BMC and Compuware: Partnering to Improve Mainframe Economics

Jonathan Adams

VP & GM, ZSolutions and Select Technologies, BMC Software, Inc

Dennis O'Flynn

VP of R&D, Compuware Corporation

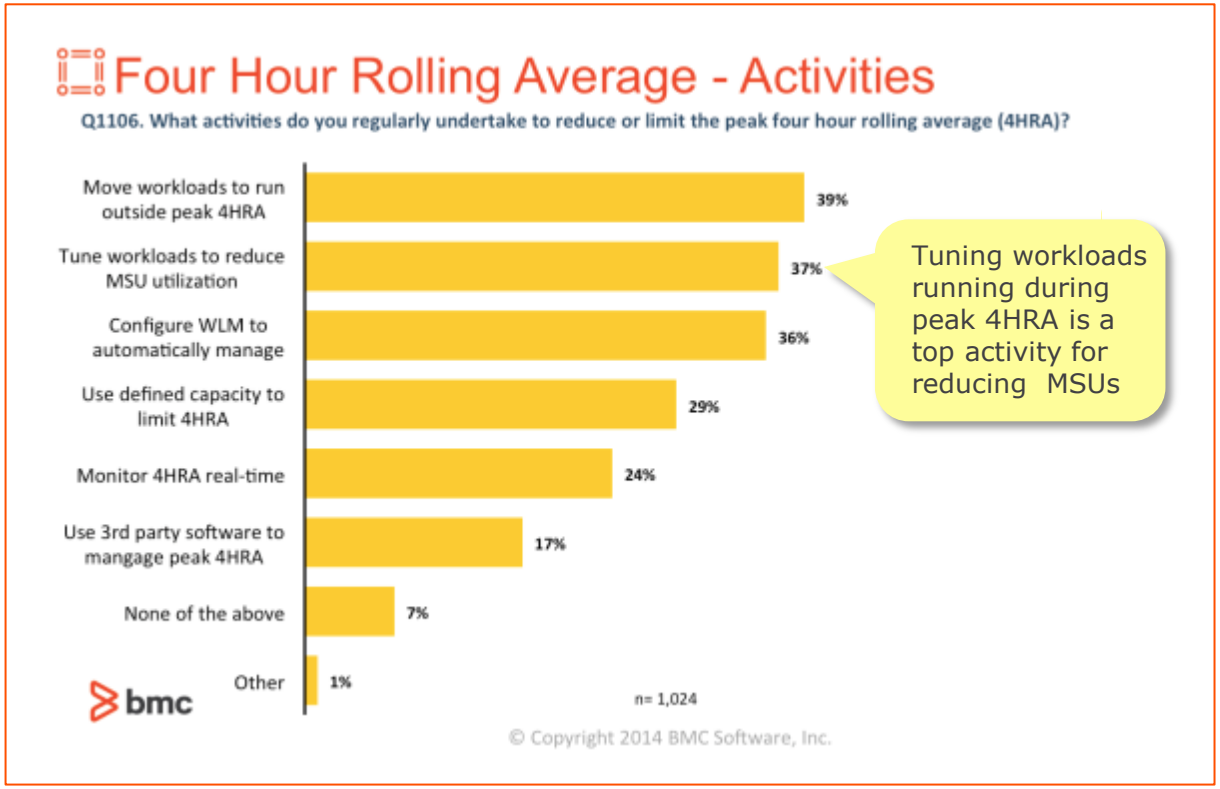
March 4, 2015

BMC and Compuware Partnership

- Marketing and technology partnership of two leading ISV's
  - Vested interest in mainframe's present and future
  - Dedicated to delivering compelling mainframe innovation that provides unique customer value and ROI
- Combined portfolios provide synergistic connection points without overlapping
- Standardizing on each other's products for application development and operations

Partnership Basis

Integration of intelligent workload (BMC) and performance management and tuning (Compuware) enables customers to discover and exploit opportunities for greater cost savings



Solutions

BMC Cost Analyzer for zEnterprise (CAzE)

- Provides transparency and insight into MLC costs with what-if capabilities to determine impact of MLC reduction activities

BMC MainView

- Provides proactive monitoring, automated problem solving and storage solutions

+

Compuware Strobe

- Pinpoints application inefficiencies causing excessive CPU consumption
- Reduces hardware and software costs while increasing customer satisfaction

Use Case Overview

#	Focus	Use Case	Integration
1	**Proactive Cost Management**	Identify MLC cost-saving tuning opportunities	Launch iStrobe directly from CAzE
2	**MTTR and Cost Reduction**	a) Automated, alarm-based deep dive performance analysis on abnormal app activity	MainView for z/OS triggers Strobe Analysis
		b) Quickly request deep dive performance analysis on poorly performing job or app	Launch Strobe analysis directly from MainView for job CPU

USE CASE 1

Identify MLC Cost-saving Tuning Opportunities

- Problem
  - Pinpoint specific performance tuning opportunities yielding greatest reduction in IBM MLC charges

USE CASE 1

Identify MLC Cost-saving Tuning Opportunities

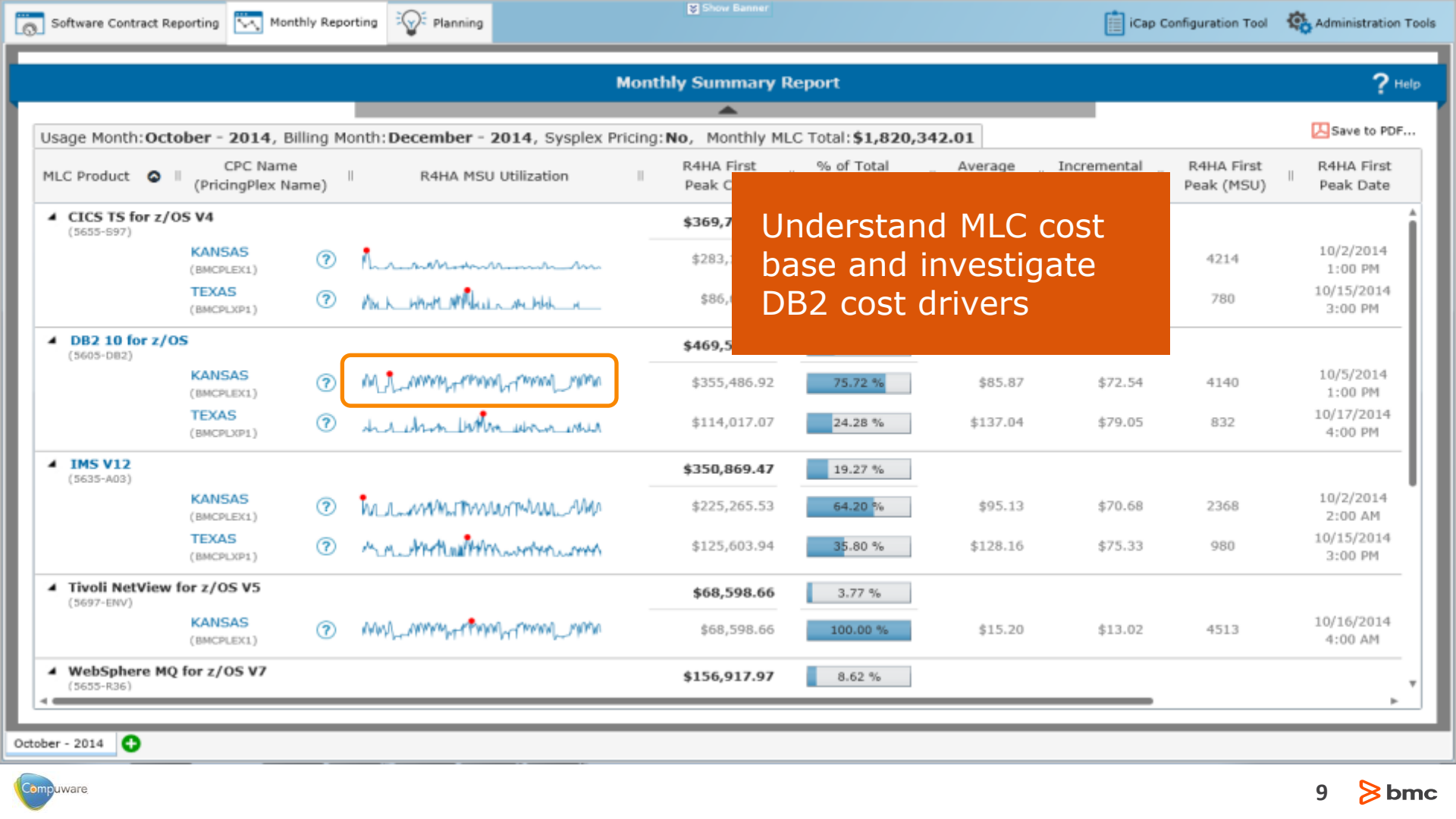
- Solution
  - CAzE determines biggest MLC-impacting R4HA periods
  - Directly launch iStrobe during CAzE R4HA drill down offering even deeper analysis into specific components contributing to CPU consumption
  - iStrobe analysis combined with CAzE information reveals potential financial impact of tuning efforts

