MWLC

z/VSE V4
featuring MWLC Software Pricing for IBM System z9

Dr. Klaus Goebel
z/VSE Systems Manager
kgoebel@de.ibm.com

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Agenda

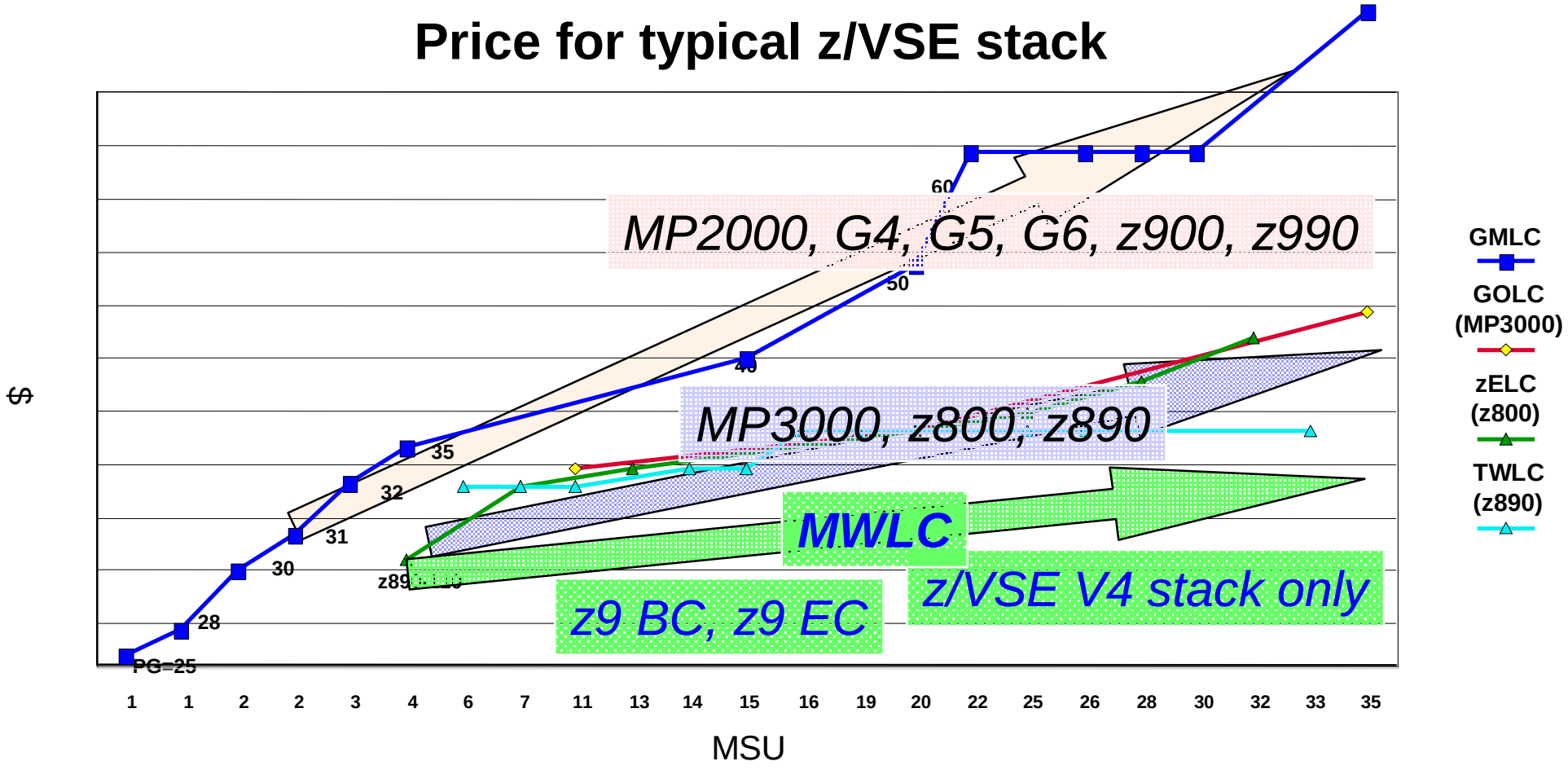
- Midrange Workload License Charge (MWLC)
- Sub-Capacity Pricing Option
- Implementation Details
- Summary

Midrange Workload License Charge (MWLC)

- **New software pricing, exclusively for z/VSE customers**
- **Requires current hardware (IBM System z9 EC or z9 BC) and z/VSE V4**
  - Exception: z9 BC Capacity Setting A01 remains zELC
- **Full-capacity and sub-capacity MWLC options**
  - Full-capacity mode offers improved price/performance compared to GOLC, zELC, and TWLC alternatives
  - Additional price/performance possible through sub-capacity mode

- **Announced:** **January 9, 2007**
- **Available:** **March 16, 2007**

What does MWLC do to Price/Performance ?



Typical z/VSE stack consists of z/VSE Operating System, LE, CICS TS, VTAM, TCP/IP, DB2

Midrange Workload License Charges for z9 BC*

for Sub-Capacity Eligible Products
Midrange Workload License Charges (MWLC)

for non-Sub-Capacity Eligible Products
Tiered EWLC Price Structure (TWLC)

Full Cap mode - use rated MSU capacity
or
Sub-Cap mode - use MSU values from sub-capacity reports

MWLC Price Structure exclusive to z9 BC and z9 EC

base	**3 MSUs**
Level 1	**4 - 17 MSUs**
Level 2	**18 - 30 MSUs**
Level 3	**31 - 45 MSUs**
Level 4	**46 - 87 MSUs**
Level 5	**88 - 175 MSUs**
Level 6	**176 - 260 MSUs**
Level 7	**261+ MSUs**

cumulative monthly pricing

TWLC Price Structure** exclusive to z9 BC and z890

Tier A	**1 - 11 MSUs**
Tier B	**12 - 15 MSUs**
Tier C	**16 - 40 MSUs**
Tier D	**41 - 75 MSUs**
Tier E	**76 - 1500 MSUs**
Tier F	**1501+ MSUs**

flat monthly pricing - select the tier based on the MSU rating of your box

* The z9 BC Model A01 is not eligible for MWLC, it is priced using zELC.
** z9 EC models do not use the TWLC price structure, they use Flat Workload License Charges (FWLC) when applicable.

