The Cheryl and Frank zRoadshow (Part 2)

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Session 19087

August 5, 2016

Welcome

- THANK YOU for attending this session!
  We hope you enjoyed the week, we sure did.
- Who are we and what we do:
  - Founded in 1987 by Cheryl Watson & Tom Walker;
    Frank Kyne joined in 2014
  - ***Cheryl Watson's Tuning Letter*** quarterly,
    published since 1991
  - ***Cheryl Watson's System z CPU Chart***
  - Public and private classes and consulting on z/OS new features, WLM, performance, Parallel Sysplex, high availability, software pricing, outsourcing contract reviews, and chargeback
  - ***GoalTender*** – WLM policy analyzer
  - ***BoxScore*** – After-the-fact benchmark
  - ***BoxScore II*** – New non-SAS version in partnership with H&W Computer Systems
  - For more info see our NEW website: www.watsonwalker.com
- This is the second half of a 2-part presentation.
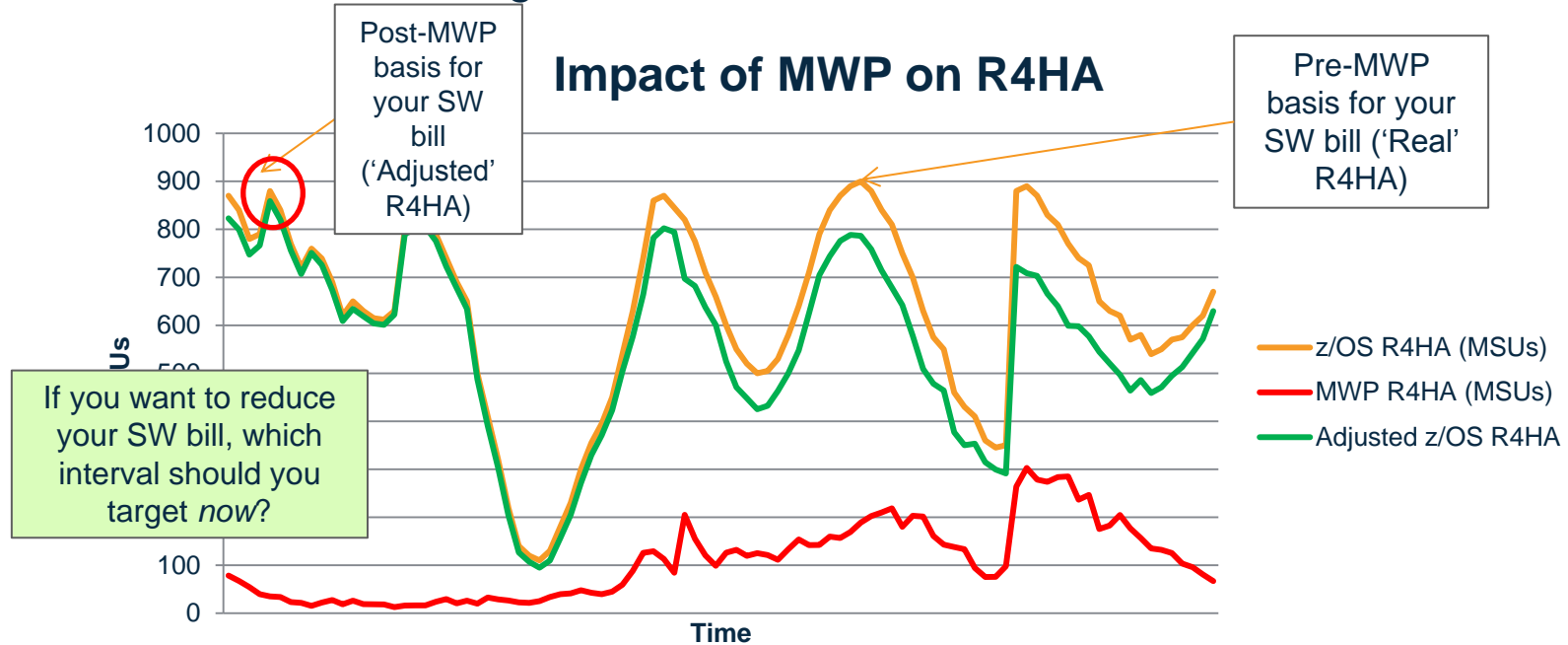
Welcome

- Topics for Part 2 (today):
  - Determining Cost of Changing Weights
  - Latest SCRT
  - COBOL and ABO
  - zAware
  - WSC Performance Hot Topics
  - End of Marketing/End of Support
  - zEvent & Doc Buddy
  - IBM Analytics Tools related to z/OS

Why Techies Should Care About S/W Costs

- Software costs are determined by Rolling 4-Hour Average (R4HA)
- Session 19098 – *Containing MLC Costs For Mobile and New Workloads*, Frank Kyne

Impact of MWP on R4HA

Post-MWP basis for your SW bill ('Adjusted' R4HA)

Pre-MWP basis for your SW bill ('Real' R4HA)

If you want to reduce your SW bill, which interval should you target *now*?

z/OS R4HA (MSUs)
MWP R4HA (MSUs)
Adjusted z/OS R4HA

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Why Techies Should Care About S/W Costs

- Our analysis of customer's SCRT reports
- Determining the cost isn't fun!