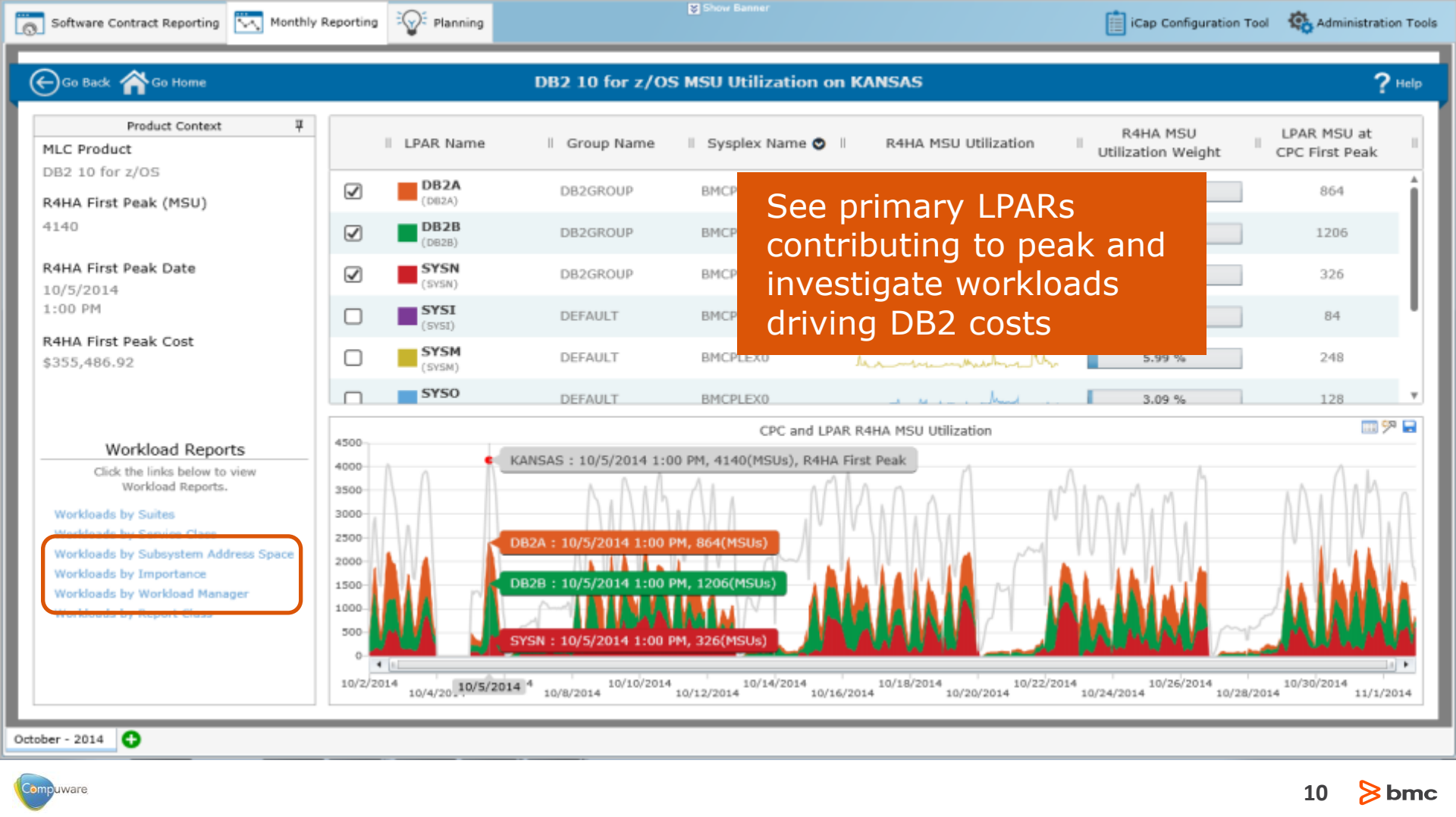
USE CASE 1

Identify MLC Cost-saving Tuning Opportunities

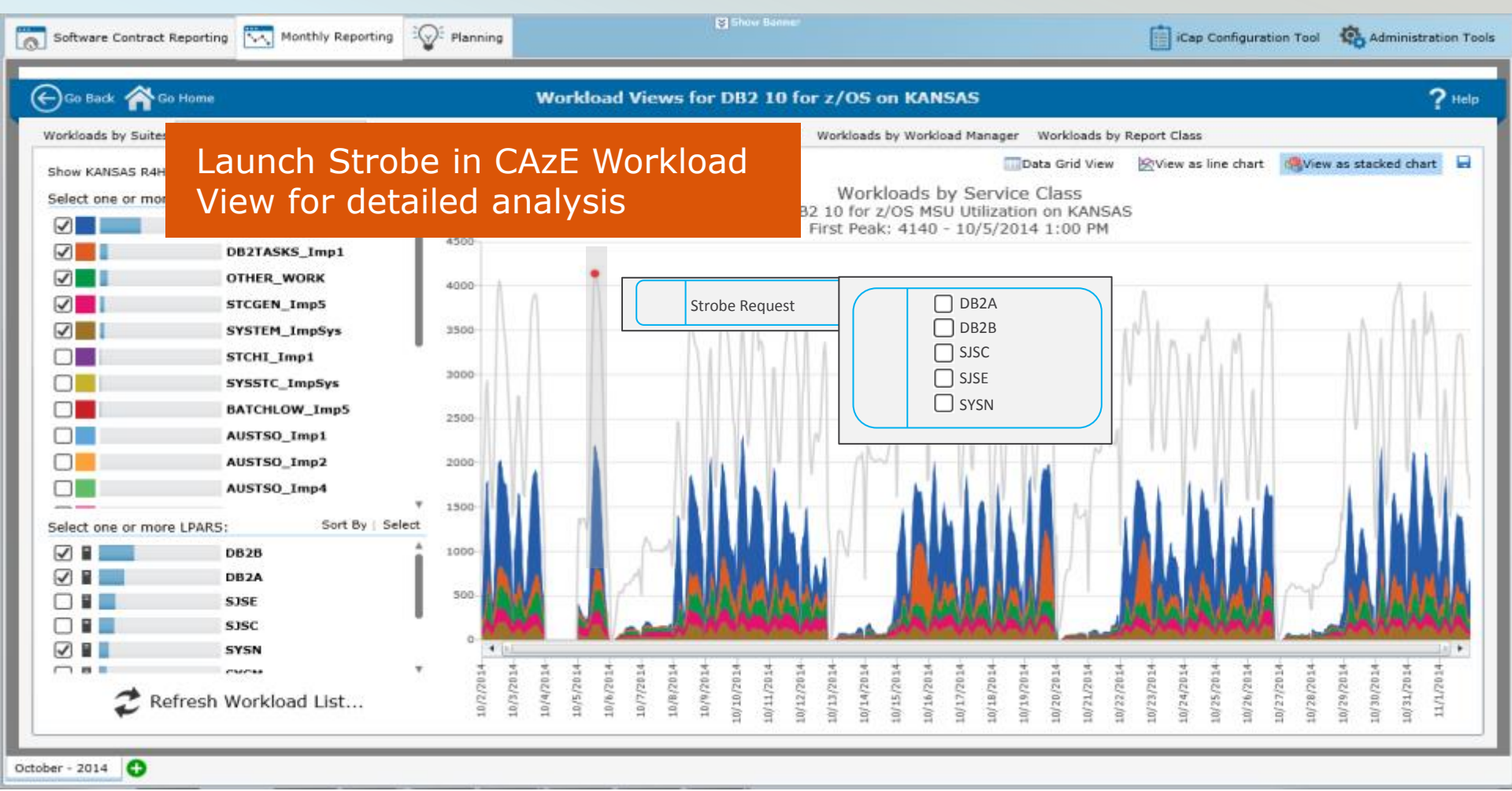
Value

- Integration enables customers to quickly identify and assess potential benefits of performance tuning efforts
- Thereby, reducing MLC expenses


Software Contract Reporting
Monthly Reporting
Planning
iCap Configuration Tool
Administration Tools
Monthly Summary Report
Help
Usage Month: October - 2014, Billing Month: December - 2014, Sysplex Pricing: No, Monthly MLC Total: $1,820,342.01
Save to PDF...
MLC Product
CPC Name (PricingPlex Name)
R4HA MSU Utilization
R4HA First Peak C
% of Total
Average
Incremental
R4HA First Peak (MSU)
R4HA First Peak Date
CICS TS for z/OS V4
(5655-S97)
$369,7
KANSAS
(BMCPLEX1)
$283,
4214
10/2/2014 1:00 PM
TEXAS
(BMCPLXP1)
$86,
780
10/15/2014 3:00 PM
DB2 10 for z/OS
(5605-DB2)
$469,5
KANSAS
(BMCPLEX1)
$355,486.92
75.72 %
$85.87
$72.54
4140
10/5/2014 1:00 PM
TEXAS
(BMCPLXP1)
$114,017.07
24.28 %
$137.04
$79.05
832
10/17/2014 4:00 PM
IMS V12
(5635-A03)
$350,869.47
19.27 %
KANSAS
(BMCPLEX1)
$225,265.53
64.20 %
$95.13
$70.68
2368
10/2/2014 2:00 AM
TEXAS
(BMCPLXP1)
$125,603.94
35.80 %
$128.16
$75.33
980
10/15/2014 3:00 PM
Tivoli NetView for z/OS V5
(5697-ENV)
$68,598.66
3.77 %
KANSAS
(BMCPLEX1)
$68,598.66
100.00 %
$15.20
$13.02
4513
10/16/2014 4:00 AM
WebSphere MQ for z/OS V7
(5655-R36)
$156,917.97
8.62 %
October - 2014
Understand MLC cost base and investigate DB2 cost drivers


Software Contract Reporting
Monthly Reporting
Planning
Show Banner
iCap Configuration Tool
Administration Tools
Go Back
Go Home
DB2 10 for z/OS MSU Utilization on KANSAS
Help
Product Context
MLC Product
DB2 10 for z/OS
R4HA First Peak (MSU)
4140
R4HA First Peak Date
10/5/2014
1:00 PM
R4HA First Peak Cost
$355,486.92
LPAR Name
Group Name
Sysplex Name
R4HA MSU Utilization
R4HA MSU Utilization Weight
LPAR MSU at CPC First Peak
DB2A (DB2A) DB2GROUP 864
DB2B (DB2B) DB2GROUP 1206
SYSN (SYSN) DB2GROUP 326
SYSI (SYSI) DEFAULT 84
SYSM (SYSM) DEFAULT 248
SYSO DEFAULT BMCPLEX0 3.09 % 128
See primary LPARs contributing to peak and investigate workloads driving DB2 costs
Workload Reports
Click the links below to view Workload Reports.
Workloads by Suites
