

Optimizing applications and data for mobile workloads

Track 3: Extending the mainframe to the mobile enterprise



Where we are in today's 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

Reduce

- Cost
- Risk
- Complexity
- Outage

Manage

- Operational efficiency
- Critical business data
- Security & Compliance
- Skills and resources

Deliver

- Service agility
- Business Intelligence
- Mobile solutions
- Cloud solutions



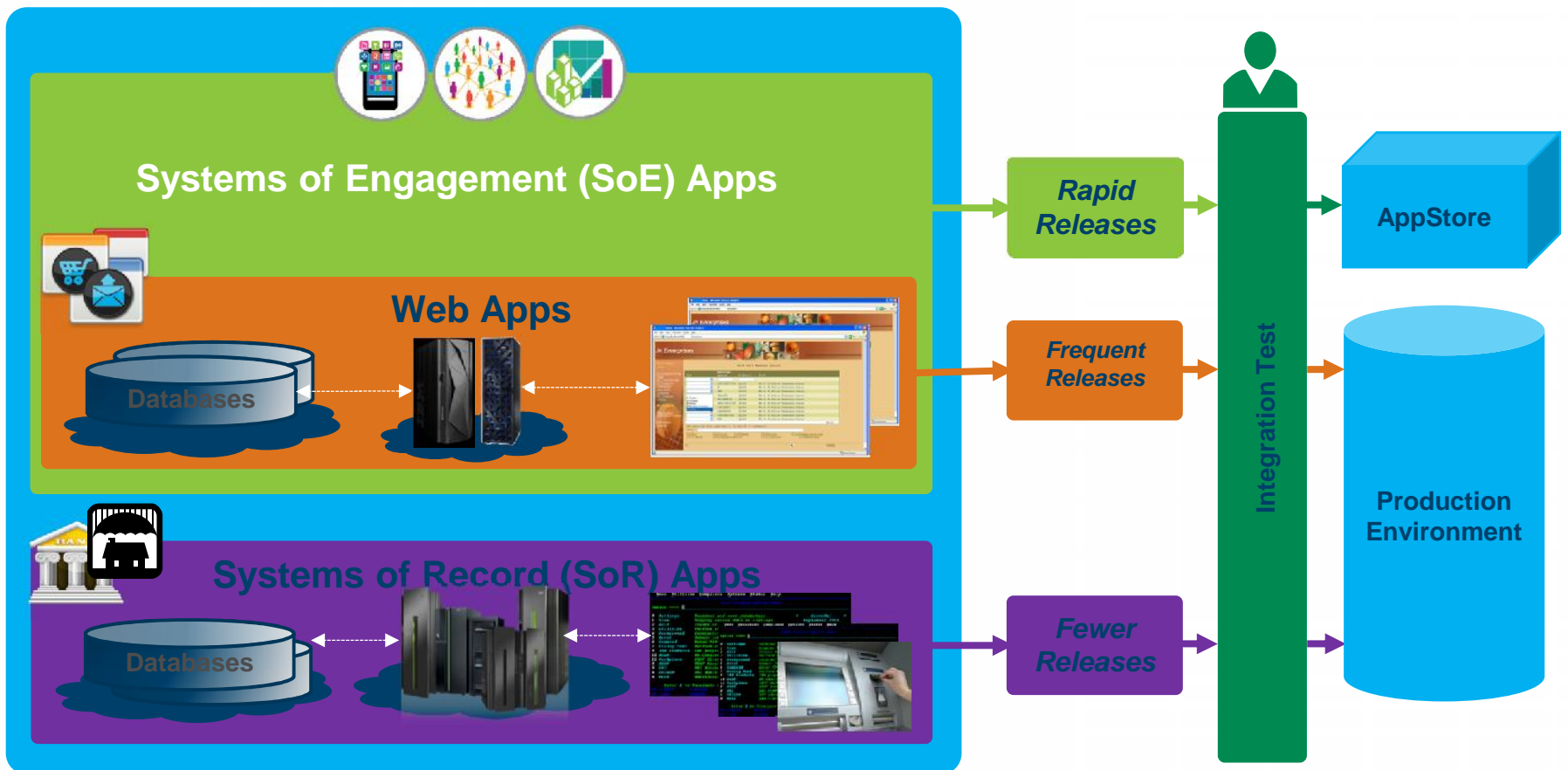
“Agility and accessibility will make the successful organization of the future.”



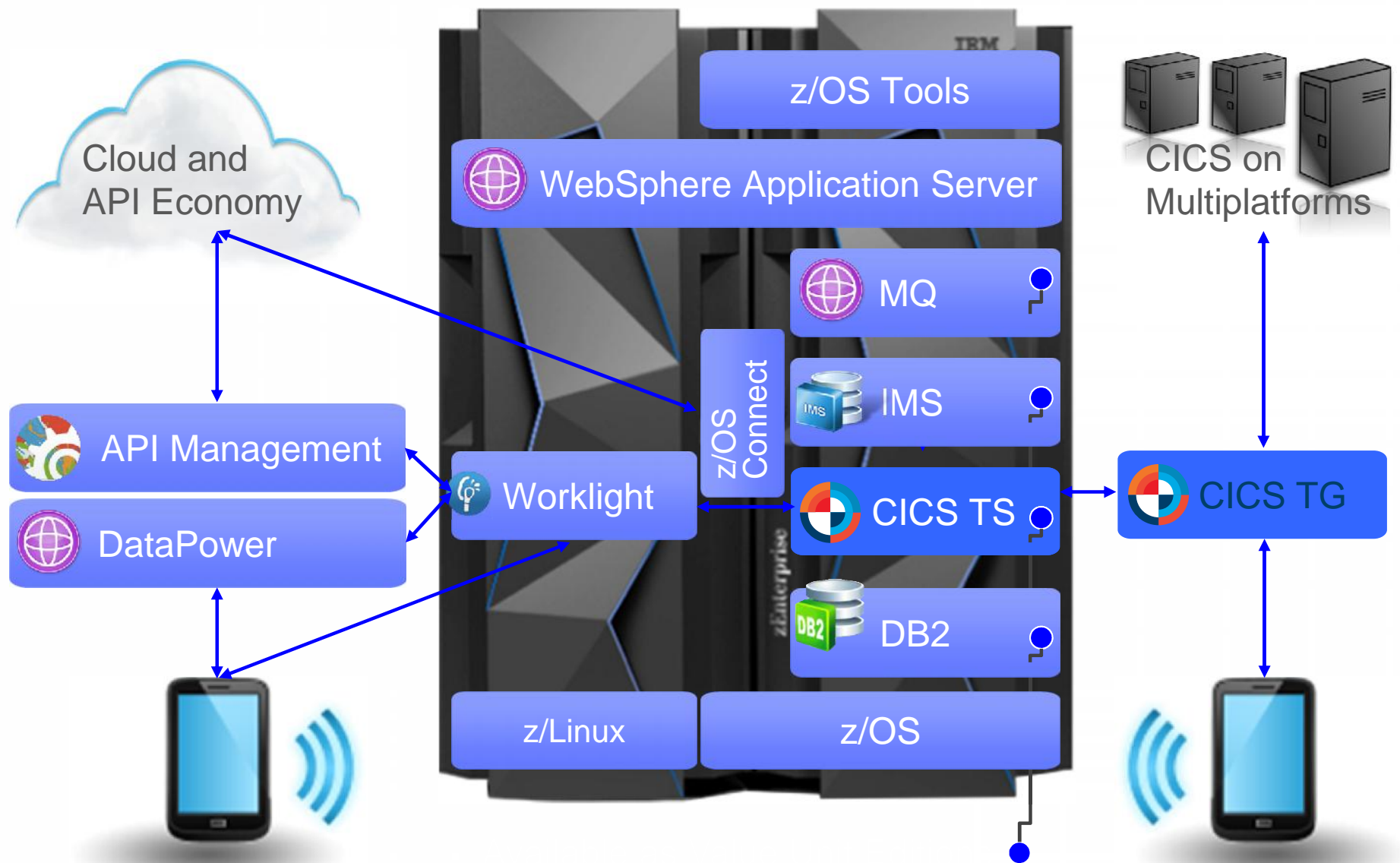
Digital technologies lead CIO technology priorities

