Optimizing applications and data for mobile workloads

Track 3: Extending the mainframe to the mobile enterprise

Where we are in todays agenda

- Mobilizing the mainframe
- Modernizing mainframe applications for mobile and more
- Exposing mainframe applications and services to mobile
- Developing an IBM MobileFirst platform application for z Systems
- Optimizing applications and data for mobile workloads
- Client use cases and getting started with mobile and z Systems

CIO Pressures

Reduce	Manage	Deliver
• Cost • Risk • Complexity • Outage	• Operational efficiency • Critical business data • Security & Compliance • Skills and resources	• Service agility • Business Intelligence • Mobile solutions • Cloud solutions

Gartner

"Agility and accessibility will make the successful organization of the future."

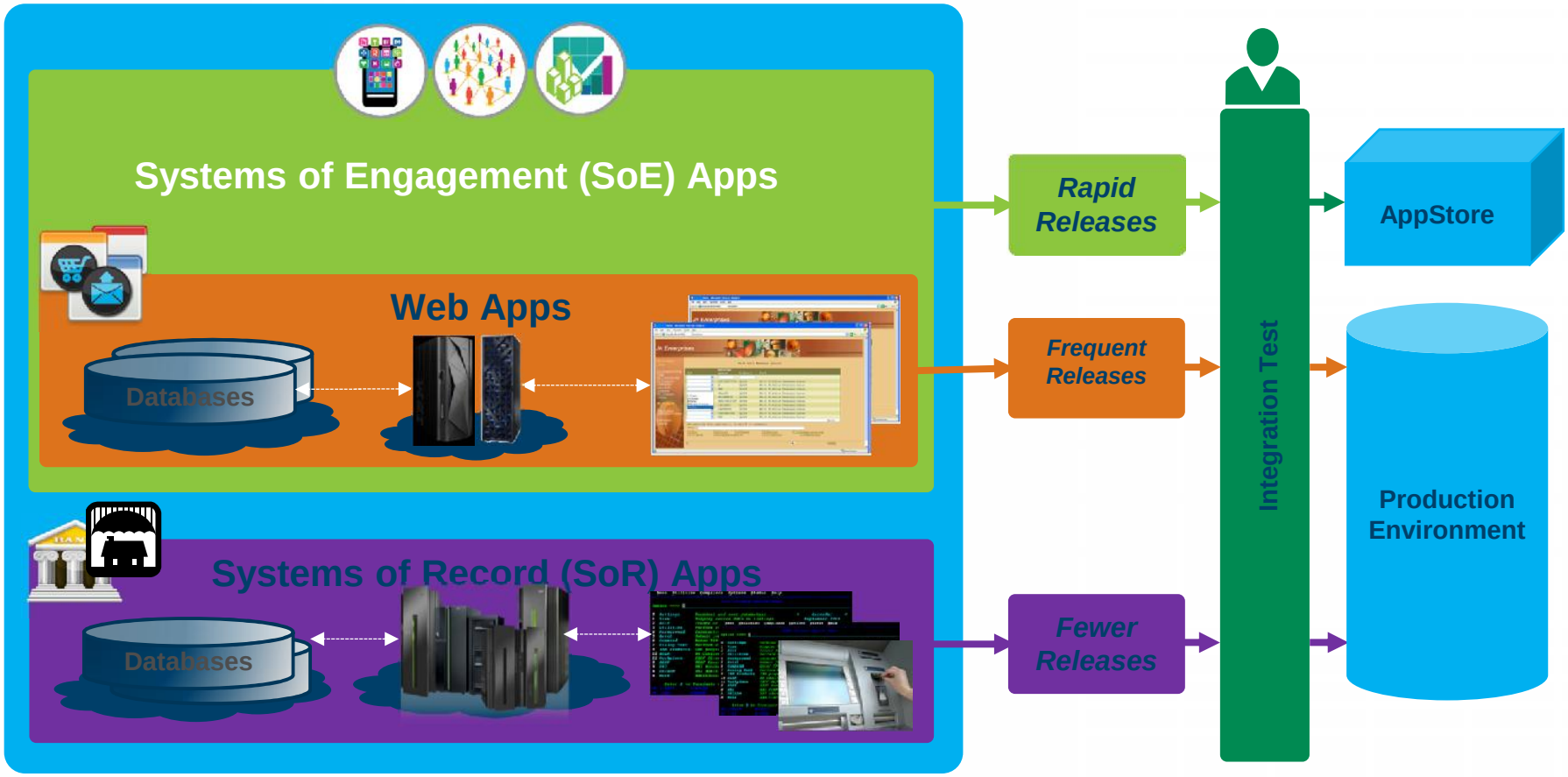
pwc

Digital technologies lead CIO technology priorities

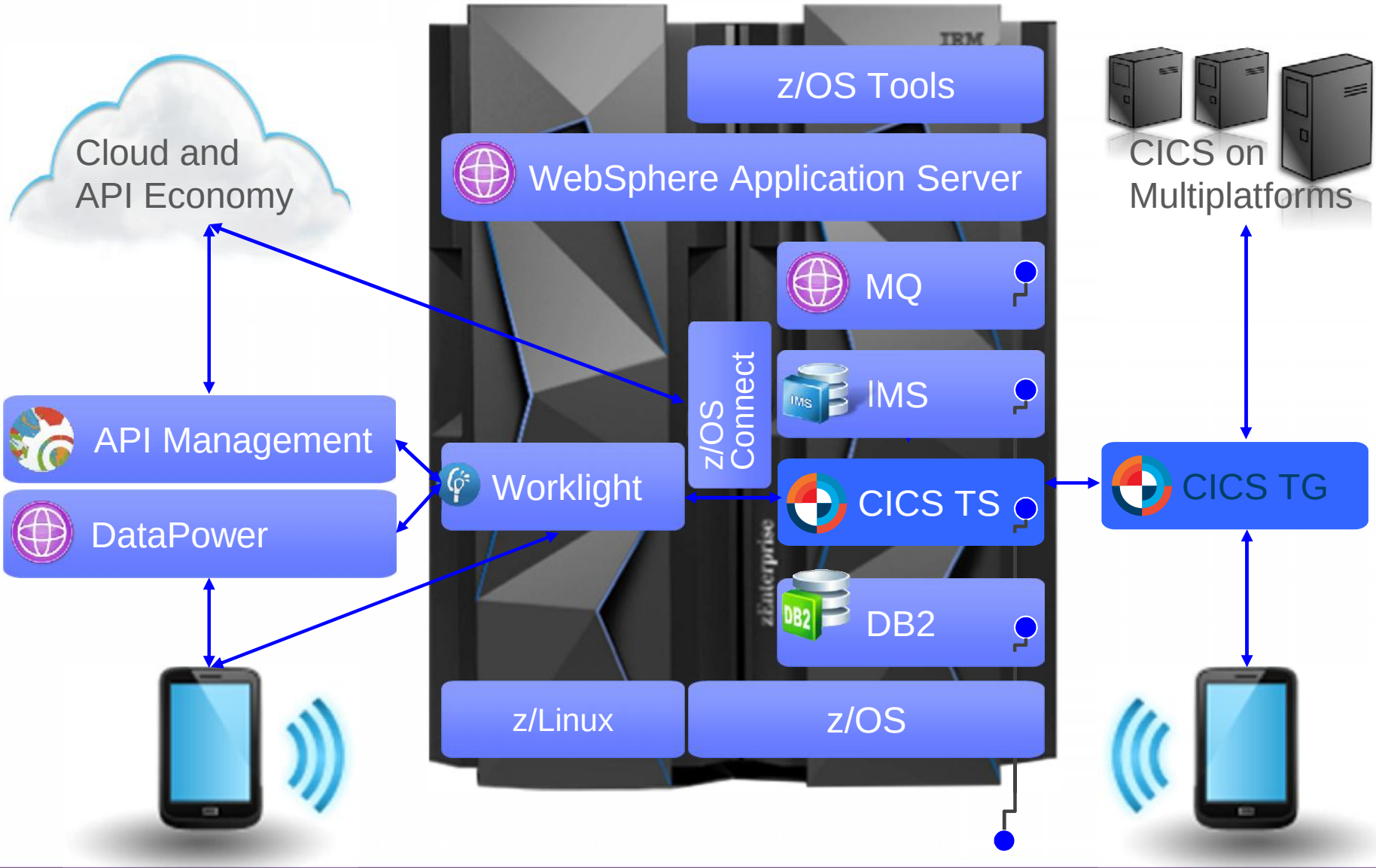
CIO technologies	Ranking of technologies CIOs selected as one of their top 3 priorities in 2013				
Ranking	***2013***	**2012**	**2011**	**2010**	**2009**
Analytics and business intelligence	1	1	5	5	1
Mobile technologies	2	2	3	6	12
Cloud computing (SaaS, IaaS, PaaS)	3	3	1	2	16

Today's Systems landscape

Bringing together the people, processes, and tools across the entire software delivery lifecycle – spanning mobile to mainframe platforms