MLC Products	Product ID	Lic Type	Lic Ref	In SCRT	MSUs	MSUs	10.0%	$ 258,224.07	100.0%
z/OS V2	5650-ZOS	VWLC	LPAR	Yes	1022	1022			
z/OS V2 (Traditional)	5650-ZOS	AWLC	LPAR	Yes	1022	1022	10.0%	$ 151,509.65	58.7%
z/OS V2 DFSORT	5650-ZOS	AWLC	z/OS	No	1022	1022	10.0%	$ 1,721.54	0.7%
non-z/OS (AWLC)									
DB2 10 for z/OS	5605-DB2	AWLC	LPAR	Yes	970	970	10.0%	$ 90,266.35	35.0%
WebSphere MQ for z/OS V7	5655-R36	AWLC	LPAR	Yes	743	743			
COBOL for OS/390 & VM V2	5648-A25	AWLC	LPAR	No89	220	220	10.0%	$ 5,661.31	2.2%
IBM Enterprise Cobol for z/OS V4	5655-S71	AWLC	LPAR	No89	489	489	10.0%	$ 9,065.23	3.5%

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Why Techies Should Care About S/W Costs

- What if you could reduce the peak R4HA by 10% by reducing the cap, installing a capping product, implementing zEDC, adding large buffers to DB2, reducing RNI, etc.? (See Session 19155, *Benchmark every week? Why? Are you crazy?*)

- $258,244 to $245,706 = -$12,538 (-4.8%) per month for a change in 100 MSUs

- $150,456 per year

MLC Products	Product ID	Lic Type	Lic Ref	In SCRT	MSUs	MSUs	10.0%	$ 245,706.00	100.0%
z/OS V2	5650-ZOS	VWLC	LPAR	Yes	920	920			
z/OS V2 (Traditional)	5650-ZOS	AWLC	LPAR	Yes	920	920	10.0%	$ 145,282.60	59.1%
z/OS V2 DFSORT	5650-ZOS	AWLC	z/OS	No	920	920	10.0%	$ 1,621.28	0.7%
non-z/OS (AWLC)									
DB2 10 for z/OS	5605-DB2	AWLC	LPAR	Yes	873	873	10.0%	$ 84,972.75	34.6%
WebSphere MQ for z/OS V7	5655-R36	AWLC	LPAR	Yes	669	669			
COBOL for OS/390 & VM V2	5648-A25	AWLC	LPAR	No89	198	198	10.0%	$ 5,382.92	2.2%
IBM Enterprise Cobol for z/OS V4	5655-S71	AWLC	LPAR	No89	440	440	10.0%	$ 8,446.45	3.4%

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Why Techies Should Care About S/W Costs

- What if the R4HA is going to increase by 10% because you need to provide more capacity, the RNI increased, transaction volume increased, new mobile workload added or licensed, etc?

- $258,244 -> $270,736 = $12,492 (+4.8%) per month

- $149,904 per year

MLC Products	Product ID	Lic Type	Lic Ref	In SCRT	MSUs	MSUs	10.0%	$ 270,736.30	100.0%
z/OS V2	5650-ZOS	VWLC	LPAR	Yes	1124	1124			
z/OS V2 (Traditional)	5650-ZOS	AWLC	LPAR	Yes	1124	1124	10.0%	$ 157,736.69	58.3%
z/OS V2 DFSORT	5650-ZOS	AWLC	z/OS	No	1124	1124	10.0%	$ 1,821.80	0.7%
non-z/OS (AWLC)									
DB2 10 for z/OS	5605-DB2	AWLC	LPAR	Yes	1067	1067	10.0%	$ 95,554.11	35.3%
WebSphere MQ for z/OS V7	5655-R36	AWLC	LPAR	Yes	817	817			
COBOL for OS/390 & VM V2	5648-A25	AWLC	LPAR	No89	242	242	10.0%	$ 5,939.69	2.2%
IBM Enterprise Cobol for z/OS V4	5655-S71	AWLC	LPAR	No89	538	538	10.0%	$ 9,684.01	3.6%

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Why Techies Should Care About S/W Costs

- Techies (sysprogs, performance analysts, capacity planners) need to be aware of cost impact of technical changes:
  - LPAR weights
  - Capping
  - LP management
  - Rolling 4-hour average (R4HA)
  - RSU maintenance
  - New software releases
- The Sub-Capacity Report Tool (SCRT) can be used to determine that

My Latest Passion – New SCRT

- New Sub-Capacity Reporting Tool
  - See session 19281 from **Chuck Hackett** – *Introduction to the New SCRT*
  - New pricing options couldn't be supported in old SCRT, so new MWRT tool was created
  - SCRT (z/OS) → MWRT (PC) → SCRT (z/OS, Java)
  - Classic SCRT release – V23.7.4
  - Java SCRT release – V23.14.0 (same code base, runs on z/OS, Linux, Windows)