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

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



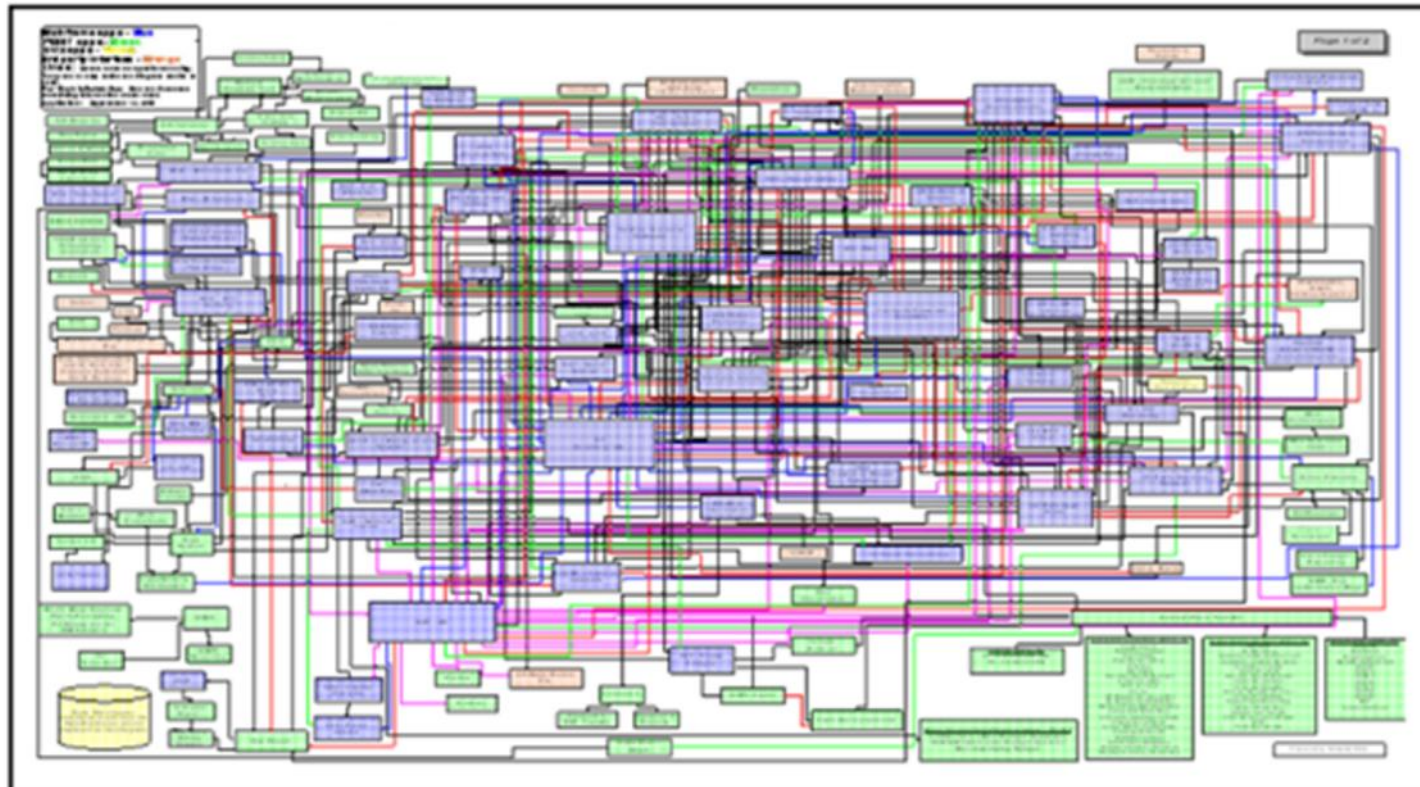
Systems of Record can be complex systems built on decades of continuous & incremental development



Change?

Fix problems?

Optimize?



Modernize?

Where do I start?

Re-use?

Applications

Performance improvement, performance trending, capacity planning

Infrastructure

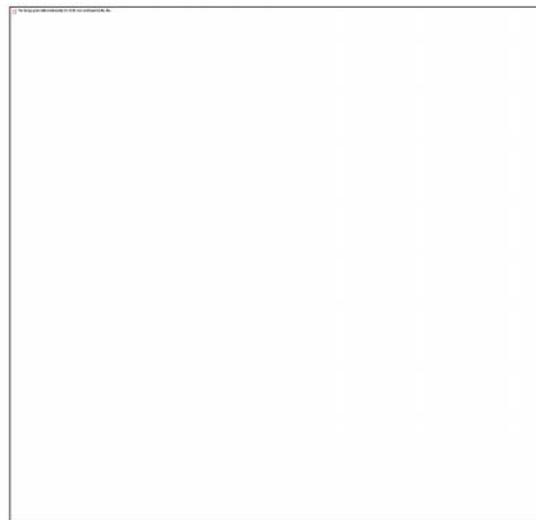
Workload management
Application configuration
Region provisioning

Data

Consistent data management
Automated recovery

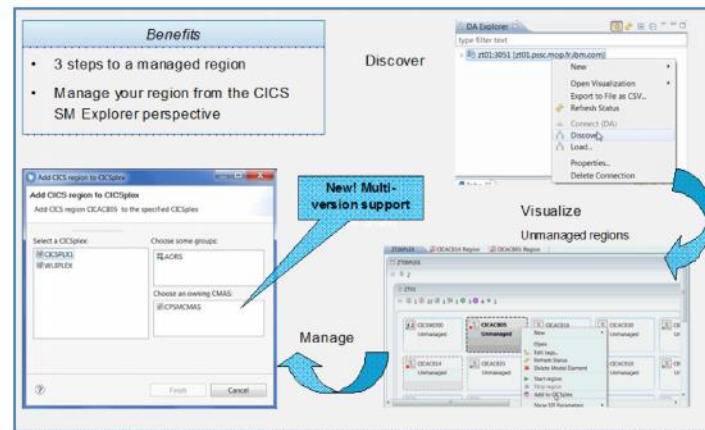
As a **System programmer**, they help me to optimize my applications, data, infrastructure, and processes

