VM WORKSHOP 2017 – Colombus, Ohio

z/VSE Pricing and Sub-Capacity Reporting
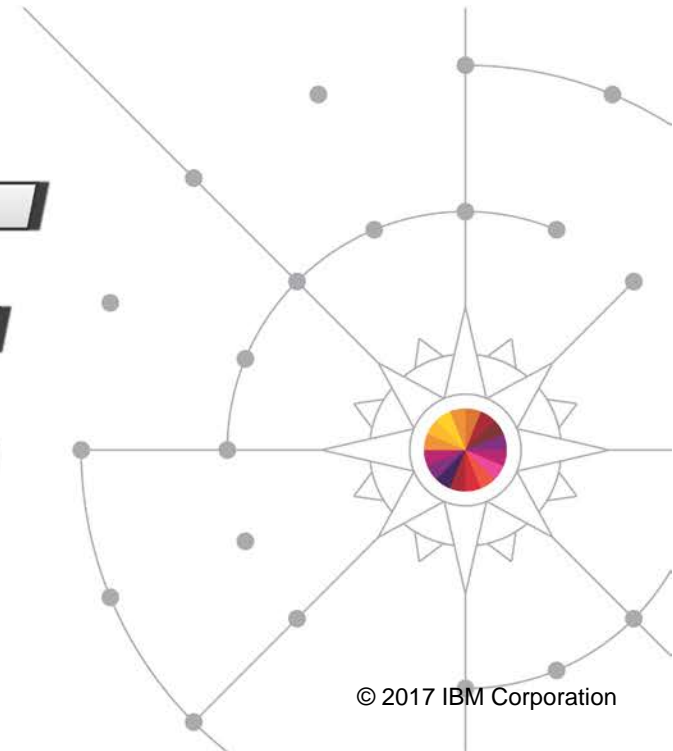
Stev Glodowski & Ingo Franzki
IBM Research & Development, Boeblingen, Germany

Stev.Glodowski@de.ibm.com
Ingo.Franzki@de.ibm.com

http://twitter.com/StevGlodowski

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Agenda

- **z/VSE Pricing**
  - Pricing Metrics
  - Sub-Capacity Pricing
  - Sub-Capacity Reporting
  - Multi-Version Measurement
  - Summary

https://www-03.ibm.com/systems/z/resources/swprice/news.html

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IT infrastructure > z Systems (Mainframes) > Resources >

IBM z Systems Software Pricing

News

| Pricing | MLC | zIPLA | Sub-Capacity | Sysplex | Reference | Help |

Overview | **News** | CMP | MVM | Table of Contents

News about changes to IBM's z Systems software licensing and pricing:

10 April 2017

Today, IBM announced that the Sub-Capacity Reporting Tool (SCRT) Version 24 Release 2.0 and SCRT Version 24 Release 11.0 are available for download. SCRT V24.2.0 and V24.11.0 features are listed on the web.

14 February 2017

Today, IBM announced Multi-Version Measurement (MVM) replaces Single Version Charging (SVC) for eligible z/OS and z/VSE software programs, providing z Systems clients with more flexibility for new software deployments and software upgrade cycles. MVM also replaces the Migration Pricing Option (MPO) and the IPLA Migration Grace Period.

10 January 2017

Today, IBM announced that the Sub-Capacity Reporting Tool (SCRT) Version 24 Release 10.4 is available for download. SCRT V24.10.4 features are listed on the web.

1 December 2016

Today, IBM announced that technical support for the Sub-Capacity Reporting Tool (SCRT) is now provided through the standard PMR service request process. Please see the SCRT Ask Me page for details about submitting a PMR.

Contact an IBM Sales Specialist

✉ Email IBM

→ Find a Business Partner

📞 Call IBM: 1-866-261-3023
Priority code: z Systems

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z/VSE

https://www-03.ibm.com/systems/z/resources/swprice/mlc/index.html

IBM z Systems Software Pricing

Monthly License Charge (MLC) Metrics

Pricing	MLC	zIPLA	Sub-Capacity	Sysplex	Reference	Help

Overview	AWLC	AEWLC	CMLC	WLC	EWLC	MWLC	zNALC	zELC	PSLC	Other

- **Midrange Workload License Charge**

★ Not applicable for capacity setting A01

Pricing Metrics	z13	z13s	zEC12	zBC12	z196	z114	z10 EC	z10 BC
MWLC	✔		✔		✔		✔ ★	✔ ★

- **Exclusive for z/VSE customers**
- **Requires z/VSE V4 or later**
- **Applicable to 15 key VSE Middleware programs**
  https://www.ibm.com/systems/z/resources/swprice/reference/exhibits/mlc.html#mwlc
  - Other programs not applicable for MWLC
    will be prices at TWLC or FWLC, etc.
- **Offers Full-capacity and Sub-Capacity options**
- **Not applicable for capacity setting A01 on z10**

MWLC Structure (cumulative monthly pricing)