Systems of Engagement meet Systems of Record

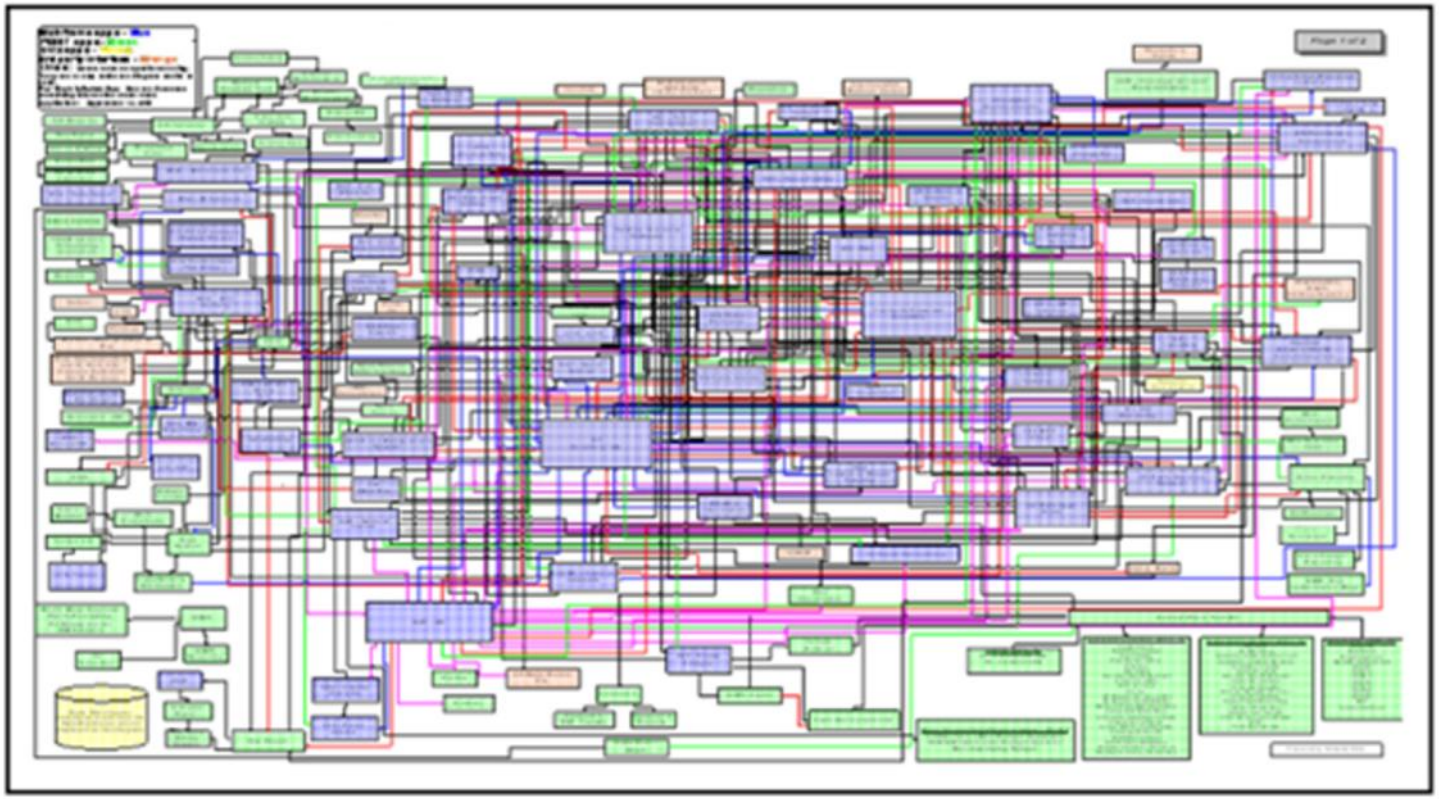


Systems of Record can be complex systems built on decades of continuous & incremental development

Change?

Fix problems?

Optimize?



Modernize?

Where do I start?

Re-use?

Optimization

Applications

Performance improvement, performance trending, capacity planning

Infrastructure

Workload management
Application configuration
Rregion provisioning

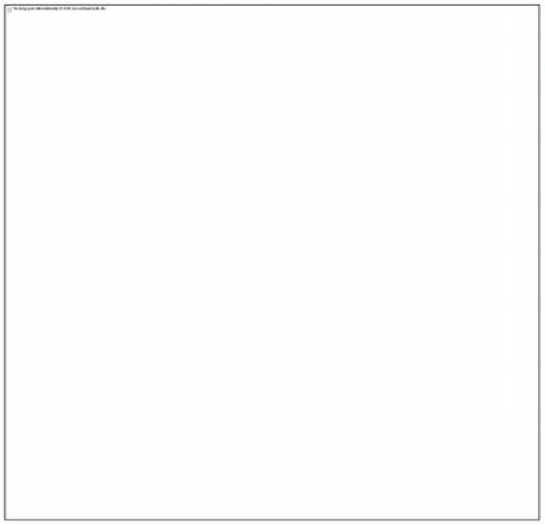
Data

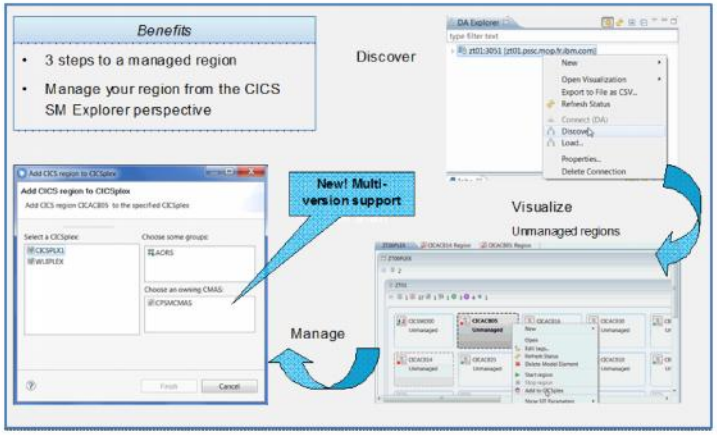
Consistent data management
Automated recovery

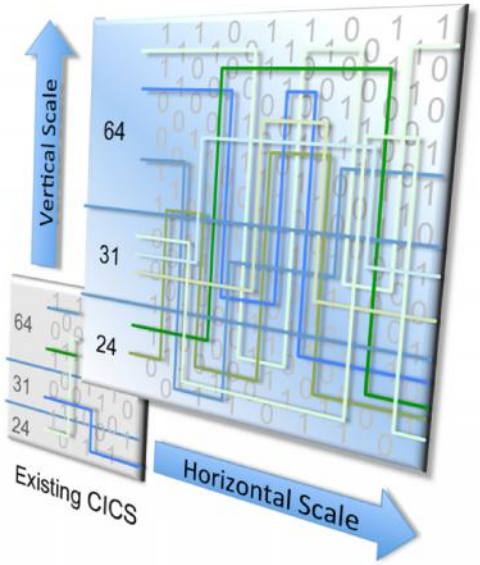
As a **System programmer,** they help me to optimize my applications, data, infrastructure, and processes

Three steps to CICS **optimization**

Optimize applications, systems, and processes to achieve more with less







Step 1

Threadsafe analysis and implementation to reduce CPU utilization by up to 20%

Step 2

Workload Management to cope with mobile scalability and availability needs

Step 3

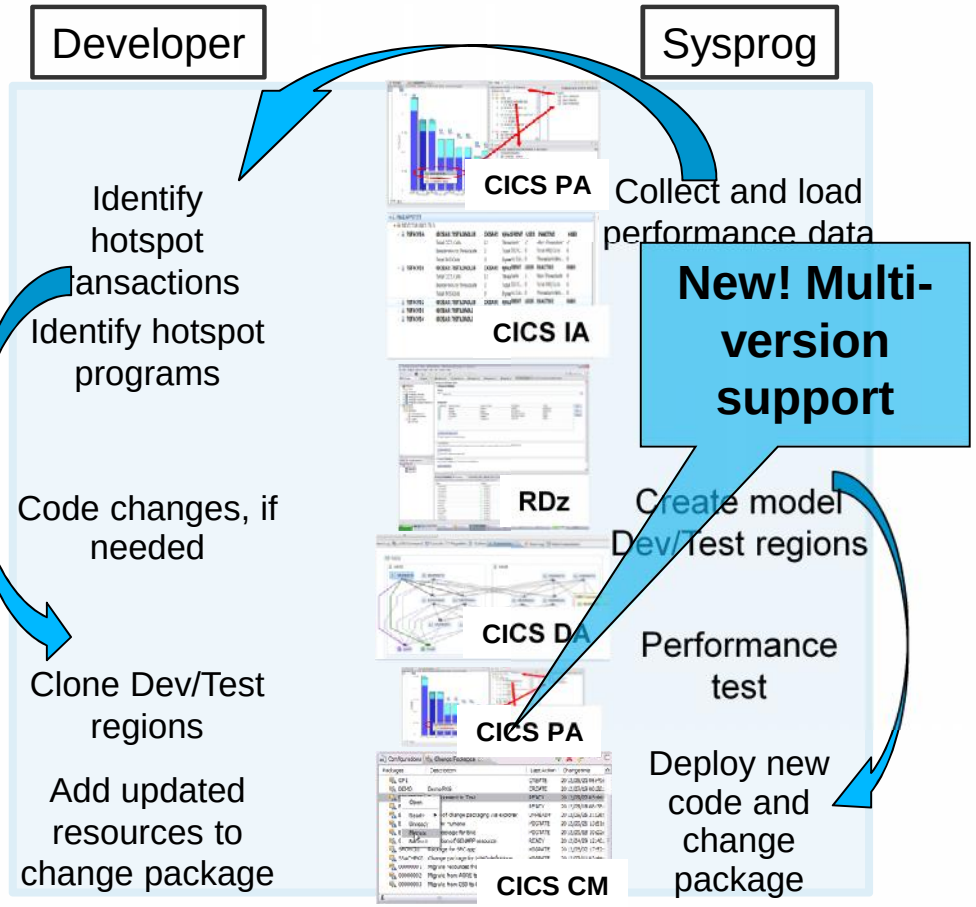
Region **Consolidation** to reduce management overhead and CPU utilization (up to 10%)

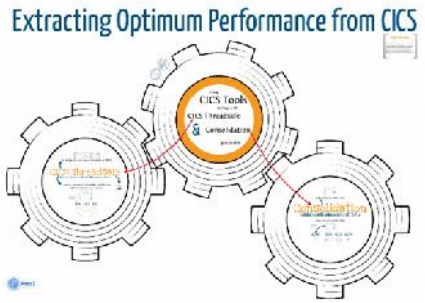
Humana.

*"**Improved application performance by 10–20 percent** and reduced the cost of processing claims, positioning it to handle growing numbers of claims"*

Threadsafe Optimization

Threadsafe analysis and implementation to reduce CPU utilization by up to **15%**





- Reduce CPU usage
- Defer capacity upgrades
- Improve response times
- Increase multi-processing

- Insight
- Analysis
- Change control

"By making only one major application threadsafe we were able to save 700 MIPS" *Major US Bank*

HUK-COBURG

HUK-COBURG
Aus Tradition günstig

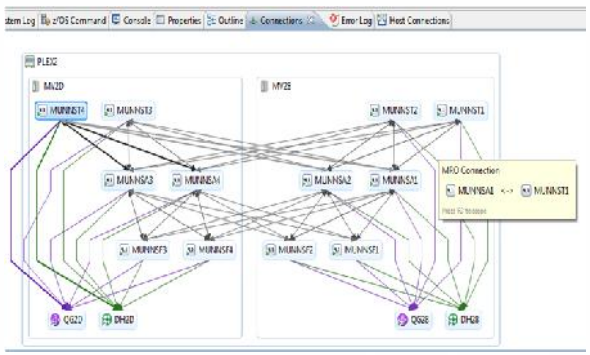
One of the largest insurance companies in Germany. Insures more than 8.5 million clients.

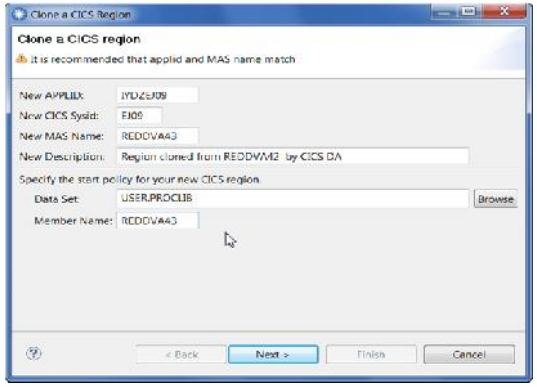
- Challenge
  - Reduce CPU usage in its IBM System z9® Enterprise Class mainframe to cut operating costs.
- Solution
  - Implemented threadsafe following hands-on usage of the IBM CICS tools (Performance Analyzer, Interdependency Analyzer, and Configuration Manager).
- Benefit
  - "We've embraced threadsafe functionality to **help us cut our CPU usage by 550 MIPs, or about US $440,000 in annual operating expense**, which really proves the efficiency of IBM CICS technology."