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



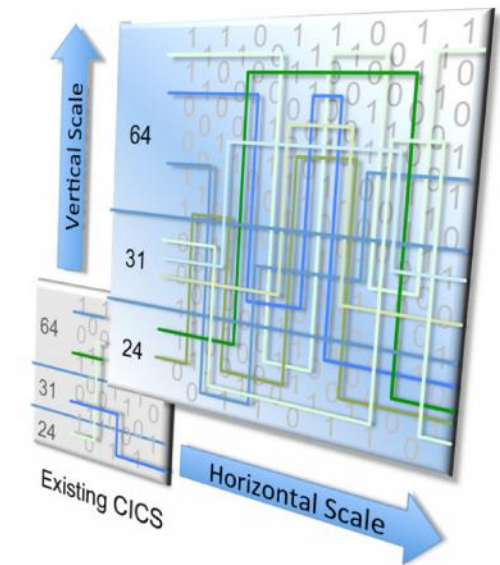
Step 1

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

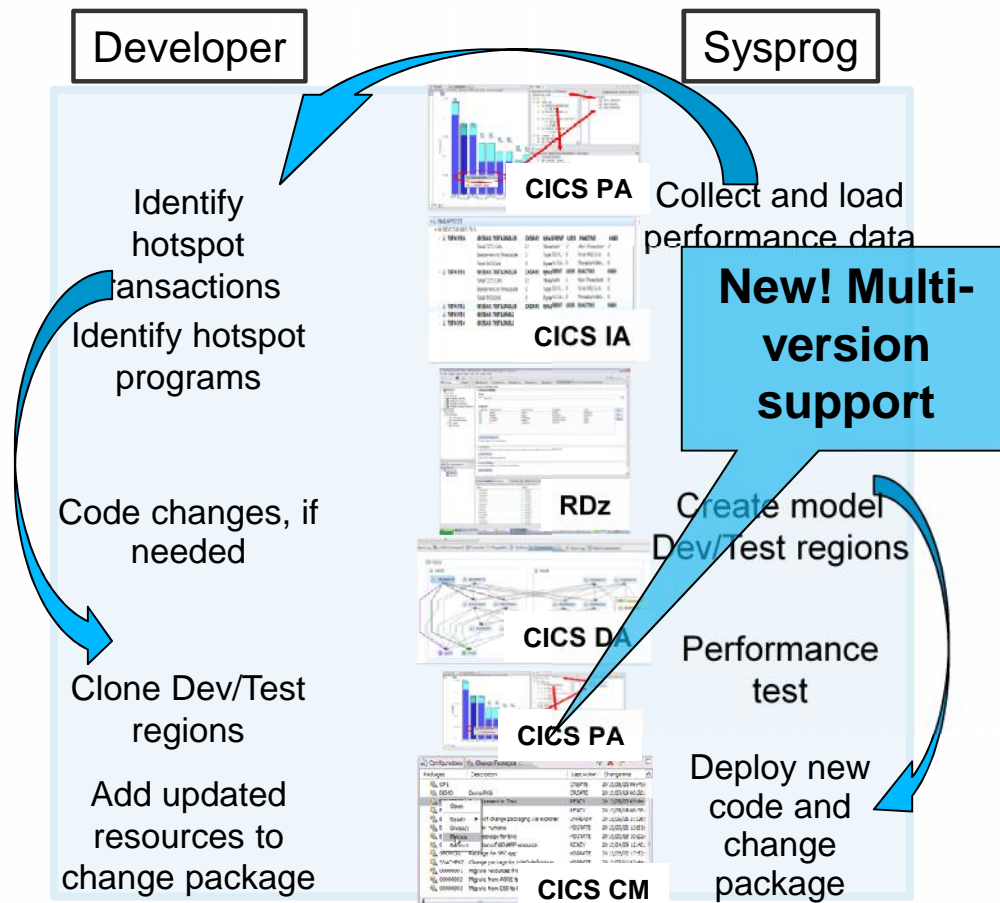
Region Consolidation to reduce management overhead and CPU utilization (up to 10%)

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

Extracting Optimum Performance from CICS



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
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).

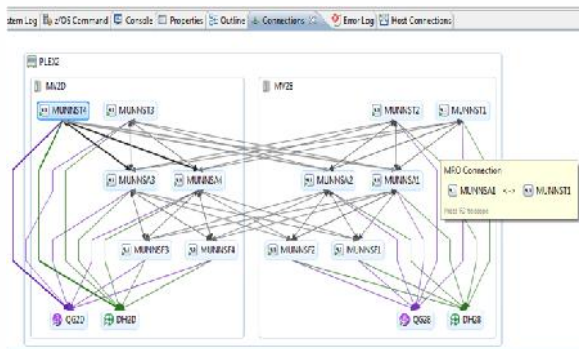
▪ **Benefit**

- ▶ “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

A screenshot of the 'Clone a CICS region' dialog box. The dialog box contains the following fields and options:

- New APPLID: IYDZEX09
- New CICS Sysid: F105
- New MAS Name: REDDVA43
- New Description: Region cloned from REDDVM2 by CICS DA
- Specify the start policy for your new CICS region
- Data Set: USER.PROCLIB (with a 'Browse...' button)
- Member Name: REDDVA43

Buttons at the bottom: < Back, Next >, Finish, Cancel!

2

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

A screenshot of a CICS Performance Analyzer report. The report title is 'CICS Performance Analyzer Transaction Profile'. The report shows a table of performance data for various transactions. The table has columns for Transaction, #Tasks, Response Time, Dispatch Over Time, Suspended Dispatch Over Time, PC Wait, FC Wait, IR Wait, SC Wait, and Count. The report is printed at 11:51:11 AM on 09/21/2013.

Trans	#Tasks	Response Time	Dispatch Over Time	Suspended Dispatch Over Time	PC Wait	FC Wait	IR Wait	SC Wait	Count
281 Report	1381	1887	2353	2832	1564	2389	2000	0	40200
281 Baseline	3639	3858	4833	3035	1405	6398	3000	0	8442
281 Delta	-2258	+1971	-2480	-2203	+1441	-4009	3000	0	-4422
281 Change	-1638	+312	-2347	-515	+159	-4000	3000	0	-4860
342 Report	12	2125	6082	2617	1203	6300	2000	0	1608
342 Baseline	44	3893	6423	3038	1467	6212	3000	0	1644
342 Delta	-32	-1768	-3341	-3021	-1264	-6002	3000	0	-4836
342 Change	-12	-1556	-3009	-2723	-1337	-5800	3000	0	-4836
343 Report	18	1043	6261	2632	1261	6308	2000	0	1620
343 Baseline	33	3378	6758	3038	1264	6211	3000	0	1620
343 Delta	-15	-2335	-5497	-3006	-1003	-5903	3000	0	-4800
343 Change	-15	-2335	-5497	-3006	-1003	-5903	3000	0	-4800
347 Report	6	2556	6273	2642	1269	6300	2000	0	1620
347 Baseline	8	2218	1091	2636	1117	6301	3000	0	1302
347 Delta	-2	338	-4782	-3700	-1484	-6000	3000	0	318
347 Change	-2	338	-4782	-3700	-1484	-6000	3000	0	318