Workloads by Subsystem Address Space
Workloads by Importance
Workloads by Workload Manager
CPC and LPAR R4HA MSU Utilization
KANSAS : 10/5/2014 1:00 PM, 4140(MSUs), R4HA First Peak
DB2A : 10/5/2014 1:00 PM, 864(MSUs)
DB2B : 10/5/2014 1:00 PM, 1206(MSUs)
SYSN : 10/5/2014 1:00 PM, 326(MSUs)
4500
4000
3500
3000
2500
2000
1500
1000
500
0
10/2/2014
10/5/2014
10/8/2014
10/10/2014
10/12/2014
10/14/2014
10/16/2014
10/18/2014
10/20/2014
10/22/2014
10/24/2014
10/26/2014
10/28/2014
10/30/2014
11/1/2014
October - 2014

Launch Strobe in CAzE Workload View for detailed analysis



iStrobe Analysis of 4HRA

iStrobe Analysis of Rolling 4 Hour Average Window

For Time Period of December 21, 2014 07:45 AM to 11:45AM

	Total CPU Time in Period (min)	Strobe Measurements taken during Period	Strobe Measurements of High Consumers regardless of time	Total Abends during Measurement Period
Batch Jobs	118.85	3	23	8
CICS Regions	198.08	2	15	533
DB2	73.95	4	25	54
IMS Applications	36.45	1	14	16
Websphere/AS	23.77	0	2	2

CICS Analysis

CICS Region Performance and Abend Summary Report

Abends by Region

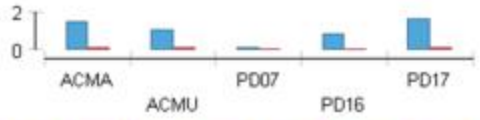
LPAR	CICS Region	Total Transactions	Total Elapsed Time (min)	Total CPU Time (min)	Number of Abends	Percentage of Transactions Abending
CW01	H01AC013	421,182	2954.6	90.6	526	0.12%
CW01	H01AC054	1,127	36043.9	0.3	7	0.62%

Feb 19, 2015, 3:01 PM

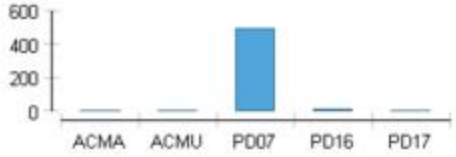
CICS Transaction Analysis

CICS Region Performance and Abend Detail Report

Elaspsed and CPU Time by Transaction



Abends by Transaction



Transaction ID	Transaction Count	Average Elasped Time	Average CPU Time	Total CPU Time	Number of Abending Transactions	Percentage of Transaction Abending
PD06	33,154	0.496	0.054	1784.11		0.00%
PD17	32,110	1.605	0.055	1754.39	3	0.01%
PD02	35,696	0.583	0.021	740.83	1	0.00%
PD07	49,212	0.067	0.004	210.36	494	1.00%
PD09	22,110	0.182	0.008	174.85		0.00%
PD10	8,116	0.517	0.021	168.23		0.00%
PD16	68,569	0.828	0.002	162.63	13	0.02%
PD18	32,109	0.169	0.005	152.23		0.00%
PD05	34,642	0.016	0.002	84.71		0.00%
PD08	20,574	0.161	0.003	71.90		0.00%
PD01	22,478	0.014	0.002	49.32		0.00%
DTI1	170	0.373	0.275	46.81	1	0.59%
PD12	17,957	0.044	0.001	16.05	1	0.01%
PD04	41,817	0.013	0.000	9.33		0.00%