Level	Range
Base MWLC	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

https://www-03.ibm.com/systems/z/resources/swprice/mlc/index.html

IBM z Systems Software Pricing

Monthly License Charge (MLC) Metrics

Pricing	MLC	zIPLA	Sub-Capacity	Sysplex	Reference	Help

Overview	AWLC	AEWLC	CMLC	WLC	EWLC	MWLC	zNALC	zELC	PSLC	Other

- **Midrange Workload License Charge – continued**

- **Full Capacity MWLC offers improved price/performance compared to TWLC and FWLC**

VSE-related Products eligible for MWLC and AEWLC

Sub-Capacity Eligible AEWLC / MWLC Programs

Program ID	Program Name	SMF89?/ SCRT89?*	Program Family**
5686-VS6	z/VSE V6	yes++	z/VSE
5686-CF9	VSE Central Functions V9 (z/VSE V5)	yes++	z/VSE
5686-CF8	VSE Central Functions V8 (z/VSE V4)	yes++	z/VSE
5655-VSE	CICS TS for z/VSE V2	yes++	CICS for z/VSE
5648-054	CICS TS for VSE/ESA V1	yes++	CICS for z/VSE
5648-099	DITTO/ESA FOR VSE	no	n/a
5686-CS1	TCP/IP for z/VSE V2	no	TCP/IP for z/VSE
5686-A04	TCP/IP for VSE V1	no	TCP/IP for z/VSE
5686-065	ACF/VTAM V4 VSE	yes++	n/a
5686-068	IBM COBOL VSE/ESA	no	n/a
5648-F66	Rational COBOL Runtime for z/VSE V7	no	n/a
5696-234	High Lvl Assembler VSE	no	n/a
5697-F42	DB2 Server for VSE&VM	no	n/a
5746-SM3	IBM DFSORT/VSE V3	no	n/a
5686-A06	MQSeries for VSE/ESA V2	no	n/a
5655-U97	WebSphere MQ for z/VSE V3	no	n/a
5746-XX1	DL/I Data Language	no	n/a
5686-A01	C/VSE	no	n/a
5686-069	IBM PL/I VSE/ESA	no	n/a
5686-BS1	IPv6/VSE V1	no	n/a

https://www.ibm.com/systems/z/resources/swprice/reference/exhibits/mlc.html#mwlc

https://www-03.ibm.com/systems/z/resources/swprice/mlc/aewlc.html

IBM z Systems Software Pricing

Monthly License Charge (MLC) Metrics

| Pricing | **MLC** | zIPLA | Sub-Capacity | Sysplex | Reference | Help |

Overview | AWLC | **AEWLC** | CMLC | WLC | EWLC | MWLC | zNALC | zELC | PSLC | Other

- **Advanced Entry Workload License Charge**

★ Not applicable for capacity setting A01

Pricing Metrics	z13	z13s	zEC12	zBC12	z196	z114	z10 EC	z10 BC
MWLC	✔		✔		✔		✔★	✔★
AEWLC		✔★		✔★		✔★		

- **Requires z/VSE V4 or later**
- **Applicable to 15 key VSE Middleware programs**
- **Offers Full-capacity and Sub-Capacity options**
- **Not applicable for capacity setting A01 on z13s, zBC12 and z114**

Level	MSU Range
Base AEWLC	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 - 315 MSUs
Level 8	316+ MSUs

z/VSE

IBM z Systems Software Pricing

Monthly License Charge (MLC) Metrics

Pricing	MLC	zIPLA	Sub-Capacity	Sysplex	Reference	Help

Overview	AWLC	AEWLC	CMLC	WLC	EWLC	MWLC	zNALC	zELC	PSLC	Other

- **Advanced Entry Workload License Charge - continued**

- **Full Capacity AEWLC offers improved price/performance**

https://www-03.ibm.com/systems/z/resources/swprice/mlc/aewlc.html

IBM z Systems Software Pricing

Monthly License Charge (MLC) Metrics

Pricing	MLC	zIPLA	Sub-Capacity	Sysplex	Reference	Help

| Overview | AWLC | AEWLC | CMLC | WLC | EWLC | MWLC | zNALC | zELC | PSLC | Other |

- **Advanced Entry Workload License Charge - continued**

- **Technology Update Pricing for z13s (TU4)**
  - For stand-alone **z13s** servers
  - AEWLC **pricing reduction up to 13%**
  - For more details, see announcement link

- **Technology Update Pricing for zBC12 (TU2)**
  - For stand-alone **zBC12** servers
  - AEWLC **pricing reduction up to 5%**
  - For more details, see announcement link

MSUs: Quantity of z13s Full Capacity MSUs for a stand-alone server	Reduction in Monthly AEWLC for z13s (TU4)	Reduction in Monthly AEWLC for zBC12 (TU2)
1-10 MSUs	13.0%	5.0%
11-17 MSUs	13.0%	5.0%
18-30 MSUs	13.0%	5.0%
31-45 MSUs	10.0%	5.0%
46-87 MSUs	9.0%	4.0%
88-175 MSUs	9.0%	4.0%
176-260 MSUs	9.0%	4.0%
261-315 MSUs	9.0%	4.0%
316-390 MSUs	9.0%	4.0%
391 - more MSUs	9.0%	4.0%

- **Reduces AEWLC pricing on z13s as compared to AEWLC on IBM zEnterprise® BC12 (zBC12) and IBM z114**
- **Offers sub-capacity or full-capacity implementation**