Example: MWLC Price Points

TWLC ← MWLC →

Product [MSU]	TWLC Tier A 1-11	Base 3	Level 1 4-17	Level 2 18-30	Level 3 31-45	Level 4 46-87	Level 5 88-175	Level 6 176-260	Level 7 261+
VSE Central Function V8	4162	2081	63	21	21	21	21	21	21
CICS TS if used w/ z/VSE V4	2534	1800	54	18	18	18	18	18	18

Examples:

z9 BC D02, 16 MSUs (~ 115 MIPS): Cost of CICS TS on z/VSE V4 = Base + (13 * Level1) = $2.502,--

z9 BC I01, 21 MSUs (~ 150 MIPS): Cost of VSE CF V8 = Base + (14 * Level1) + (4 * Level2) = $3.047,--

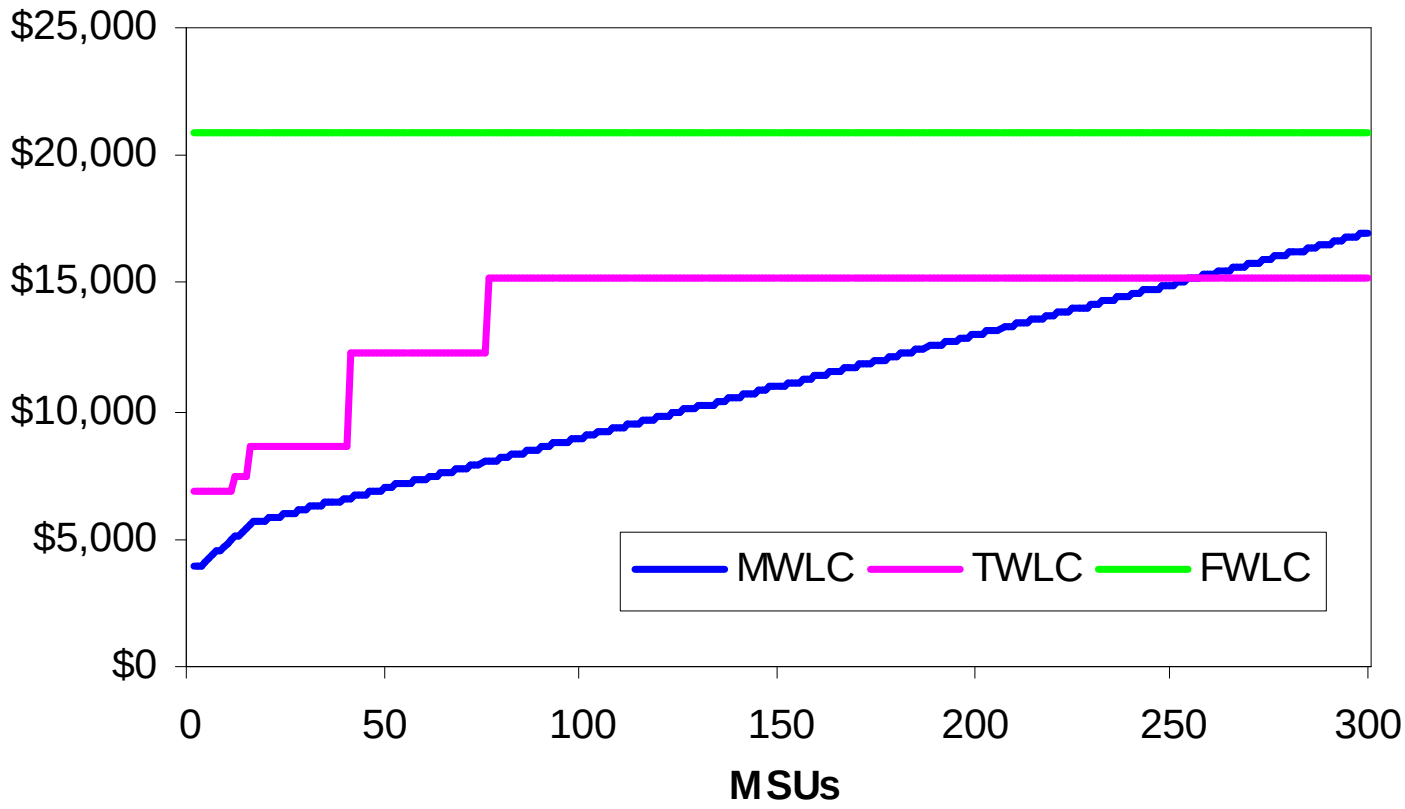
*Prices subject to change without notice; all prices shown in USD as of Jan 2007.

VSE-related Products eligible for MWLC

1. z/VSE V4
2. CICS TS for VSE/ESA
3. ACF/VTAM® V4 VSE/ESA
4. TCP/IP for VSE/ESA
5. DB2 Server for VSE & VM
6. DL/I DOS/VS
7. IBM Cobol VSE/ESA
8. IBM PL/1 for VSE/ESA
9. C/VSE
10. High Lvl Ass. VSE & VM/ESA®
11. WebSphere MQSERIES® VSE/ESA
12. DITTO/ESA® for VSE
13. IBM DFSORT /VSE® V3

Product ID	Product Name
5686CF8	z/VSE V4.1
5648054	CICS TS for VSE/ESA
5648099	DITTO/ESA® FOR VSE
5686A04	TCP/IP NFS
5686A04	TCP/IP Application Pak
5686A04	TCP/IP GPS
5686065	ACF/VTAM® V4 VSE Clnt/Serv
5686065	ACF/VTAM V4 VSE Inter Ent
5686065	ACF/VTAM V4 VSE MultiDomain
5686068	IBM COBOL VSE/ESA Full Func
5686068	IBM COBOL VSE/ESA Alt Func
5696234	High Lvl Assem. VSE Only
5697F42	DB2 Server for VSE&VM
5697F42	DB2 QMF for VM/VSE
5697F42	DB2 QMF for Windows feat of DB2
5697F42	DB2 QMF for Windows feat of QMF
5697F42	DB2 Control Center for VM/VSE
5746SM3	IBM DFSORT/VSE® V3
5686A06	MQSERIES® VSE/ESA
5746XX1	DL/I Data Language
5686A01	C/VSE Alt. Function
5686A01	C/VSE Full Function
5686069	IBM PL/I VSE/ESA Full Func
5686069	IBM PL/I VSE/ESA Alt Func

MWLC Sample Stack Slope vs. TWLC and FWLC



- Customers may choose between MWLC/TWLC or MWLC/FWLC as appropriate to their machine
- Additional price/performance may be possible with sub-capacity mode

- ***"I just got our April software bill from IBM for the first month on our z9 under z/VSE 4.1 and MWLC. We were paying $22,965 per month on our z800 under z/VSE 3.1.2. The April bill is for the same software and it is $12,318: a difference of $10,647 per month."***
  Mike Moore, IT Manager, Alabama Judical Datacenter, Alabama

*Sample software stack includes: VSE CF V8, HLASM, VTAM, DITTO, COBOL
*Prices subject to change without notice; all prices shown in USD

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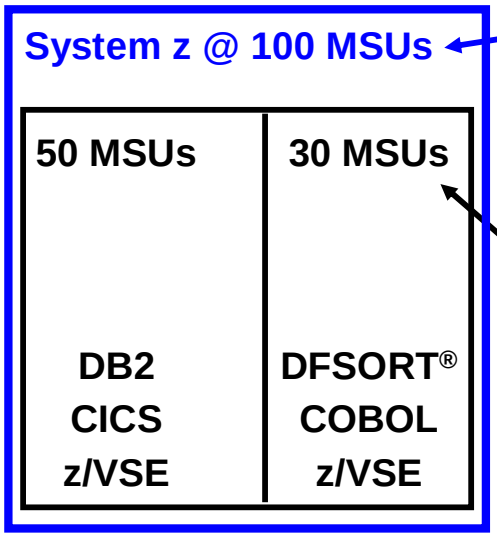
What is Sub-Capacity?

sub- (prefix)
Below; under; beneath: *subsoil.*

Subdivision: *subregion.*
Less than completely or normally; nearly.