CICS Transaction Details

Showing page 1 of 2

CICS Transaction Details

Region H01AC013 Transaction PD06

Measurement Date Range 02/01/2014 to 01/31/2015

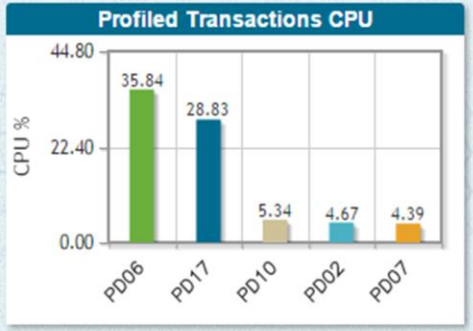
LPAR	Region	CICS Transaction	Session Date/Time	Profile	Transactions	Average Service Time (sec.) Delay	Suspend	Execute	Total
CW01	H01AC013	PD06	05/28/2014 09:29:11	H01AC0132	447	0.619	0.001	0.115	0.736
CW01	H01AC013	PD06	05/28/2014 11:16:10	H01AC01312	649	0.981	0.002	0.114	1.097
CW01	H01AC013	PD06	05/28/2014 10:55:40	H01AC0137	676	0.607	0.001	0.107	0.715
CW01	H01AC013	PD06	05/28/2014 09:34:10	H01AC0133	6	0.128		0.081	0.208
CW01	H01AC013	PD06	05/12/2014 13:40:48	h01AC013E	15	0.217		0.072	0.289
CW01	H01AC013	PD06	05/12/2014 14:01:09	BOLTS2	672	0.687		0.071	0.758
CW01	H01AC013	PD06	05/28/2014 11:07:24	H01AC01310	8	0.073		0.067	0.139
CW01	H01AC013	PD06	05/28/2014 11:00:08	H01AC0138	9	0.085		0.067	0.151
CW01	H01AC013	PD06	05/28/2014 11:27:18	H01AC01315				0.061	0.771
CW01	H01AC013	PD06	05/28/2014 11:10:54	H01AC01311				0.055	0.135
CW01	H01AC013	PD06	05/28/2014 11:20:37	H01AC01313				0.055	0.164
CW01	H01AC013	PD06	05/28/2014 09:38:27	H01AC0134				0.049	0.206
CW01	H01AC013	PD06	05/12/2014 13:49:45	TRACEDEBUG				0.047	0.146
CW01	H01AC013	PD06	05/12/2014 13:49:45	BOLTS				0.047	0.146
CW01	H01AC013	PD06	05/28/2014 09:42:21	H01AC0135				0.046	0.152
CW01	H01AC013	PD06	05/28/2014 11:30:56	H01AC01316				0.043	0.222
CW01	H01AC013	PD06	05/28/2014 11:23:58	H01AC01314	6	0.074		0.042	0.116
CW01	H01AC013	PD06	05/28/2014 11:03:53	H01AC0139	7	0.091		0.041	0.132
CW01	H01AC013	PD06	05/28/2014 09:46:17	H01AC0136	24	0.149		0.041	0.190
CW01	H01AC013	PD06	05/12/2014 13:55:47	BOLTS1	50	0.317	0.002	0.037	0.356
CW01	H01AC013	PD06	10/10/2014 10:12:54	H01AC01327	280	0.245	0.006	0.033	0.285
CW01	H01AC013	PD06	09/11/2014 16:06:38	USERGROUP2	14	0.106	0.004	0.032	0.142
CW01	H01AC013	PD06	06/18/2014 13:36:44	H01AC01318	107	0.129		0.028	0.157
CW01	H01AC013	PD06	06/18/2014 13:44:25	H01AC01320	15	0.052		0.028	0.080
CW01	H01AC013	PD06	06/18/2014 13:32:39	H01AC01317	311	0.195	0.001	0.028	0.224
CW01	H01AC013	PD06	06/18/2014 13:40:34	H01AC01319	22	0.096		0.027	0.123
CW01	H01AC013	PD06	06/18/2014 14:00:48	H01AC01322	21	0.124		0.024	0.148

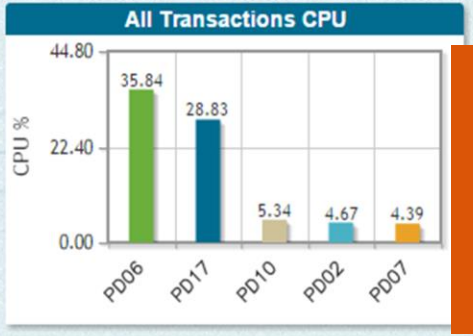
Detailed transaction data with measurements

iStrobe | myStrobe | Strobe Advisor

CICS | DB2 | General | File | LE

Profile Name: CICS_EXAMPLE Job Name: H01AC013 Initiated On: 2013-10-29 13:00:14





Strobe Advisor provides possible solution to address issue

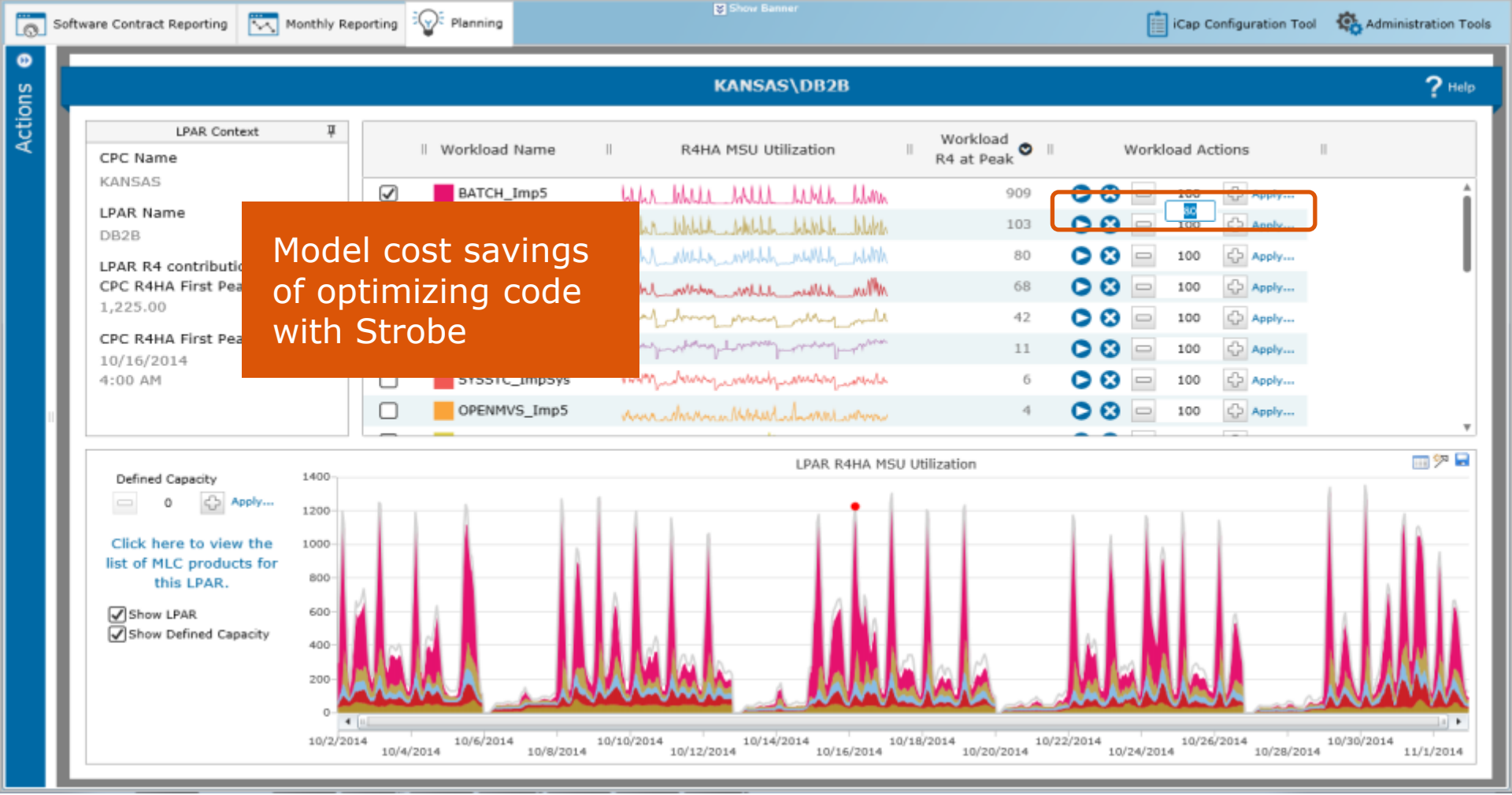
Note: Tracing was enabled for CICS. Consider turning off tracing to improve performance.

