



IBM System z Technical Conference

IBM System z Technical Conference

Munich, Germany
April 16 - 20, 2007



IBM System z Technical Conference

Session E42

z/VSE V4 featuring New Software Pricing with IBM System z9

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

Trademarks

Trademarks

The following are trademarks of the International Business Machines Corporation in the United States and/or other countries. For a complete list of IBM Trademarks, see www.ibm.com/legal/copytrade.shtml: AS/400, DBE, e-business logo, ESCO, eServer, FICON, IBM, IBM Logo, iSeries, MVS, OS/390, pSeries, RS/6000, S/30, VM/ESA, VSE/ESA, Websphere, xSeries, z/OS, zSeries, z/VM

The following are trademarks or registered trademarks of other companies

Lotus, Notes, and Domino are trademarks or registered trademarks of Lotus Development Corporation
Java and all Java-related trademarks and logos are trademarks of Sun Microsystems, Inc., in the United States and other countries
LINUX is a registered trademark of Linux Torvalds
UNIX is a registered trademark of The Open Group in the United States and other countries.
Microsoft, Windows and Windows NT are registered trademarks of Microsoft Corporation.
SET and Secure Electronic Transaction are trademarks owned by SET Secure Electronic Transaction LLC.
Intel is a registered trademark of Intel Corporation
* All other products may be trademarks or registered trademarks of their respective companies.

NOTES:

Performance is in Internal Throughput Rate (ITR) ratio based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput improvements equivalent to the performance ratios stated here.

IBM hardware products are manufactured from new parts, or new and serviceable used parts. Regardless, our warranty terms apply.

All customer examples cited or described in this presentation are presented as illustrations of the manner in which some customers have used IBM products and the results they may have achieved. Actual environmental costs and performance characteristics will vary depending on individual customer configurations and conditions.

This publication was produced in the United States. IBM may not offer the products, services or features discussed in this document in other countries, and the information may be subject to change without notice. Consult your local IBM business contact for information on the product or services available in your area.

All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

Information about non-IBM products is obtained from the manufacturers of those products or their published announcements. IBM has not tested those products and cannot confirm the performance, compatibility, or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

Prices subject to change without notice. Contact your IBM representative or Business Partner for the most current pricing in your geography.

References in this document to IBM products or services do not imply that IBM intends to make them available in every country.

Any proposed use of claims in this presentation outside of the United States must be reviewed by local IBM country counsel prior to such use.

The information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.




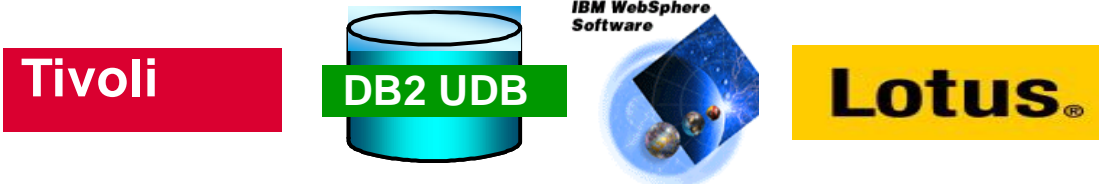

Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.

Agenda

- § **Top Concerns of VSE Customers**
- § **Midrange Workload License Charge (MWLC)**
- § **Sub-Capacity Pricing Option**
- § **Implementation Details**
- § **Some Examples**
- § **Summary**



Top Five Concerns of VSE* Customers

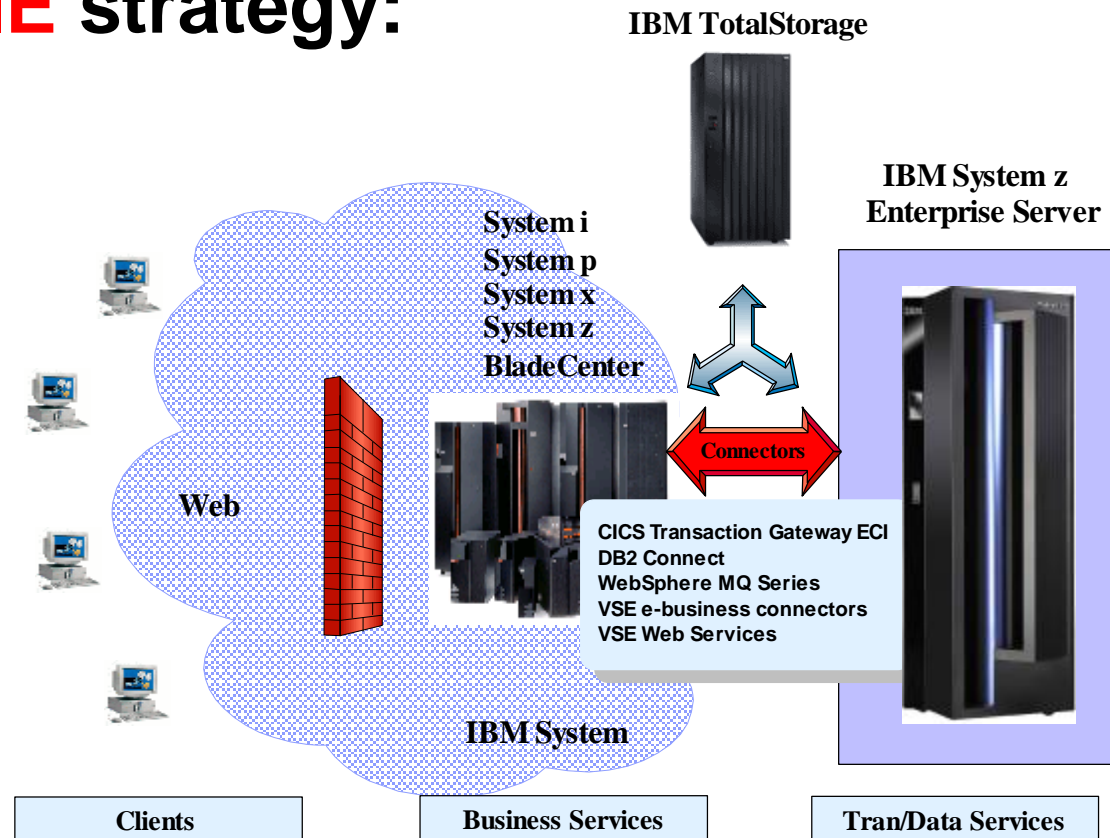
- 1. **Cost** 
- 2. **Cost** 
- 3. **Cost** 
- 4. **Applications** 
- 5. **Applications** 

(*) The term "VSE" stands for both, VSE/ESA and z/VSE.