Full-Capacity Pricing Metrics rely on the total rated capacity (measured in MSUs) of the MACHINE where a product executes.

Example: zELC, TWLC

Sub-Capacity Pricing Metrics rely on the utilization (based on peak 4-hour rolling average each month) of the LPAR(s) or guest Virtual Machines where a product executes.

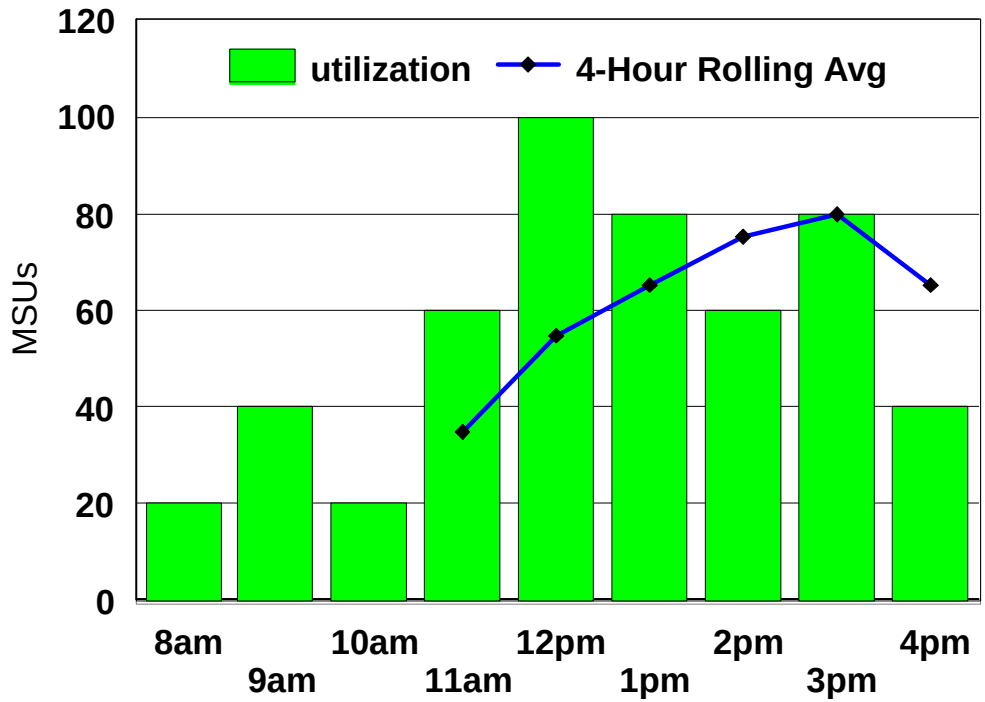
Example: EWLC, MWLC

Sub-Capacity Concept: Rolling 4-Hour Average

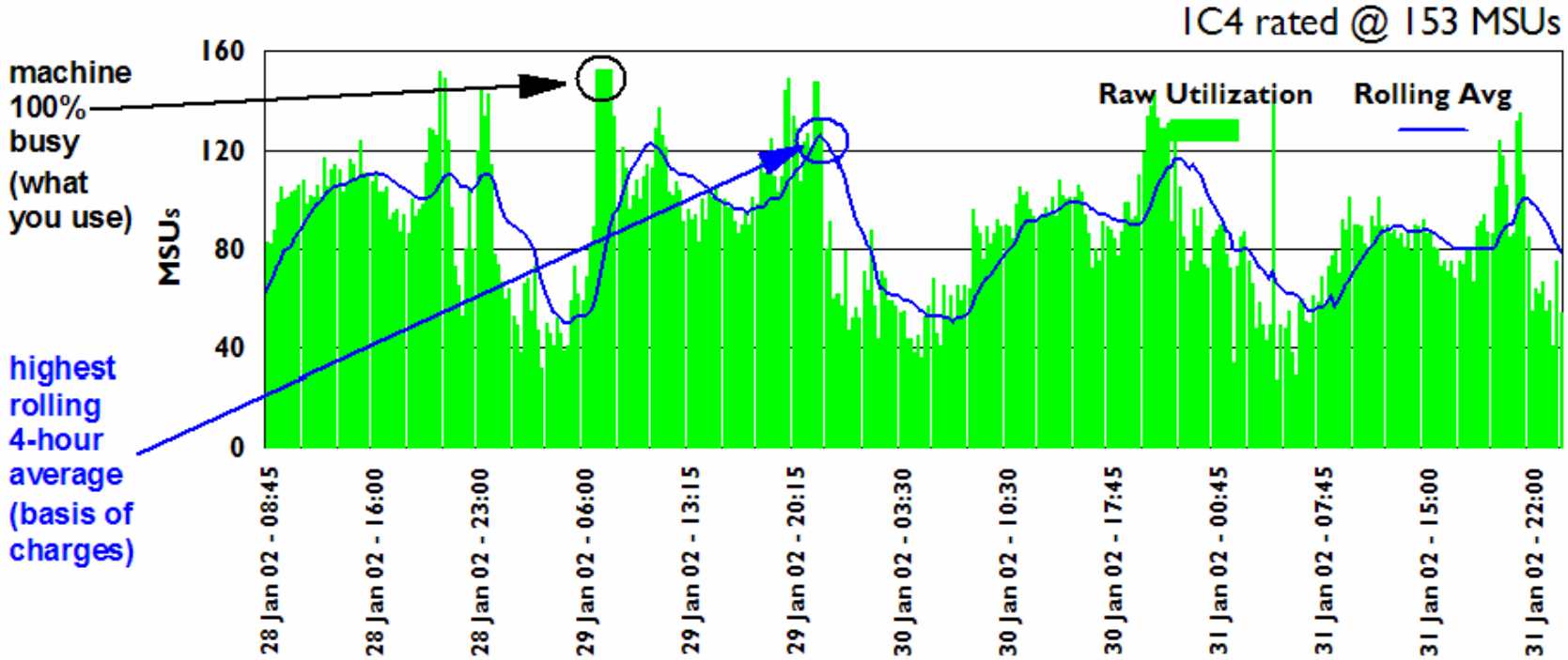
Capture the 4-hour rolling average of utilization for each interval in the month