IBM z Systems Software Pricing

Monthly License Charge (MLC) Metrics

Pricing	**MLC**	zIPLA	Sub-Capacity	Sysplex	Reference	Help

Overview	AWLC	AEWLC	CMLC	WLC	EWLC	MWLC	zNALC	**zELC**	PSLC	Other

- **zSeries Entry License Charge**

★ Not applicable for capacity setting A01

Pricing Metrics	z13	z13s	zEC12	zBC12	z196	z114	z10 EC	z10 BC
MWLC	✔		✔		✔		✔ ★	✔ ★
AEWLC		✔ ★		✔ ★		✔ ★		
zELC (capacity setting A01 only)		✔		✔		✔	✔	✔

- **Monthly license charge applicable for entry models of servers**
- **Capacity setting A01**

Agenda

- **z/VSE Pricing**
  - Pricing Metrics
  - Sub-Capacity Pricing
  - Sub-Capacity Reporting
  - Multi-Version Measurement
  - Summary

https://www-03.ibm.com/systems/z/resources/swprice/mlc/index.html

IBM z Systems Software Pricing

Monthly License Charge (MLC) Metrics

| Pricing | MLC | zIPLA | Sub-Capacity | Sysplex | Reference | Help |

| Overview | AWLC | AEWLC | CMLC | WLC | EWLC | MWLC | zNALC | zELC | PSLC | Other |

- ## Midrange Workload License Charges

★ Not applicable for capacity setting A01

Pricing Metrics	z13	z13s	zEC12	zBC12	z196	z114	z10EC	z10BC
MWLC	✔		✔		✔		✔ ★	✔ ★
AEWLC		✔ ★		✔ ★		✔ ★		
zELC (capacity setting A01 only)		✔		✔		✔	✔	✔
Sub-Capacity	✔	✔ ★	✔	✔ ★	✔	✔ ★	✔ ★	✔ ★

- ## Minimum HW & SW Requirements
  - System z9 or higher
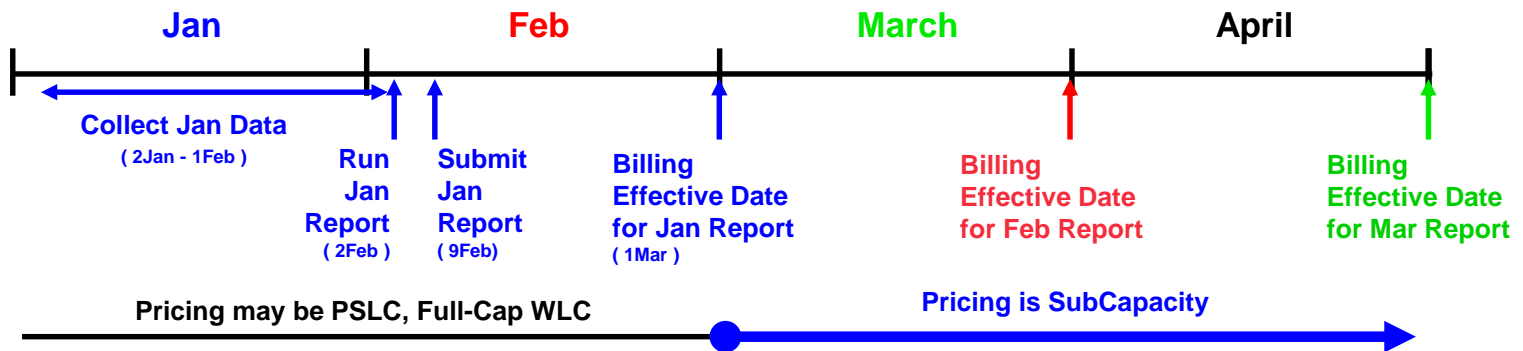 - z/VSE V4 or higher

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z/VSE

Sub-Capacity Pricing Terms & Conditions

- **Process**
  - Sub-Cap Pricing begins after processing of 1st full month report
  - Data Collection Period: 2nd of the previous month - 1st of current month
 - Submission Period: 2nd - 9th following data collection

- **Sub-Capacity Pricing Terms & Conditions**
  - Must report on all LPARS and z/VM guests (No exceptions for "Test", "Sandbox", "Maintenance" LPARs, etc.)
  - minimum of 95% Data Collection
  - Must have "Call Home" reporting active
  - Must retain SMF data for at least 6 months

Jan	Feb	March	April

Collect Jan Data
(2Jan - 1Feb)

Run Jan Report
(2Feb)

Submit Jan Report
(9Feb)

Billing Effective Date for Jan Report
(1Mar)