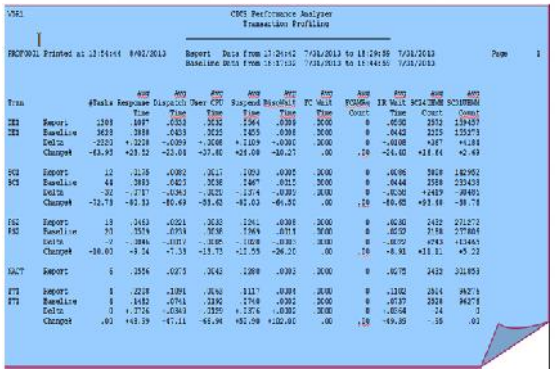
IBM Case Study

http://www-05.ibm.com/de/follow-z/pdf/Referenz-april-HUK-COBURG_EN.pdf

Availability workload management







1

Understand the system & application's performance and topology

2

Extend the environment and **implement** workload management definitions

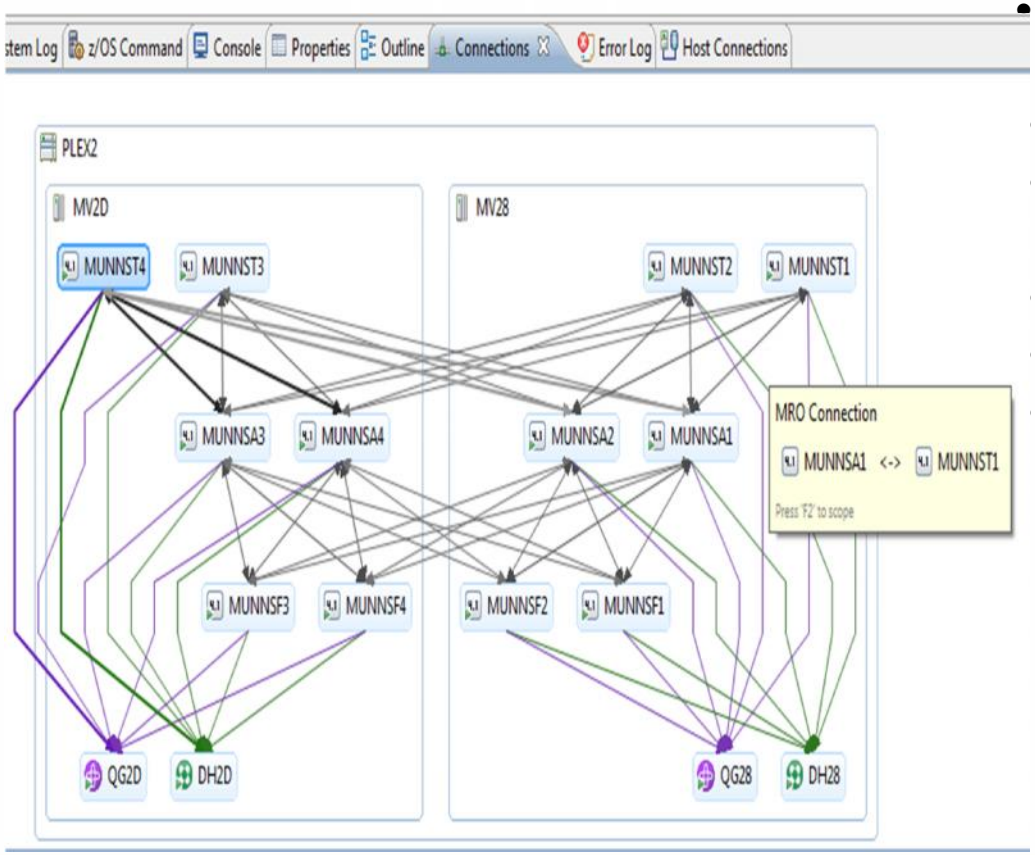
3

Validate the results

CICS Deployment Assistant for z/OS

Step 1

- Use CICS DA to Discover and Manage your CICS topology quickly.

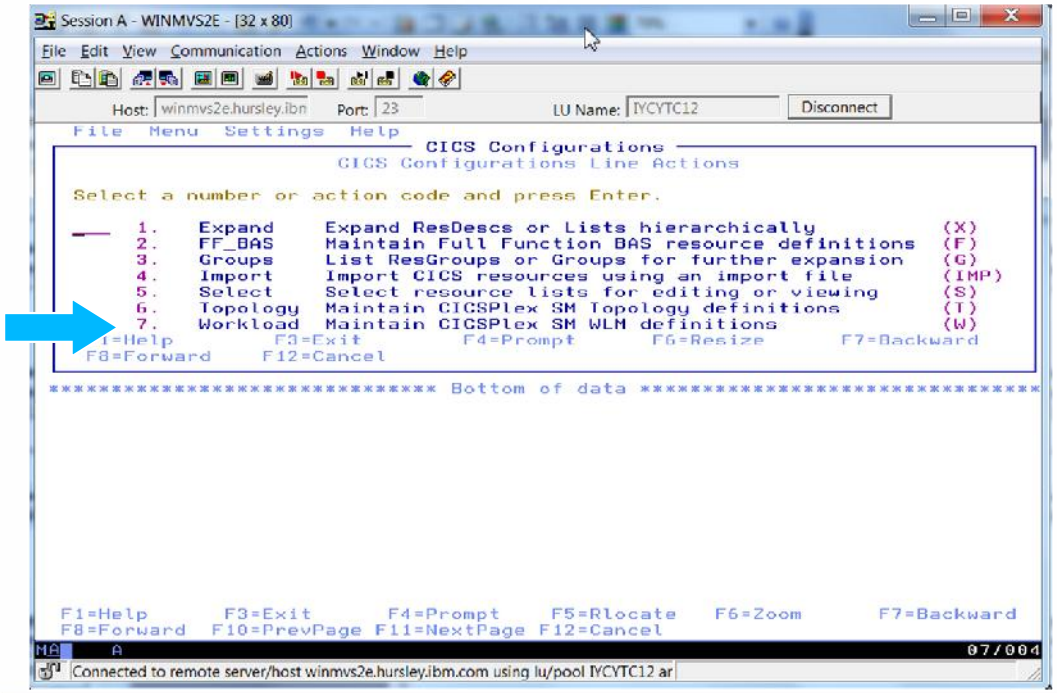


CICS DA provides…

- Visualize and manage your CICS topology
- Discover existing regions and sus-systems
  Clone Regions
  Automation creates new CICSplex
  Plexify and clone CICS regions
  Start and stop a CICS region
  Share model with other applications

Step 2

- With CICS CM - CICSPlex SM Topology and Workload Management resource types can be managed, so that you can reconfigure dynamic mobile workloads quickly.

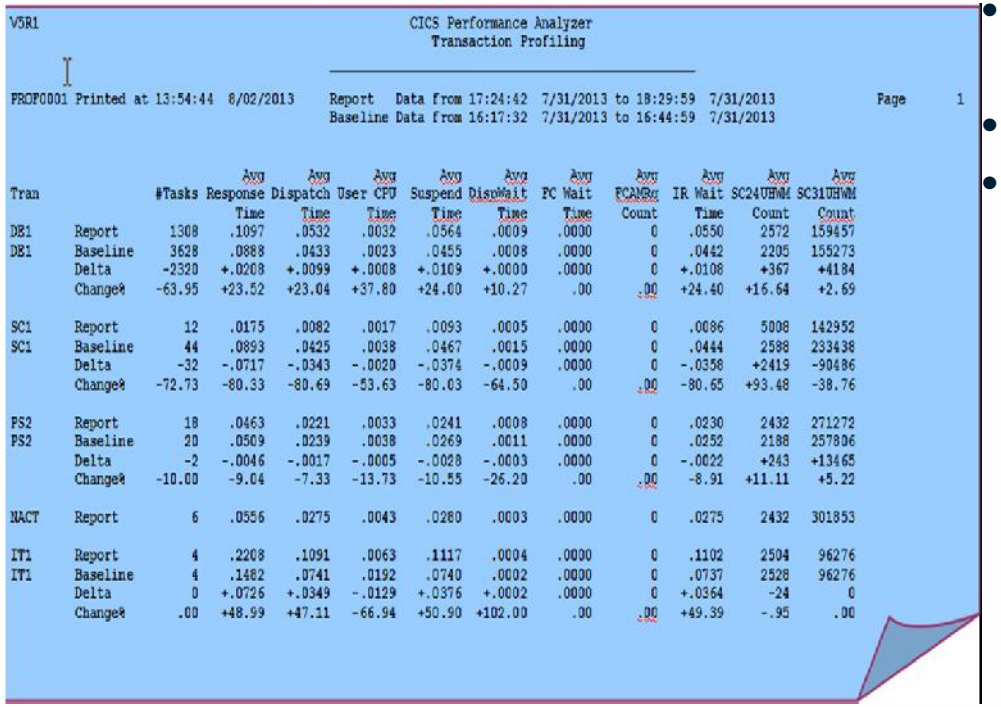


CICS CM provides…

- Manage changes throughout the life-cycle
- Create reports to identify redundant definitions, show resource relationships, and change management history
  Manage audit, back-out and change authorizations

Step 3

- Use CICS PA for performance analysis comparison of transactions using Transaction Profiling to Validate results.