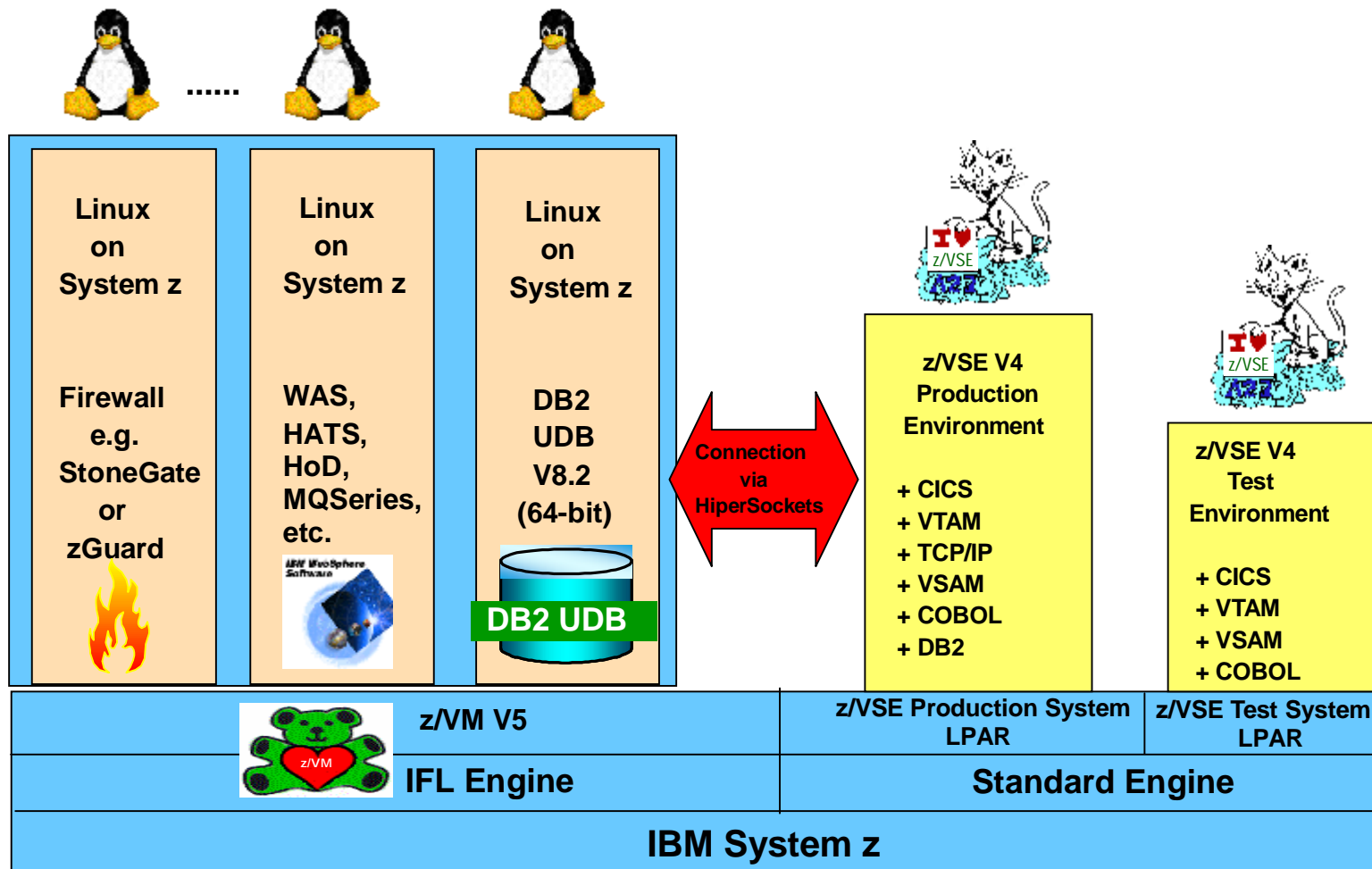
How to address the Application Issue ?

Access to new applications is addressed through VSE's **PIE** strategy:

- § **P**rotect
- § **I**ntegrate
- § **E**xtend



Access to new Applications with Linux on System z



How to address the Cost Issue ?

Cost is addressed with this presentation:

- § **Midrange Workload License Charge (MWLC)**
- § **Sub-Capacity Pricing Option**



Agenda

§ Top Concerns of VSE Customers

→ § Midrange Workload License Charge (MWLC)

§ Sub-Capacity Pricing Option

§ Implementation Details

§ Some Examples

§ Summary



History: z/VSE V4 Statement of Direction



Statement of Direction announced as part of IBM System z9 announcement, July 2005:
“IBM intends to provide a software sub-capacity measurement tool for z/VSE.”



§ **Fulfilled** with z/VSE V4 Preview Announcement, April 2006:
– **LPAR based sub-capacity monitoring tool**



§ New **Statement of Direction**, announced with z/VSE V4 Preview Announcement:

SOD: It is IBM's intent to provide new software pricing for z/VSE V4 when running on select processors, subject to applicable terms and conditions. IBM expects this new software pricing metric to provide more granularity and a sub-capacity pricing option.

All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice.

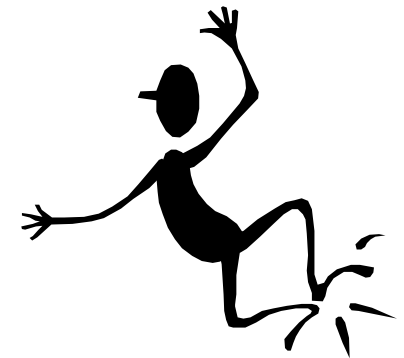


§ **Fulfilled** with z/VSE V4 Product Announcement, Jan 2007:
– **MWLC incl. sub-capacity pricing option**

Midrange Workload License Charge (MWLC)