3

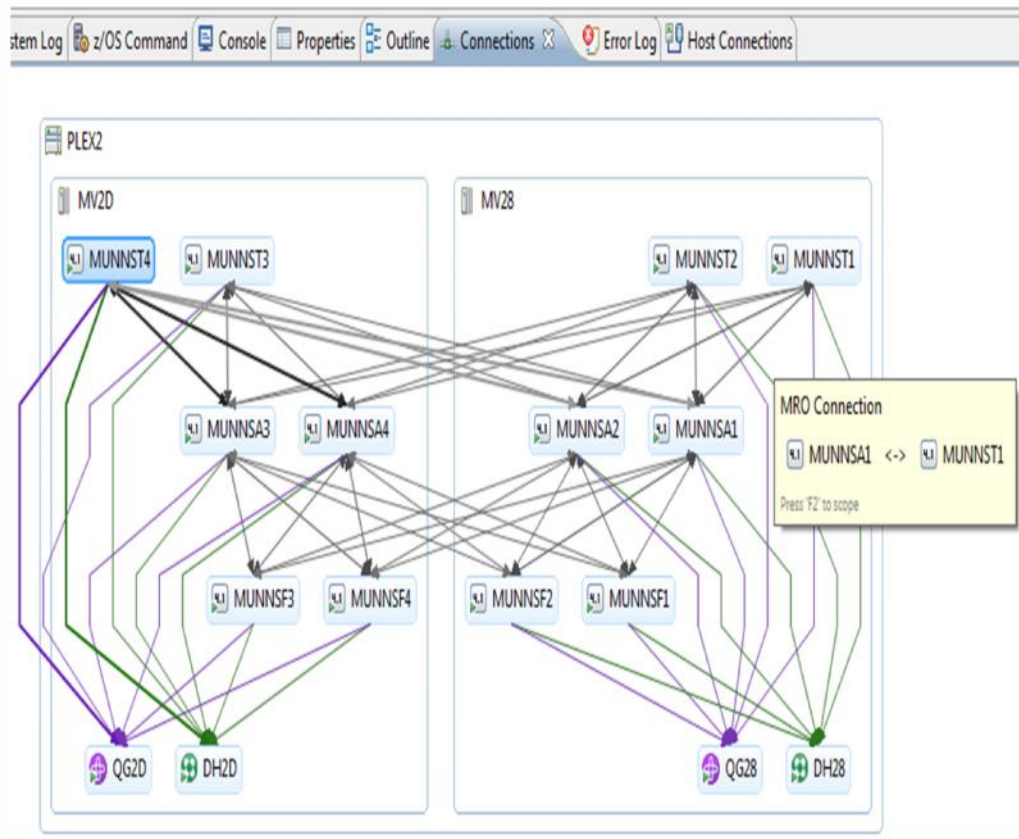
Validate the results

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

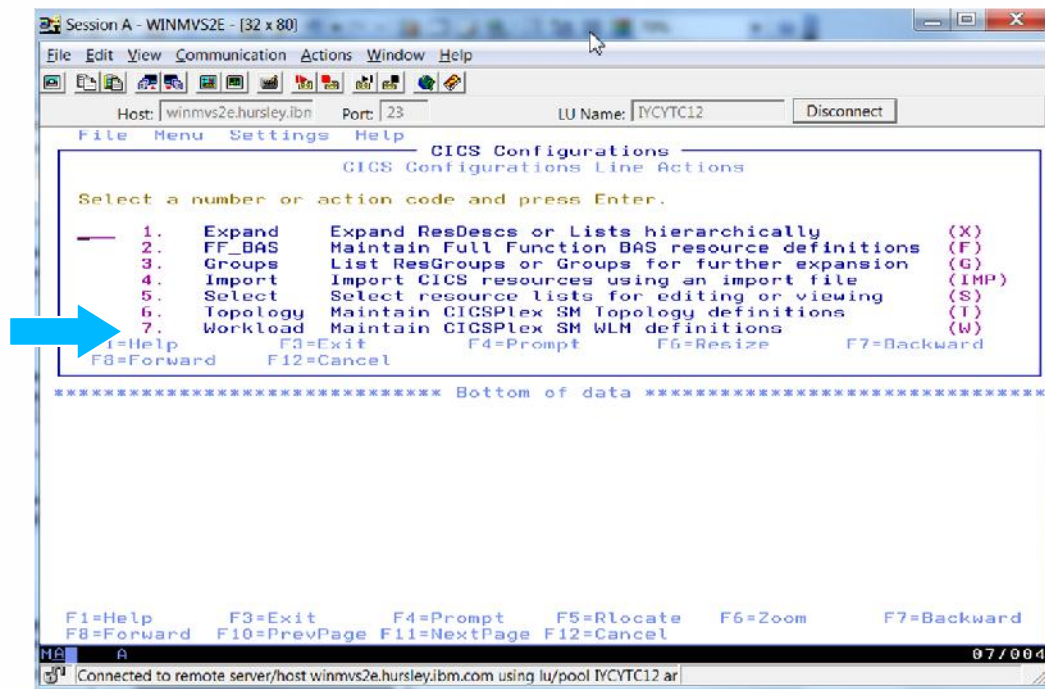


Step 2

- 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

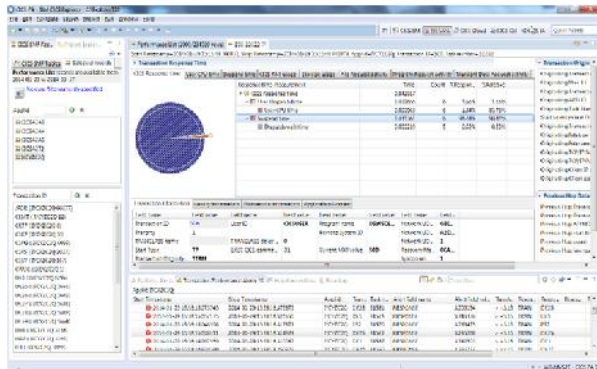
FRCP0001 Printed at 13:54:44 8/02/2013 Report Data from 17:24:42 7/31/2013 to 18:29:59 7/31/2013 Page 1
 Baseline Data from 16:17:32 7/31/2013 to 16:44:59 7/31/2013

Tran		#Tasks	Avg Response	Avg Dispatch	Avg User	Avg CPU	Avg Suspend	Avg Dispatch	Avg FC	Avg Wait	Avg FCAN	Avg IR	Avg Wait	Avg SC24UHM	Avg SC31UHM
			Time	Time	Time	Time	Time	Time	Time	Time	Count	Time	Count	Count	Count
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	5098	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			

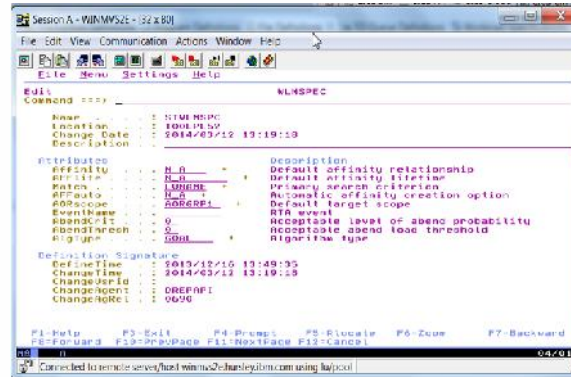
CICS PA provides...