Billing Effective Date for Feb Report

Billing Effective Date for Mar Report

Pricing may be PSLC, Full-Cap WLC

Pricing is SubCapacity

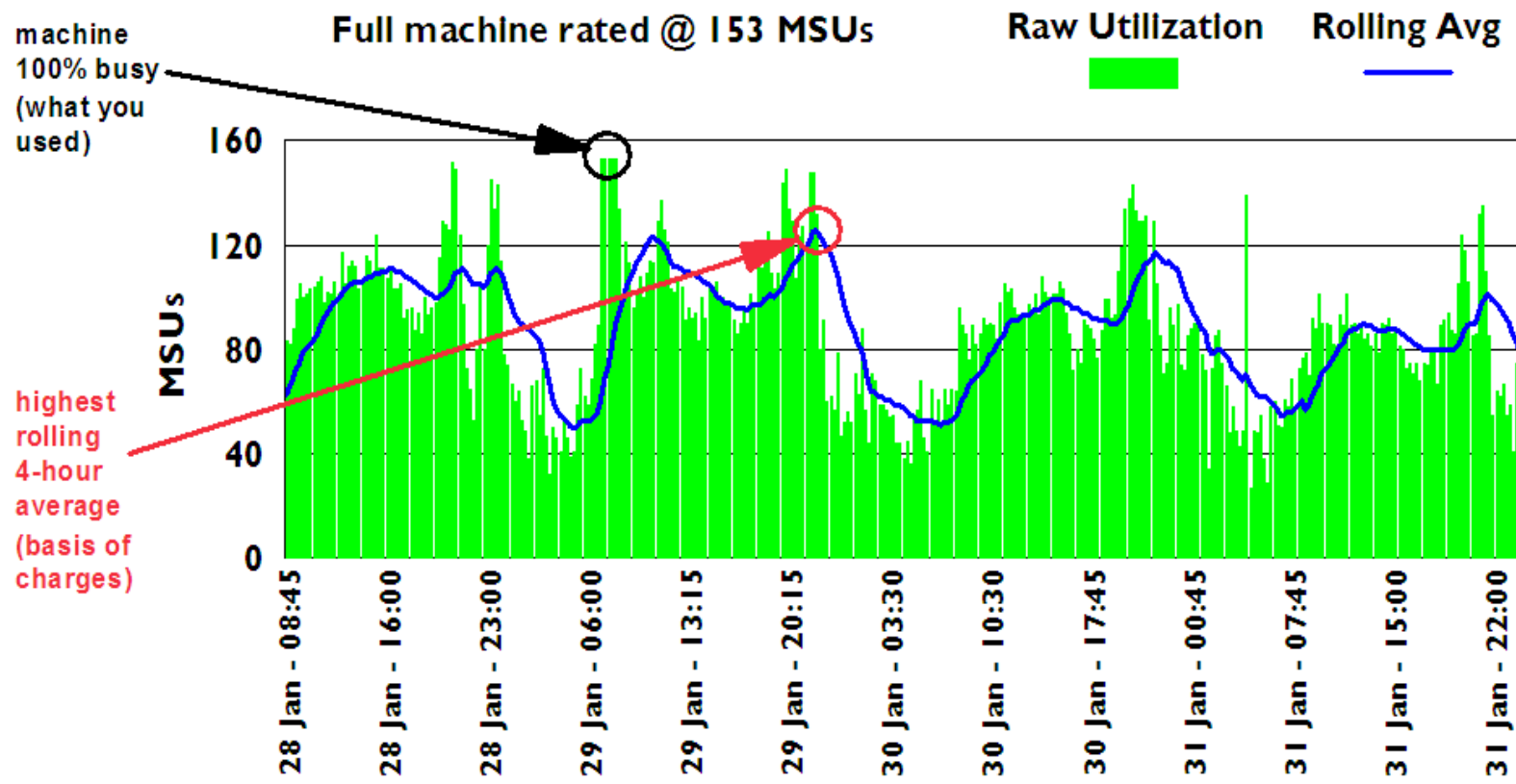# SubCap Concept: Rolling 4-Hour Average Utilization