4-Hour Rolling Average

11 am (8,9,10,11): 35 MSUs
12 pm (9,10,11,12): 55 MSUs
1 pm (10,11,12,1): 65 MSUs
2 pm (11,12,1,2): 75 MSUs
3 pm (12, 1, 2, 3): 80 MSUs
4 pm (1, 2, 3, 4): 65 MSUs

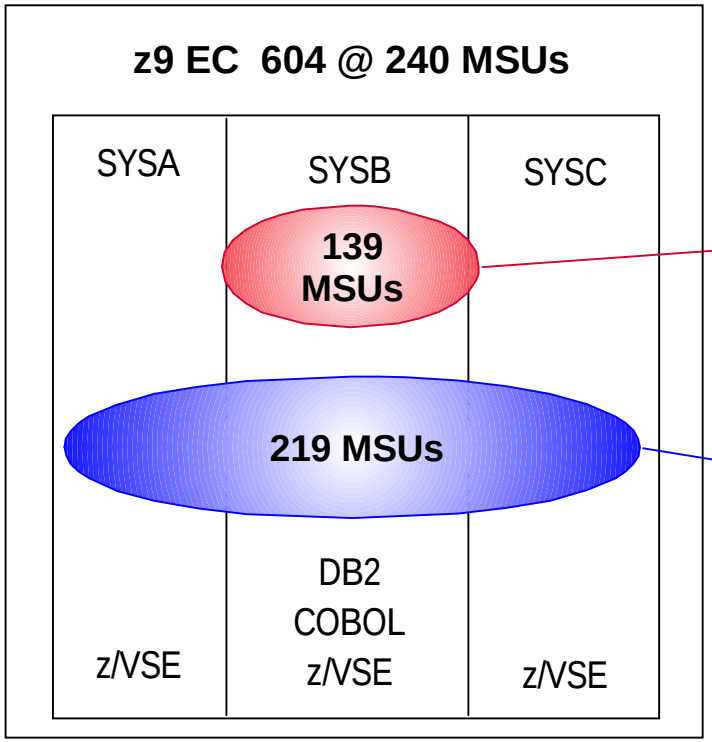


Example: Peak Rolling 4-Hour Average

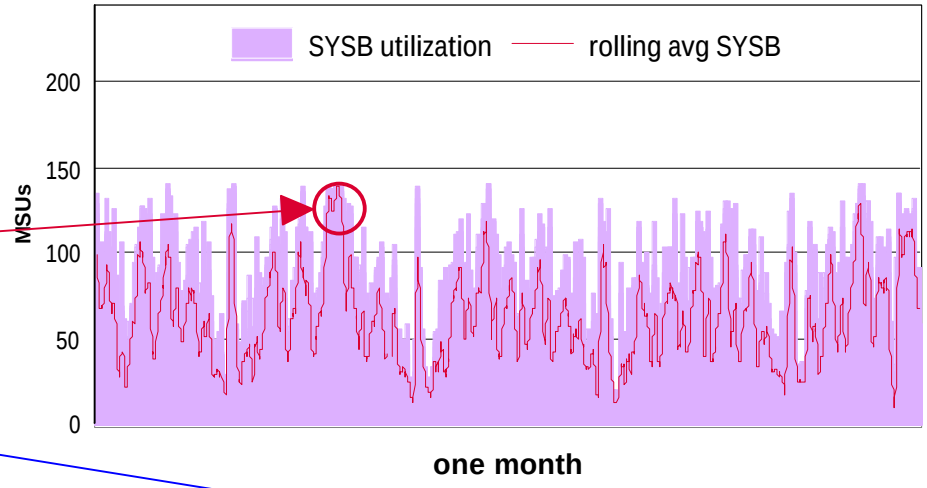


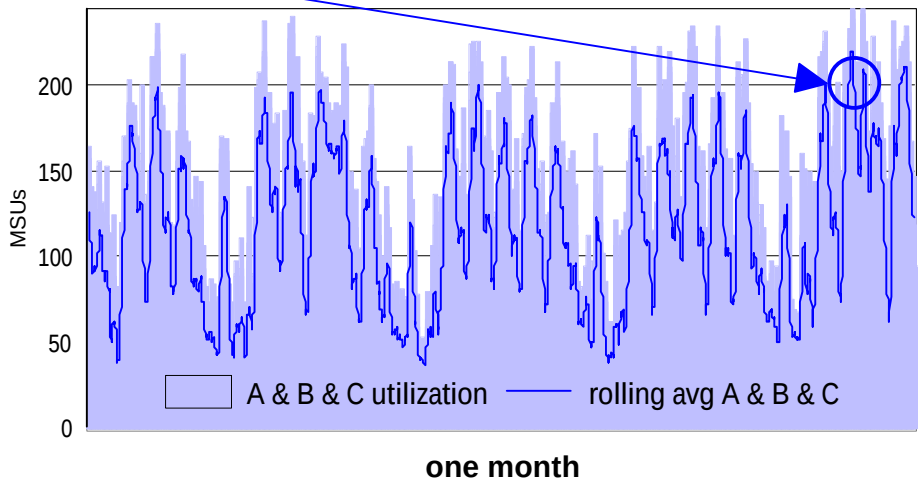
Rolling 4-Hour Average utilization smoothes out peaks in raw utilization.
Allows for varied peaks & bases Software charges on more moderate measure.