- 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

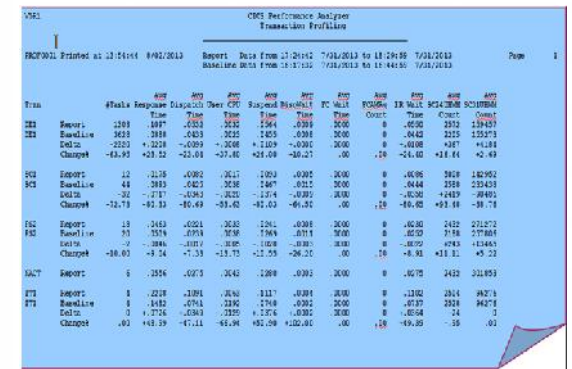
Performance workload management



Understand current performance



Implement an adaptable workload management system



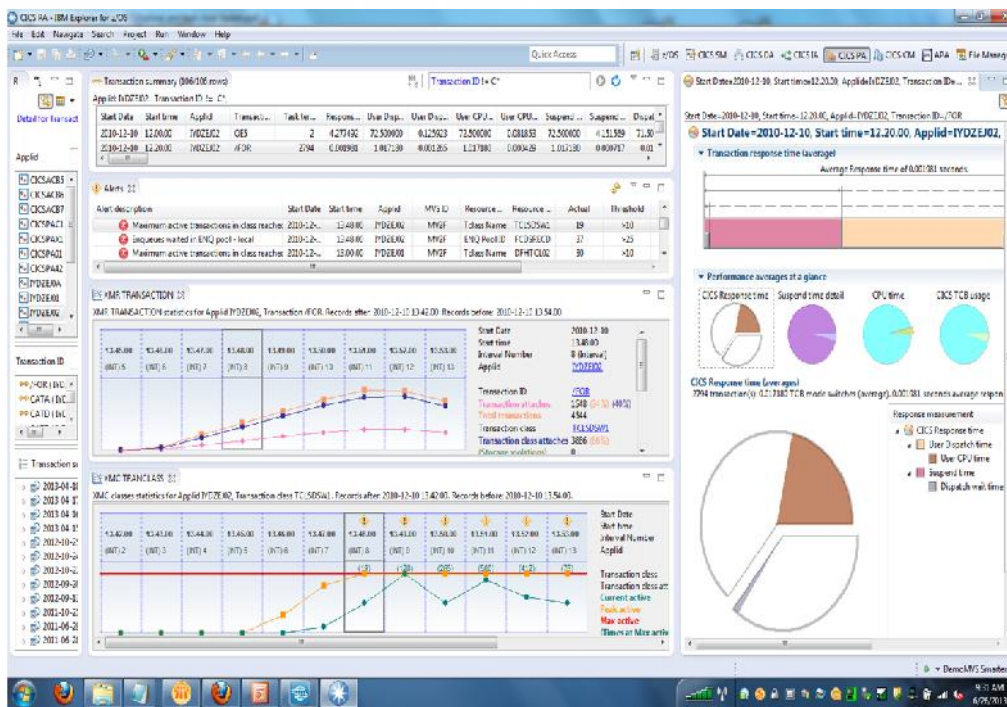
Validate the results

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

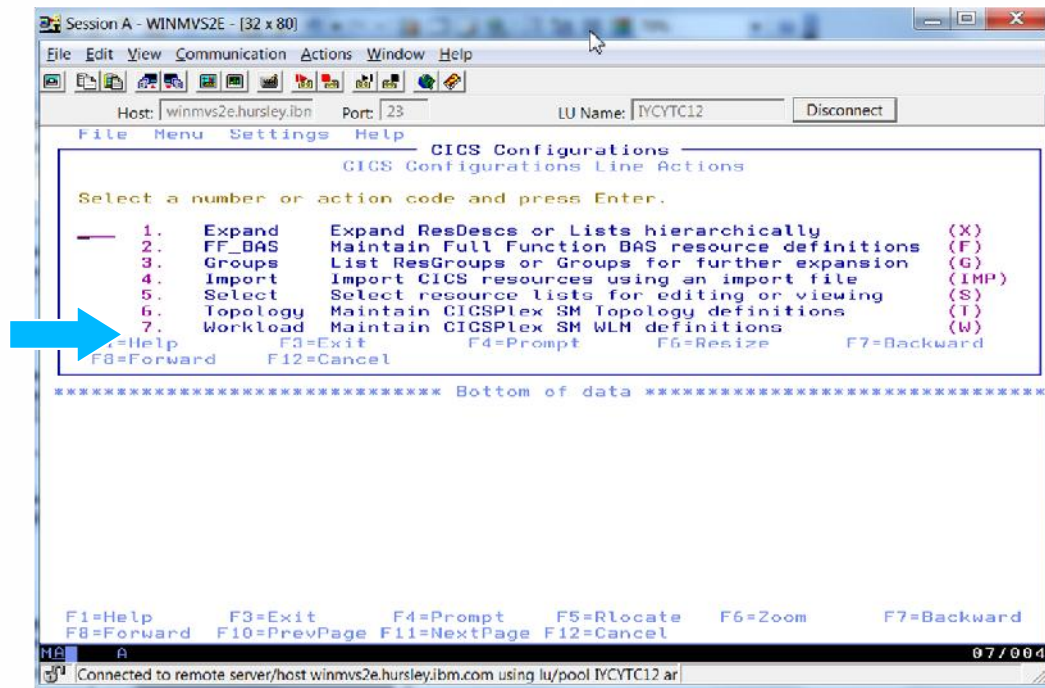


Step 2

- 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

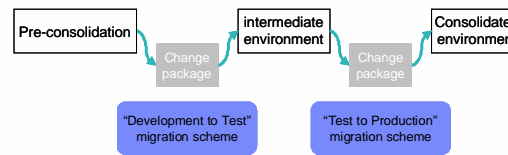
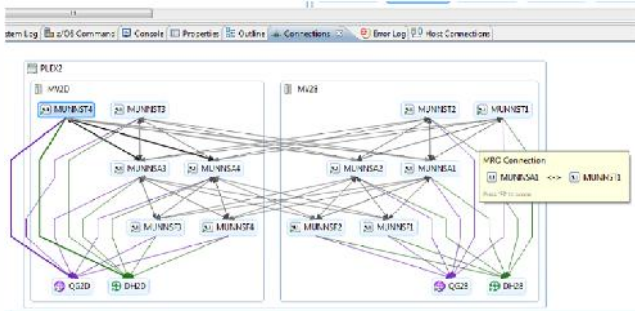
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			Time	Time	Time	Time	Time	Time	Time	Time	Count	Time	Count	Count	Count
DE1	Report	1308	.1097	.0532	.0032	.0564	.0009	.0000	0	.0550	2572	159457			
DE1	Baseline	3628	.0888	.0433	.0023	.0455	.0008	.0000	0	.0442	2205	155273			
	Delta	-2320	+.0208	+.0099	+.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	5098	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			
FS2	Report	18	.0463	.0221	.0033	.0241	.0008	.0000	0	.0230	2432	271272			
FS2	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

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



VSR1M0 CICS Performance Analyzer Transaction Profiling

PROF0001 Printed at 13:54:44 8/02/2012 Report Data from 15:24:42 7/31/2012 to 16:29:59 7/31/2012 Page 1 Baseline Data from 16:17:13Z 7/31/2012 to 16:44:59 7/31/2012

Tran		Avg #Tasks	Avg Response Time	Avg Dispatch Time	Avg User CPU	Avg Suspend	Avg Dispatch Wait	Avg FC Wait	Avg PCMMq Count	Avg IR Wait	Avg SC240RM Count	Avg SC310RM Count
DEI	Report	1308	1.597	0.532	0.032	0.044	0.009	0.000	0	0.550	2972	159457
DEI	Baseline	3628	0.888	0.433	0.023	0.455	0.008	0.000	0	0.442	2205	155273
DEI	Delta	-2320	+0.208	+0.099	+0.008	+0.109	+0.000	0.000	0	+0.108	+367	+1384
DEI	Change	-61.95	+21.52	+21.04	+17.80	+24.00	+10.27	0.00	0.00	+24.40	+16.64	+1.69
FA2	Report	12	0.175	0.082	0.017	0.093	0.005	0.000	0	0.086	508	14292
FA2	Baseline	44	0.893	0.425	0.038	0.467	0.015	0.000	0	0.444	2588	233438
FA2	Delta	-32	-0.717	-0.343	-0.020	-0.374	-0.009	0.000	0	-0.358	+2419	-90486
FA2	Change	-72.73	-80.33	-80.69	-83.63	-80.03	-64.50	0.00	0.00	-80.65	+53.48	-38.76
FA3	Report	18	0.463	0.221	0.033	0.241	0.008	0.000	0	0.230	2432	271372
FA3	Baseline	20	0.599	0.239	0.038	0.269	0.011	0.000	0	0.252	2188	257806
FA3	Delta	-2	-0.046	-0.017	-0.005	-0.028	-0.003	0.000	0	-0.022	+243	+13465
FA3	Change	-10.00	-8.04	-7.33	-13.75	-10.55	-06.00	0.00	0.00	-8.91	+11.11	+5.22
SBAL	Report	6	0.556	0.275	0.043	0.280	0.003	0.000	0	0.275	2432	301853
OE11	Report	4	2.208	1.091	0.063	1.117	0.004	0.000	0	1.102	2504	96276
OE11	Baseline	4	1.482	0.742	0.192	0.740	0.002	0.000	0	0.737	2528	96276
OE11	Delta	0	+0.726	+0.349	-0.129	+0.376	+0.002	0.000	0	+0.364	-24	0
OE11	Change	0.00	+48.99	+47.11	-66.94	+50.90	+102.00	0.00	0.00	+49.39	-95	0.00

A

Step 1

Analysis and planning

B

Step 2

Implementation & tuning

C

Step 3

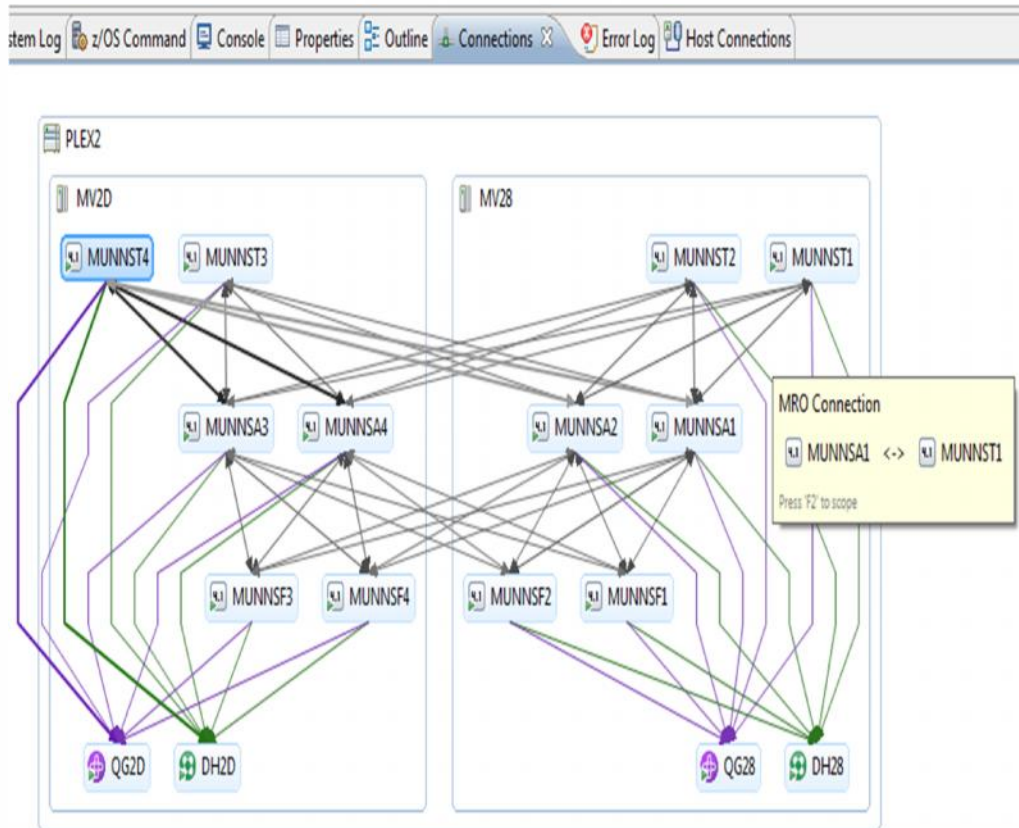
Validation

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

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

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

Benefits

- Eliminate manual and error prone processes
- Full audit trail and backout capability
- Integrate with source code change management processes