- Captures the rolling 4-hour average LPAR utilization for each interval in the month
- Capacity and utilization is measured in Millions of Service Units (MSU) per hour
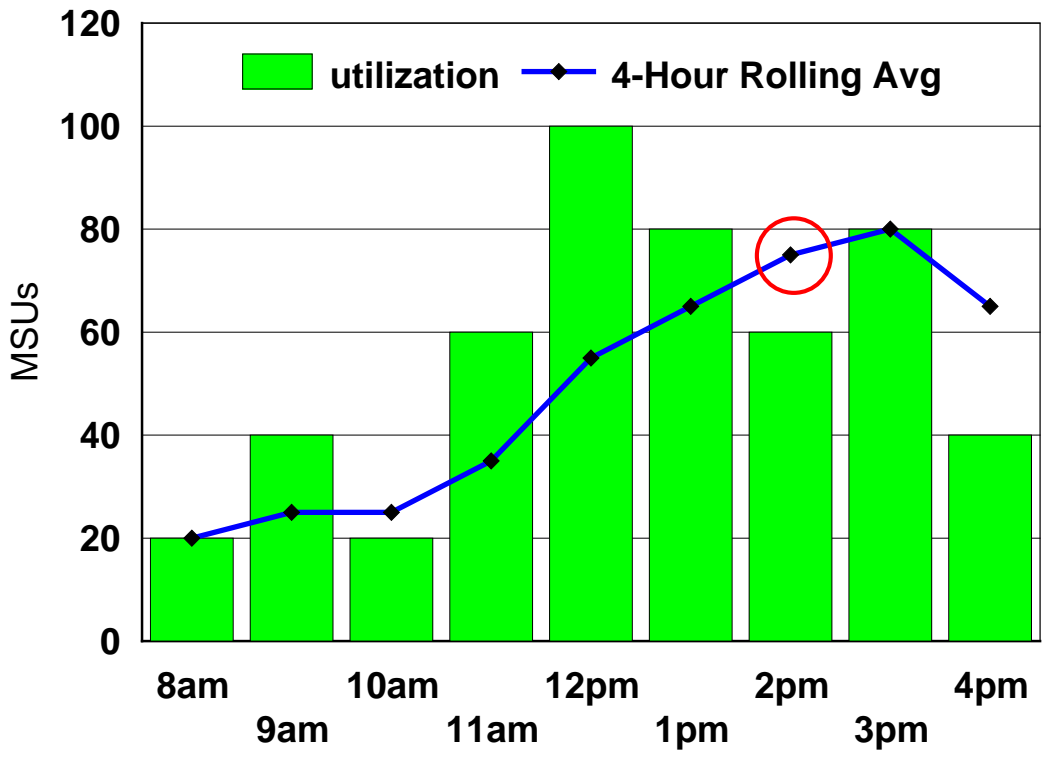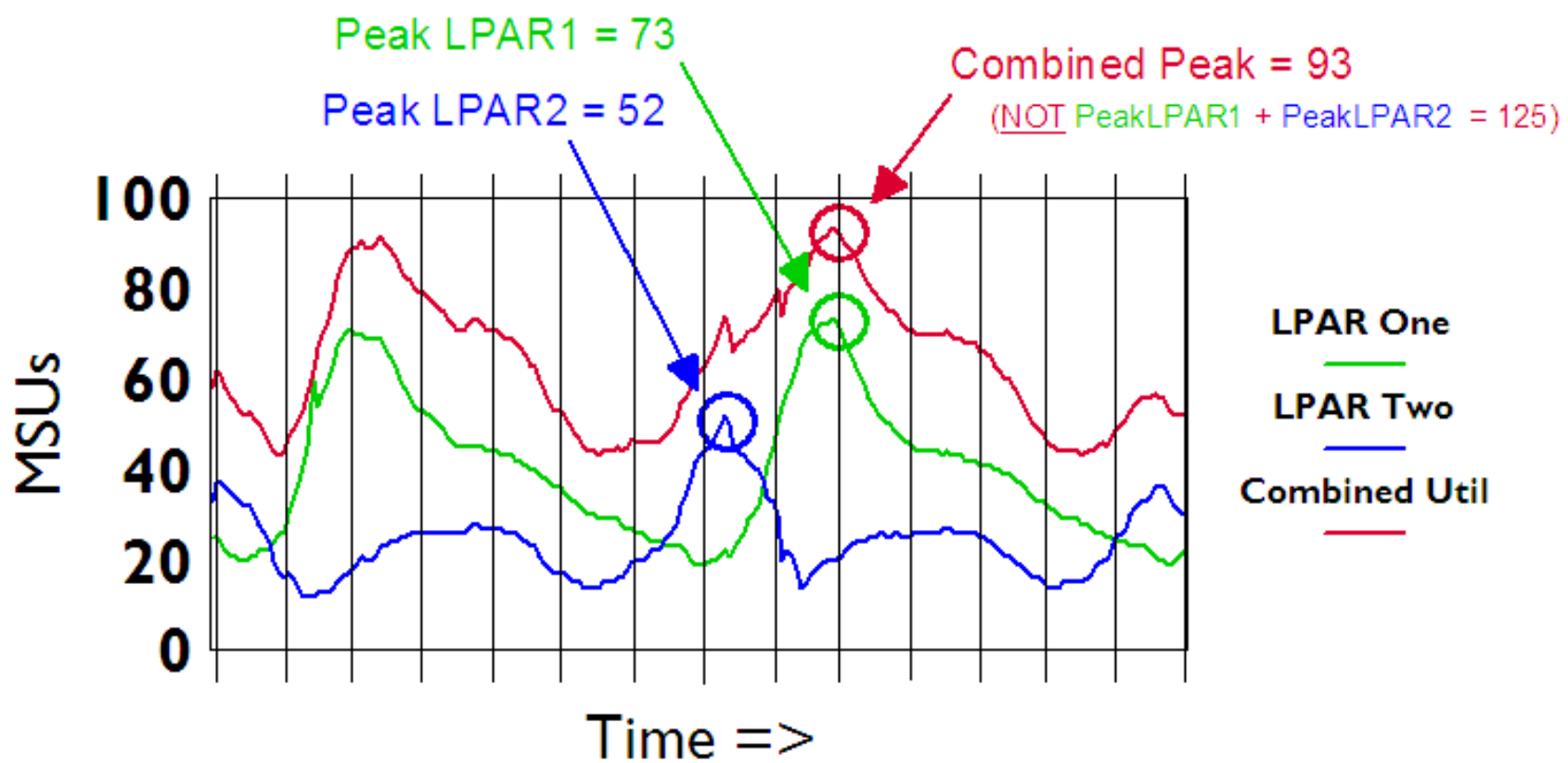
Rolling 4-Hour Average

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: Rolling 4-Hour Average

machine 100% busy (what you used)