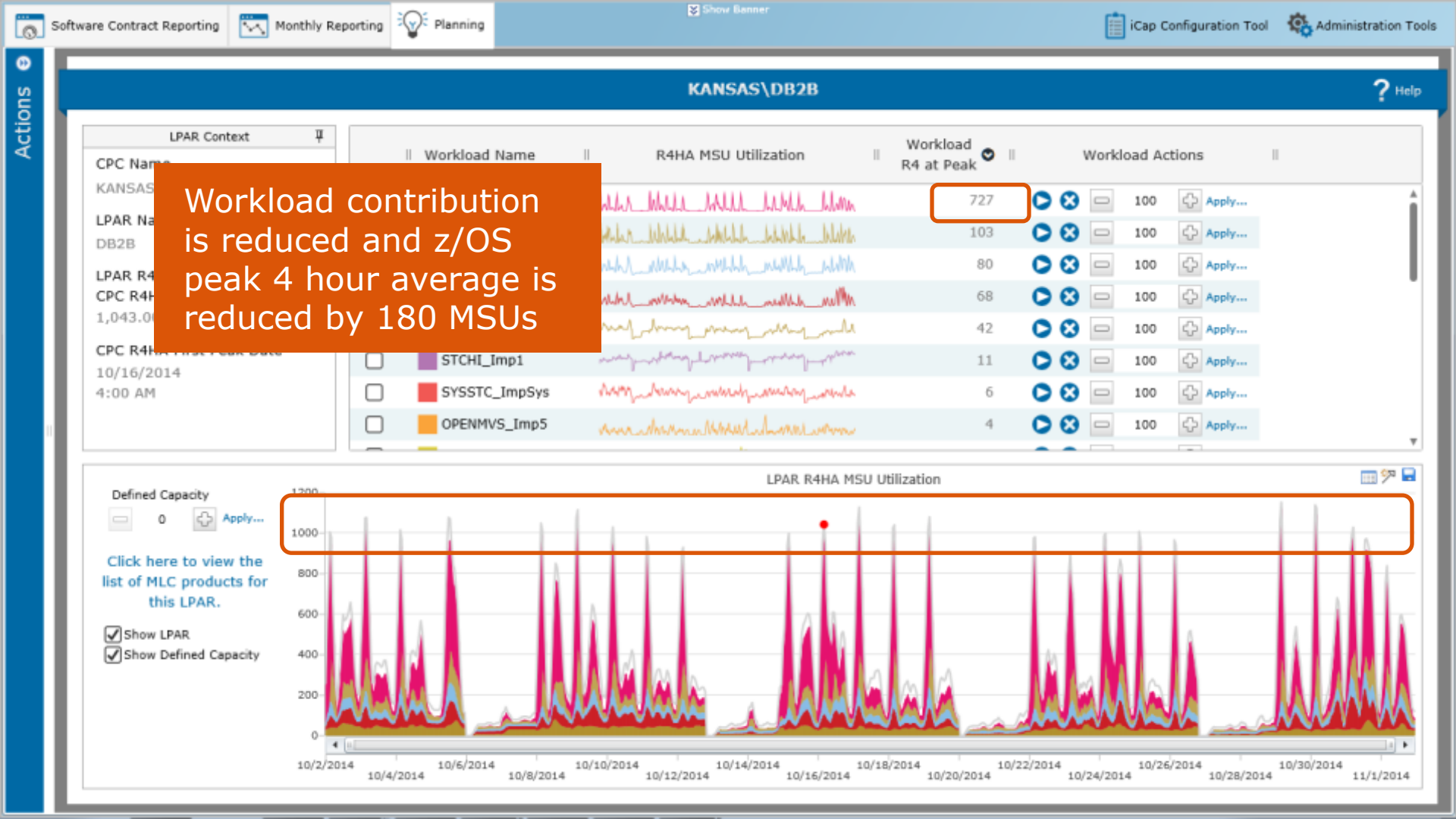
Profiled Transactions | All Transactions

Transaction 1: PD06 - 35.84% (97.19 sec) of CPU (profiled)

Transaction	Count	CPU %	Change TCB Modes	Change TCB Service Time %	Change TCB Mean Service Time (sec)	Mean Service Time (sec)				Margin Of Error (sec)
						Delay	Suspend	Exec	Total	
PD06	1,047	35.84	1,405,957	78.69	0.000561	0.816013	0.005983	0.134647	0.956643	0.004

Transaction 2: PD17 - 28.83% (78.18 sec) of CPU (profiled)


Software Contract Reporting
Monthly Reporting
Planning
Show Banner
iCap Configuration Tool
Administration Tools
Actions
KANSAS\DB2B
Help
LPAR Context
CPC Name
KANSAS
LPAR Name
DB2B
LPAR R4 contributi
CPC R4HA First Pea
1,225.00
CPC R4HA First Pea
10/16/2014
4:00 AM
Workload Name
R4HA MSU Utilization
Workload R4 at Peak
Workload Actions
BATCH_Imp5
909
103
80
68
42
11
6
4
OPENMVS_Imp5
100
Apply...
Model cost savings of optimizing code with Strobe
Defined Capacity
0
Apply...
Click here to view the list of MLC products for this LPAR.
Show LPAR
Show Defined Capacity
LPAR R4HA MSU Utilization
1400
1200
1000
800
600
400
200
0
10/2/2014
10/4/2014
10/6/2014
10/8/2014
10/10/2014
10/12/2014
10/14/2014
10/16/2014
10/18/2014
10/20/2014
10/22/2014
10/24/2014
10/26/2014
10/28/2014
10/30/2014
11/1/2014


Software Contract Reporting
Monthly Reporting
Planning
Show Banner
iCap Configuration Tool
Administration Tools
Actions
KANSAS\DB2B
Help
LPAR Context
Workload Name
R4HA MSU Utilization
Workload R4 at Peak
Workload Actions
727
103
80
68
42
11
6
4
100
Apply...
STCHI_Imp1
SYSSTC_ImpSys
OPENMVS_Imp5
10/16/2014
4:00 AM
Workload contribution is reduced and z/OS peak 4 hour average is reduced by 180 MSUs
LPAR R4HA MSU Utilization
Defined Capacity
0
Apply...
Click here to view the list of MLC products for this LPAR.
Show LPAR
Show Defined Capacity
1200
1000
800
600
400
200
0
10/2/2014
10/4/2014
10/6/2014
10/8/2014
10/10/2014
10/12/2014
10/14/2014
10/16/2014
10/18/2014
10/20/2014
10/22/2014
10/24/2014
10/26/2014
10/28/2014
10/30/2014
11/1/2014

Software Contract Reporting | Monthly Reporting | Planning | Show Banner | iCap Configuration Tool | Administration Tools

Plan Evaluation Summary Report

Plan: **Optimizing workload with Strobe**, Usage Month: **October - 2014**, Workload Type: **ServClasses**, Monthly MLC Total: **$1,190,208.42**

Save to PDF...

