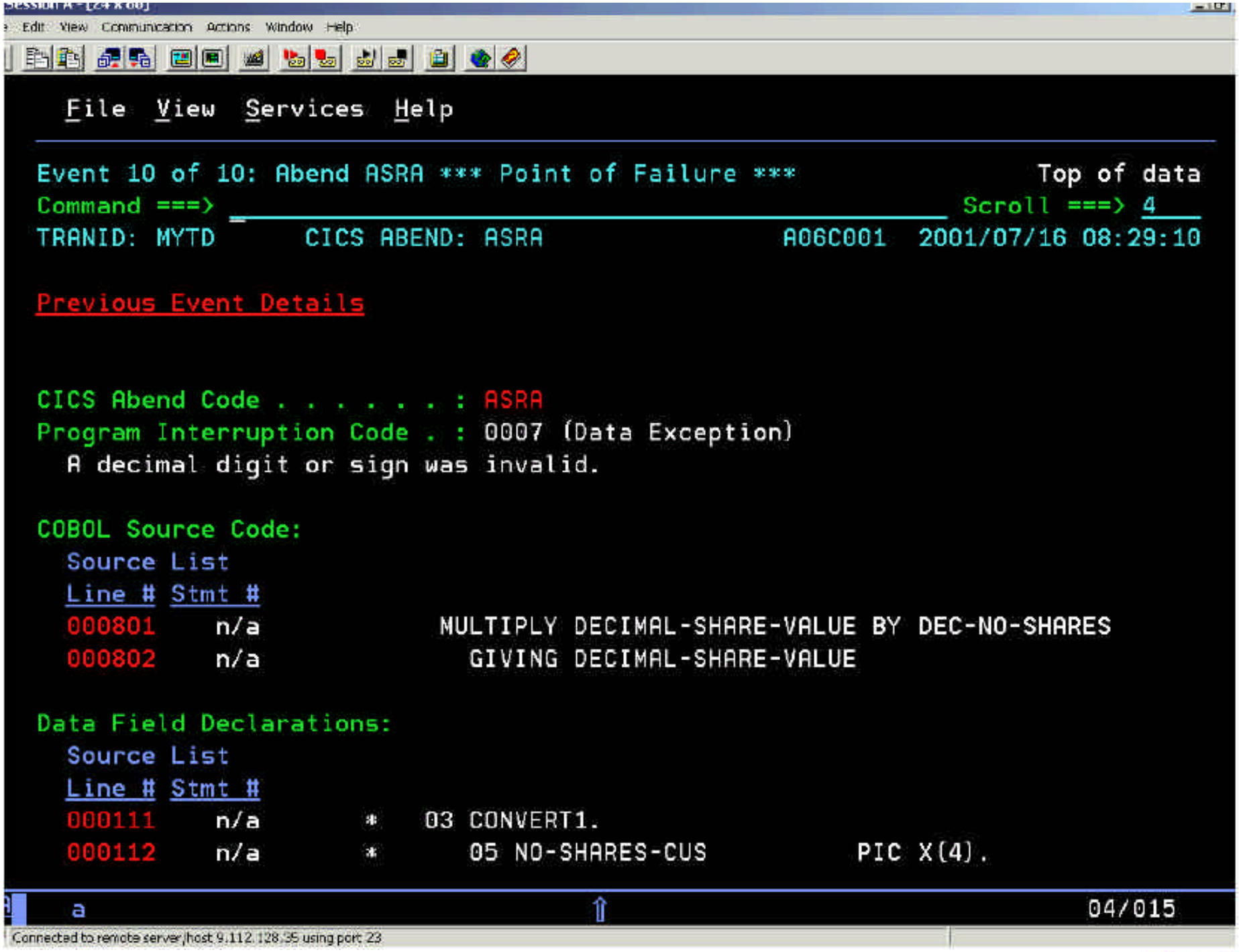
- **Real-time analysis:** when an application abends, an exit (supplied) invokes Fault Analyzer, which generates an analysis report.
- **Batch reanalysis:** generates a new analysis report based on the information gathered in real-time, with potentially different options, and with a compiler listing or side file (that might not have been available at abend).
- **Interactive reanalysis:** enables you to navigate on-screen through a formatted, structured view of the reanalysis. Lets you view working storage and control blocks as they were at the time of the fault.