Change package created for resources in Development repository

Install definitions in CICS regions on test environment

Packages	Description	Last Action	Changetime
CP1		CREATE	2012/05/21 06:49:
DEMO	Demo PIG	CREATE	2012/07/19 08:28:
Open	ppment to Test	READY	2012/09/27 05:44:
Ready	of change packaging via explorer	READY	2012/09/19 08:28:
Unready	or Humana	UNREADY	2012/09/25 11:26:
Migrate	ackage for Eric	MGRATE	2012/09/26 10:52:
Backout	ion of GENAPP resource	MGRATE	2012/04/29 12:46:
SFCPKG1	PACKAGE for SFC app	MGRATE	2012/05/02 17:52:
SSACHPKG	Change package for WMQ definitions	MGRATE	2012/07/11 03:44:
00000001	Migrate resources from CICS TS 3.2 to 4.1	MGRATE	2012/04/18 05:31:
00000002	Migrate from ACR6 to ACR7	MGRATE	2012/02/13 08:24:
00000003	Migrate from CSD to CPM BAS	BACKOUT	2012/05/30 03:55:

Change package migrated to test environment

Step 3

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

CICS PA provides...

- Comprehensive Performance Reporting
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VSR1M0

CICS Performance Analyzer
Transaction Profiling

PROF0001 Printed at 13:54:44 8/02/2012 Report Data from 15:24:42 7/31/2012 to 16:29:59 7/31/2012
Page 1
Baseline Data from 16:17:32 7/31/2012 to 16:44:59 7/31/2012

Tran		#Tasks	Avg Response Time	Avg Dispatch Time	Avg User Time	Avg CPU	Avg Suspend Time	Avg DispWait Time	Avg FC Wait Time	Avg FCMRQ Count	Avg IR Wait Time	Avg SC24UHW Count	Avg SC31UHW Count
DEL	Report	1308	.1097	.0532	.0032	.0564	.0009	.0000	.0000	0	.0550	2572	159457
DEL	Baseline	3628	.0888	.0433	.0023	.0455	.0008	.0000	.0000	0	.0442	2205	155273
	Delta	-2320	+.0208	+.0099	+.0008	+.0109	+.0000	.0000	.0000	0	+.0108	+367	+4184
	Change%	-63.95	+23.52	+23.04	+37.80	+24.00	+10.27	.00	.00	.00	+24.40	+16.64	+2.69
PA2	Report	12	.0175	.0082	.0017	.0093	.0005	.0000	.0000	0	.0086	5008	142952
PA2	Baseline	44	.0893	.0425	.0038	.0467	.0015	.0000	.0000	0	.0444	2588	233438
	Delta	-32	-.0717	-.0343	-.0020	-.0374	-.0009	.0000	.0000	0	-.0358	+2419	-90486
	Change%	-72.73	-80.33	-80.69	-53.63	-80.03	-64.50	.00	.00	.00	-80.65	+93.48	-38.76
PA3	Report	18	.0463	.0221	.0033	.0241	.0008	.0000	.0000	0	.0230	2432	271272
PA3	Baseline	20	.0509	.0239	.0038	.0269	.0011	.0000	.0000	0	.0252	2188	257806
	Delta	-2	-.0046	-.0017	-.0005	-.0028	-.0003	.0000	.0000	0	-.0022	+243	+13465
	Change%	-10.00	-9.04	-7.33	-13.73	-10.55	-26.20	.00	.00	.00	-8.91	+11.11	+5.22
SEB1	Report	6	.0556	.0275	.0043	.0280	.0003	.0000	.0000	0	.0275	2432	301853
OEL1	Report	4	.2208	.1091	.0063	.1117	.0004	.0000	.0000	0	.1102	2504	96276
OEL1	Baseline	4	.1482	.0741	.0192	.0740	.0002	.0000	.0000	0	.0737	2528	96276
	Delta	0	+.0726	+.0349	-.0129	+.0376	+.0002	.0000	.0000	0	+.0364	-24	0
	Change%	.00	+48.99	+47.11	-66.94	+50.90	+102.00	.00	.00	.00	+49.39	-.95	.00

Three steps to CICS Cloud enablement

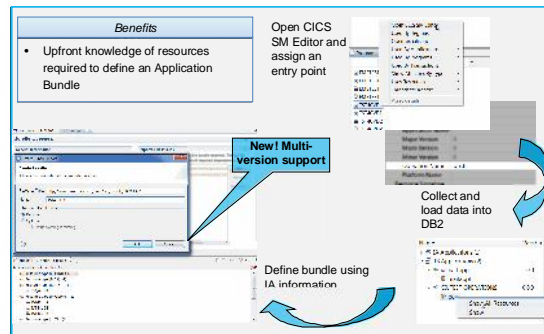


Support CICS cloud initiatives to simplify system management and rapid application deployment.



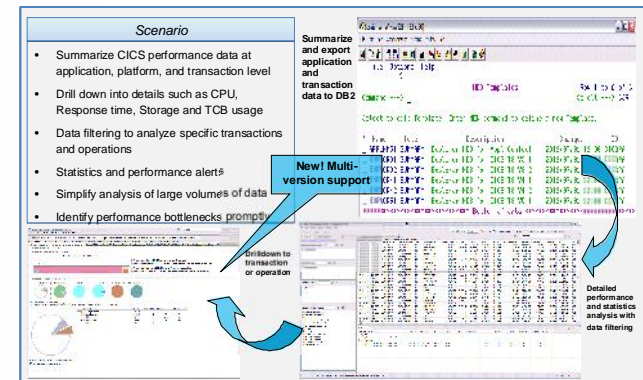
Step 1

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

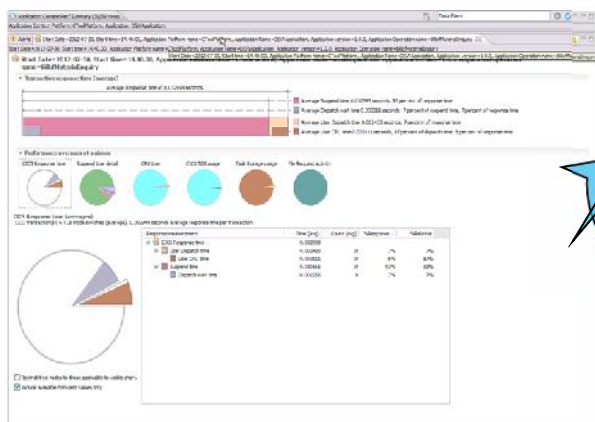
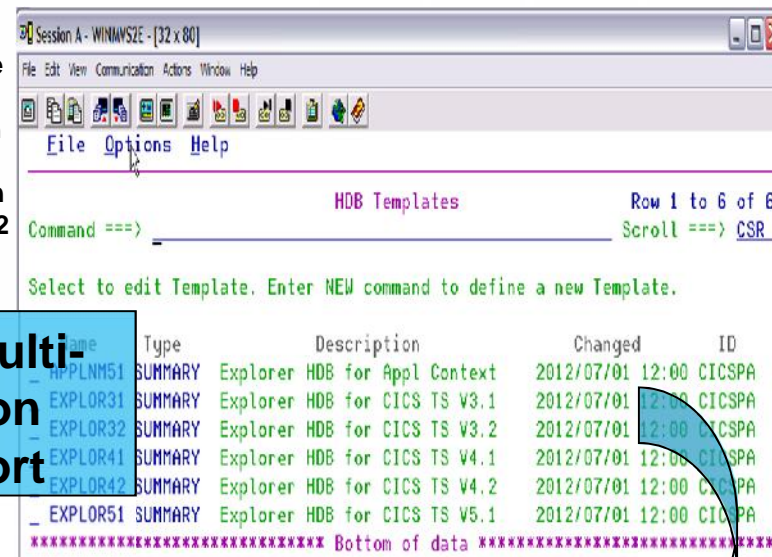
- Summarize CICS performance data at application, platform, and transaction level
- Drill down into details such as CPU, Response time, Storage and TCB usage
- Data filtering to analyze specific transactions and operations
- Statistics and performance alerts
- Simplify analysis of large volumes of data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