My Latest Passion – New SCRT

- Java SCRT release
  - Supports CMP (Country Multiplex Pricing), MWP (Mobile Workload Pricing), zCAP (z Systems Collocated Application Pricing), zWPC (z Systems Workload Pricing for Cloud), and new features
  - Detailed data available (optional):
    - MSUs by product by hour by LPAR
    - Shows MWP, zCAP, and zWPC adjustments
    - Can sort easily by R4HA to find the next peak(s)
    - Can be used to determine/confirm ISV charges

My Latest Passion – New SCRT

- The following examples are from Chuck's presentation
  - D5 – Special Conditions (e.g. MWP)
  - E5 – Product Summary Information
  - P5 – Product Max Contributors
  - V5 – Mobile/zCAP Pricing Detailed Data
- Country Multiplex Example
  - W3 – Detailed Interval Data

My Latest Passion – New SCRT

```
=(D5)==================================================
SPECIAL CONDITIONS

MWP_Input_From_WLM
```

Special condition generated

WLM classification is source of mobile data.

```
=(E5)==================================================
PRODUCT SUMMARY INFORMATION
```

MLC Product Name	MLC Product ID	Tool MSUs	Footnotes
z/OS V2	5650-ZOS	1269 (d)	
DB2 11 for z/OS	5615-DB2	1269	
CICS TS for z/OS V5	5655-Y04	1269	
IBM MQ for z/OS V8	5655-W97	1269	
IMS V13	5635-A04	1269	

(d) footnote is applied to highest z/OS version.

IPLA Product Name	IPLA Product ID	Tool MSUs	Footnotes
IBM WebSphere Application Server for z/OS V8	5655-W65	3 (iv)	
IBM Integration Bus for z/OS V9	5655-IBB	28 (iv)	
IBM Multi-site Workload Lifeline V2	5655-UM4	1269	

(d) footnote explanation generated.

Footnotes:
(iv) Product's Tool MSUs are based on Getting Started Sub-capacity Pricing from one or more LPARs
(d) Mobile Workload Pricing transaction data from this product was included from one or more LPARs

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My Latest Passion – New SCRT

Either source → Section P5 Impacts.

Note: these values reflect the mobile adjustment.

Adjustment during peak hour

```
==P5=============================================================
PRODUCT MAX CONTRIBUTORS


                                                   LPAR    Mobile MSU
Product Name            Product ID    Highest   Date/Time       LPAR1   Reduction

z/OS V2                 5650-ZOS        1525   08 Feb 2015 - 17:00   1525       60
DB2 11 for z/OS         5615-DB2        1525   08 Feb 2015 - 17:00   1525       60
CICS TS for z/OS V5     5655-Y04        1525   08 Feb 2015 - 17:00   1525       60
IBM MQ for z/OS V8      5655-W97        1525   08 Feb 2015 - 17:00   1525       60
IMS V13                 5635-A04        1525   08 Feb 2015 - 17:00   1525       60
IBM Enterprise Cobol for z/OS V4  5655-S71  1525  08 Feb 2015 - 17:00  1525   60
File Export for z/OS V1 5697-I12        1525   08 Feb 2015 - 17:00   1525       60
Migration Utility for z/OS V4  5655-MGU  1525   08 Feb 2015 - 17:00   1525       60
```

My Latest Passion – New SCRT

Both sources of MWP data→ With "Generate_Detailed_Data"

=V5===
MOBILE/ZCAP PRICING DETAILED DATA

MLC Products   **Adjusted LPAR value**

5650-ZOS   z/OS V2

CSV input for CICS Family

WLM classified mobile workloads

Combined Mobile Reduction

Date Time of RMF Interval	Type	CPC MSU	Partition JA0	CICS Mobile Partition JA0	WLM Mobile Partition JA0	Total Mobile MSU Reduction	CPC Total
01 Dec 2015 - 06.00	2817-760	5001	799	4	51	55	799
01 Dec 2015 - 07.00	2817-760	5001	840	8	54	62	840
01 Dec 2015 - 08.00	2817-760	5001	936	11	60	71	936
01 Dec 2015 - 09.00	2817-760	5001	1057	15	68	83	1057
01 Dec 2015 - 10.00	2817-760	5001	1161	15	75	90	1161
01 Dec 2015 - 11.00	2817-760	5001	1265	15	81	96	1265
01 Dec 2015 - 12.00	2817-760	5001	1269	15	82	97	1269
01 Dec 2015 - 13.00	2817-760	5001	1259	15	81	96	1259
01 Dec 2015 - 14.00	2817-760	5001	1255	15	80	95	1255
01 Dec 2015 - 15.00	2817-760	5001	571	15	37	52	571
01 Dec 2015 - 16.00	2817-760	5001	154	15	10	25	154
01 Dec 2015 - 17.00	2817-760	5001	325	15	22	37	325
01 Dec 2015 - 18.00	2817-760	5001	452	15	29	44	452