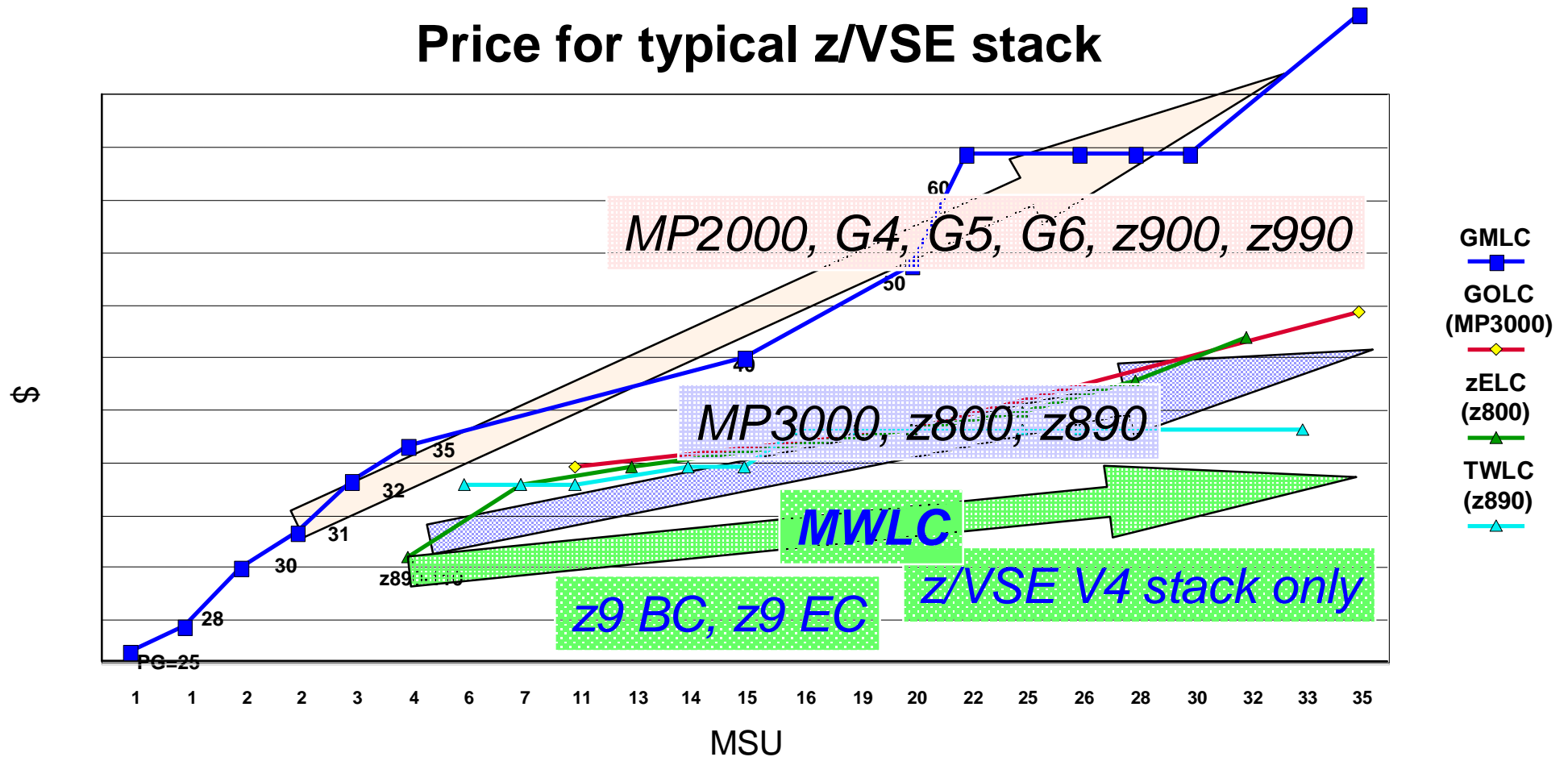
- § **New software pricing, exclusively for z/VSE customers**
- § **Requires current hardware (IBM System z9 EC or z9 BC) and z/VSE V4**
 - Exception: z9 BC Capacity Setting A01 remains zELC
- § **Full-capacity and sub-capacity MWLC options**
 - Full-capacity mode offers improved price/performance compared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

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



What does MWLC do to Price/Performance ?

Price for typical z/VSE stack



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

Summary of z/VSE Software Price Metrics

IBM Servers	z/VSE V4	z/VSE V3 (Note 1)	VSE/ESA V2
IBM System z9 Enterprise Class – z9 EC (formerly z9-109)	MWLC (incl sub-cap opt.)	GMLC, ELC, flat WLC	GMLC, ELC, flat WLC
IBM System z9 Business Class – z9 BC (except A01 which is priced zELC)	MWLC (incl sub-cap opt.)	TWLC	TWLC
IBM eServer zSeries 990 and 900	GMLC, ELC, flat WLC	GMLC, ELC, flat WLC	GMLC, ELC, flat WLC
IBM eServer zSeries 890 (except 110 which is priced zELC)	TWLC	TWLC	TWLC
IBM eServer zSeries 800	zELC	zELC	zELC
S/390® Parallel Enterprise Server™ G5/G6	not applicable	GMLC, ELC, flat WLC	GMLC, ELC, flat WLC
S/390® Multiprise® 3000	not applicable	GOLC	GOLC

Note 1: z/VSE V3 can operate in 31-bit mode only. It does not implement z/Architecture and specifically does not implement 64-bit mode capabilities. z/VSE V3 is designed to support selected features of IBM System z hardware.

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

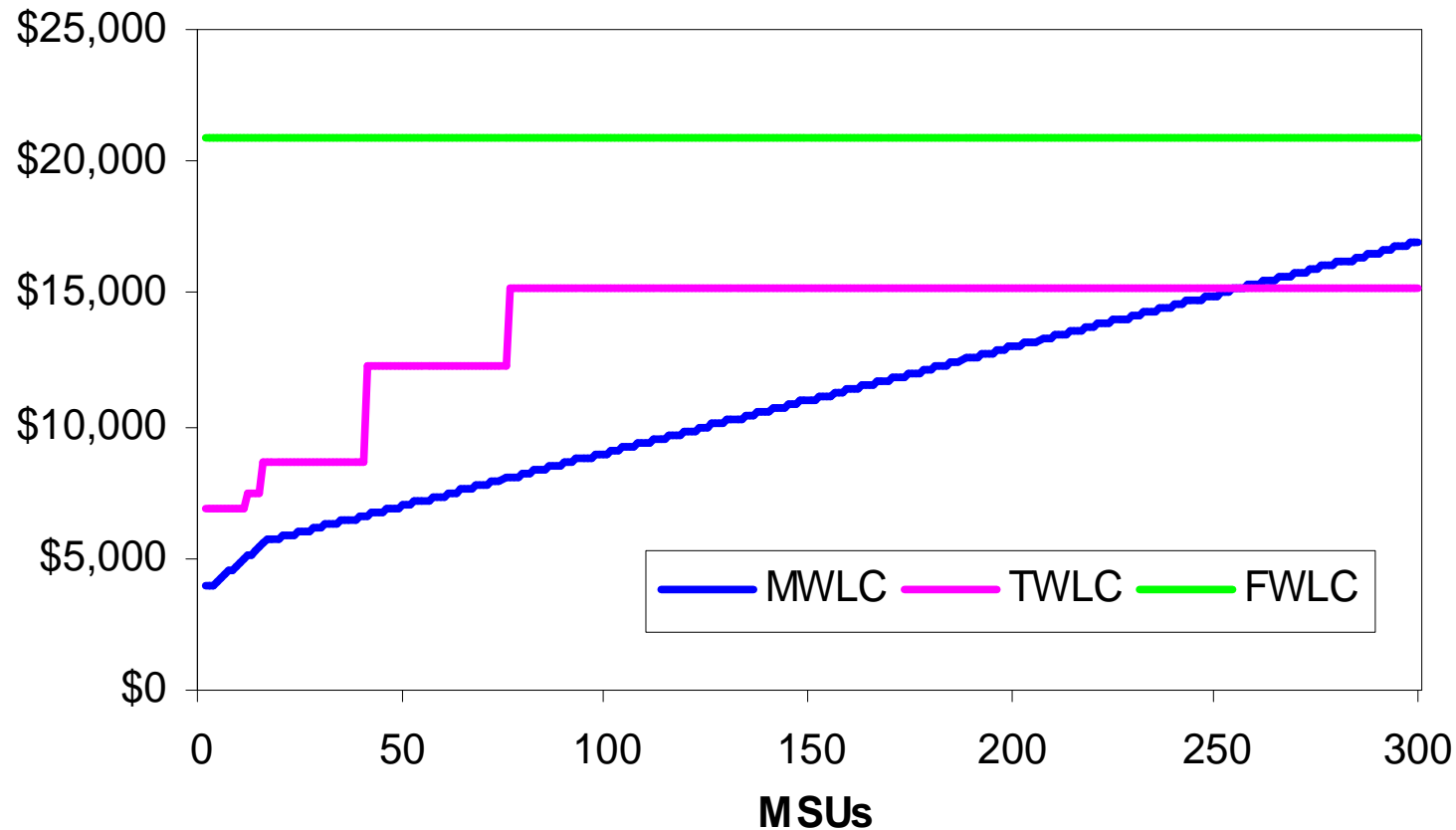
Examples:

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.