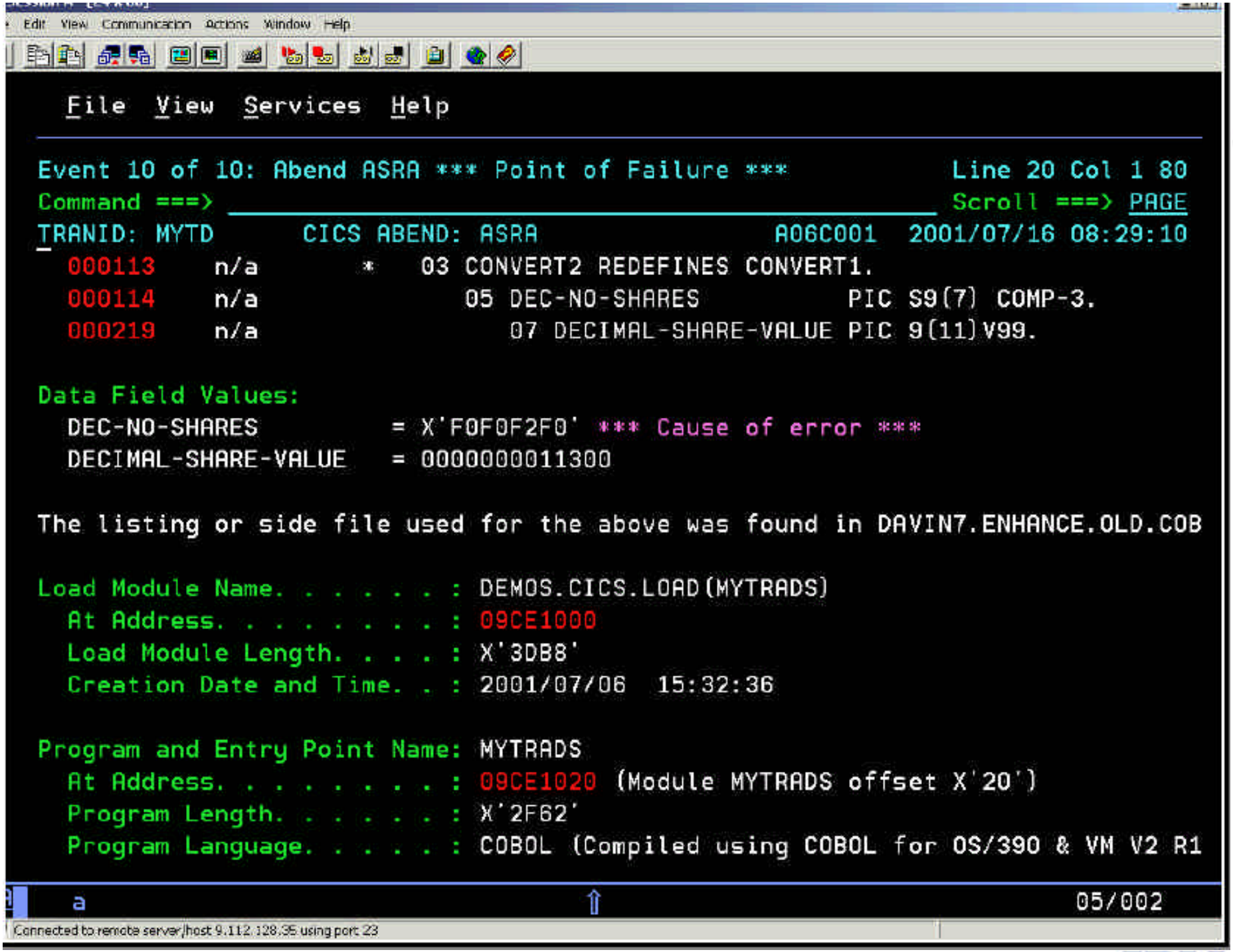
Analysis report

- Synopsis: why, where, how the fault occurred
- Analysis "events". For example:
  - Abends (initial or symptomatic)
  - Traceback (such as calls and links between programs)
  - EXEC CICS
  - S/390 SVC (Supervisor call) or EX (Execute) instructions
- Abend code and message descriptions extracted from selected OS/390 Online Library books, or supplied with Fault Analyzer ("IBM-supplied"), or (optionally) provided by user
- Analysis report includes descriptions of abend codes and messages extracted from (in order):
  - Message User Exit
  - User-defined message descriptions (if defined)
  - Message descriptions supplied with Fault Analyzer
  - Selected manuals from the OS/390 Online Library, packaged with Fault Analyzer


Session A - [24 x 80]
Edit View Communication Actions Window Help
File View Services Help
CICS Trace Table
Line 1 Col 1 80
Command ===>
Scroll ===> 4
TRANID: MYTD CICS ABEND: ASRA A06C001 2001/07/16 08:29:10
00746 QR AP EA00 TMP ENTRY LOCATE PFT,DFHCICST
00746 QR XS 0701 XSRC ENTRY CHECK_CICS_RESOURCE MYTD,TRANSATTACH,EXECUTE