Generic Sub-Capacity Example

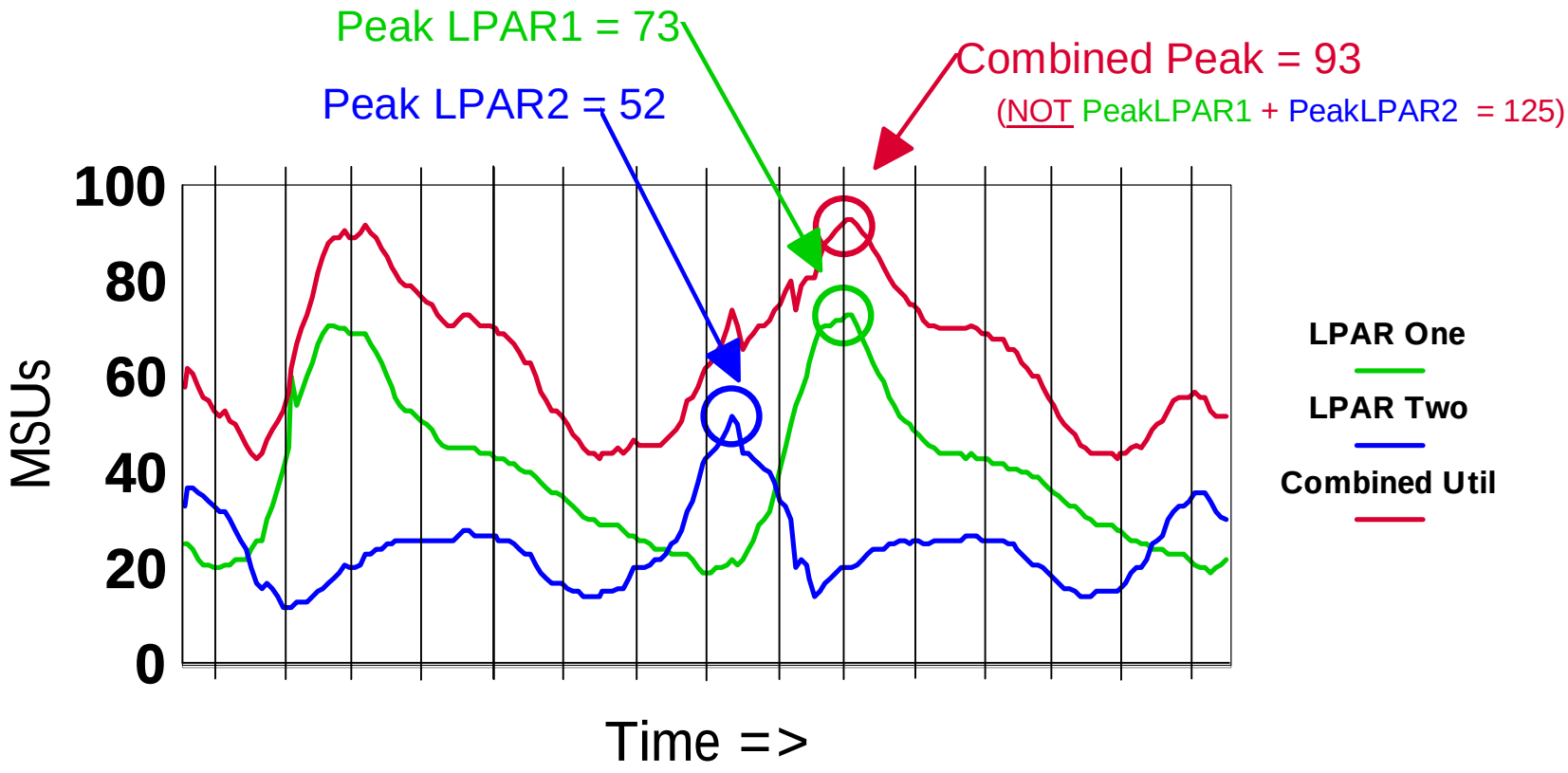


Product	Sub-Cap MSUs
DB2	139 MSUs
COBOL	139 MSUs
z/VSE	219 MSUs





Simultaneous combined rolling 4-Hour Average



Benefits of Sub-Capacity Pricing

- **Disconnect HW growth from SW charges for sub-capacity eligible products**
  - Allows you to grow hardware capacity independently of software capacity

    e.g. upgrade server and only pay for software based on the utilized portion of the server
  - Grow into excess hardware capacity gradually as needed with a 1 MSU level of granularity
  - Spike into "spare" capacity without incurring software charges
  - Manage utilization without having to turn engines on and off
- **Grow an LPAR without affecting software in other LPARs**
  - Isolate products in certain LPARs to reduce software costs (optional)
  - Reduce LPAR utilization to reduce software costs (optional)
  - Add capacity to grow your production LPARs without impacting your test and/or development LPARs
- **Align software charges with utilization**
  - Pay based on highest rolling 4-hour average utilization each month, not peak utilization
  - Sub-Capacity Monitoring Tool manages measurement and reporting
  - Software charges increased/decreased based on variations in utilization

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- Sub-Capacity Pricing Option
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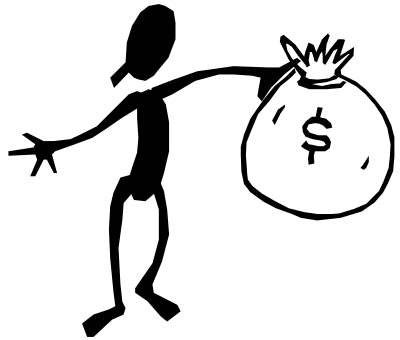
Transition to z/VSE V4 MWLC Pricing

- **Basic Requirements**
  - **IBM System z9 BC or z9 EC (exception: z9 BC A01 is priced zELC)**
  - **z/VSE V4**
  - **If running under VM: z/VM 5.2 (or later) is required**

Very simple !



- **The resulting savings can – and should – be used to invest in new solutions, e.g.**
  - **SOA**
  - **Linux on System z**
  - **new middleware**
  - **new standard software**
  - **new application development**
  - **new projects with IBM**

Transition to z/VSE V4 Sub-Capacity Pricing

§ Basic Requirements

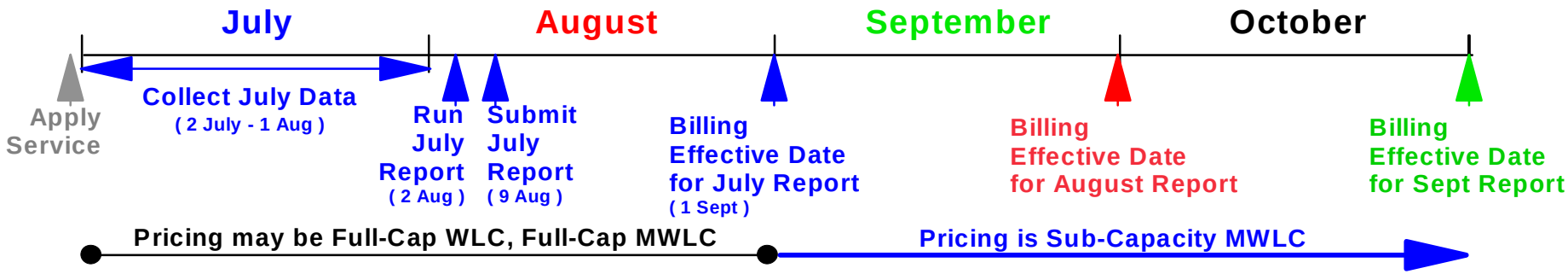
- IBM System z9 BC or z9 EC (exception: z9 BC A01 is priced zELC and can not get sub-cap pricing)
- z/VSE V4 (no older VSE version allowed on the processor, i.e. no VSE/ESA V2, no z/VSE V3)
- If running under VM: z/VM 5.2 (or later) is required