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**.

*Sample software stack includes: VSE CF V8, HLASM, VTAM, DITTO, COBOL

*Prices subject to change without notice; all prices shown in USD

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

Agenda

§ Top Concerns of VSE Customers

§ Midrange Workload License Charge (MWLC)

→ § Sub-Capacity Pricing Option

§ Implementation Details

§ Some Examples

§ Summary



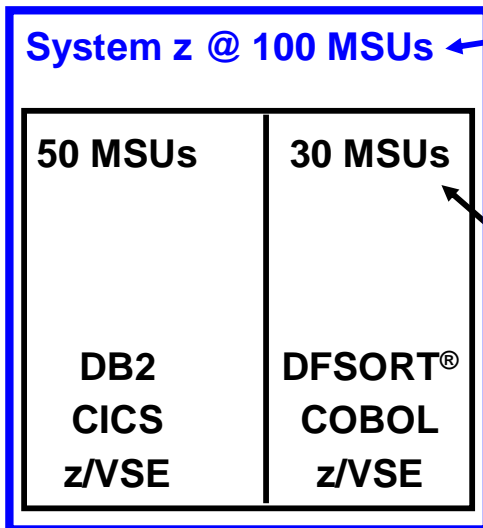
What is Sub-Capacity?

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

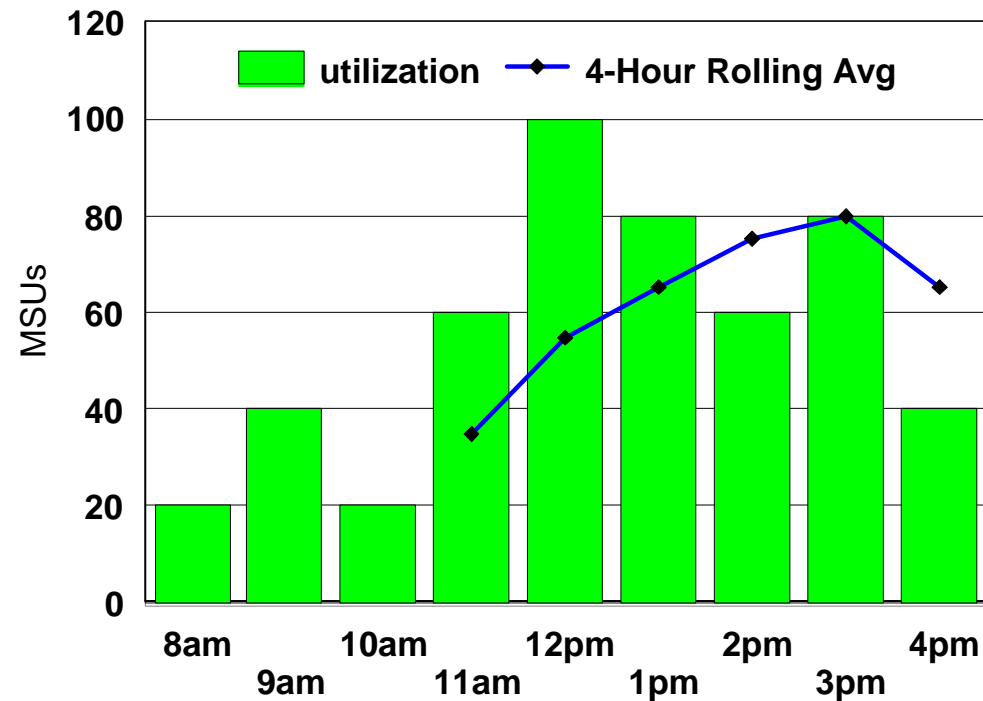
12 pm (9,10,11,12): 55 MSUs

1 pm (10,11,12,1): 65 MSUs

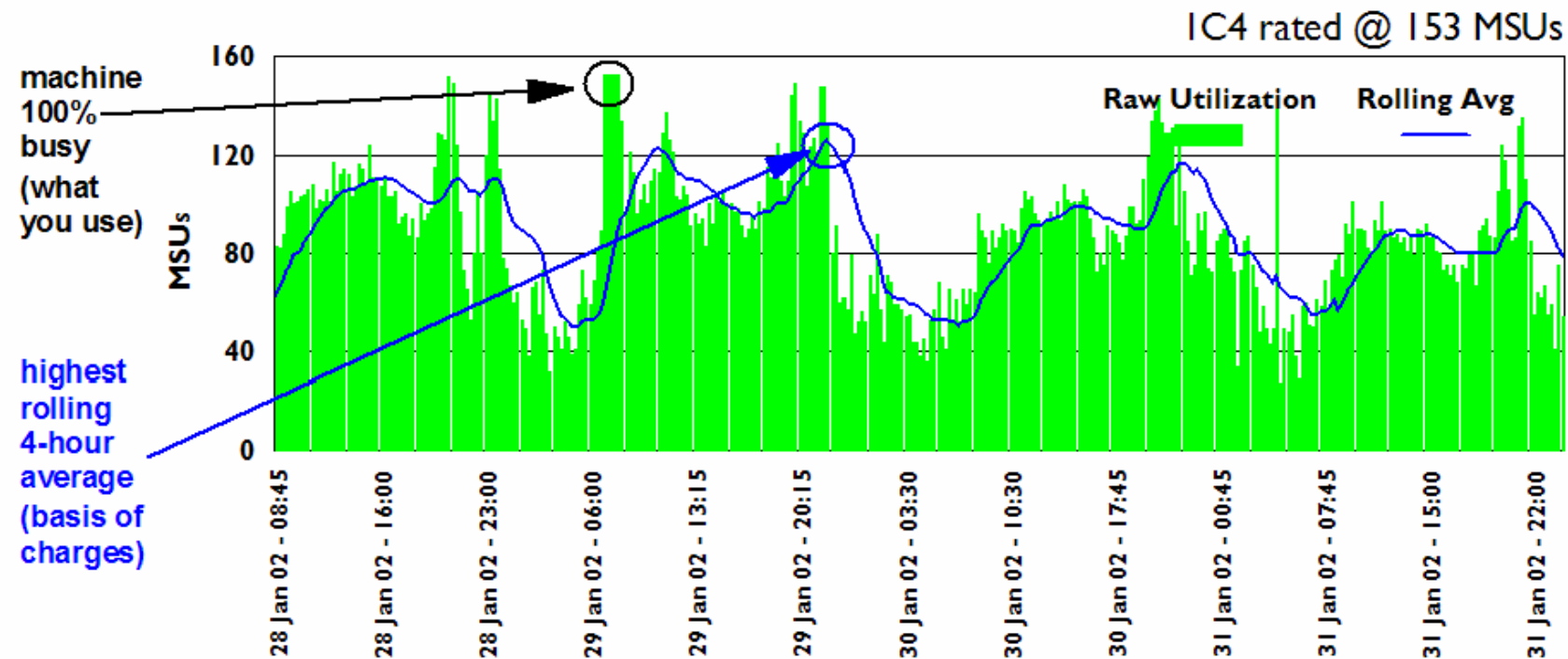
2 pm (11,12,1,2): 75 MSUs

3 pm (12, 1, 2, 3): 80 MSUs

4 pm (1, 2, 3, 4): 65 MSUs

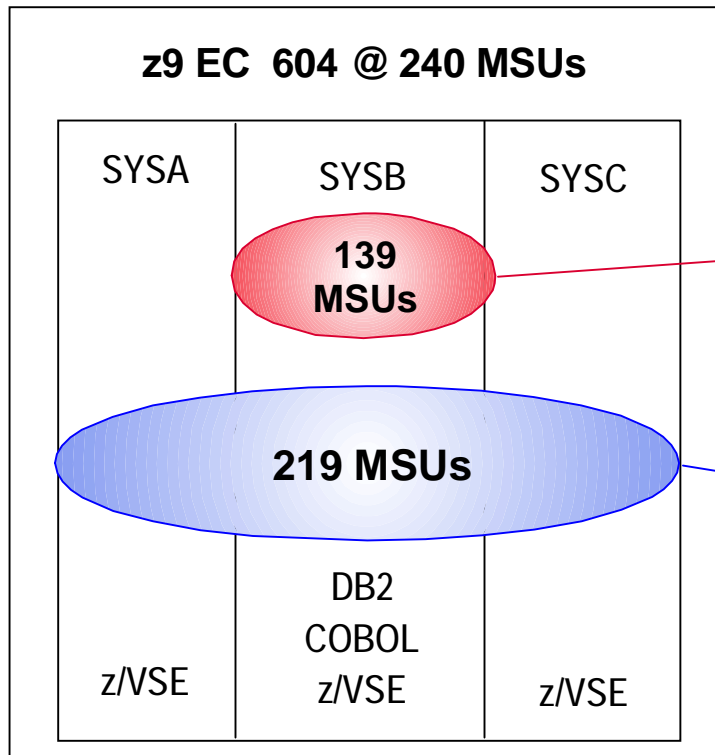


Example: Peak Rolling 4-Hour Average

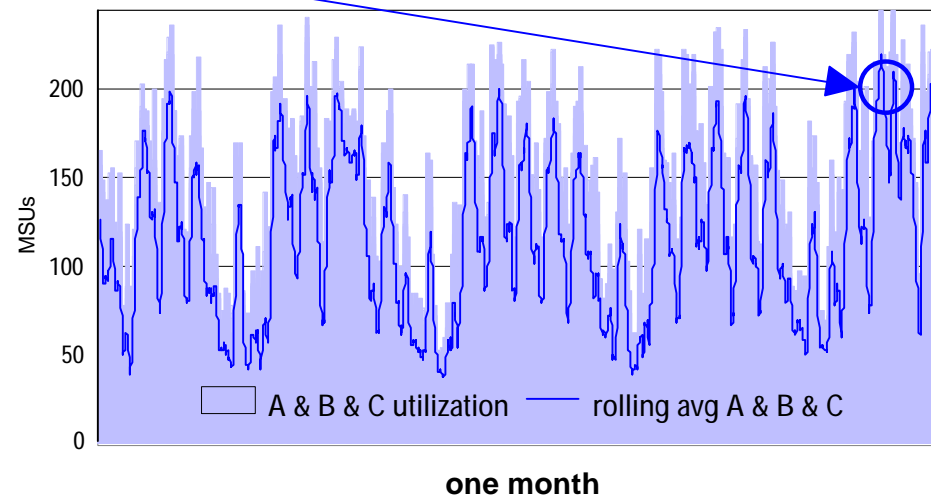
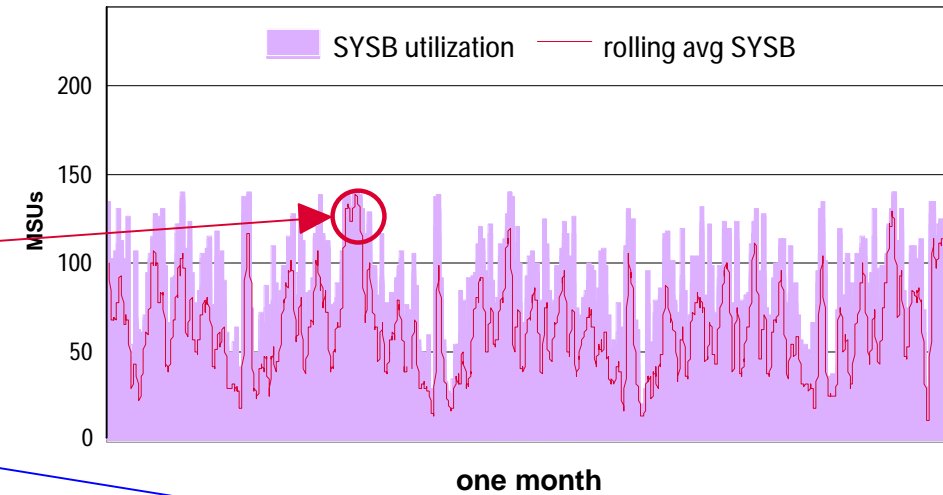


Rolling 4-Hour Average utilization smoothes out peaks in raw utilization. Allows for varied peaks & bases Software charges on more moderate measure.