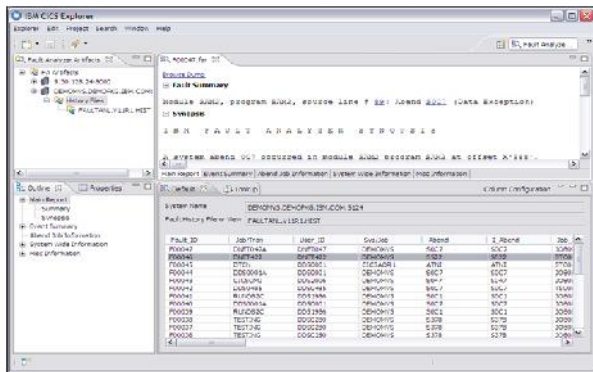


Name	Date	Action	Actual	VCPU	Response	Resource	Actual	Wait	Wait	Wait	Wait
APPLNMS1	2012/07/01	12:00	100	100	100	100	100	100	100	100	100
EXPLOR31	2012/07/01	12:00	100	100	100	100	100	100	100	100	100
EXPLOR32	2012/07/01	12:00	100	100	100	100	100	100	100	100	100
EXPLOR41	2012/07/01	12:00	100	100	100	100	100	100	100	100	100
EXPLOR42	2012/07/01	12:00	100	100	100	100	100	100	100	100	100
EXPLOR51	2012/07/01	12:00	100	100	100	100	100	100	100	100	100

Three steps to Problem Diagnosis

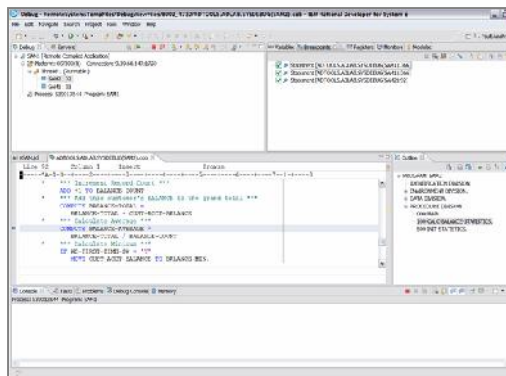


Faster problem identification and resolution



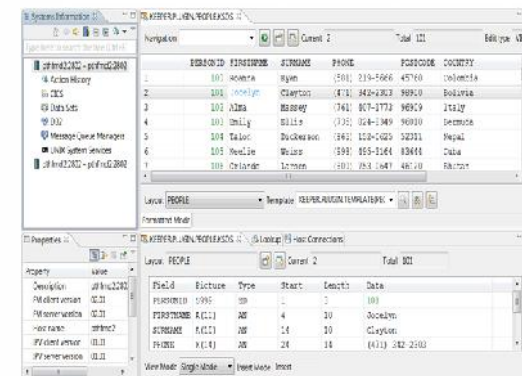
Step 1

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



“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

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.

```
demomvms.demopkg.ibm.com:2800/FAULTANLV13R1.HIST(J00767)-Report
1=
2=Module SAM2, program SAM2, source line # 89: Abend S0C7 (Data Exception)
3 IBM FAULT ANALYZER SYNOPSIS
4
5
6 A system abend 0C7 occurred in module SAM2 program SAM2 at offset X'39A'.
7
8 A program-interruption code 0007 (Data Exception) is associated with this abend
9 and indicates that:
10
11 A decimal digit or sign was invalid.
12
13 The cause of the failure was program SAM2 in module SAM2. The COBOL source code
14 that immediately preceded the failure was:
15
16 Source
17 Line #
18 -----
19 000088 * *** Add this customer's BALANCE to the grand total ***
20 000089 COMPUTE BALANCE-TOTAL =
21 000090 BALANCE-TOTAL + CUST-ACCT-BALANCE
22
23 The COBOL source code for data fields involved in the failure:
24
--
Main Report | Event Details | Abend Information | System-Wide Information | Miscellaneous
```

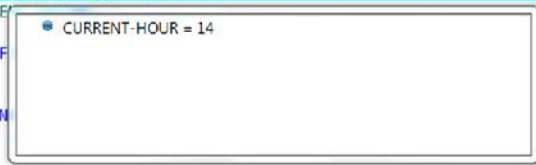
*Helps to identify the cause,
analyze the failure, and fix the
problem*

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.

```
246 *****
247 PROCEDURE DIVISION.
248 *****
249
250 000-MAIN.
251 ACCEPT CURRENT-DATE FROM DATE.
252 ACCEPT CURRENT-TIME FROM TIME.
253 DISPLAY 'SAMI STARTED DATE = ' CURRENT-MONTH '/'
254 CURRENT-DAY '/' CURRENT-YEAR ' (mm/dd/yy)'.
255 DISPLAY ' TIME = ' CURRENT-HOUR ':'
256 CURRENT-MINUTE ':' CURRE
257
258 PERFORM 900-OPEN-TRAN-AND-RPT-F
259 PERFORM 800-INIT-REPORT .
260
261 PERFORM 100-PROCESS-TRANSACTION
262 UNTIL WS-TRAN-FILE-EOF
263
264 PERFORM 905-CLOSE-TRAN-AND-RPT-FILES.
265
266 GOBACK .
```



Source code debugging to improve development productivity

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

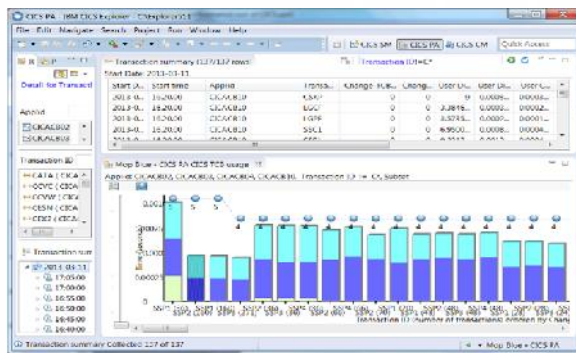
Navigation Column# 1 Cursor Current

	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

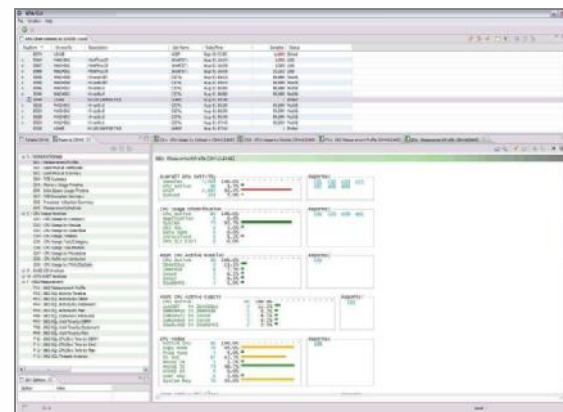
- **Fault Analyzer** - Faster problem determination and resolution. Understand what happened, program, where it happened, context within the source code, the variables involved and the value of the variables at the time the exception occurred. Point and shoot navigation and explanation of error messages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

Looking for Trouble?