00746 QR AP 2520 ERM ENTRY CALL-TRUES-FOR-TASK-START
Called-from-address 0008871E : Module DFHAPXM CSECT DFHAPXM + X'A9E'
00746 QR AP 2521 ERM EXIT CALL-TRUES-FOR-TASK-START
00746 QR PG 0901 PGPG ENTRY INITIAL_LINK MYTRADMV
00746 QR AP 1940 APLI ENTRY START_PROGRAM MYTRADMV,CEDF,FULLAPI,EXE
00746 QR AP 00E1 EIP ENTRY ADDRESS
Called-from-address 093E8BA8 : Module EQADCXXT CSECT EQADCXXT + X'78'
00746 QR AP 00E1 EIP EXIT ADDRESS OK
00746 QR AP 00E1 EIP ENTRY READQ-TS
Called-from-address 093E8BFA : Module EQADCXXT CSECT EQADCXXT + X'CA'
00746 QR TS 0201 TSQR ENTRY READ_SET EQADTCN2,1,EXEC
00746 QR AP 00E1 EIP EXIT READQ-TS QIDERR
00746 QR AP 00E1 EIP ENTRY RECEIVE-MAP
a
04/015


Edit View Communication Actions Window Help
File View Services Help
Last CICS 3270 Screen Buffer
Line 1 Col 1 80
Command ===>
Scroll ===> 4
TRANID: MYTD
CICS ABEND: ASRA
A06C001 2001/07/16 08:29:10
Column
Row
Share Trading Demonstration
TRADER.
Share Trading Manager: Options
1..New Real-Time Quote
2..Buy Shares
3..Sell Shares
a
04/015
Connected to remote server/host 9.112.128.35 using port 23