MLC Product	CPC Name (PricingPlex Name)	R4HA MSU Utilization	R4HA First Peak Cost	% of Total Cost	Cost Change	Average Cost/MSU	Incremental Cost/MSU	R4HA First Peak (MSU)
IMS V12 (5635-A03)			**$214,875.57**	18.05 %	**($10,389.96)**			
	KANSAS (BMCPLEX1)		$214,875.57	100.00 %	($10,389.96)	$95.13	$70.68	2221
DB2 10 for z/OS (5605-DB2)			**$346,782.12**	29.14 %	**($8,704.80)**			
	KANSAS (BMCPLEX1)		$346,782.12	100.00 %	($8,704.80)	$85.87	$72.54	4020
z/OS V1 (5694-A01)			**$168,650.85**	14.17 %	**($4,231.50)**			
	KANSAS (BMCPLEX1)		$168,650.85	100.00 %	($4,231.50)	$38.31	$23.25	4331
CICS TS for z/OS V4 (5655-S97)			**$279,753.30**	23.50 %	**($3,347.07)**			
	KANSAS (BMCPLEX1)		$279,753.30	100.00 %	($3,347.07)	$67.18	$56.73	4155
WebSphere MQ for z/OS V7 (5655-R36)			**$113,917.56**	9.57 %	**($2,901.60)**			
Tivoli NetView for z/OS V5 (5697-ENV)			**$66,229.02**	5.56 %	**($2,369.64)**			

Monthly MLC Total: **$1,190,208.42**

Savings: ($31,944.57)
Increase: $0.00
Difference: ($31,944.57)

Savings = $32K/month ($384K/year)

USE CASE 2a

Automated Problem Identification and Analysis

- Problem
  - Quickly identify and resolve abnormal application performance activity

USE CASE 2a

Automated Problem Identification and Analysis

- Solution
  - In MainView, set alarm to check for suspected loop criteria
  - Issue Alarm and WTO when initial criteria is met
  - Strobe analysis is automatically launched from MainView Alarm Manager
  - Message contains all required information for Strobe measurement
  - WTO enables automated Strobe measurement for deep dive analysis

USE CASE 2a

Automated Problem Identification and Analysis

Value

- Significantly reduce MTTR required for determining root cause of abnormal performance condition
- Automation ensures timeliness and eliminates resource restrictions

USE CASE 2b

Quickly Initiate Deep Dive Analysis

- Problem
  - Customer defines criteria in MainView where job may be looping
  - Once criteria is met (e.g. CPU 95% and no I/O etc.), schedule more in-depth analysis on suspected job

USE CASE 2b

Quickly Initiate Deep Dive Analysis

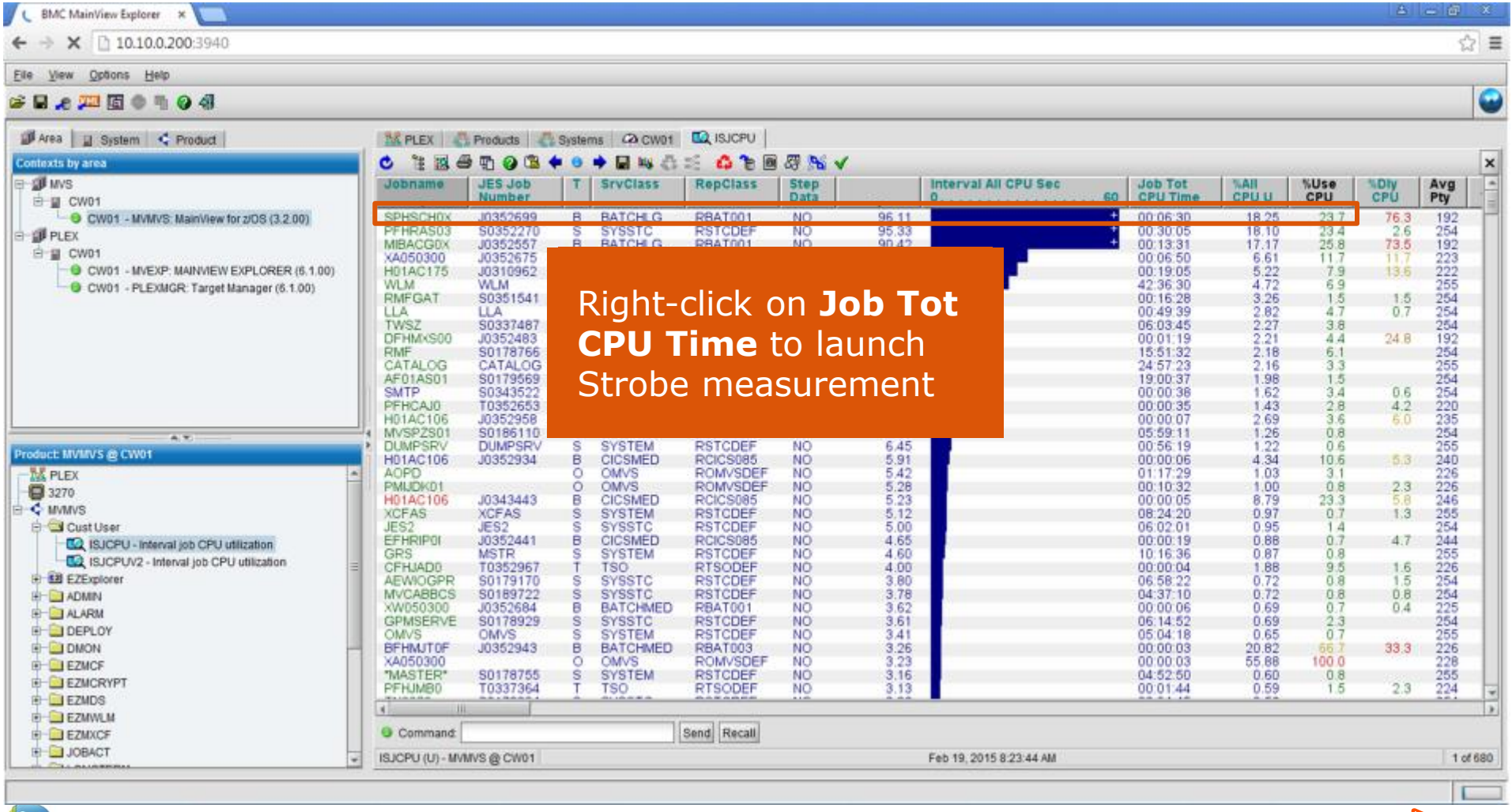
- Solution
  - Use JCPU view in MainView for z/OS
    - Right-click row with suspected looping job
    - Select iStrobe hyperlink to initiate Strobe analysis