V5R1 CICS Performance Analyzer
Transaction Profiling

PROF0001 Printed at 13:54:44 8/02/2013 Report Data from 17:24:42 7/31/2013 to 18:29:59 7/31/2013 Page 1
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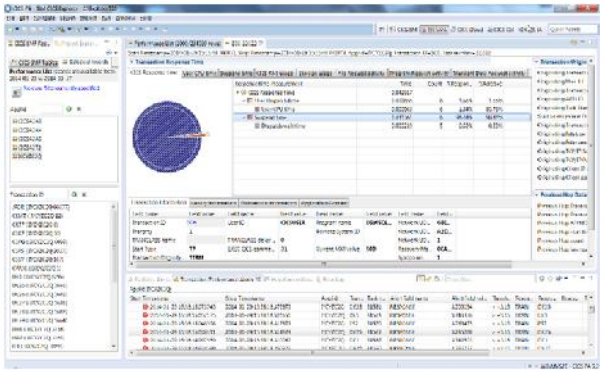
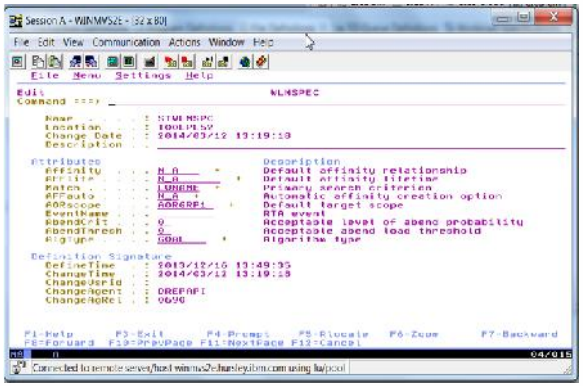
DE1	Report	1308	.1097	.0532	.0032	.0564	.0009	.0000	0	.0550	2572	159457
DE1	Baseline	3628	.0888	.0433	.0023	.0455	.0008	.0000	0	.0442	2205	155273
	Delta	-2320	+.0208	+.0099	+.0008	+.0109	+.0000	.0000	0	+.0108	+367	+4184
	Change%	-63.95	+23.52	+23.04	+37.80	+24.00	+10.27	.00	.00	+24.40	+16.64	+2.69
SC1	Report	12	.0175	.0082	.0017	.0093	.0005	.0000	0	.0086	5008	142952
SC1	Baseline	44	.0893	.0425	.0038	.0467	.0015	.0000	0	.0444	2588	233438
	Delta	-32	-.0717	-.0343	-.0020	-.0374	-.0009	.0000	0	-.0358	+2419	-90486
	Change%	-72.73	-80.33	-80.69	-53.63	-80.03	-64.50	.00	.00	-80.65	+93.48	-38.76
PS2	Report	18	.0463	.0221	.0033	.0241	.0008	.0000	0	.0230	2432	271272
PS2	Baseline	20	.0509	.0239	.0038	.0269	.0011	.0000	0	.0252	2188	257806
	Delta	-2	-.0046	-.0017	-.0005	-.0028	-.0003	.0000	0	-.0022	+243	+13465
	Change%	-10.00	-9.04	-7.33	-13.73	-10.55	-26.20	.00	.00	-8.91	+11.11	+5.22
NACT	Report	6	.0556	.0275	.0043	.0280	.0003	.0000	0	.0275	2432	301853
IT1	Report	4	.2208	.1091	.0063	.1117	.0004	.0000	0	.1102	2504	96276
IT1	Baseline	4	.1482	.0741	.0192	.0740	.0002	.0000	0	.0737	2528	96276
	Delta	0	+.0726	+.0349	-.0129	+.0376	+.0002	.0000	0	+.0364	-24	0
	Change%	.00	+48.99	+47.11	-66.94	+50.90	+102.00	.00	.00	+49.39	-.95	.00

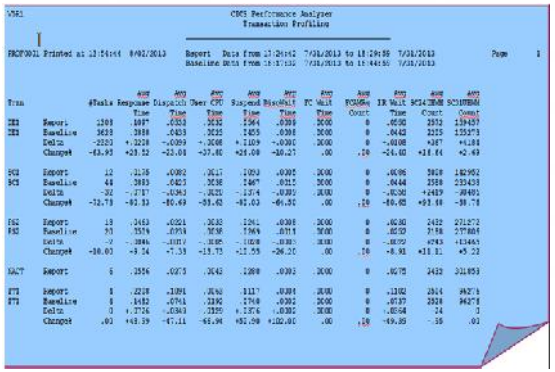
CICS PA provides…

- Comprehensive Performance Reporting
- Transaction tracking and action profiling reports
- Trending and capacity planning with historical database
- Faster problem resolution
- Evaluation and tuning of CICS system efficiency to improve system performance

Performance workload management







1

Understand current performance

2

Implement an adaptable workload management system

3

Validate the results

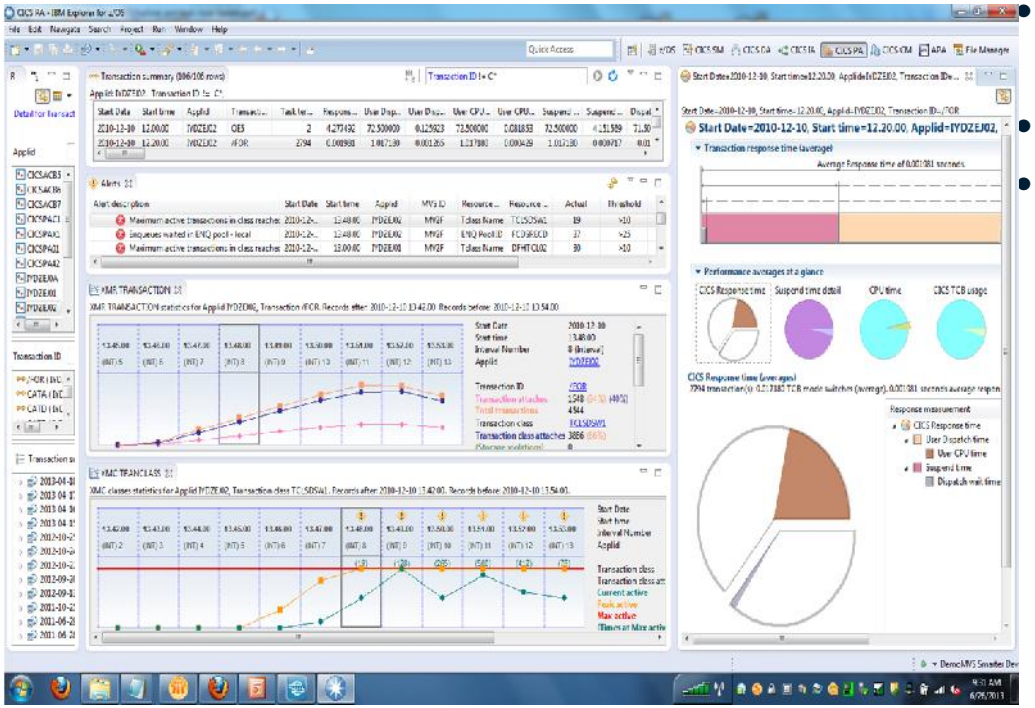
CICS Performance Analyzer for z/OS

Performance insight

IBM

Step 1

- Use CICS PA for performance analysis of individual transactions to determine problem transactions and evaluate areas for improvement.



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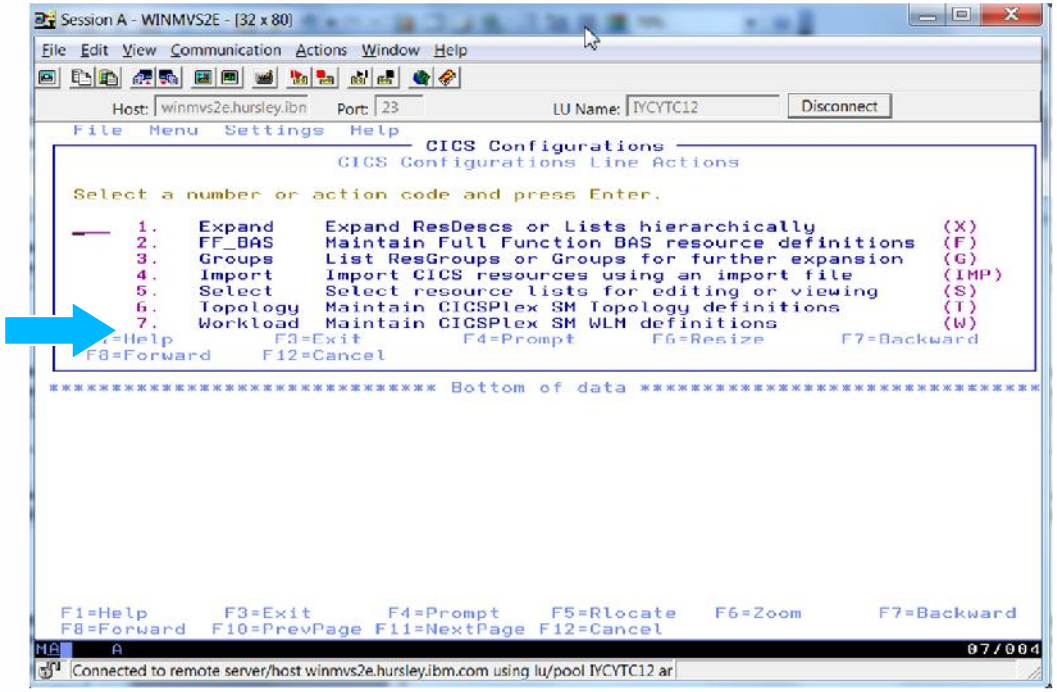

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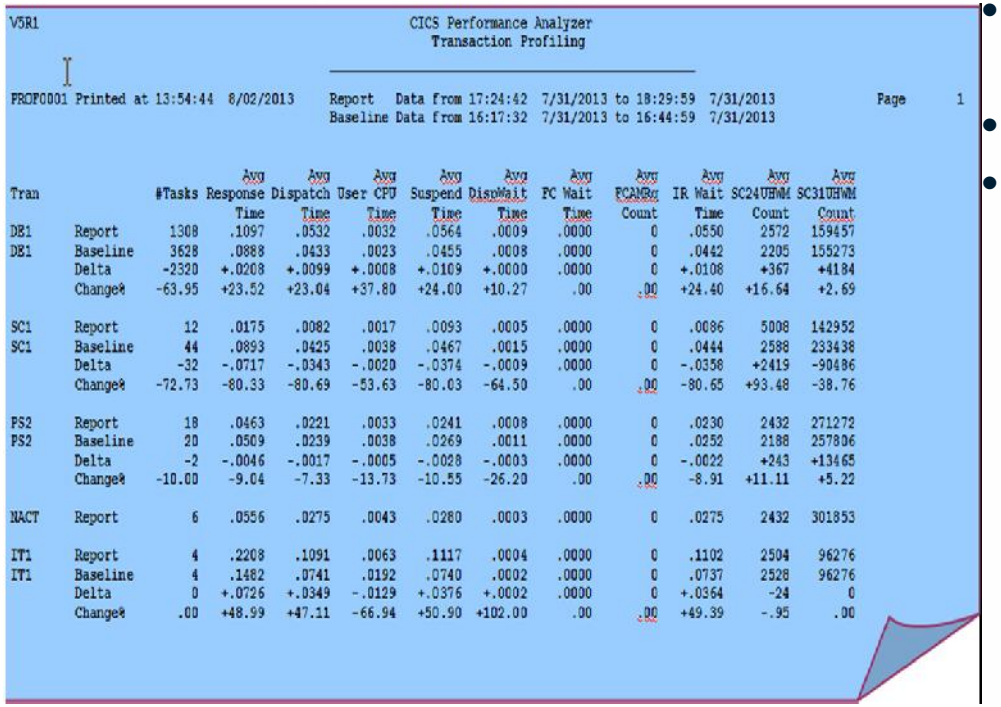