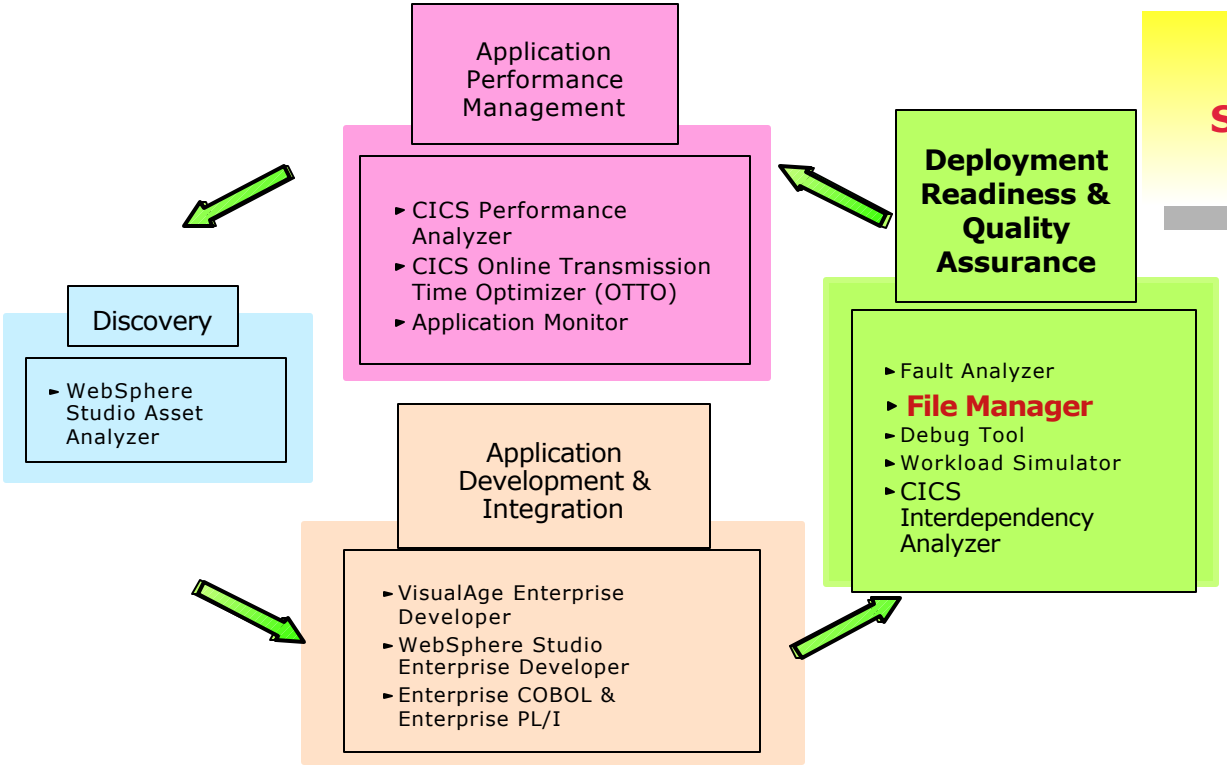

Edit View Communication Actions Window Help
File View Services Help
Event 10 of 10: Abend ASRA *** Point of Failure *** Top of data
Command ===>
Scroll ===> 4
TRANID: MYTD CICS ABEND: ASRA A06C001 2001/07/16 08:29:10
Previous Event Details
CICS Abend Code . . . . . : ASRA
Program Interruption Code . : 0007 (Data Exception)
A decimal digit or sign was invalid.
COBOL Source Code:
Source List
Line # Stmt #
000801 n/a MULTIPLY DECIMAL-SHARE-VALUE BY DEC-NO-SHARES
000802 n/a GIVING DECIMAL-SHARE-VALUE
Data Field Declarations:
Source List
Line # Stmt #
000111 n/a * 03 CONVERT1.
000112 n/a * 05 NO-SHARES-CUS PIC X(4).
a
04/015
Connected to remote server/host 9.112.128.35 using port 23


Edit View Communication Actions Window Help
File View Services Help
Event 10 of 10: Abend ASRA *** Point of Failure *** Line 20 Col 1 80
Command ===> Scroll ===> PAGE
TRANID: MYTD CICS ABEND: ASRA A06C001 2001/07/16 08:29:10
000113 n/a * 03 CONVERT2 REDEFINES CONVERT1.
000114 n/a 05 DEC-NO-SHARES PIC S9(7) COMP-3.
000219 n/a 07 DECIMAL-SHARE-VALUE PIC 9(11)V99.
Data Field Values:
DEC-NO-SHARES = X'F0F0F2F0' *** Cause of error ***
DECIMAL-SHARE-VALUE = 0000000011300
The listing or side file used for the above was found in DAVIN7.ENHANCE.OLD.COB
Load Module Name. . . . . : DEMOS.CICS.LOAD(MYTRADS)
At Address. . . . . : 09CE1000
Load Module Length. . . . : X'3DB8'
Creation Date and Time. . : 2001/07/06 15:32:36
Program and Entry Point Name: MYTRADS
At Address. . . . . : 09CE1020 (Module MYTRADS offset X'20')
Program Length. . . . . : X'2F62'
Program Language. . . . . : COBOL (Compiled using COBOL for OS/390 & VM V2 R1
a
05/002
Connected to remote server/host 9.112.128.35 using port 23

Fault Analyzer V2 - What's New?