USE CASE 2b

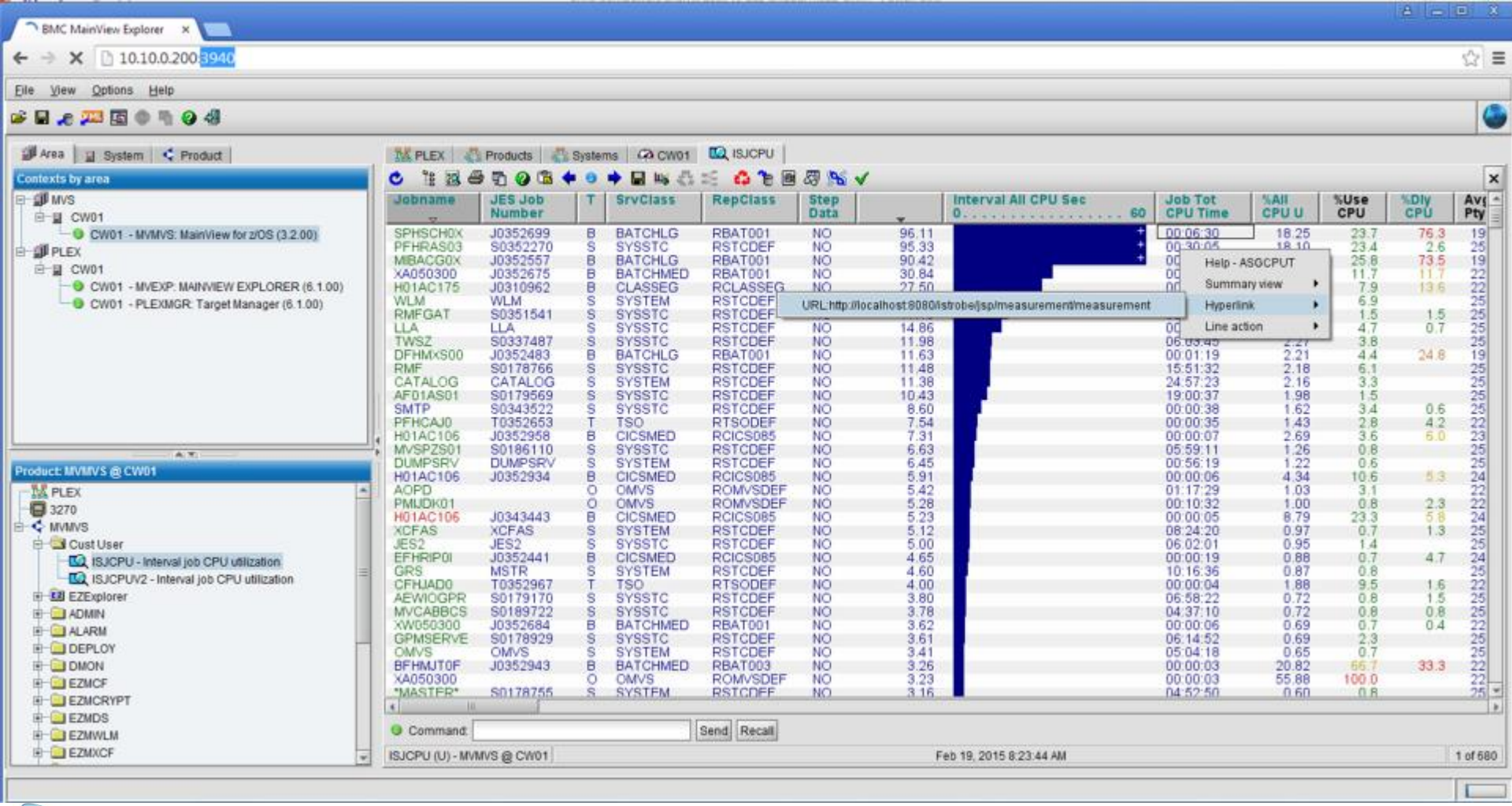
Quickly Initiate Deep Dive Analysis

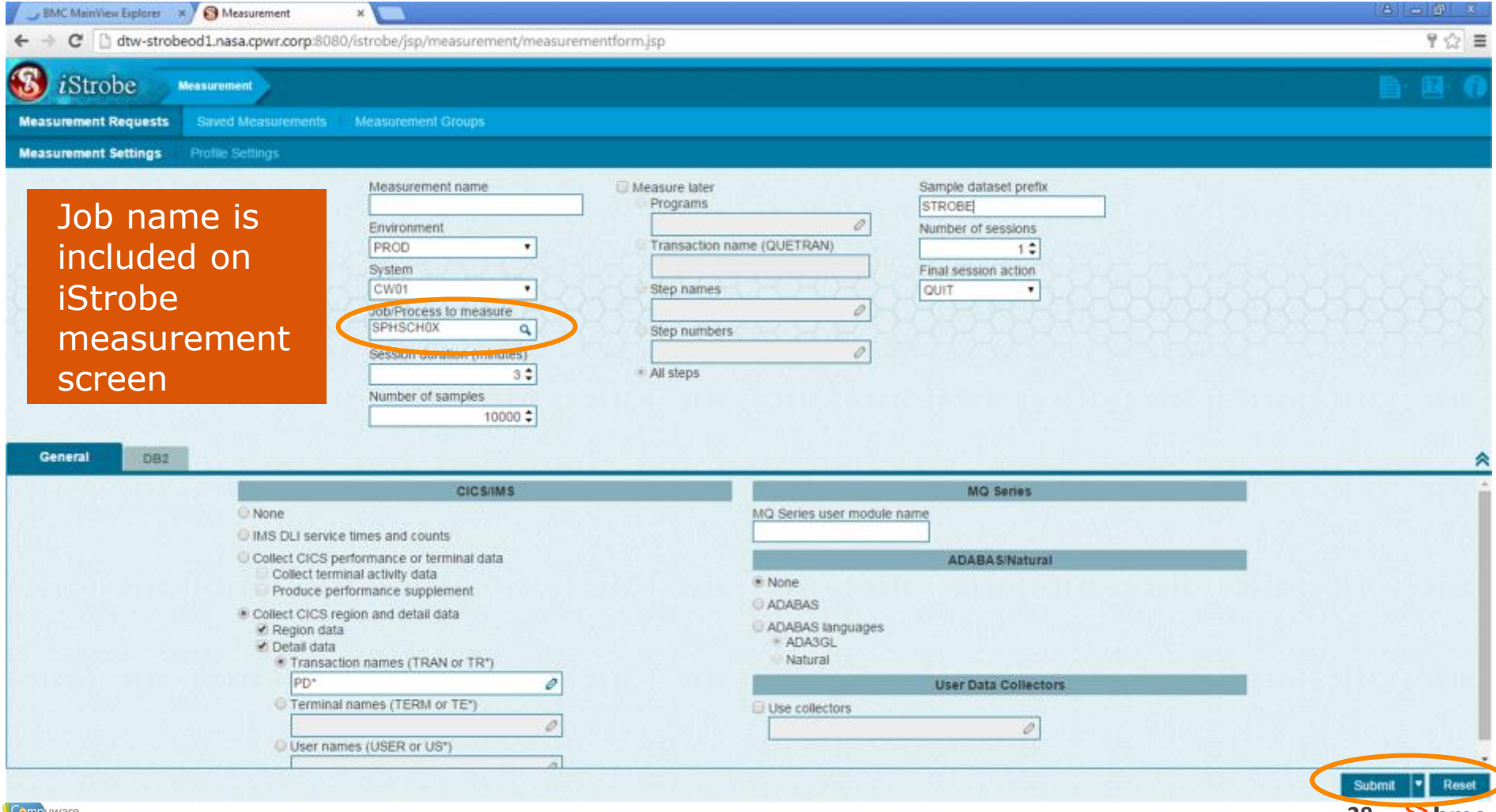
Value

- Initiate Strobe's deeper analysis with simple of point and click in MainView to determine where issue is looping in program code