Full machine rated @ 153 MSUs

Raw Utilization   **Rolling Avg**

MSUs

160
120
80
40
0

highest rolling 4-hour average (basis of charges)

28 Jan - 08:45, 28 Jan - 16:00, 28 Jan - 23:00, 29 Jan - 06:00, 29 Jan - 13:15, 29 Jan - 20:15, 30 Jan - 03:30, 30 Jan - 10:30, 30 Jan - 17:45, 31 Jan - 00:45, 31 Jan - 07:45, 31 Jan - 15:00, 31 Jan - 22:00
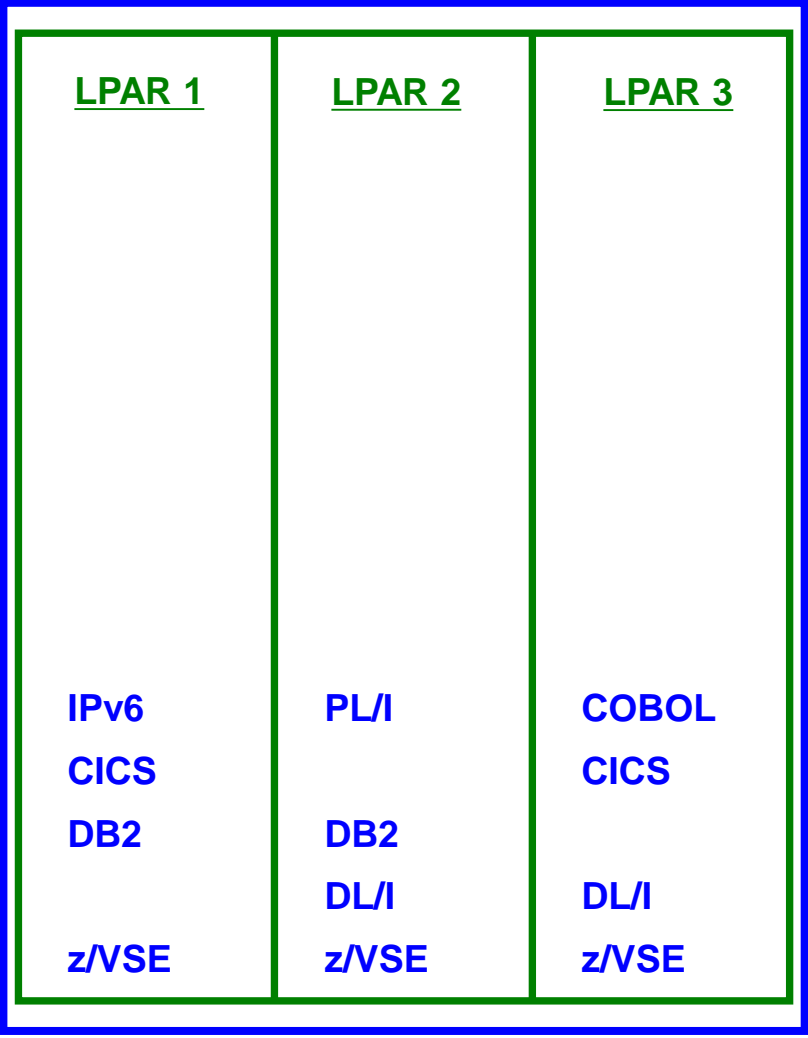
- **Rolling 4-Hour Average Utilization Smoothes Out Peaks in Raw Utilization**
- **Allows for Varied Peaks, Bases Software Charges on More Moderate Measure**

z/VSE

SubCap Concept:
Simultaneous Combined Rolling 4-Hour Average

Peak LPAR1 = 73

Peak LPAR2 = 52

Combined Peak = 93

(NOT PeakLPAR1 + PeakLPAR2 = 125)

LPAR One

LPAR Two

Combined Util

Time =>

Sub-Capacity Overview

100 MSU Rated Capacity

LPAR 1	LPAR 2	LPAR 3
IPv6	PL/I	COBOL
CICS	CICS	CICS
DB2	DB2	
	DL/I	DL/I
z/VSE	z/VSE	z/VSE

- **Full Capacity Pricing**
  - Charges based on Machine Capacity of machines where product runs
  - Each SW product on the machine is charged 100 MSUs