- **CICS System Abend Support**
  - Trace table analysis
  - Last 3270 screen analysis
  - CICS domain control block:
    - navigation, mapping
    - identification of abnormal conditions
- **MQ Series Support**
  - Analysis of abends which occur when calls are made to MQ Series APIs
  - Display of COBOL or PL/I source code which led to abend
- **Additional Customization**
  - History File options - Application based or logical based management
  - User Exits for source location, messages, and email notification
  - Export/Import capabilities for history file transmission across JES network

Tools for the IBM Enterprise Application Development Solution



Business Requirement:
Simplify S/390 file and data management

Product: File Manager

- manipulates development, test, and production data across multiple file formats and storage media
- includes extensive edit, browse, print, data creation, and copy functions: developers' productivity is increased

IBM

File Manager V2 - What's New?

- DB2 Support
  - Subsystem Selection
  - Browse Functions
  - Edit Functions
  - Print Functions
  - Copy Functions
  - Data Create Functions
  - Object List File Functions
  - Utility Job Generation
  - Statement Analysis
  - Database Edit/Browse Functions
  - Database Extract Load

File Manager V2 - What's New?

- **IMS Support**
  - Edit/Browse Functions
  - Database Extract and Load
  - Define Templates and Views
  - Static (existing) or Dynamic PSBs
  - Option access by either DL/I or BMP processing
  - Option to access databases via DL/I or BMP processing
  - Support for HDAM, HIDAM, HISAM, HSAM, DEDB, MSDB, and logical databases, including databases with secondary indexes
  - note: IMS Batch Support available at end of September
- **PL/I Include File Support**
  - Ability to manipulate files utilizing PL/I Include Files in addition to COBOL Copybooks