V5R1 CICS Performance Analyzer
Transaction Profiling

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DE1	Report	1308	.1097	.0532	.0032	.0564	.0009	.0000	0	.0550	2572	159457
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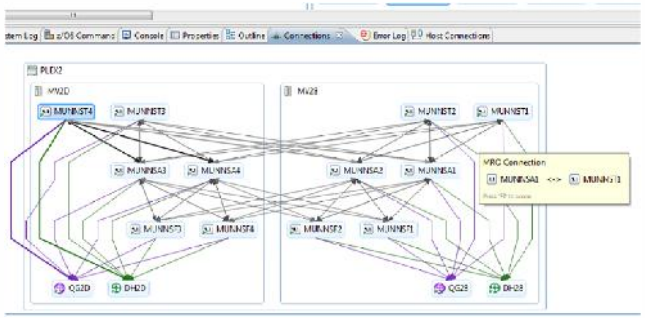
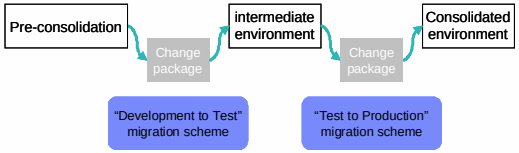
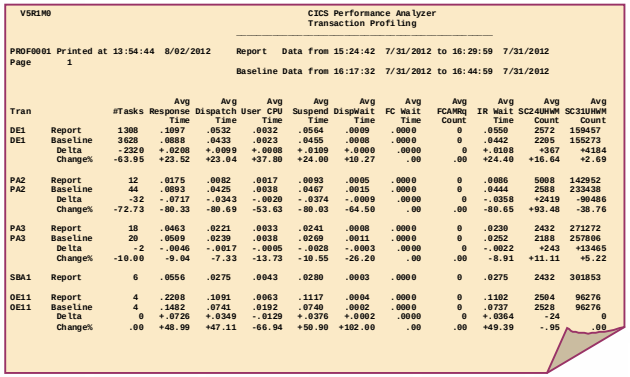
Consolidation

Region Consolidation to reduce CPU utilization (up to 10%) and management overhead







V5R1M0 CICS Performance Analyzer
Transaction Profiling

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SBA1	Report	6	.0556	.0275	.0043	.0280	.0003	.0000	0	.0275	2432	301853
OE11	Report	4	.2208	.1091	.0063	.1117	.0004	.0000	0	.1102	2504	96276
OE11	Baseline	4	.1482	.0741	.0192	.0740	.0002	.0000	0	.0737	2528	96276
	Delta	0	+.0726	+.0349	-.0129	+.0376	+.0002	.0000	0	+.0364	-24	0
	Change%	.00	+48.99	+47.11	-66.94	+50.90	+102.00	.00	.00	+49.39	-.95	.00

A

Step 1

Analysis and planning

B

Step 2

Implementation & tuning

C

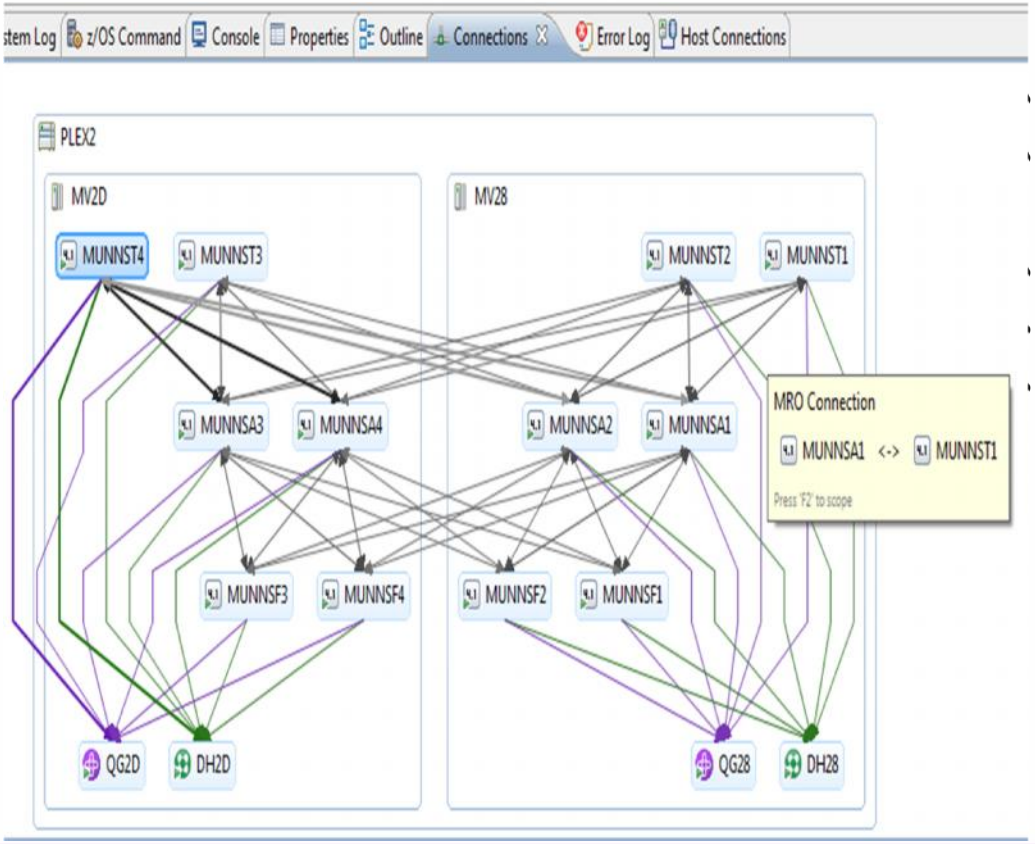
Step 3

Validation

CICS Deployment Assistant for z/OS

Step 1

- Use CICS DA to Discover and Manage your CICS topology quickly.



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- Automation creates new CICSplex
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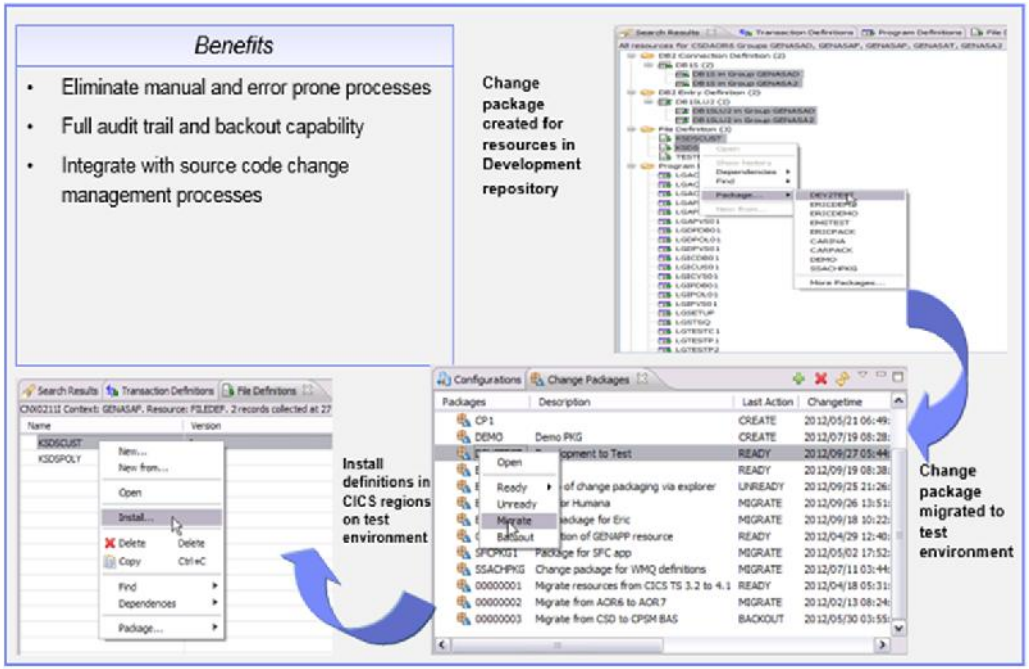
- Start and stop a CICS region
- Share model with other applications

Step 2

- Use CICS CM manage and consolidate resource definitions for CICS across multiple CICS regions.



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V5R1M0 CICS Performance Analyzer
Transaction Profiling

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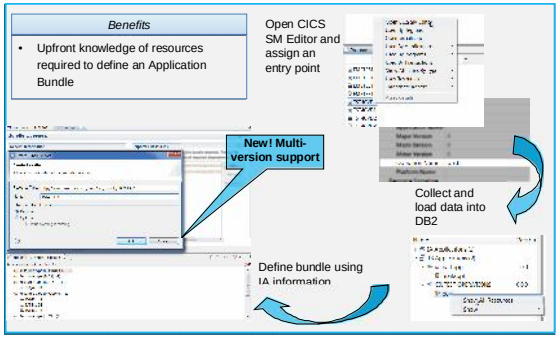
	Change%	-63.95	+23.52	+23.04	+37.80	+24.00	+10.27	.00	.00	+24.40	+16.64	+2.69
PA2	Report	12	.0175	.0082	.0017	.0093	.0005	.0000	0	.0086	5008	142952
PA2	Baseline	44	.0893	.0425	.0038	.0467	.0015	.0000	0	.0444	2588	233438
	Delta	-32	-.0717	-.0343	-.0020	-.0374	-.0009	.0000	0	-.0358	+2419	-90486
	Change%	-72.73	-80.33	-80.69	-53.63	-80.03	-64.50	.00	.00	-80.65	+93.48	-38.76
PA3	Report	18	.0463	.0221	.0033	.0241	.0008	.0000	0	.0230	2432	271272
PA3	Baseline	20	.0509	.0239	.0038	.0269	.0011	.0000	0	.0252	2188	257806
	Delta	-2	-.0046	-.0017	-.0005	-.0028	-.0003	.0000	0	-.0022	+243	+13465
	Change%	-10.00	-9.04	-7.33	-13.73	-10.55	-26.20	.00	.00	-8.91	+11.11	+5.22
SBA1	Report	6	.0556	.0275	.0043	.0280	.0003	.0000	0	.0275	2432	301853
OE11	Report	4	.2208	.1091	.0063	.1117	.0004	.0000	0	.1102	2504	96276
OE11	Baseline	4	.1482	.0741	.0192	.0740	.0002	.0000	0	.0737	2528	96276
	Delta	0	+.0726	+.0349	-.0129	+.0376	+.0002	.0000	0	+.0364	-24	0
	Change%	.00	+48.99	+47.11	-66.94	+50.90	+102.00	.00	.00	+49.39	-.95	.00

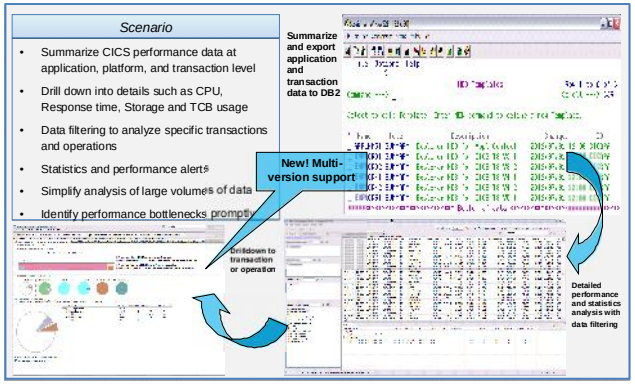
CICS PA provides…

- Comprehensive Performance Reporting
- Transaction tracking and action profiling reports
- Trending and capacity planning with historical database
- Faster problem resolution
- Evaluation and tuning of CICS system efficiency to improve system performance

Three steps to **CICS Cloud enablement**

Support CICS cloud initiatives to simplify system management and rapid application deployment.