§ Reporting Requirements

- Must report on all LPARs and z/VM guests (production, test, development, etc.)
- 95% data collection
- Default (i.e. worst case) is full-capacity prices
- 2-month full-capacity transition period

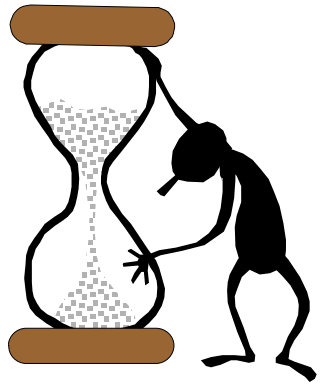
§ Timing Requirements

- Sub-Capacity Pricing begins with the submission of 1st full month report
- Data collection period: 2nd of the previous month - 1st of the current month
- Data submission period: 2nd - 9th following data collection

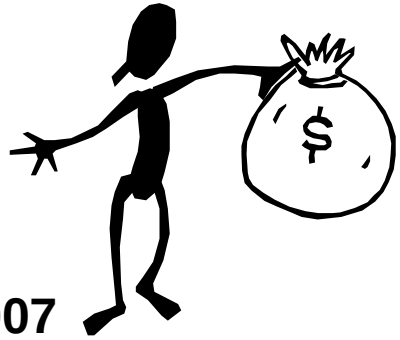


Capacity Measurement Tool (CMT)

- Sometimes called “Sub-Capacity Monitoring Tool”
- Announced and available with z/VSE V4.1 since March 16, 2007
- Can be activated on z9 BC and z9 EC models only
- Requires z/Architecture mode è z/VSE V4.1 only
- Collects data for LPARs and/or guest machines running under z/VM 5.2 (or later)
- Implemented as a new z/VSE V4.1 system task
  - periodically measures CPU usage and calculates MSUs
  - measurement interval is every 30 minutes
  - calculates the rolling 4-hour average
  - creates dataset with SCRT89 records
- Output from CMT is input for SCRT



Sub-Capacity Reporting Tool (SCRT)



- Announced and available for z/VSE V4.1 since October 10, 2007
- Planned to be integrated into z/VSE V4.2 (when generally available)
- New version of SCRT is required and available: SCRT V14.2
- Analyzes SCRT89 records as produced by CMT on z/VSE V4
- Also analyzes SMF70 and SMF89 records as produced by z/OS
- Customer must generate SCRT report, monthly
- Output from SCRT is a report, similar to a spreadsheet report

SCRT Example Report: Part 1 of 3

========== SUB-CAPACITY REPORT ==========

Run Date/Time	02 Feb 2007 - 12:38
Name of Person Submitting Report:	xyz
E-Mail Address of Report Submitter:	xyz
Phone Number of Report Submitter:	xxx
Customer Name	xyz
Customer Number	xxx
Machine Serial Number	xxx
Machine Type and Model	2096-G01
Machine Rated Capacity (MSUs)	15
Purchase Order Number	xyz
Is this machine a member of a pricing aggregation?	no
Customer Comments (255 chars max)	xyz

TOOL INFORMATION	
Tool Release	12:02
Reporting Period	2 Jan, 2007 - 1 Feb, 2007

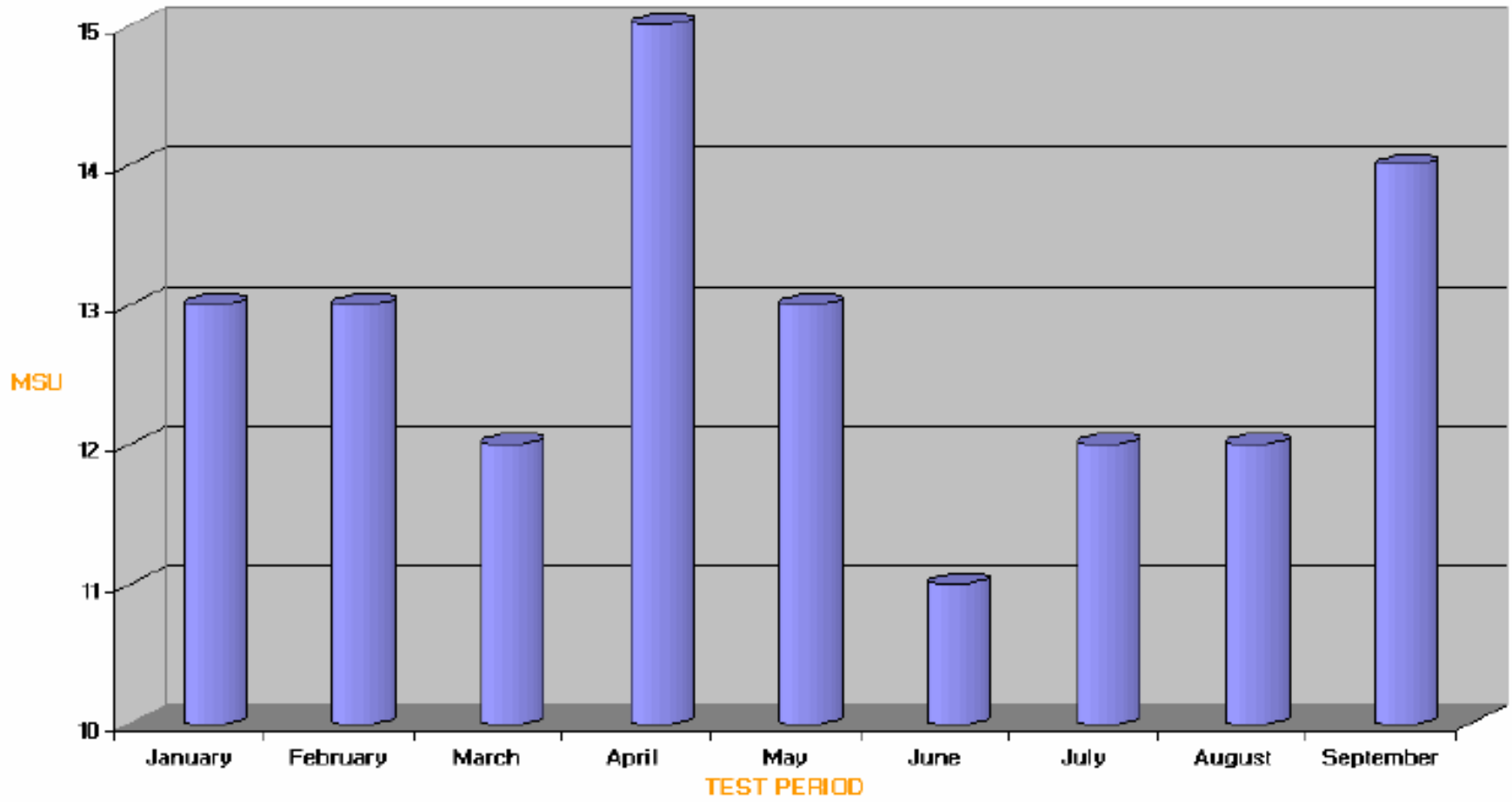
SCRT Example Report: Part 2 of 3

		z/VSE
% Data Collected		96% for 31 days
Justification for low data collection (255 chars max)	explain	