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Detailed Interval Data

MLC Products

5650-ZOS	z/OS V2 (Traditional)

Processor Type Serial

2827-20202

Date Time of RMF Interval	Type	CPC MSU	Partition					CPC Total
			NSYS	PRD1	TST1	TSYS	USYS	
02 Aug 2014 - 00:00 UTC	2827-706	957	14	110	47	179	13	363
02 Aug 2014 - 01:00 UTC	2827-706	957	14	89	45	159	13	320
02 Aug 2014 - 02:00 UTC	2827-706	957	13	70	44	166	14	307
02 Aug 2014 - 03:00 UTC	2827-706	957	14	61	44	217	15	351
02 Aug 2014 - 04:00 UTC	2827-706	957	13	54	45	253	17	382
02 Aug 2014 - 05:00 UTC	2827-706	957	13	48	45	255	16	377
02 Aug 2014 - 06:00 UTC	2827-706	957	13	52	48	250	16	379
02 Aug 2014 - 07:00 UTC	2827-706	957	13	60	49	192	17	331

2827-30303

Type	CPC MSU	Partition				CPC Total
		CPUC	CPUG	LPAR3	LPAR8	
2827-705	813	157	35	69	18	279
2827-705	813	180	34	96	16	326
2827-705	813	202	33	137	16	388
2827-705	813	224	42	148	12	426
2827-705	813	263	51	167	12	493
2827-705	813	248	50	155	12	465
2827-705	813	229	50	136	11	426
2827-705	813	205	41	152	11	409

2827-40404

Type	CPC MSU	Partition	CPC Total
		CPUA	
2827-703	511	226	226
2827-703	511	229	229
2827-703	511	291	291
2827-703	511	326	326
2827-703	511	364	364
2827-703	511	381	381
2827-703	511	333	333
2827-703	511	282	282

2827-50505

Type	CPC MSU	Partition					CPC Total
		CSYS	DSYS	ESYS	PSYS	QSYS	
2827-509	588	41	12	7	11	14	85
2827-509	588	36	11	7	12	14	80
2827-509	588	33	10	6	12	14	75
2827-509	588	31	11	7	12	14	75
2827-509	588	32	10	6	13	15	76
2827-509	588	49	14	6	11	15	95
2827-509	588	55	47	6	12	15	135
2827-509	588	53	77	6	10	15	161

MultiPlex

Total
953
955
1061
1178
1315
1318
1273
1183

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My Latest Passion – New SCRT

- SCRT releases
  - Classic version V23.7.4
  - Java version
    - V23.10 (10/2015) – Replacement for MWRT; support for MWP, zCAP, CMP
    - V23.13 (3/2016) – Mobile in WLM, z.VSE, z13s
    - V23.14 (7/2016) – z/VSE in multiplex, Windows, zLinux, linux
    - V24.10 (10/2016) – Cloud pricing (zWPC)
    - V24.11+ (3/2017) – ISV reports, performance improvements
  - With latest release, the classic version is being stabilized – no new features.

My Latest Passion – New SCRT

- z Systems Workload Pricing for Cloud (zWPC)
  - US Announcement 216-319, July 26, 2016 – *IBM z Systems Workload Pricing for Cloud for z/OS can reduce the cost of growth for public cloud transactions*
  - Provides discounts for transactions coming from the cloud being processed in CICS, IMS, DB2, MQ, and WAS
  - Public cloud offerings include IBM Bluemix, Amazon Web Services, Microsoft Azure
  - Requires new SCRT V24.10.0 in October 11, 2016
  - Very similar to MWP (60% discount, IBM's agreement, WLM support)

My Latest Passion – New SCRT

- Problem: Many ISVs use MIPS pricing for contracts
  - There's little problem if product is run on one LPAR
  - There's a MAJOR problem if product runs on more than one LPAR
    - Can't determine peak usage without processing type 70 records for every day and every month during the month for each LPAR
    - What happens during an audit when you need a year's worth of data?
    - Try to get ISVs to agree to use SCRT reports!
    - New detailed report let's you take any combination of LPARs to find the peak period of two or more LPARs

Latest Passion – New SCRT

- Some problems running Java SCRT on z/OS
  - One customer said it was taking 2 hours on z/OS
  - IBM responded: "SCRT Java can slow down quite a bit as we near the maximum heap size (which is set in the STDENV DD statement in the SCRT JCL; it is the -Xmx parameter)... As memory usage nears that value, java garbage collection can run extremely quickly as it tries to free memory. A combination of expanded region size and a very large max heap size should alleviate the problem." IBM is working on performance improvement.
  - Solution for now – use Windows version or increase region and max heap size to run in minutes

COBOL 5 or COBOL 6 or ABO?