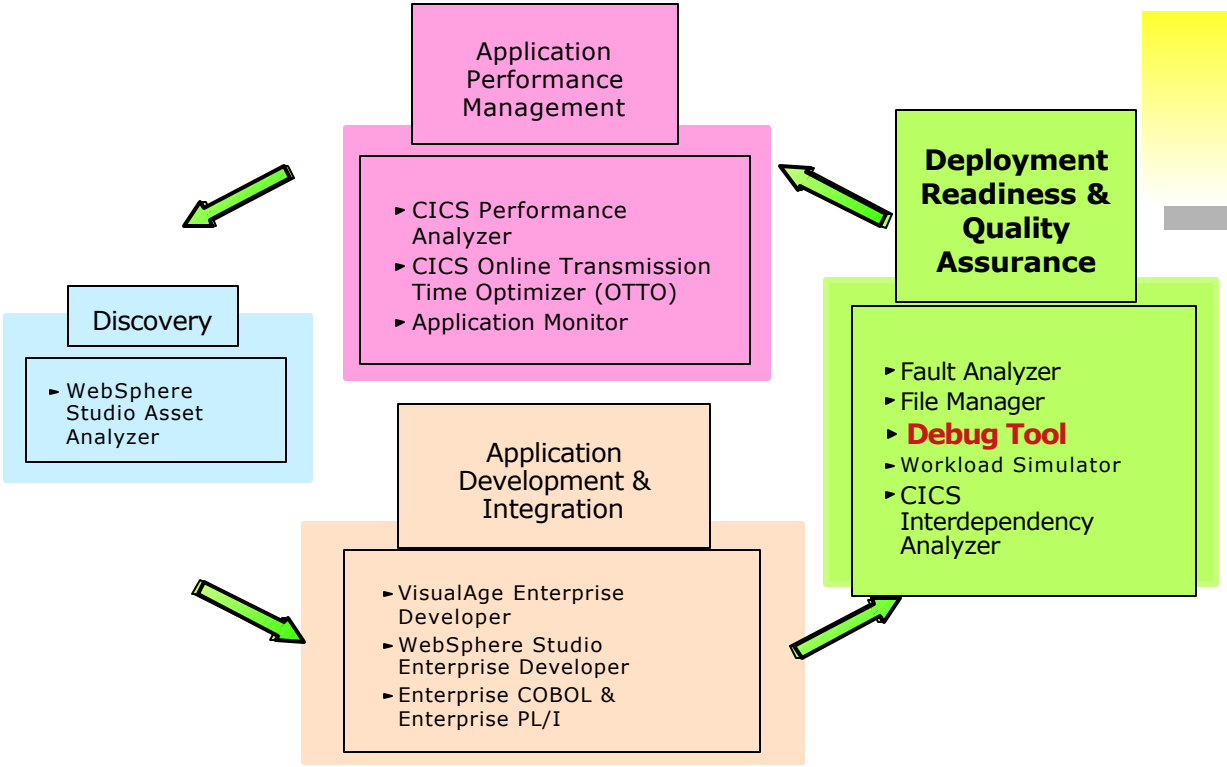
highlights

- Browse, edit, copy and print QSAM data sets, VSAM data sets and PDS members
- Combines information supplied by the user to produce a logical view of data to simplify viewing and manipulation
- Work with data formatted according to record structure, arranged into fields
- Work with files containing multiple record structures
- Use flexible criteria to select records
- Change record selection criteria and formatting "on the fly", while browsing or editing
- Find and change data within particular fields
- Identify records that do not match a recognized structure, or that contain invalid values
- Edit entire files, regardless of size
- Copy or print selected records and fields; copy between different data types and lengths
- Create data with fields initialized according to flexible patterns
- Automate tasks in batch jobs, REXX procedures or CLISTs
- Enhance with your own custom procedures

DB2 Highlights - Browse and Edit, Print and Copy

- Browse and Edit
  - Browse and edit DB2 tables with columns formatted according to data type
  - Select which columns are to be displayed, and the order in which they are arranged on the screen
  - Use the power of SQL SELECT statement WHERE clause to determine which rows to browse or edit
  - Order the rows by column
  - Optionally protect primary key columns from update
  - Browse any result table, or edit any updatable result table, produced by a user-entered SQL SELECT statement
- Print and Copy
  - Print DB2 tables or views with columns formatted according to column data type
  - Select which columns to print and the order in which they are arranged in the listing
  - Select which rows to print using the SQL SELECT statement WHERE clause
  - Provide customized column headings
  - Copy data between DB2 tables
  - Reformat data during copy by mapping columns in input table to different columns in output table, and initializing new columns using user-specified values or patterns