Step 1

Analysis and definition of CICS cloud **Applications**

Step 2

Plan and build CICS cloud **Platforms**

Step 3

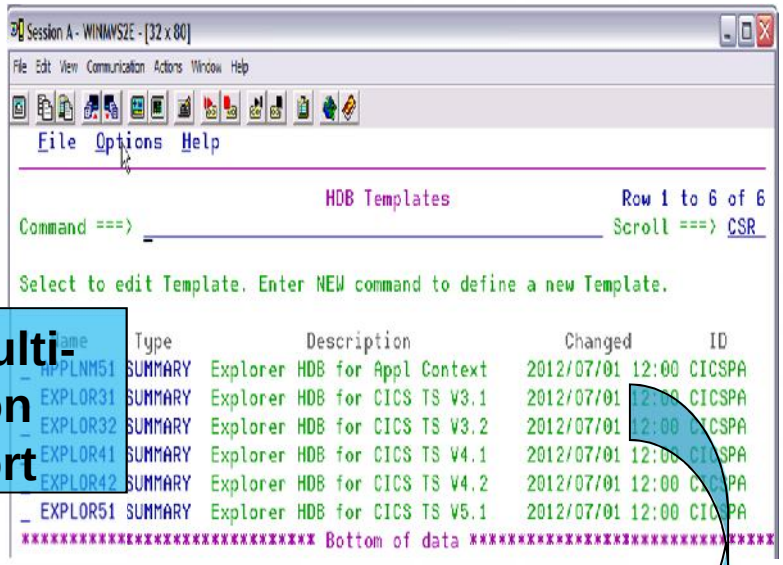
Deploy and manage CICS cloud **Applications** and **Platforms**

CICS PA gives CICS cloud Performance insight

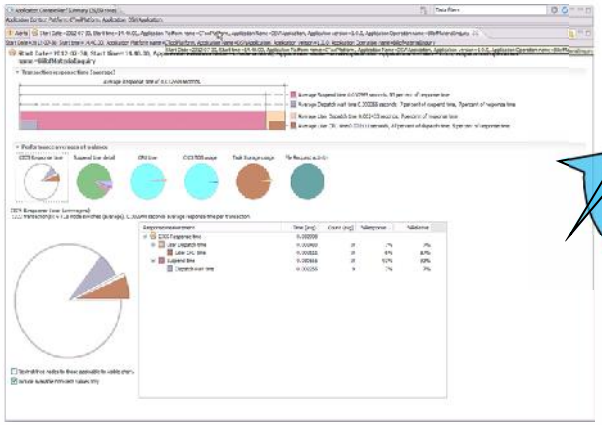
Scenario

- Summarize CICS performance data at application, platform, and transaction level
- Drill down into details such as CPU, Response time, Storage and TCB usage
- Data filtering to analyze specific transactions and operations
- Statistics and performance alerts
- Simplify analysis of large volumes of data
- Identify performance bottlenecks promptly

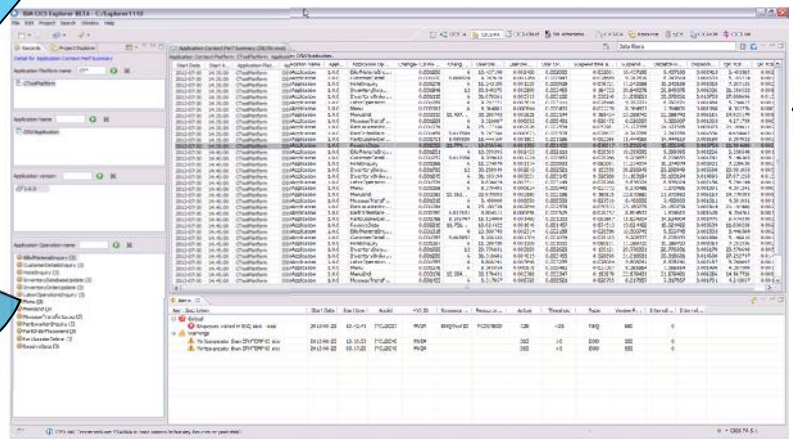
Summarize and export application and transaction data to DB2



New! Multi-version support



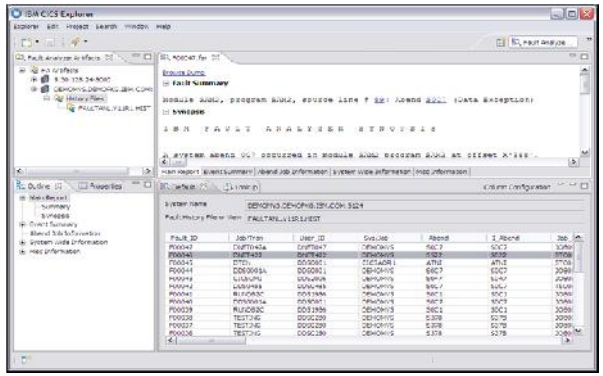
Drilldown to transaction or operation



Detailed performance and statistics analysis with data filtering

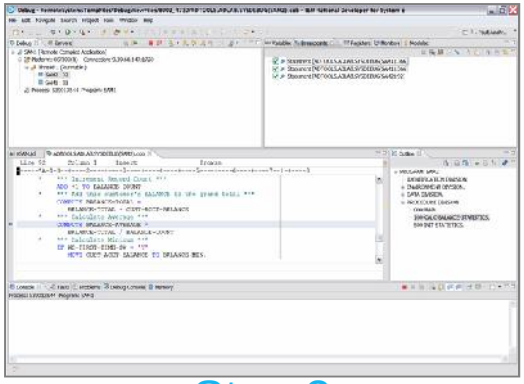
Three steps to **Problem Diagnosis**

Faster problem identification and resolution



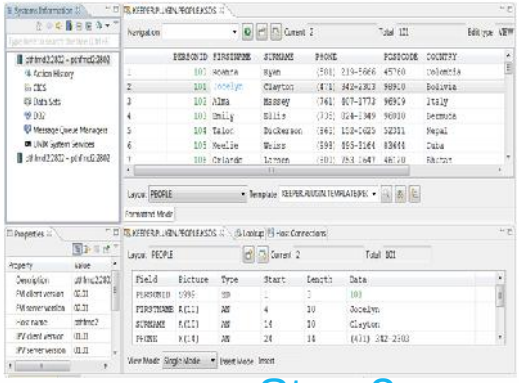
Step 1

Automated fault and performance alerts with diagnostic advice



Step 2

Drill-down into problems with analysis tools



Step 3

Fix problem, for example, make a change in data

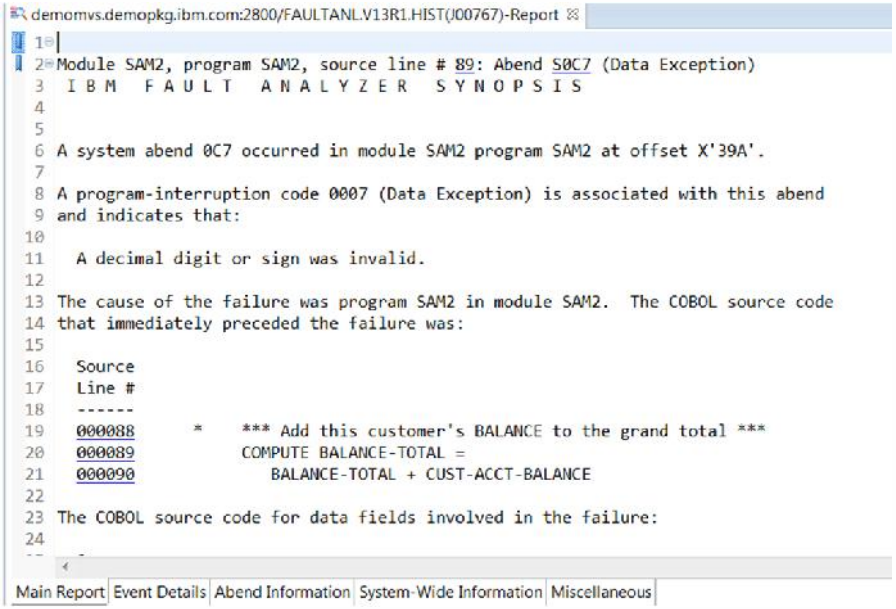
HSBC
En Argentina y en el mundo, HSBC

"We've **increased programmer productivity by 10 percent** and cut development costs. Not only that, but we've **experienced significant decreases in the number of transaction failures** within our applications." Roberto L De Hoz, manager mainframe support, HSBC Bank Argentina S.A

IBM Fault Analyzer

Step 1

- Use Fault Analyzer to provide detailed information on the instructions and variables involved at the time of the Abend.



- **IBM Fault Analyzer** improves developer productivity and decreases deployment costs by helping to analyze and correct application failures quickly (CICS/DB2/IMS/MQ/COBOL/PLI/ASM/ C/C++/ASM/JAVA).
- Develop and test new and existing applications more productively, helping to reduce costs along the way.
- Proven 3270-based interface and free graphical user interface.