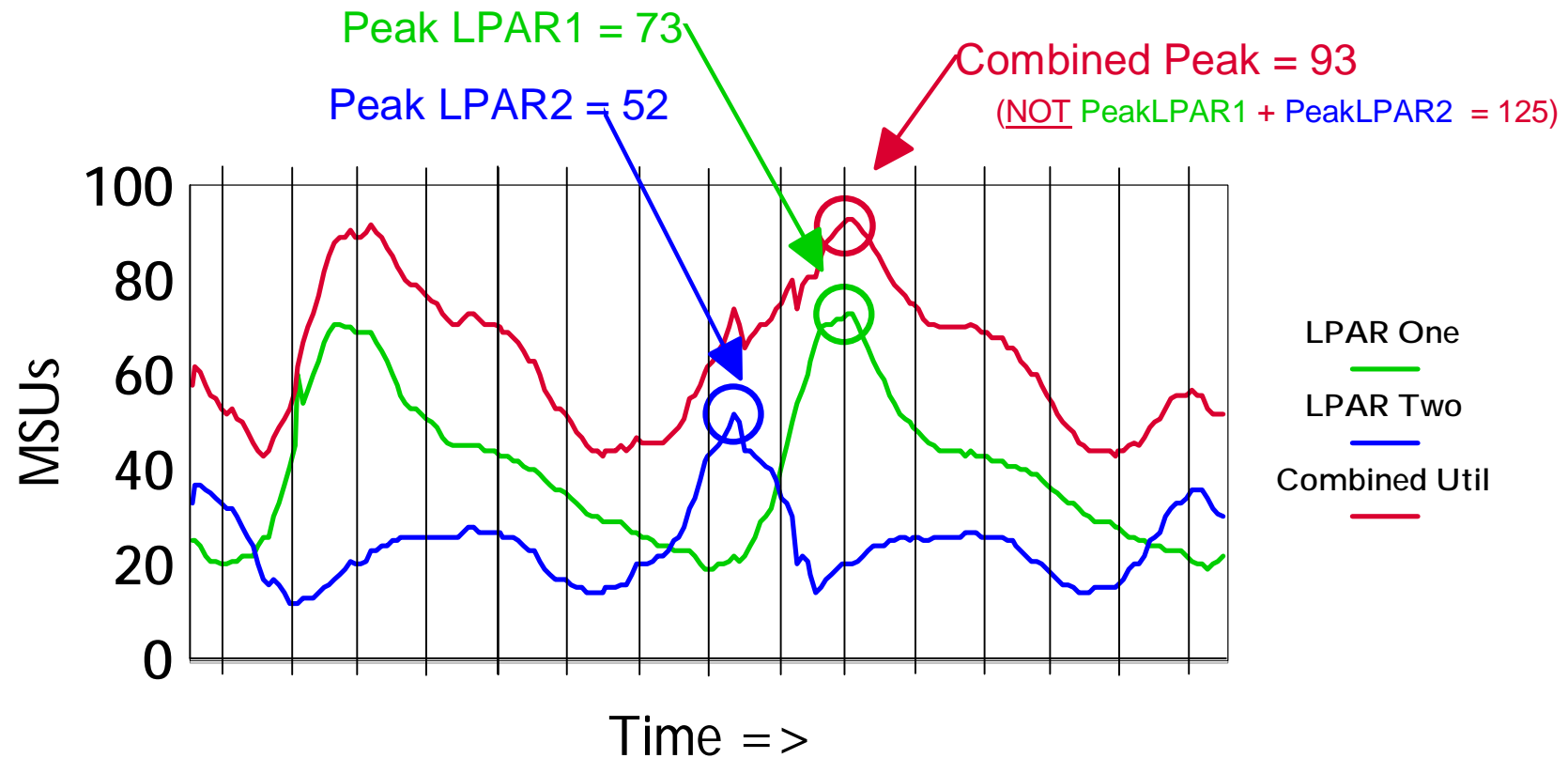
Generic Sub-Capacity Example



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

Agenda

§ Top Concerns of VSE Customers

§ Midrange Workload License Charge (MWLC)

§ Sub-Capacity Pricing Option

→ § Implementation Details

§ Some Examples

§ Summary



New Tools

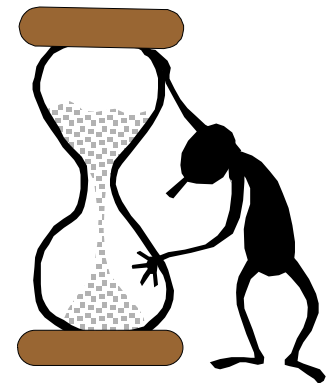
§ **Capacity Measurement Tool (CMT)**

§ **Sub-Capacity Reporting Tool (SCRT)**



Capacity Measurement Tool (CMT)

- § Sometimes called “Sub-capacity Monitoring Tool”
- § Announced and available with z/VSE V4.1 since 3/2007
- § 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)



- § Not announced and not available on z/VSE V4.1
- § Requires z/OS system to execute, and requires a new version of SCRT
- § New version of SCRT on z/OS is planned to become available in 4/2007
- § Analyzes SCRT89 records as produced by CMT on z/VSE V4
- § Also analyzes SMF70 and SMF89 records as produced by z/OS
- § If there is both, z/OS and z/VSE V4, you must generate your own SCRT report
- § If there is only z/VSE V4, you will need to send SCRT89 records to IBM and IBM will run SCRT for you
- § Output from SCRT is a report, similar to a spreadsheet report

SCRT Example Report: Part 1 of 2

===== 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 2

% Data Collected z/VSE
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

T's & C's: 95% Data Collection Requirement

- You are required to collect data whenever an LPAR is active
 - ▶ The minimum acceptable collection percentage is 95%
 - At least one z/VSE LPAR reporting in 95% of the intervals
 - The 5% allowance is made to allow for normal downtime like scheduled maintenance
 - ▶ Less than 95% collection requires an explanation in the SCRT report
 - You must document reason in "Justification for low data collection" section
 - Report and explanation will be reviewed and an exception may be granted
 - Otherwise the report will be rejected and billing for the period will be at Full Machine Capacity

# Days in Month	Total Intervals	95% Required	Allowed Missing
28	672	638	34
29	696	661	35
30	720	684	36
31	744	707	37



Transition to Sub-Capacity Pricing

§ Basic Requirements

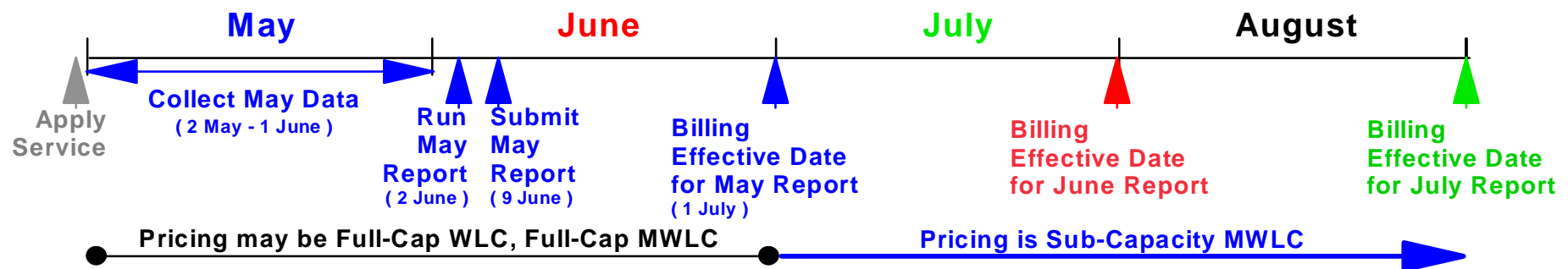
- IBM System z9 BC or z9 EC
- z/VSE V4 (no older VSE version allowed on the processor, ie. no VSE/ESA V2, no z/VSE V3)
- If running under VM: z/VM 5.2 (or later) is required

§ 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



Agenda

§ Top Concerns of VSE Customers

§ Midrange Workload License Charge (MWLC)