z/VSE

Sub-Capacity Overview

100 MSU Rated Capacity

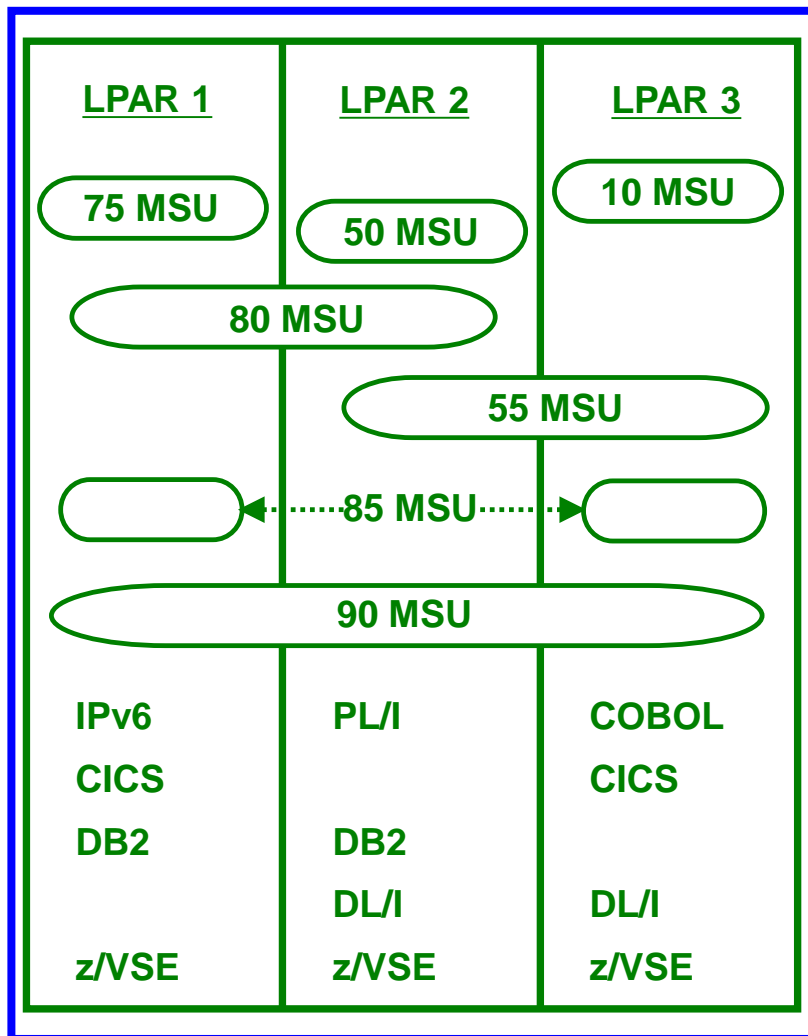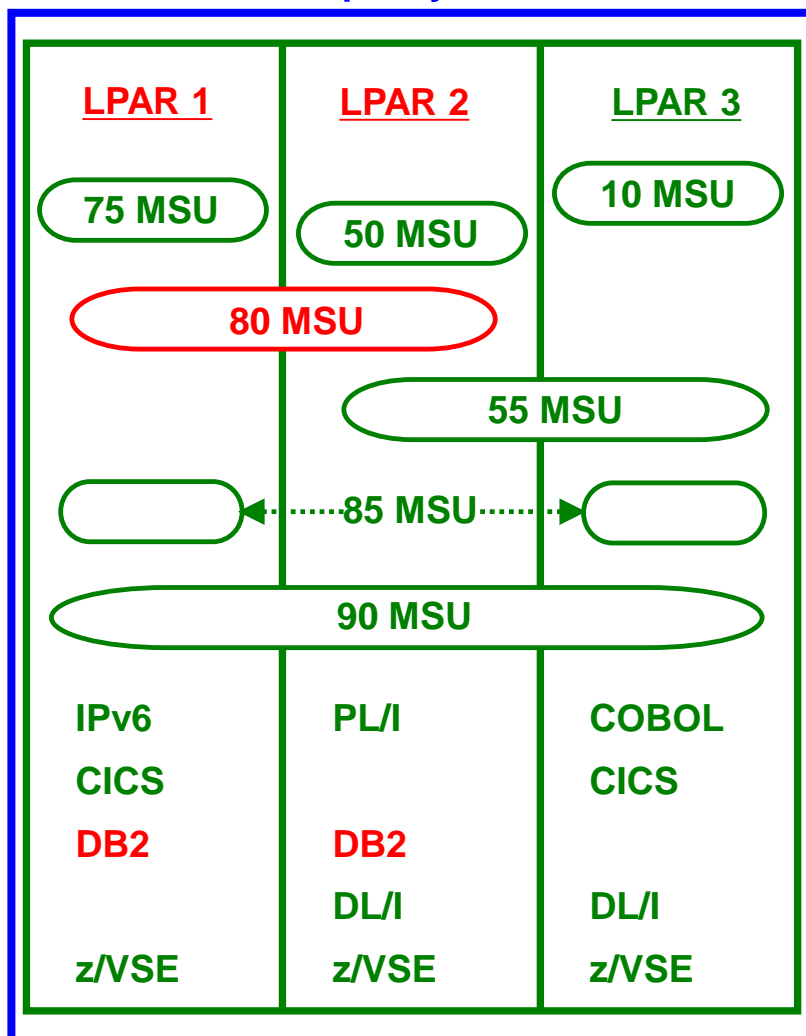| LPAR 1	LPAR 2	LPAR 3
75 MSU		10 MSU
	50 MSU	
80 MSU		
	55 MSU	
◄······ 85 MSU ······►		
90 MSU		
z/VSE	z/VSE	z/VSE

- **Full Capacity Pricing**
  - Charges based on Machine Capacity of machines where product runs