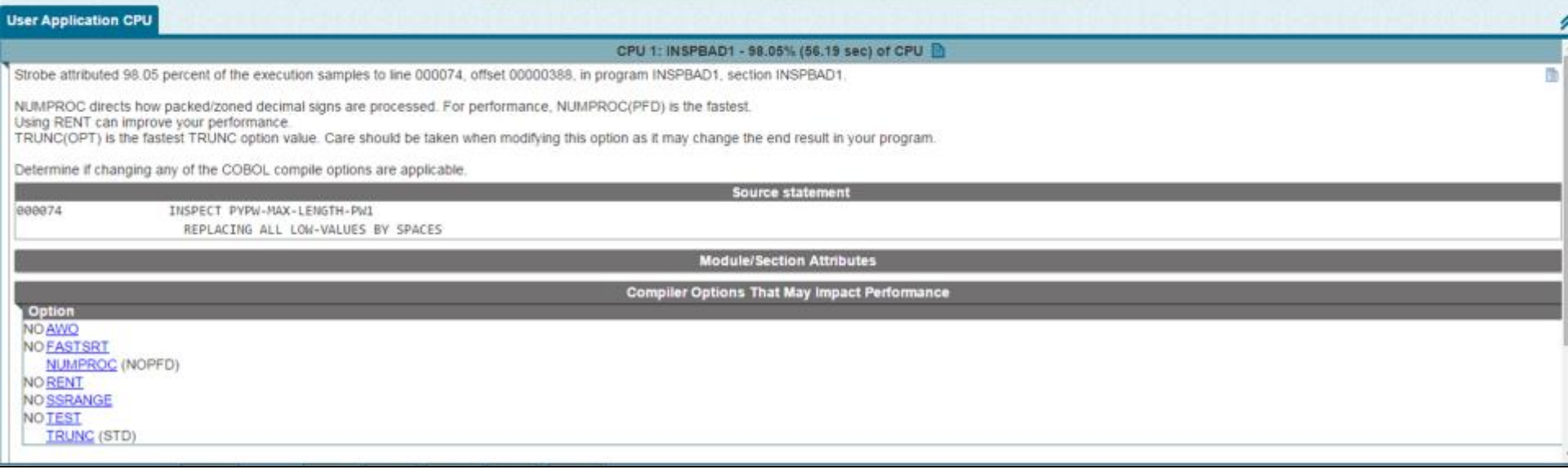


Right-click on **Job Tot CPU Time** to launch Strobe measurement


BMC MainView Explorer
10.10.0.200:3940
File View Options Help
Area System Product
Contexts by area
MVS
CW01
CW01 - MVMVS: MainView for z/OS (3.2.00)
PLEX
CW01
CW01 - MVEXP: MAINVIEW EXPLORER (6.1.00)
CW01 - PLEXMGR: Target Manager (6.1.00)
Product: MVMVS @ CW01
PLEX
3270
MVMVS
Cust User
ISJCPU - Interval job CPU utilization
ISJCPUV2 - Interval job CPU utilization
EZExplorer
ADMIN
ALARM
DEPLOY
DMON
EZMCF
EZMCRYPT
EZMDS
EZMWLM
EZMXCF
PLEX Products Systems CW01 ISJCPU
Jobname
JES Job Number
T
SrvClass
RepClass
Step Data
Interval All CPU Sec
0 60
Job Tot CPU Time
%All CPU U
%Use CPU
%Dly CPU
Avg Pty
SPHSCH0X J0352699 B BATCHLG RBAT001 NO 96.11 00:06:30 18.25 23.7 76.3 19
PFHRAS03 S0352270 S SYSSTC RSTCDEF NO 95.33 23.4 2.6 25
MIBACG0X J0352557 B BATCHLG RBAT001 NO 90.42 25.8 73.5 19
XA050300 J0352675 B BATCHMED RBAT001 NO 30.84 11.7 11.7 22
H01AC175 J0310962 B CLASSEG RCLASSEG NO 27.50 7.9 13.6 22
WLM WLM S SYSTEM RSTCDEF NO 6.9 25
RMFGAT S0351541 S SYSSTC RSTCDEF NO 1.5 1.5 25
LLA LLA S SYSSTC RSTCDEF NO 14.86 4.7 0.7 25
TWSZ S0337487 S SYSSTC RSTCDEF NO 11.98 3.8 25
DFHMXS00 J0352483 B BATCHLG RBAT001 NO 11.63 00:01:19 2.21 4.4 24.8 19
RMF S0178766 S SYSSTC RSTCDEF NO 11.48 15:51:32 2.18 6.1 25
CATALOG CATALOG S SYSTEM RSTCDEF NO 11.38 24:57:23 2.16 3.3 25
AF01AS01 S0179569 S SYSSTC RSTCDEF NO 10.43 19:00:37 1.98 1.5 25
SMTP S0343522 S SYSSTC RSTCDEF NO 8.60 00:00:38 1.62 3.4 0.6 25
PFHCAJ0 T0352653 T TSO RTSODEF NO 7.54 00:00:35 1.43 2.8 4.2 22
H01AC106 J0352958 B CICSMED RCICS085 NO 7.31 00:00:07 2.69 3.6 5.0 23
MVSPZS01 S0186110 S SYSSTC RSTCDEF NO 6.63 05:59:11 1.26 0.8 25
DUMPSRV DUMPSRV S SYSTEM RSTCDEF NO 6.45 00:56:19 1.22 0.6 25
H01AC106 J0352934 B CICSMED RCICS085 NO 5.91 00:00:06 4.34 10.6 5.3 24
AOPD O OMVS ROMVSDEF NO 5.42 01:17:29 1.03 3.1 22
PMUDK01 O OMVS ROMVSDEF NO 5.28 00:10:32 1.00 0.8 2.3 22
H01AC106 J0343443 B CICSMED RCICS085 NO 5.23 00:00:05 8.79 23.3 5.8 24
XCFAS XCFAS S SYSTEM RSTCDEF NO 5.12 08:24:20 0.97 0.7 1.3 25
JES2 JES2 S SYSSTC RSTCDEF NO 5.00 06:02:01 0.95 1.4 25
EFHRIP0I J0352441 B CICSMED RCICS085 NO 4.65 00:00:19 0.88 0.7 4.7 24
GRS MSTR S SYSTEM RSTCDEF NO 4.60 10:16:36 0.87 0.8 25
CFHJAD0 T0352967 T TSO RTSODEF NO 4.00 00:00:04 1.88 9.5 1.6 22
AEWIOGPR S0179170 S SYSSTC RSTCDEF NO 3.80 06:58:22 0.72 0.8 1.5 25
MVCABBCS S0189722 S SYSSTC RSTCDEF NO 3.78 04:37:10 0.72 0.8 0.8 25
XW050300 J0352684 B BATCHMED RBAT001 NO 3.62 00:00:06 0.69 0.7 0.4 22
GPMSERVE S0178929 S SYSSTC RSTCDEF NO 3.61 06:14:52 0.69 2.3 25
OMVS OMVS S SYSTEM RSTCDEF NO 3.41 05:04:18 0.65 0.7 25
BFHMJT0F J0352943 B BATCHMED RBAT003 NO 3.26 00:00:03 20.82 66.7 33.3 22
XA050300 O OMVS ROMVSDEF NO 3.23 00:00:03 55.88 100.0 22
MASTER S0178755 S SYSTEM RSTCDEF NO 3.16 04:52:50 0.60 0.8 25
Help - ASGCPUT
Summary view
Hyperlink
Line action
URL:http://localhost:8080/istrobe/jsp/measurement/measurement
Command:
Send
Recall
ISJCPU (U) - MVMVS @ CW01
Feb 19, 2015 8:23:44 AM
1 of 680


Job name is included on iStrobe measurement screen
BMC MainView Explorer
Measurement
dtw-strobeod1.nasa.cpwr.corp:8080/istrobe/jsp/measurement/measurementform.jsp
iStrobe
Measurement
Measurement Requests
Saved Measurements
Measurement Groups
Measurement Settings
Profile Settings
Measurement name
Environment
PROD
System
CW01
Job/Process to measure
SPHSCH0X
Session duration (minutes)
3
Number of samples
10000
Measure later
Programs
Transaction name (QUETRAN)
Step names
Step numbers
All steps
Sample dataset prefix
STROBE
Number of sessions
1
Final session action
QUIT
General
DB2
CICS/IMS
None
IMS DLI service times and counts
Collect CICS performance or terminal data
Collect terminal activity data
Produce performance supplement
Collect CICS region and detail data
Region data
Detail data
Transaction names (TRAN or TR*)
PD*
Terminal names (TERM or TE*)
User names (USER or US*)
MQ Series
MQ Series user module name
ADABAS/Natural
None
ADABAS
ADABAS languages
ADA3GL
Natural
User Data Collectors
Use collectors
Submit
Reset

Strobe Advisor identifies issue



Looking Ahead

- Initial product integration planned for late Q2 delivery
  - CAzE to Strobe
  - MainView to Strobe
- Long-term partnership
  - Other use cases in development
  - Standardizing respective solutions

Thank You