PRODUCT SUMMARY INFORMATION

VWLC Product Name	VWLC Product ID	Tool MSUs
VSE Central Functions V8	5686-CF8	13
ACF/VTAM V4 VSE/ESA	5686-065	13
CICS TS for VSE/ESA	5648-054	13
DITTO/ESA for VSE	5648-099	13
High Level Assembler VSE & VM	5696-234	13
IBM COBOL VSE/ESA	5686-068	13
TCP/IP for VSE	5686-A04	13

SCRT Example Report: Part 3 of 3



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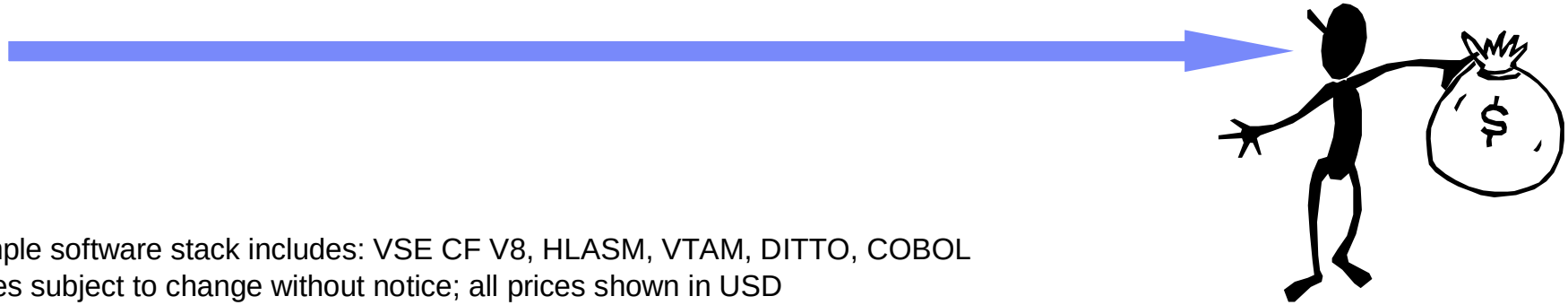
z/VSE – Price/Performance over Time

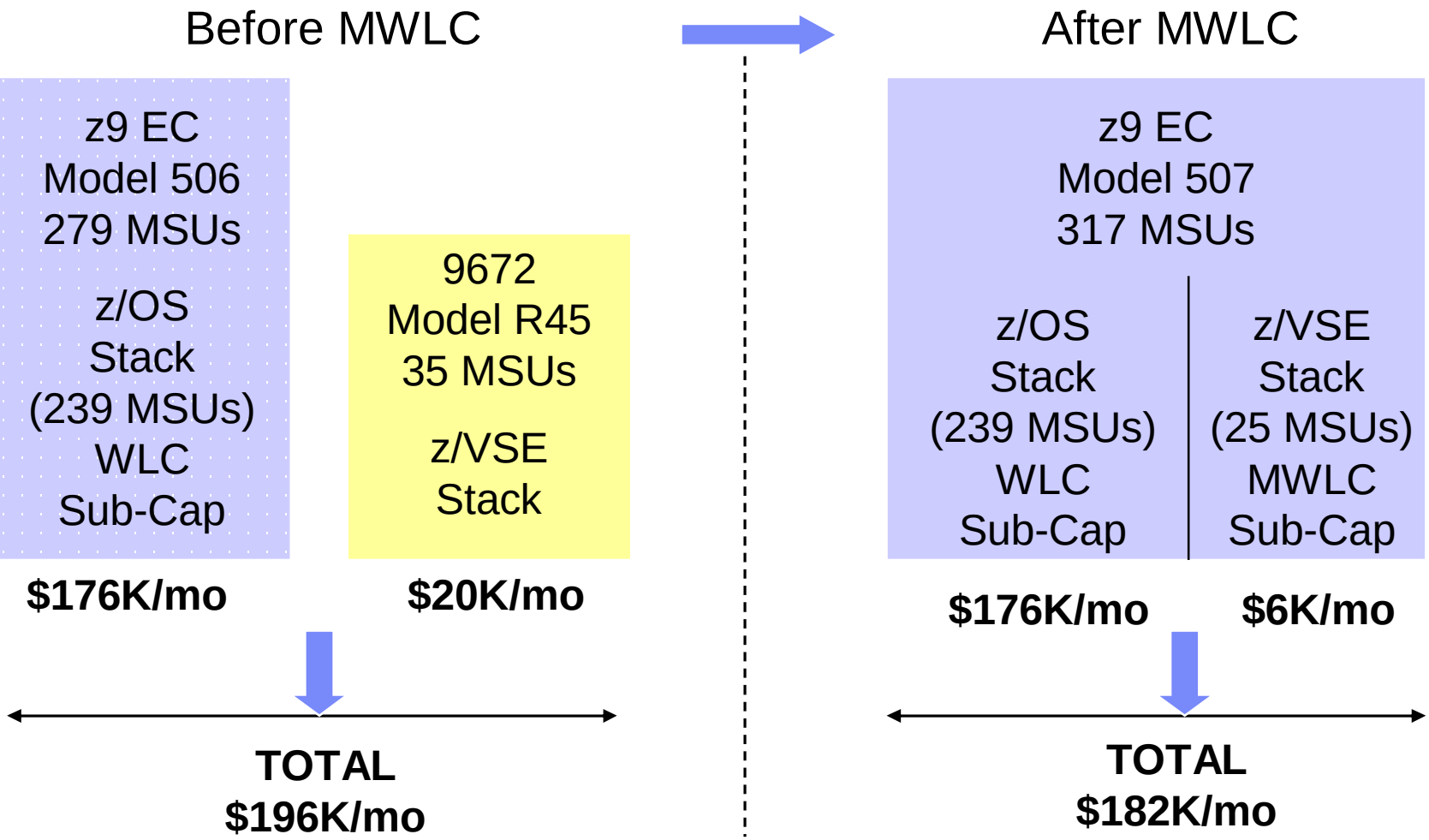
- **Midrange sample customer software stack**

32 MSUs z/VSE Stack 9672 GMLC	32 MSUs z/VSE Stack z800 zELC	32 MSUs z/VSE Stack z890 TWLC	32 MSUs z/VSE V4 Stack z9 BC MWLC	32 MSU z/VSE V4 Stack z9 BC MWLC with 30% White Space
$240K/yr	$120K/yr	$96K/yr	$76K/yr	$71K/yr