- COBOL 5.1, 5.2 (5655-W32, avail April 2013)
  - Newest major version in many years
  - Compiles take longer, more resources
  - But runtime is usually lower, sometimes significantly
  - Often takes longer than Single Version Charge (SVC)
  - 5.2 provides significant improvements
- COBOL 6.1 (5655-EC6, avail Feb 2016)
  - Can handle larger compiles; provides JSON GENERATE, nested copy replace
- Automatic Binary Optimizer (5697-AB1, avail Oct 2015)
  - Designed for COBOL 3 or COBOL 4 programs that aren't going to be recompiled with COBOL 5 or 6
  - Runtime is usually lower, especially if using architectural level set (ALS), but less than recompile
  - Can be used to reduce CPU time when source has been lost
- All have 90-day free trial period, so delays period before license charges kick in

COBOL 5 or COBOL 6 or ABO?

- COBOL 5 Pros & Cons
    - 5.2 has corrected some of the 5.1 'challenges'
    - P: Most widely used version after COBOL 4
    - P: Runtime is reduced
    - P: Only need to pay for use on one LPAR
    - C: Requires PDSE object libraries
    - C: Lots of changes, so thorough testing is needed
    - C: Can't compile very large programs

COBOL 5 or COBOL 6 or ABO?

- COBOL 6 Pros & Cons
  - P: Most recent version
  - P: Can compile very large programs
  - P: Additional enhancements such as JSON and nested copy replace
  - P: Only need to pay for use on one LPAR
  - C: Most recent version
  - C: Still needs thorough testing

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COBOL 5 or COBOL 6 or ABO?

- ABO Pros & Cons
  - P: Can reduce runtime (less than recompile on newer compiler)
  - P: Provide runtime reduction for programs where source has been lost
  - P: Can try using cloud based trial
  - **C: You pay for every LPAR that run ABO-load modules**
  - C: This can be very expensive; so you need to be able to justify the cost; if programs can't reduce peak R4HA, then might not be justified
  - C: More difficult debugging, difficult control of load modules, concern with Sarbanes-Oxley
  - C: Requires same amount of testing that recompiling under COBOL 5 or 6 needs
  - C: We haven't found a customer who can justify the cost

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COBOL 5 or COBOL 6 or ABO?

- References:
  - *19993 – Accelerate Performance of Your COBOL Modules using the IBM Automatic Binary Optimizer for z/OS*, Tom Ross
  - *19495 – COBOL V6.1 Was Announced! What's New?*, Tom Ross
  - *19503 – How to take advantage of the new Enterprise COBOL V5/V6 compilers – Migration!*, Tom Ross
  - *19508 – Meet the Experts in LE and Languages*
    - REXX and REXX compiler is stabilized
    - Customer doesn't see COBOL 5/6 performance improvements in CICS COBOL programs; but CPU time is very small and there is a fixed startup time for each (COBOL runtime startup and C runtime startup) so you won't see major change

zAware User Experience

- Session 19403 – *zAware User Experience*, Dan Hines, UPS
- zAware (IBM z Systems Advanced Workload Analysis Reporter) – Additional LPAR monitoring other systems by reviewing logs and other data; minimal overhead; designed to quickly respond to unexpected problems
- Until now, I had not seen actual benefits
- Estimated cost of hour of downtime ($69K to $6.5M) – IBM Systems Magazine March 2001
- Estimated cost of zAware – tiny fraction of that
- It's time to reconsider zAware!

WSC z/OS Performance Hot Topics

- Session 18912 – *EWCP Project Opening and ATS Hot Topics*, John Burg, Kathy Walsh

- I think this is always one of the most beneficial sessions of every SHARE conference – try not to miss it

- My favorites:
  - Best practices for Clearing Memory (LPAR de-activations and activations)
  - Managing vertical highs, mediums, lows – new recommendations
  - BCPii now cuts SMF type 106 records

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Optimize LPAR Performance

- Set weights to meet capacity needs
  - Optimize VHs to improve performance

- Need to manage weights across shift changes and business cycles

ROT – Define 1-2 LPs more than weight needs

Increase weight to optimize VHs for SYSZ

Decrease weight to optimize VHs for other partitions

WSC z/OS Performance Hot Topics
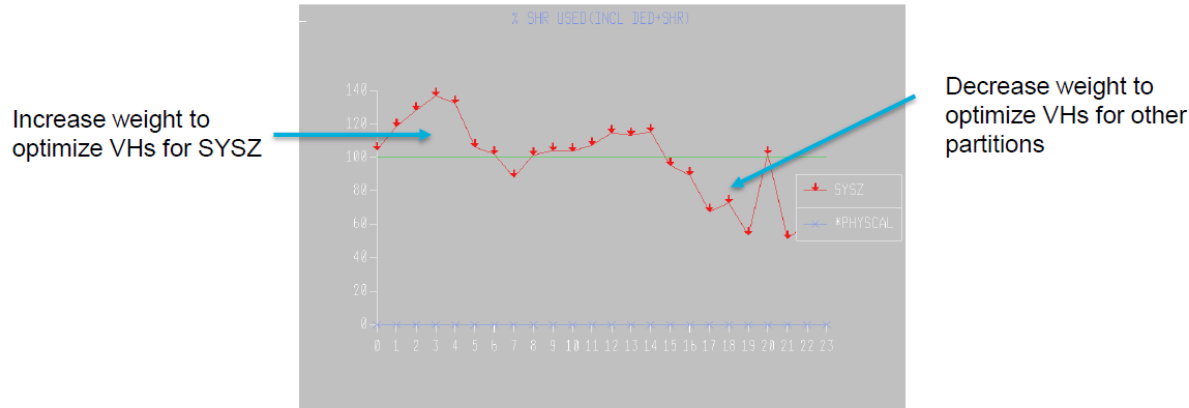
WLM Support for Mobile Pricing – CPU / Tran