Helps to identify the cause, analyze the failure, and fix the problem

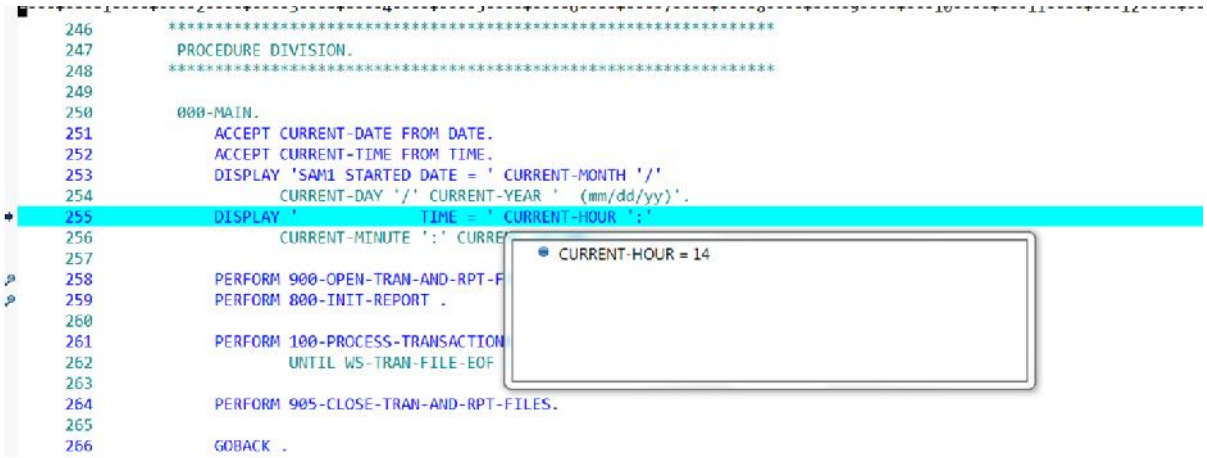
IBM Debug Tool

Step 2

- Use IBM Debug Tool to test and determine if the cause of the abend is logic or data.

  •The powerful and user friendly GUI interface provides productivity for the end users.

- **IBM Debug Tool** can help you increase debugging efficiencies and reduce application development cycle times.
- Program testing and analysis aid that helps you examine, monitor, and control the execution of application programs on z/OS (CICS/DB2/IMS/ COBOL/PLI/ASM,C/C++/ASM/JAVA w Toolkit)
- Code Coverage Analytics
- Proven 3270-based interface and free graphical user interface.



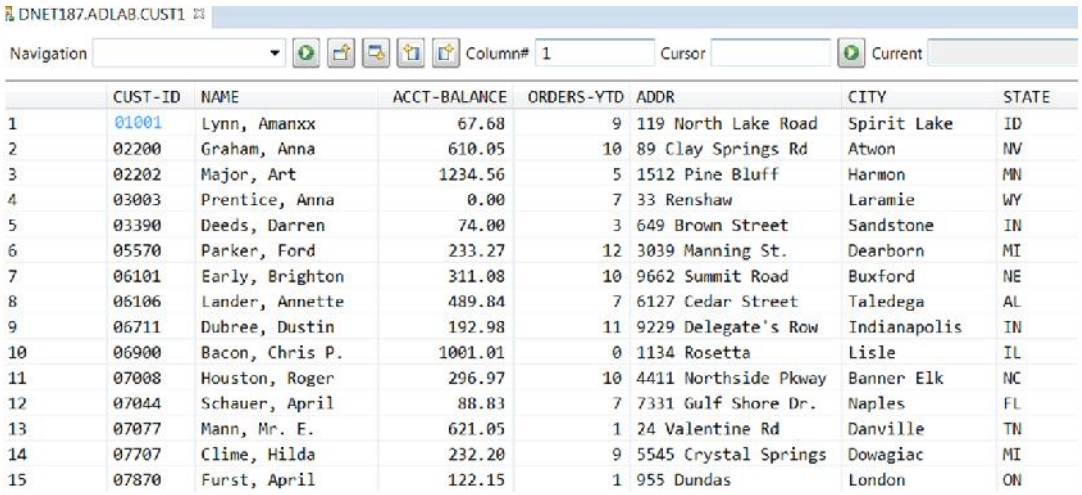
Source code debugging to improve development productivity

IBM File Manager

Step 3

- Use File Manager to manipulate data when working with z/OS data sets, DB2, CICS, IMS or WebSphere MQ data.

- **IBM File Manager** allows you to manage production, test, and development data across multiple formats and storage media.
- Create, edit, copy, browse, extract, print, and compare enterprise data (VSAM/DB2/IMS,CICS/MQ)
- 3270-based interface and graphical user interface.


DNET187.ADLAB.CUST1

Navigation | Column# 1 | Cursor | Current

	CUST-ID	NAME	ACCT-BALANCE	ORDERS-YTD	ADDR	CITY	STATE
1	01001	Lynn, Amanxx	67.68	9	119 North Lake Road	Spirit Lake	ID
2	02200	Graham, Anna	610.05	10	89 Clay Springs Rd	Atwon	NV
3	02202	Major, Art	1234.56	5	1512 Pine Bluff	Harmon	MN
4	03003	Prentice, Anna	0.00	7	33 Renshaw	Laramie	WY
5	03390	Deeds, Darren	74.00	3	649 Brown Street	Sandstone	IN
6	05570	Parker, Ford	233.27	12	3039 Manning St.	Dearborn	MI
7	06101	Early, Brighton	311.08	10	9662 Summit Road	Buxford	NE
8	06106	Lander, Annette	489.84	7	6127 Cedar Street	Taledega	AL
9	06711	Dubree, Dustin	192.98	11	9229 Delegate's Row	Indianapolis	IN
10	06900	Bacon, Chris P.	1001.01	0	1134 Rosetta	Lisle	IL
11	07008	Houston, Roger	296.97	10	4411 Northside Pkway	Banner Elk	NC
12	07044	Schauer, April	88.83	7	7331 Gulf Shore Dr.	Naples	FL
13	07077	Mann, Mr. E.	621.05	1	24 Valentine Rd	Danville	TN
14	07707	Clime, Hilda	232.20	9	5545 Crystal Springs	Dowagiac	MI
15	07870	Furst, April	122.15	1	955 Dundas	London	ON

Data management tool supporting key file structures like VSAM, DB2, CICS, and IMS

Summary

- Fault Analyzer - Faster problem determination and resolution. Understand what happened, program, where it happened, context within the source code, the variables involved and the value of the variables at the time the exception occurred. Point and shoot navigation and explanation of error messages and codes, GUI interface provides productivity for users.

- Debug Tool - Recreate the issue to determine if the problem is Data or Logic related. Test / validate code changes. Use Code Coverage to determine if all changed code was tested.

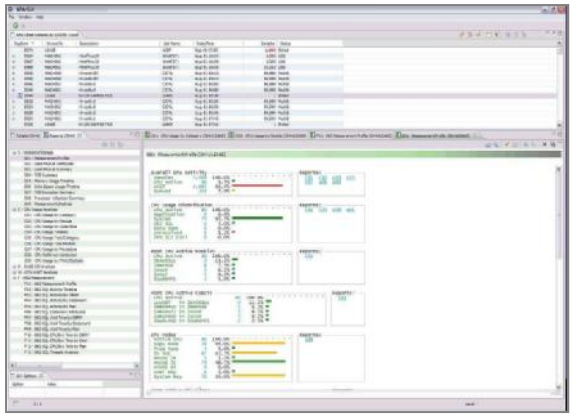
- File Manager - Provides a quick and easy method to access, manipulate or correct VSAM, DB2,IMS, MQ, CICS, zFiles/HFS data.

Three steps to **Performance Problem Elimination**

Looking for Trouble?

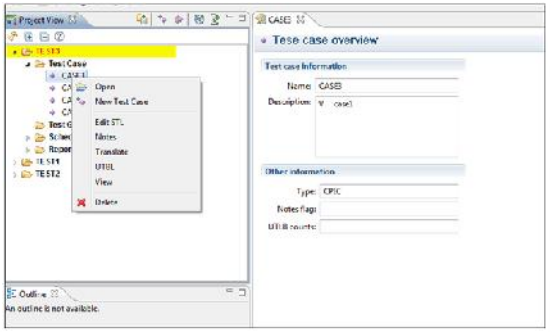
Step 1

Identify CICS transaction needing response time improvement



Step 2

Understand transaction's resource consumption at much deeper level



Step 3

Test changes and measure results to ensure success

U.S. credit card services company used APA to improve performance by **3x**"

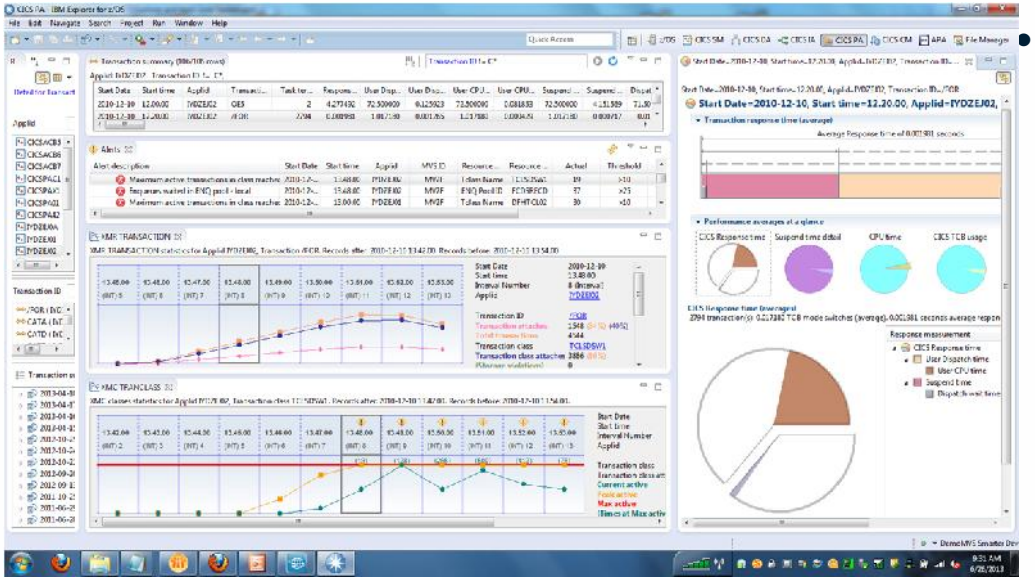
CICS Performance Analyzer for z/OS

Performance insight

IBM

Step 1

- Use CICS PA for performance analysis of individual transactions to determine problem transactions and evaluate areas for improvement.