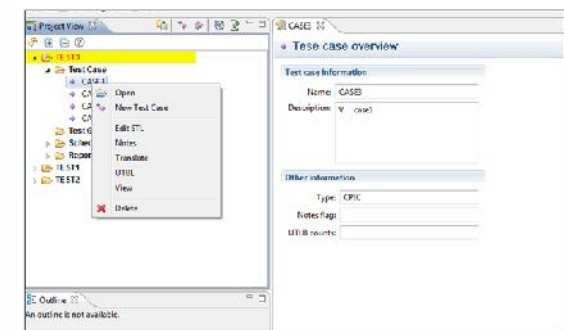
Step 1

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

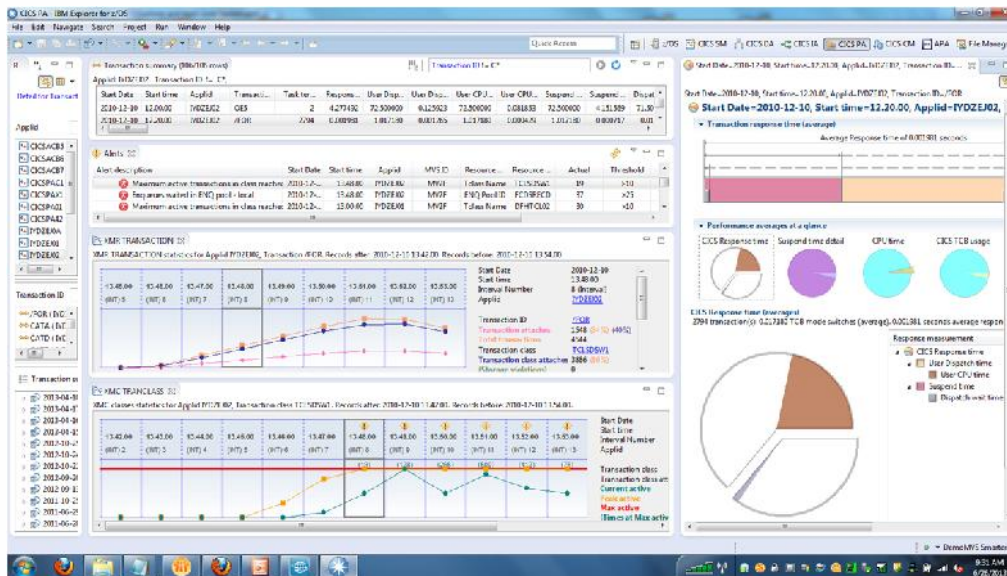
U.S. credit card services company used APA to improve performance by 3x"

Step 1

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

CICS PA provides...

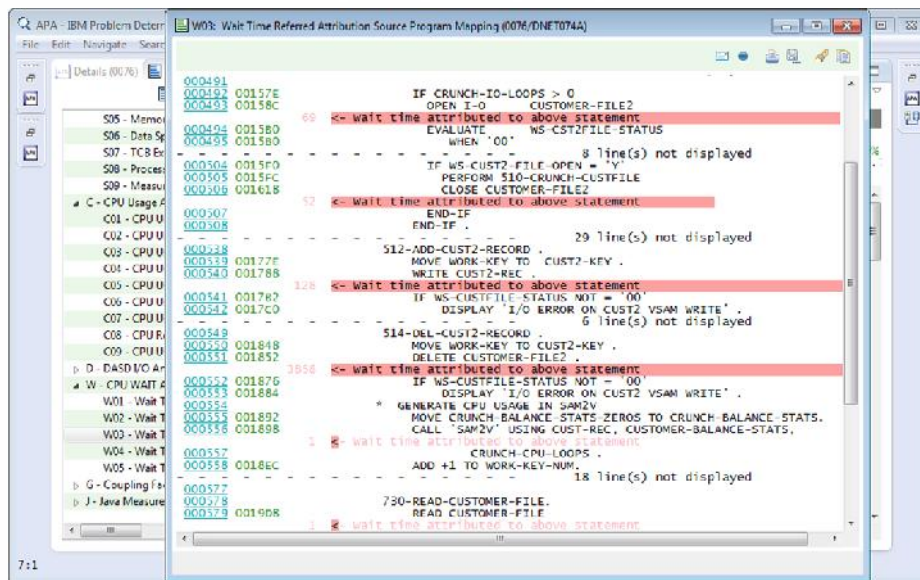
- Comprehensive Performance Reporting
- Transaction tracking and action profiling reports
- Trending and capacity planning with historical database
- Faster problem resolution
- Evaluation and tuning of CICS system efficiency to improve system performance



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.

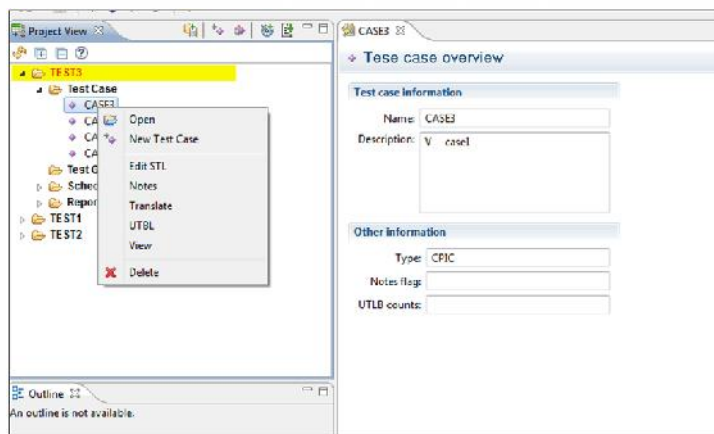


Monitor and optimize performance at the application level

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.

- 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.

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

- 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

CICS Optimization Solution Pack for z/OS V5.2

Quickly optimize performance and availability of CICS systems and applications

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



CICS TS Value Unit Edition — For new Java workload and service enablement

Responding to customer demand for an alternative pricing structure

CICS One-time-charge

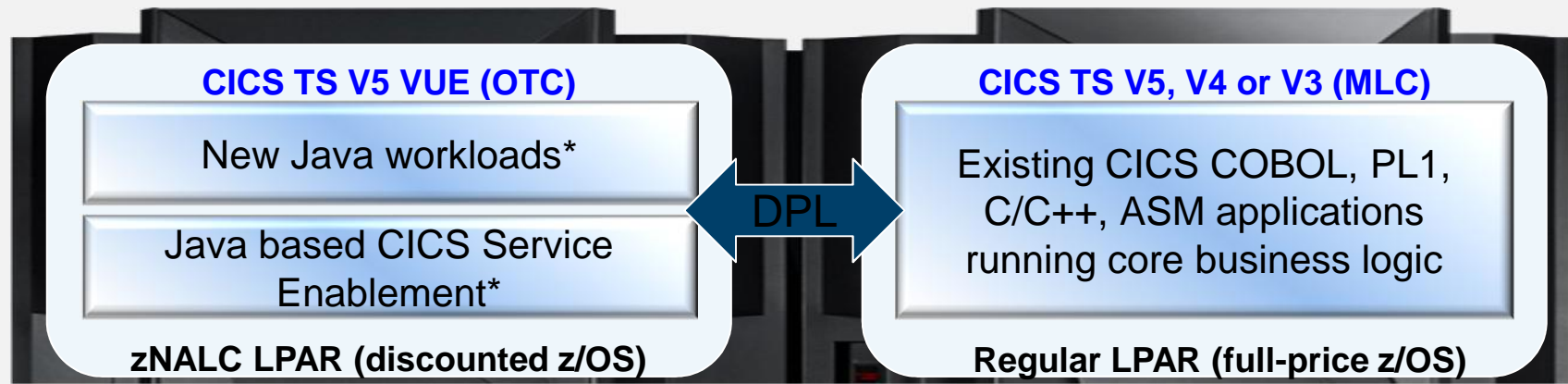
Alternative pricing model for new applications using a one-time-charge price metric*

zNALC pricing

*Reduced price for the z/OS operating system on LPARs that run a qualified application**

TS V5.1 avoiding SVC

CICS TS VUE is a separately licensed program and does not initiate Single Version Charging



* zNALC approval is required for each application

- 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](#)
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 - Debug Tool newsletter <http://www-01.ibm.com/support/docview.wss?uid=swg21422089>