- CICS Transaction Service Class – **Total and Mobile APPL%**

```
-----------------------------------------------------------------------------------------------

REPORT BY: POLICY=BASE          WORKLOAD=CICSWKLD    SERVICE CLASS=CICSFAST    RESOURCE GROUP=*NONE
                                                     CRITICAL    =NONE
                                                     DESCRIPTION =CICS fast Service class

         -TRANSACTIONS-    TRANS-TIME HHH.MM.SS.TTT
AVG          0.00    ACTUAL              1.343
MPL          0.00    EXECUTION             669
ENDED         671    QUEUED                  0
END/S       11.18    R/S AFFIN               0
#SWAPS          0    INELIGIBLE              0
EXCTD         667    CONVERSION              0
AVG ENC      0.00    STD DEV                 0
REM ENC      0.00
MS ENC       0.00

TRANSACTIONS APPL% :    TOTAL :   CP 196.49   AAP/IIP ON CP    0.00   AAP/IIP    0.00
                        MOBILE :  CP 104.80   AAP/IIP ON CP    0.00   AAP/IIP    0.00
```

Can Calculate CPU / Tran without CICS 110 records or IMS logs
- RMF 1 Minute Interval
- 1.9649 * 60 seconds = 117.894 CPU Seconds
- 671 Ended Transactions

CPU / Tran = 117.894 / 671 = .1757 CPU seconds / Tran

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End of Marketing

- z114/z196

  – z114 and z196 was withdrawn from marketing on June 30, 2014

  – This included any upgrades from z9 and z10

  – Features and conversions delivered via modification to Licensed Internal Code (LIC) were not available after June 30, 2015
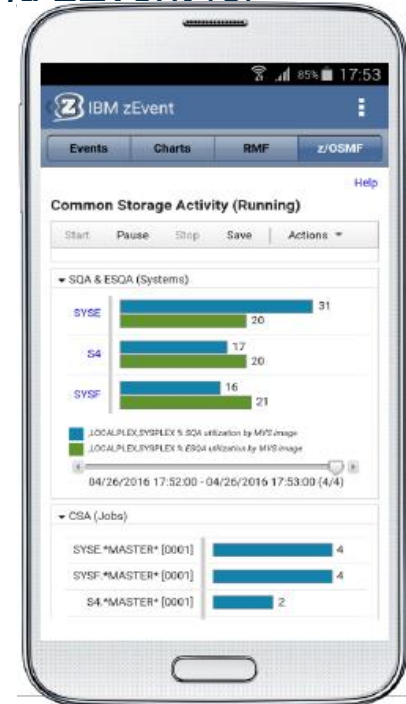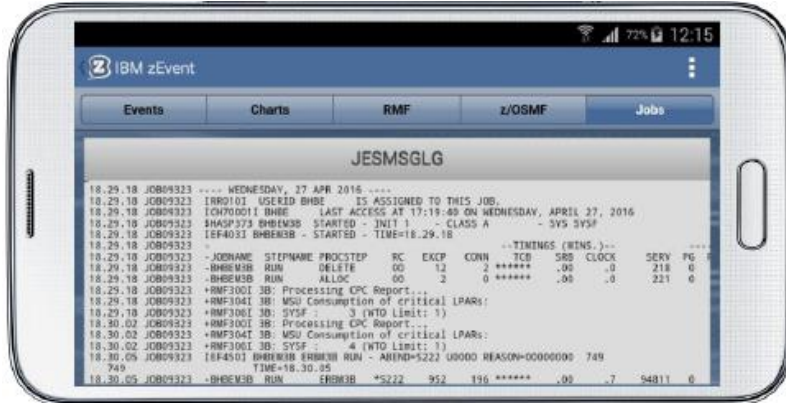
End of Service

- Software - http://www.ibm.com/software/data/support/lifecycle/
- z/OS 1.13
  - End of Service will be September 30, 2016 (just 57 days from now!)
- z/OS 1.12
  - End of Service was September 30, 2014

How To Be a Night Club Sensation

- New zEvent mobile app - Session 19400, *z/OSMF and Mobile: Using zEvent for Rapid Notification*

- SDSF *and* z/OSMF on your phone – could life get any better?? The implementation is relatively easy . And the cost is
	..... FREE!
- Download zEvent app from Google Play Store or Apple App Store

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IBM Doc Buddy

- New, handy, FREE, little IBM app for Android and iPhone to let you look up messages for z/OS-based products.