CICS PA provides…

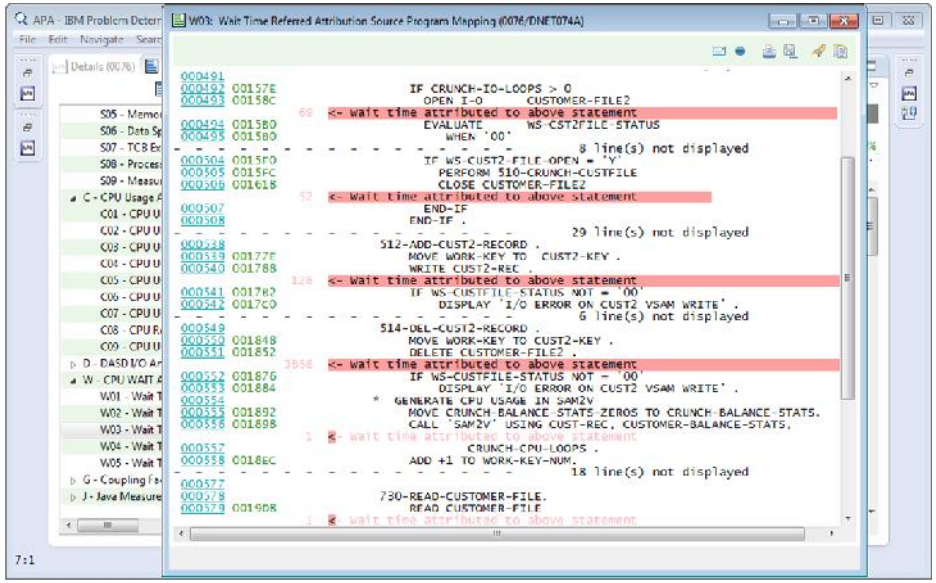
- Comprehensive Performance Reporting
- Transaction tracking and action profiling reports
- Trending and capacity planning with historical database
- Faster problem resolution
- Evaluation and tuning of CICS system efficiency to improve system performance

IBM Application Performance Analyzer

Step 2

- Use IBM Application Performance Analyzer to monitor and drill down to subsystem details and the source instructions to determine statements causing bottlenecks.

- **IBM Application Performance Analyzer** helps maximize the performance of your applications and improve the response time of your online transactions and batch turnaround.
- Identify constraints and improve the entire application's performance no matter where the problem resides (CICS/ IMS/DB2/MQ/COBOL/PLI/ ASM/JAVA)
- 3270-based interface and graphical user interface.

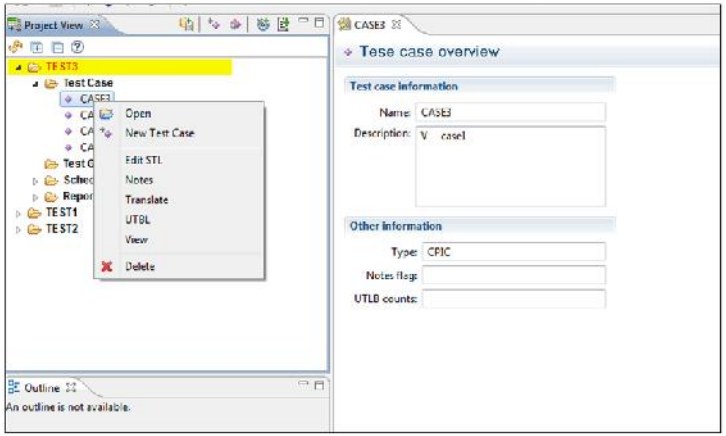


Monitor and optimize performance at the application level

IBM Workload Simulator

Step 3

- Use IBM Workload Simulator to perform stress, performance and capacity testing of applications.



- **IBM Workload Simulator** helps eliminate the need for large amounts actual users and time for testing.
- Ideal for stress, performance, regression, function, and capacity planning tests.
- 3270-based interface and graphical user interface.

Simulates a network of users doing actual work on the application.

Summary

- CICS Performance Analyzer - Analyze CICS transactions for history and trending to determine if a problem is occurring due to changes in the application or changes in the CICS environment where the application(s) execute. Choose candidate transactions for detailed analysis using APA

- Application Performance Analyzer - Monitor and analyze transactions to provide details on where time is being spent and resources are being consumed in an application, and areas for improvement. Use APA in the test environment to evaluate changes made using report compare feature.

- Workload Simulator - Provides the ability to create test cases for regression and stress testing for proactive analysis of the effect of change on applications. Simulate workload and number of users for analysis of increased workload.

Three steps to **Financial optimization**

Get more for your money

$

Step 1

Replace 3rd party products with IBM z/OS Tools

$$

Step 2

Save even more with IBM Solution Packs

$$$

Step 3

Move OpEx to CapEx with CICS TS VUE

Replace 3rd party products with IBM z/OS Tools

- Affordable Pricing - generally 25+% less than ISV
- All Inclusive of Languages - COBOL, PL/I, Assembler, C/C++
- All Inclusive of Subsystems - CICS, IMS, DB2, MQ, WAS
- SMP/E Installed and Maintained - reduces impact on Systems Staff
- Can be pre-installed as part of a z/OS upgrade - reduces impact on System Staff
- No Software Keys - reduces impact on Systems Staff / Supports Disaster Recovery Strategy for Testing / Implementation
- Includes both 3270 and Workstation Interfaces - no additional charges, no additional licensing, no per seat limits

Save even more with IBM Solution Packs

Convenience and affordability

CICS Optimization Solution Pack for z/OS V5.2

Quickly optimize performance and availability of CICS systems and applications with Interdependency Analyzer, CICS Deployment Assistant, CICS Performance Analyzer, CICS Configuration Manager

CICS Modernization Solution Pack for z/OS V5.2

Understand deployed CICS application and system resources, connect from non-mainframe devices, and create CICS infrastructure to support the increased workload with CICS Interdependency Analyzer, CICS Deployment Assistant, CICS Transaction Gateway for z/OS

IBM Problem Determination Solution Pack for z/OS

Cost effective problem analysis for z/OS sub-systems and languages with both GUI & 3270 interface with File Manager, Fault Analyzer, Debug Tool for z/OS, Workload Simulator, Hour Glass, Data Set Commander

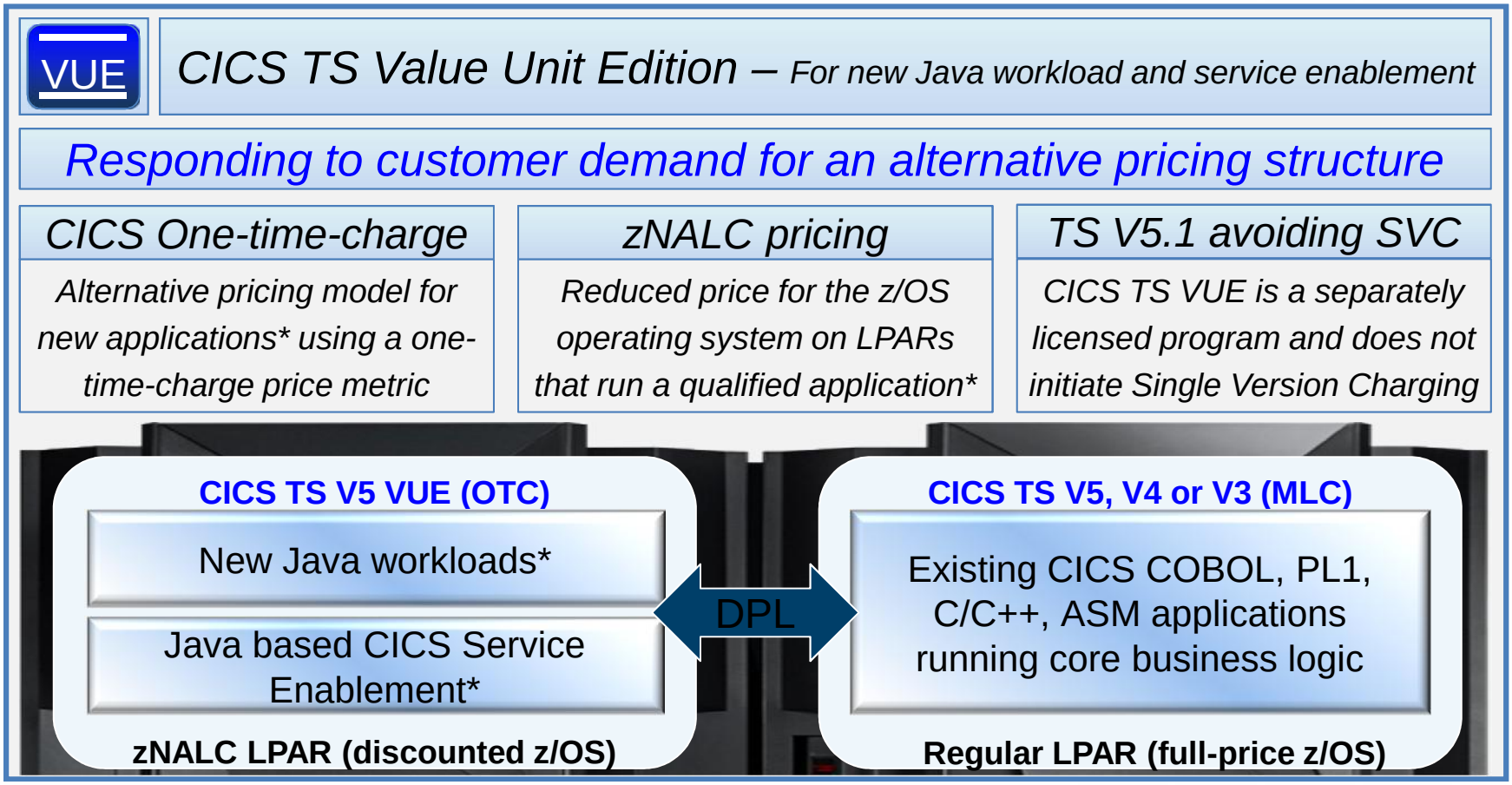
IBM Problem Determination Testing Solution Pack for z/OS V1.1

Reduce testing time, improve application reliability and user diagnosis capabilities, and improving user's ability to regulate and monitor testing activities with Debug Tool, Workload Simulator, Hour Glass

IBM Problem Determination Modernization Solution Pack for z/OS V1.1

Address your problem analysis needs and provides tools that decrease development time, improve performance and reliability and reduce diagnosis time with Application Performance Analyzer, Debug Tool, Fault Analyzer, File Manager

Move OpEx to CapEx with CICS TS VUE



* zNALC approval is required for each application

More information

- Web pages
  - http://ibm.com/cics
  - http://ibm.com/cics/showcase
  - http://ibm.com/cics/tools
  - http://ibm.com/software/awdtools/deployment
- Analyst reports
  - IBM CICS Tools: Discovery and Optimization for the Next Generation link
  - IBM PD Tools – leads the pack again link
- Threadsafety & Consolidation - extracting optimum performance from CICS Prezi YouTube
- Social media
  - Like CICS on Facebook at CICS Hursley or WebSphere and CICS Support
  - Watch videos on YouTube - CICS and CICS Tools and IBM System z PD Tools
  - View presentations on Slideshare
  - Follow IBM_CICS on Twitter http://www.ibm.com/support/docview.wss?uid=swg21384915
  - See multiple channels by using the CICS Social Media Aggregator.
- Subscribe to
  - CICSbuzz for the latest newshttp://www-01.ibm.com/software/htp/cics/enews/
  - Debug Tool newsletter http://www-01.ibm.com/support/docview.wss?uid=swg21422089