Tools for the IBM Enterprise Application Development Solution



Business Requirement:
Increase developers' productivity

Product: Debug Tool

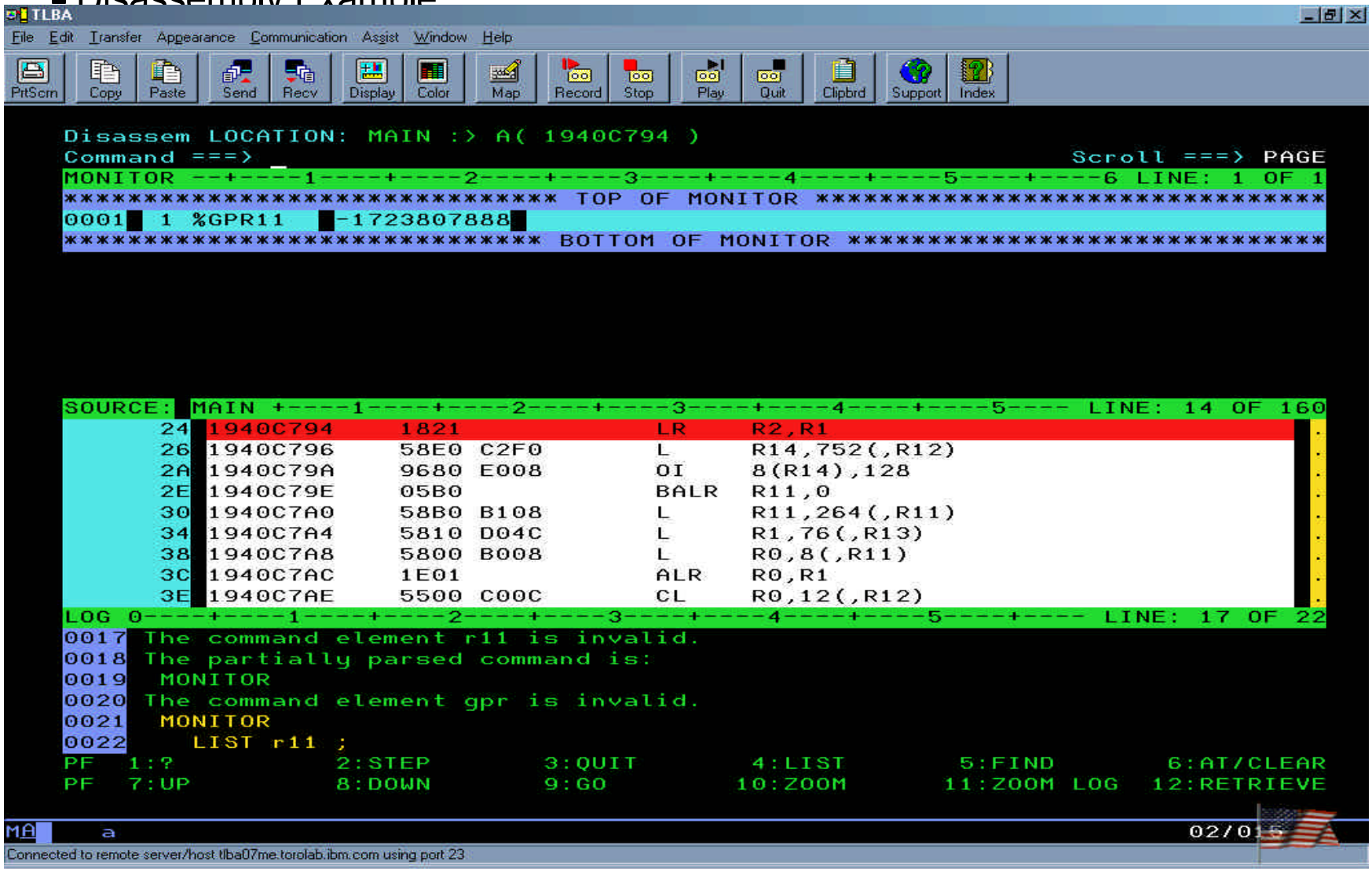
- displays a source-level view of the point of failure, and provides facilities for diagnosing and correcting the problem
- works across multiple languages and platforms

Debug Tool for zOS and S/390 V3.1

- IBM's debugger for OS/390
- Two user interfaces:
  - remote via workstation (VA family only remote)
  - 3270 terminal interface
- Supports: C/C++, COBOL, PL/I, Compiled Java
- Subsystems: CICS, DB2, IMS (BTS & TM), Websphere, Domino Go Webserver.....
- Most recent enhancement - hookless debug for COBOL, overtype of variables (3270 interface)
- Available as part of the full function offering of each of the compilers, & the workstation interface is part of the VisualAge packages, e.g. VisualAge COBOL

Debug Tool 1.3 Disassembly

- Disassembly Example:



Debug Tool V1.3

- De

```
------------------------- Debug Tool Setup Utility -------------------------
Option ===>

0  Defaults           Specify defaults
1  Foreground         Debug programs interactively in Foreground
2  Batch (Sample)     Debug programs interactively in Batch

T  Tutorial           View Getting Started and Tutorial etc..

Enter X to Terminate
```

- Foreground
  - Changes JCL to CLIST (single step)
  - Parm list modifcation allowing debug tool invocation
  - Compiliation and setup via ISPF rather than JCL
- Batch Invocation in foreground
  - Parm list modification to program execution DD allowing debug tool invocation
  - Uses LU location to invoke foreground session from batch job
  - Benefits: Doesn't force Debug Tool users to use limited TSO space