§ Sub-Capacity Pricing Option

§ Implementation Details

→ § Some Examples

§ Summary



z/VSE – Price/Performance over Time

§ Midrange sample customer software stack

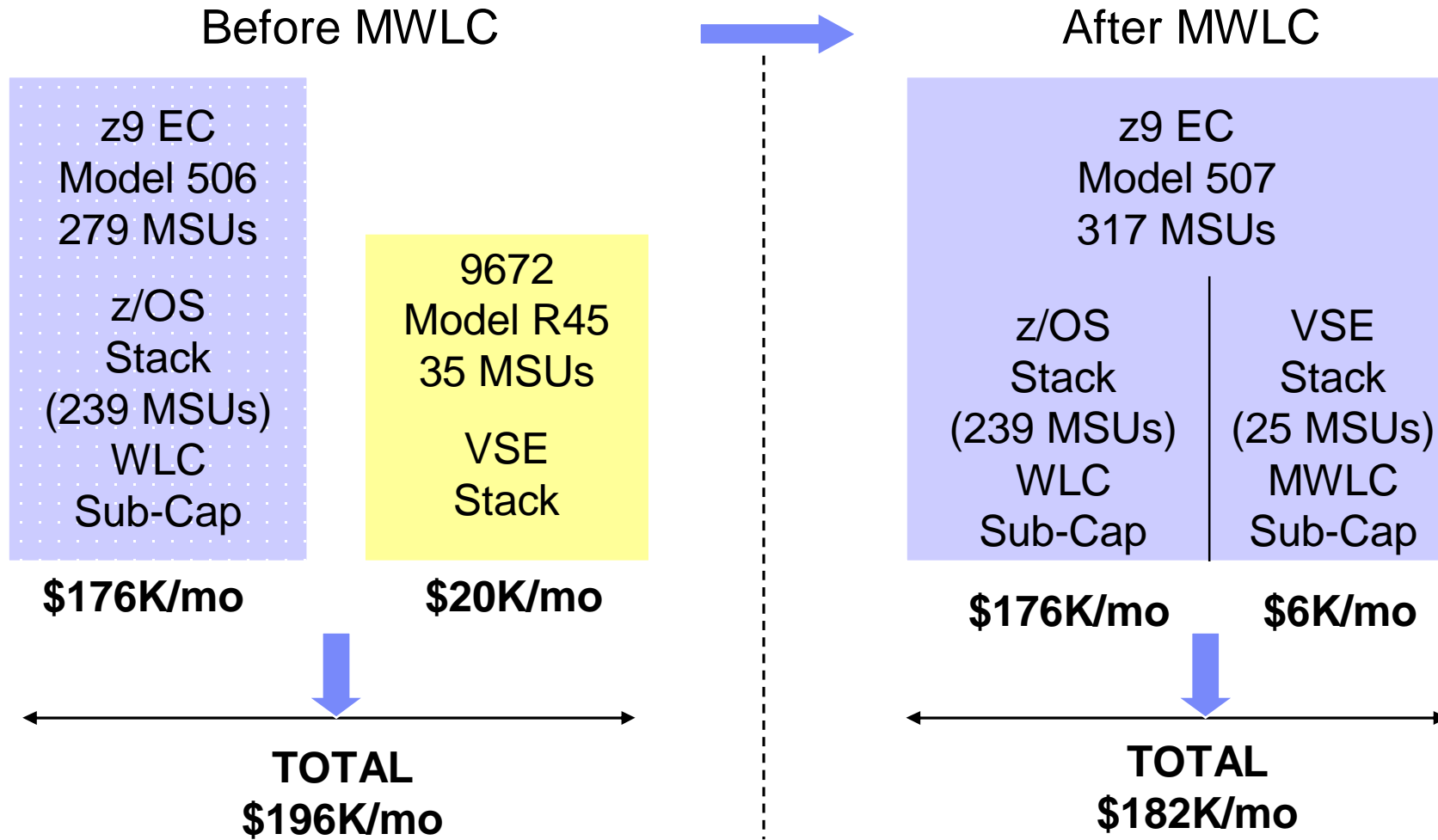
32 MSUs z/VSE Stack 9672 GMLC	32 MSUs z/VSE Stack z800 zELC	32 MSUs z/VSE Stack z890 TWLC	32 MSUs z/VSE V4 Stack z9 BC MWLC	32 MSU z/VSE V4 Stack z9 BC MWLC with 30% White Space
\$240K/yr	\$120K/yr	\$96K/yr	\$76K/yr	\$71K/yr



*Sample software stack includes: VSE CF V8, HLASM, VTAM, DITTO, COBOL

*Prices subject to change without notice; all prices shown in USD

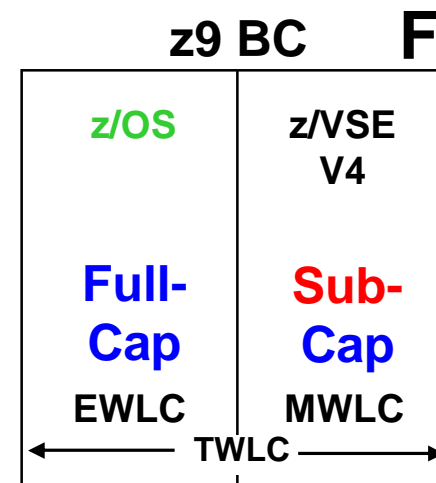
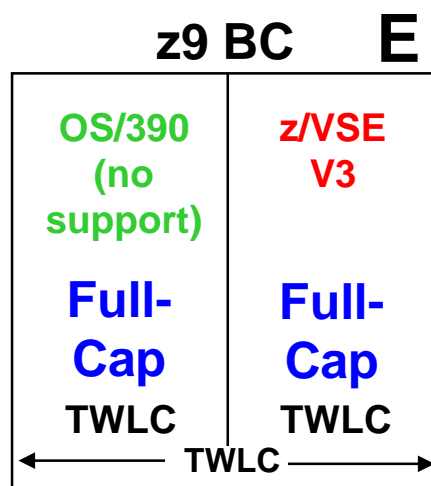
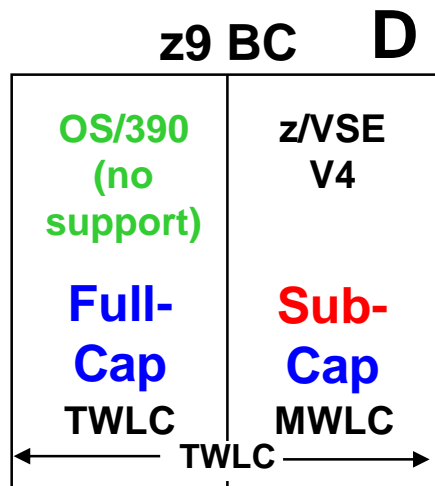
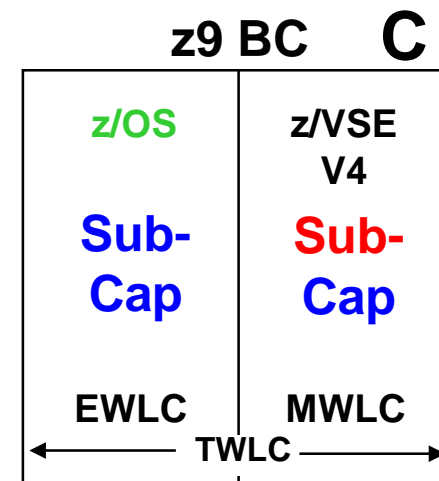
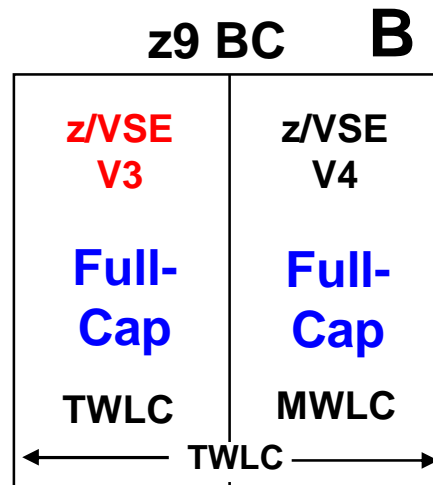
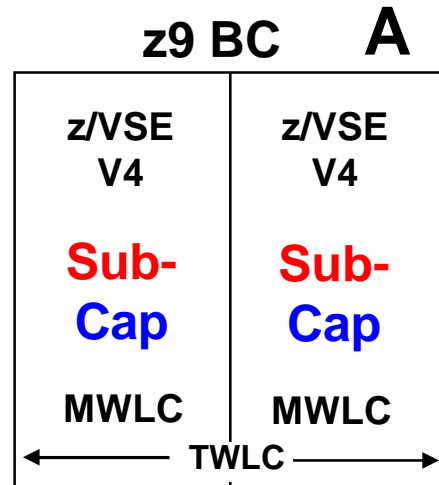
z/VSE V4: MWLC High-End Price/Performance server consolidation example