- Download messages in advance, can then access without web access.

- Was recently updated to release 1.1.1.

- For more info, and to send your feedback and suggestions to IBM, see http://ibmdocbuddy.mybluemix.net/

IBM z Operational Insights
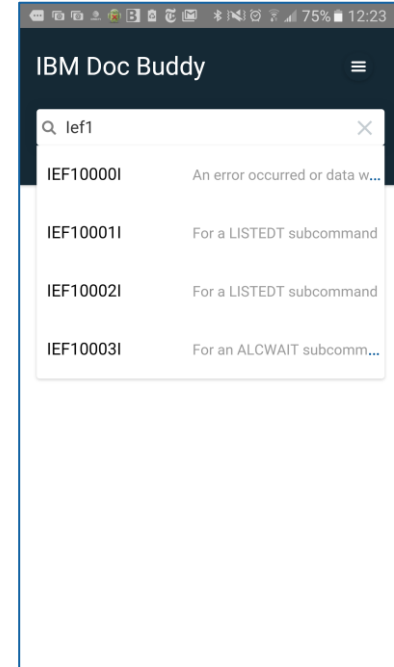
- In early 2015, IBM had a beta offering called CICS Operational Insights. This service runs in the cloud (using IBM's Bluemix) and analyzes data from your system, helping you identify CICS programs that would be good candidates for Threadsafe….
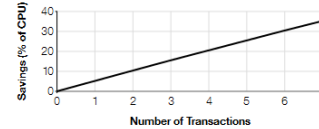
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IBM z Operational Insights

This was interesting to us, because it reported potential CPU time savings (AND it was free!)

CICS Threadsafe Report [Sample data ▼] **Feb 20, 2015 (10:00 – 11:00)**

Rate insight

Potential savings:	Potential improvements:	Benchmark rank:
35.2%	**28.4 – 76.3%**	**No rank**
of total CPU time	of response time	potential CPU savings

7
TXNS
← →

CPU Time by Transaction
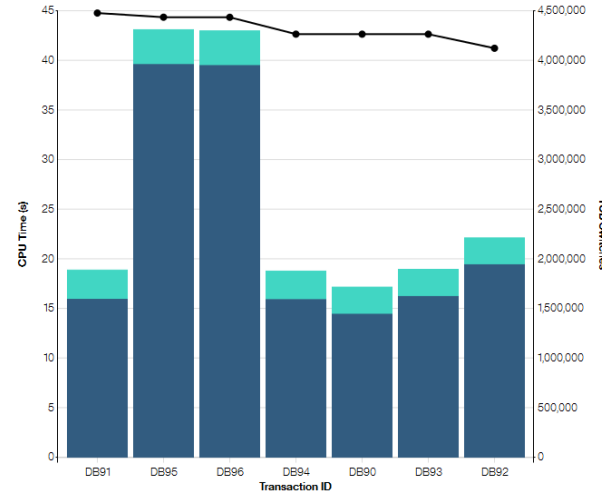
Top 7 Transactions by CPU Time

Tran ID	Task Count	TCB Switches	QR CPU Time	Total CPU Time	CPU Savings (s)	CPU Savings (%)
DB91	10600	4.48m	2.95	18.9	9.48	50.3
DB95	10600	4.43m	3.51	43.1	9.4	21.8
DB96	10600	4.43m	3.5	43	9.39	21.9
DB94	10600	4.26m	2.88	18.8	9.03	48.2
DB90	10600	4.26m	2.74	17.1	9.03	52.7
DB93	10600	4.26m	2.74	18.9	9.03	47.7
DB92	10600	4.12m	2.71	22.1	8.73	39.5

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IBM z Operational Insights

- Then, in early 2016, IBM announced that the scope of the service would be widened to include DB2, IMS, MQ, and WAS, and the name would be changed to 'IBM z Operational Insights open beta'.

- This:
  - Is currently FREE.
  - Will provide information about how your data compares to data from other participants (obviously all anonymously).
  - It is still in Beta, so IBM are looking for customers that will work with them to improve the offering. You can sign up for free at https://ibm.biz/try-zoi. Signing up is TRIVIAL – takes about 10 seconds….

IBM z Operational Insights

- Blue boxes are operational and can be used today to analyze your data.

- Green boxes are proposed enhancements. You can select these, review them, and send your feedback to IBM. Green boxes use sample data rather than your data.

Welcome to z Operational Insights.

Below is the catalog of available insights, free to use. We've got some other insights in mind that we'd really appreciate some feedback on.

For now, we've populated the available reports with sample data. When you want to try out your own data, click the "manage data" option in the header.

1/3 IBM z Operational Insights tour: Getting started ...

CICS Abend Analysis Report	CICS Java Offload Report	CICS Threadsafe Report	CICS Response Time
CICS Workload Profile	DB2 REAL Memory Usage	IMS Buffer Pool Efficiency	Log Analytics
MQ Buffer Pool Optimization	z/OS LPAR Insights		

Complete your session evaluations online at SHARE.o

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- Where applicable, click on Benchmark to see how you compare to other customers.