*Sample software stack includes: VSE CF V8, HLASM, VTAM, DITTO, COBOL
*Prices subject to change without notice; all prices shown in USD

z/VSE V4: MWLC High-End Price/Performance server consolidation example



*Sample software stack includes: VSE CF V8, HLASM, VTAM, DITTO, COBOL
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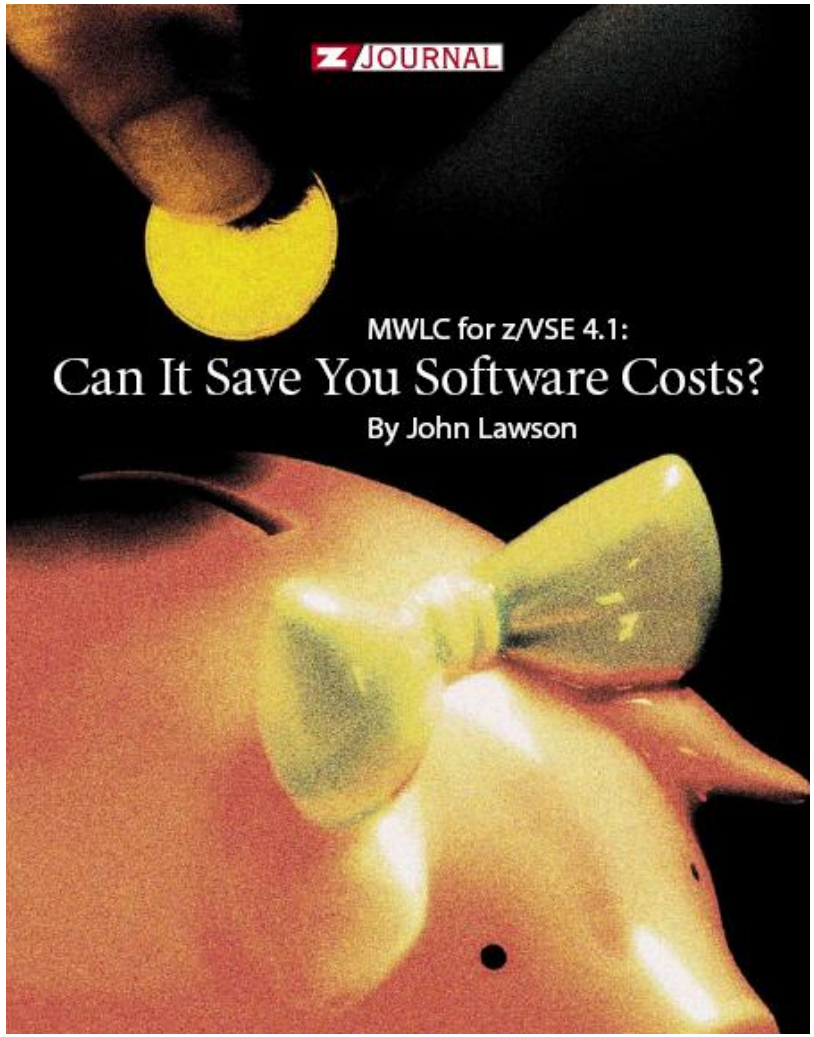
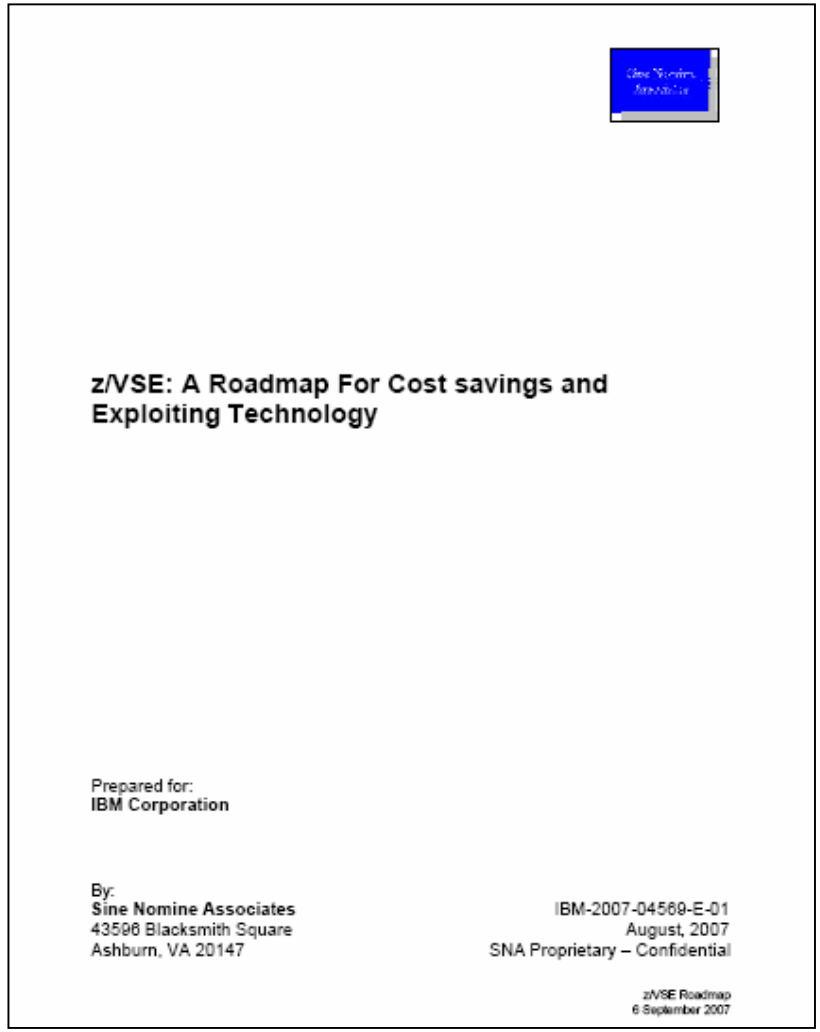
Press and Analyst Articles



Source: z/Journal, April / May 2007



Source: Sine Nomine Associates, August 2007

Summary: z/VSE V4 and MWLC

- **Helping to protect your investments in core z/VSE application code, data, application knowledge, and IT skills**
- **Helping to preserve your highly evolved business processes and end-user training**
- **Helping you to implement new solutions in a three-tier, integrated environment that leverages existing z/VSE information assets**
- **Helping improve price / performance**
- **The resulting savings can – and should – be used to invest in new solutions, e.g.**
  - **SOA**
  - **Linux on System z**
  - **new middleware**
  - **new standard software**
  - **new application development**
  - **new projects with IBM**