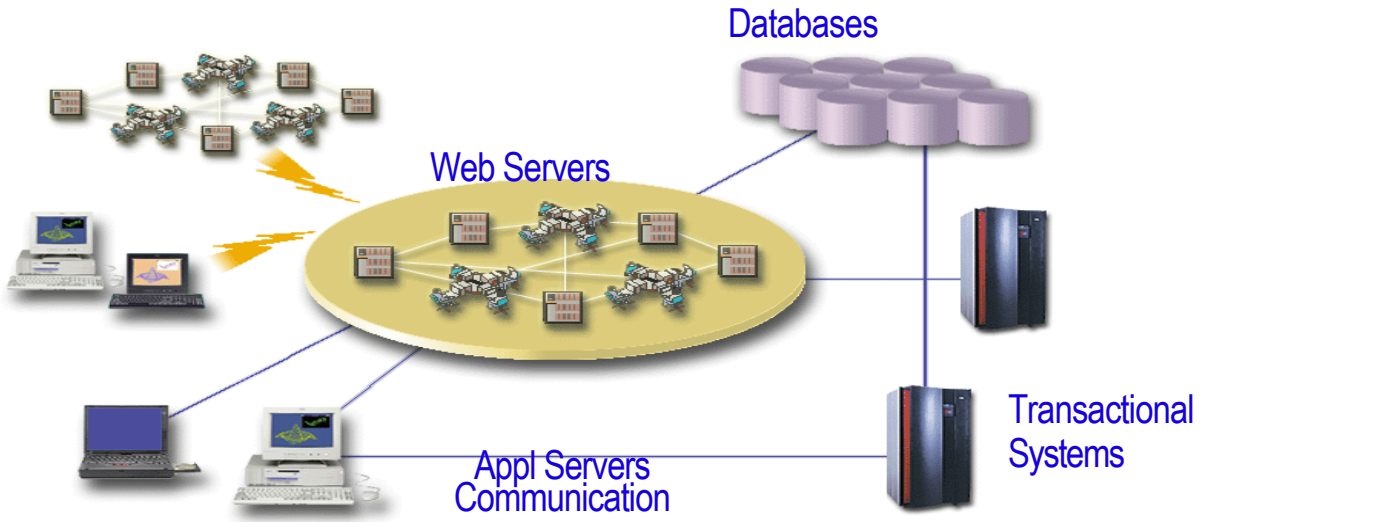
CICS Tools Summary

- Affordability
  - Attractively priced solutions
  - Driving down the cost of enterprise computing
- Comprehensive tool suite
- Excellent support
- Long term commitment
  - Portfolio expansion
  - Product functional enhancements

IBM Enterprise COBOL and PLI for z/OS and OS/390 V3

- **Integrated CICS Translator**
- **Unicode support**
- **XML Parsing support**

Current COBOL Applications e-business Integration Challenges



Current COBOL not threadsafe

Enterprise COBOL V3.1

- GA: 11/30/2001

- Provides Web Interoperability by supporting JAVA architectures that take advantage of:
  - ►XML parsing and exploitation in COBOL
  - ►Data translation to and from COBOL (unicode)
  - ►Support for multiple threads and asynchronous signals in COBOL

- Provides object-oriented syntax to facilitate the interoperation of COBOL and Java programs by allowing programmers to write:
  - ►COBOL code that creates object instances of Java classes
  - ►COBOL code that invokes Java methods
  - ►COBOL code that defines classes
  - ►Object instances of COBOL classes may be created from Java and COBOL
  - ►Methods of COBOL classes may be invoked from Java and COBOL

COBOL moves towards supporting Enterprise E-Business Architectures

References ...

Useful Runtime Tools WEB Sites ...

http://ibm.com/cics/

http://ibm.com/cics/library/

http://ibm.com/software/data/db2imstools/

http://ibm.com/s390/rmf/

http://ibm.com/s390/wlm/

http://www.storage.ibm.com/software/sort/srtmhome.htm

Useful AD Tools WEB Sites ...

http://ibm.com/software/ad/faultanalyzer/

http://ibm.com/software/ad/filemanager/

http://ibm.com/servers/eserver/zseries/dt/

http://ibm.com/software/network/tpns/