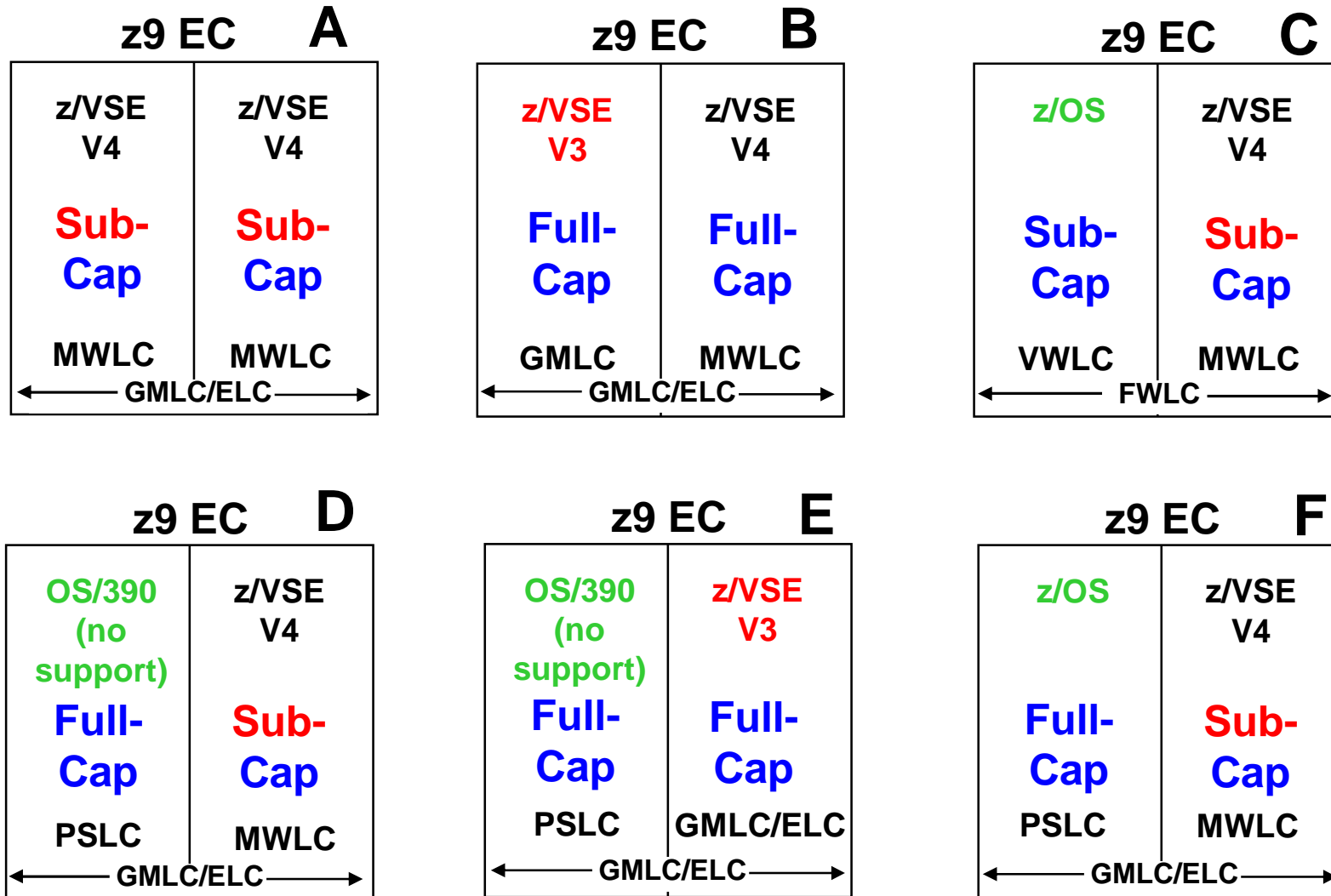
*Sample software stack includes: VSE CF V8, HLASM, VTAM, DITTO, COBOL

*Prices subject to change without notice; all prices shown in USD

Scenarios with z9 BC



Scenarios with z9 EC



Agenda

§ Top Concerns of VSE Customers

§ Midrange Workload License Charge (MWLC)

§ Sub-Capacity Pricing Option

§ Implementation Details

§ Some Examples

→ § Summary



MWLC Requirements

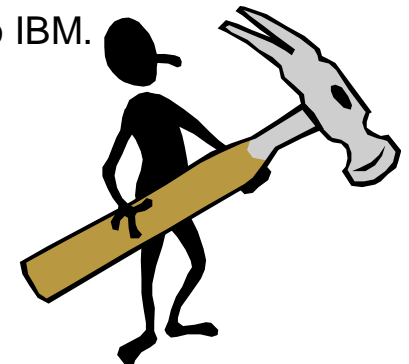
§ For both full-capacity and sub-capacity MWLC:

- z9 BC or z9 EC
- z/VSE V4
- Attachments:
 - IBM System z Midrange Workload License Charges (Z125-7452).
 - IBM System z Midrange Workload License Charges Exhibit (Z125-7453).
- Please note, if z/VSE V4 under MWLC is to run as a guest under z/VM, then it must be z/VM 5.2 or later.

§ Additional requirements for sub-capacity MWLC:

- You must run the Capacity Measurement Tool (ships with z/VSE V4 and enables z/VSE V4 to generate SCRT89 records) for an entire month to generate SCRT89 records
- If you have z/OS, run SCRT* under z/OS.
- If you do not have z/OS, send SCRT89 records (and other required information) to IBM. IBM will use your SCRT89 records to produce a Sub-Capacity Report.
- SCRT report will be returned to you for verification.
- You must submit report to IBM Billing via internet tool.

* This assumes a new version of SCRT is generally available at this time.





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.