- Every report has a 'Next steps' page where you can get suggestions about how to improve your systems.

Potential savings:	Eligible, not offloaded:	Currently offloaded:	Machine & model:	Benchmark rank:
89	**1635**	**1084**	**2964-7B3**	**No rank**
MSUs	CPU seconds	CPU seconds	z13	offloaded to zIIP

Actions to Take

The data you provided shows what percentage of your workload is zAAP eligible for offload to a zIIP, and of that work how much is actually offloaded. If you can offload the remaining eligible workload you will save MSUs on your monthly charge (assuming you have provided peak data).

To offload more work to a zIIP, you have a couple of options:

- If you have a z13, make sure you are running with symmetric multithreading (SMT) for zIIPs. This configuration options means you can run two tasks concurrently on a zIIP rather than one.
- Configure the IIPHONORPRIORITY parameter in z/OS to make work wait to be offloaded when the zIIP is busy. Only configure this parameter if response time is not as important as offloading the work, because it will prevent eligible work from running on a general processor.
- Check the activity on the zIIPs assigned to the LPAR using RMF reports. Other workloads can also run on a zIIP, so if the processor is fully used it might be worth configuring a general processor to run as a zIIP or buying a new zIIP to offload more work. The general guidance is that if either the AAPCP or IIPCP fields in the Workload Activity RMF report is greater than 25%, it is cost effective to buy another zIIP.

Useful Links

zIIP performance and capacity considerations
Monitoring CPU activity with RMF reports
SMT setup for z/OS
zAAP on zIIP capability
Knowledge Center: Acquiring zIIPs
Knowledge Center: Defining zIIPs
Knowledge Center: z/OS parameter settings

There are also links to relevant manuals

Disclaimer   Java offload   Benchmarking   Next steps

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IBM z Operational Insights

- This is still very early days, so function so far is somewhat limited. You can't create your own reports, but you CAN send suggestions to IBM who might implement them for you.
- For more information, see:
  - ZOI Home page:
    - http://www-03.ibm.com/software/products/en/z-oi
  - Three short YouTube Videos:
    - https://ibm.biz/zoi-video (or, search on 'IBM z Operational Insights tour')
  - A developerWorks forum:
    - https://www.ibm.com/developerworks/community/groups/service/html/communityoverview?communityUuid=6349cdb7-1d99-4599-bfb2-2cd2fc385d99
  - Sign up and try it for yourself - https://ibm.biz/try-zoi

IBM Operations Analytics for z Systems

- Just to avoid any confusion between z Systems Operational Insights (ZOI) and IBM Operations Analytics for z Systems (IOAZ)…

- ZOI is aimed at performance and benchmarking and runs as a Cloud service.

- IOAZ is a product to assist in problem determination using information from Syslog, JOBLOGs, CICS 110 records, IMS, DB2, MQ, NetView, security products, and SNMP. The analytics server runs on Linux (including Linux on z). Log forwarders run on every monitored system.

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IBM Operations Analytics for z Systems

- For more information about IOAz, see:
  - IOAz Overview:
    - https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/Wfbfac25cdec9_4079_a308_5e65632fbc10/page/
  - Library of Videos about IOAz:
    - https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/Wfbfac25cdec9_4079_a308_5e65632fbc10/page/Media%20Gallery%20for%20IBM%20Operations%20Analytics%20for%20z%20Systems
  - A developerWorks wiki:
    - https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/Wfbfac25cdec9_4079_a308_5e65632fbc10

IBM Analytics Tools for z Systems

- This is a rapidly-evolving area, with a number of analytics products and offerings:
  - Analytics that involve data from multiple customers logically belong in the Cloud.
  - Analytics that happen in real time or that utilize large amounts of data from z/OS logically belong in z/OS.
  - Analytics that help with problem determination (like zAWARE or IOAZ) are more suited to running in a different system so that they can still run while a system is having problems, and their activity will not impact a system that is struggling.

Some Thoughts for Your Trip Home

- Michael Erichsen of Xact Consulting in Denmark had a very interesting and thought-provoking keynote session at the recent Nordic conference in Reykjavik.

- If you have half an hour, view Michael's presentation here:
  https://www.youtube.com/watch?v=hNgpiKM6kfg

- In the interim, have a look at this video, about the ability for a computer to read and understand brain waves:
  https://www.youtube.com/watch?v=K-4mp_e5v4A
  – From the George Orwell novel, 1984:
    - "In 1984, London is a grim city where Big Brother is always watching you and the Thought Police can practically read your mind."   Sound familiar?

Some Thoughts for Your Trip Home

MEET ERICA

She didn't go to school. She doesn't have DNA.
Soon she will be smarter than you.

Some Thoughts for Your Trip Home

Thank you

- Thank you for coming and for your support.
- Have a safe trip home.
- Don't forget to follow up on all those
  "I must look at that when I get home" items.

- Please complete an evaluation – Session 19877.

- See you in San Jose!