- **Sub-Capacity Pricing**
  - Charges based on Hardware Utilization of LPARs where product runs
  - Hourly intervals measured
  - Rolling 4-Hour Average calculated for each combination of LPARs
  - Charges based on Monthly Peak R4HA of appropriate LPAR combination

z/VSE

Sub-Capacity Overview

100 MSU Rated Capacity

LPAR 1	LPAR 2	LPAR 3
75 MSU		10 MSU
	50 MSU	
80 MSU		
	55 MSU	
◄····· 85 MSU ·····►		
90 MSU		
IPv6	PL/I	COBOL
CICS		CICS
DB2	DB2	
	DL/I	DL/I
z/VSE	z/VSE	z/VSE

- **Full Capacity Pricing**
  - Charges based on Machine Capacity of machines where product runs

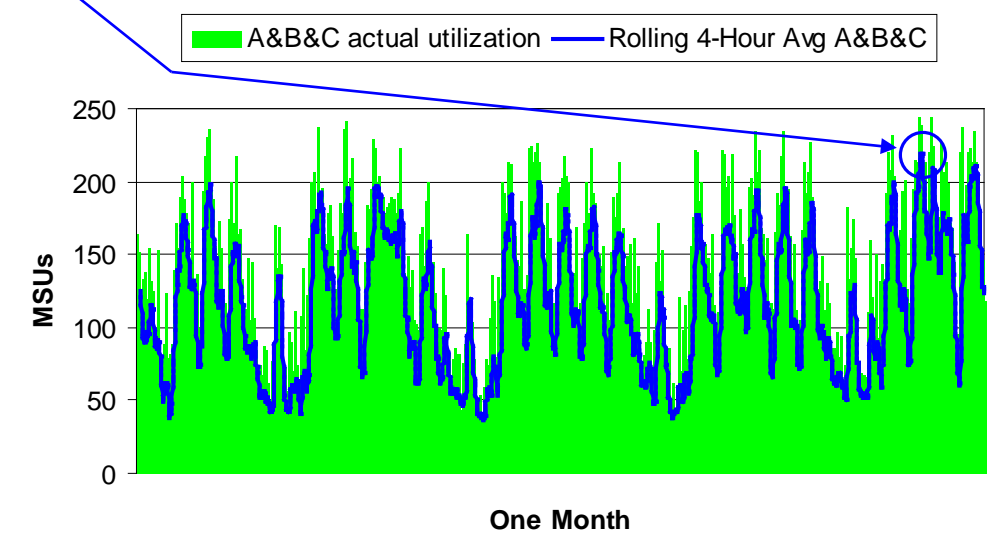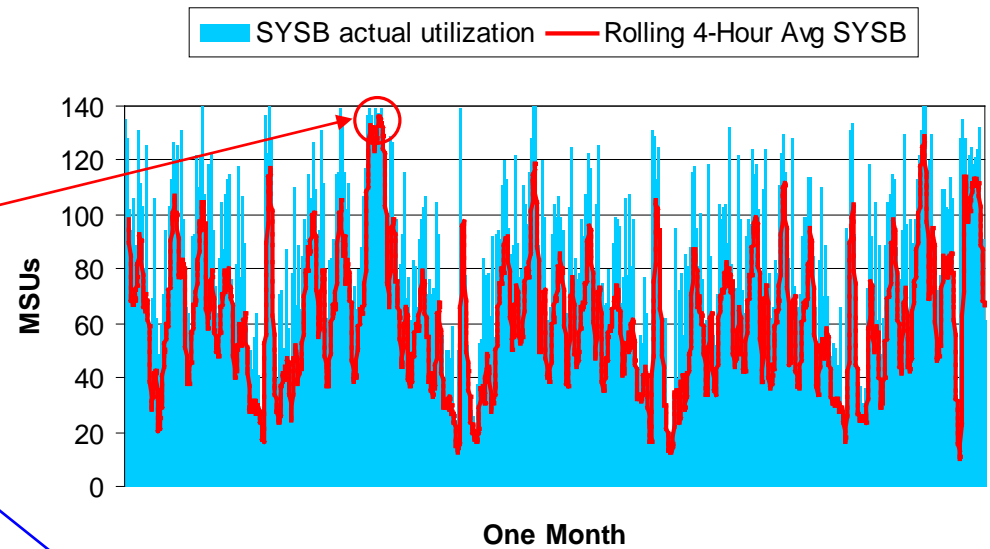- **Sub-Capacity Pricing**
  - Charges based on Hardware Utilization of LPARs where product runs
  - Hourly intervals measured
  - Rolling 4-Hour Average calculated for each combination of LPARs
  - Charges based on Monthly Peak R4HA of appropriate LPAR combination
  - Not based on individual Product measurement

z/VSE

Sub-Capacity Overview

100 MSU Rated Capacity

LPAR 1	LPAR 2	LPAR 3
75 MSU	50 MSU	10 MSU

80 MSU

55 MSU

◄ ‑‑‑‑‑‑ 85 MSU ‑‑‑‑‑‑ ►

90 MSU

LPAR 1	LPAR 2	LPAR 3
IPv6	PL/I	COBOL
CICS		CICS
DB2	DB2	
	DL/I	DL/I
z/VSE	z/VSE	z/VSE

- **Full Capacity Pricing**
  - Charges based on Machine Capacity of machines where product runs

- **Sub-Capacity Pricing**
  - Charges based on Hardware Utilization of LPARs where product runs
  - Hourly intervals measured
  - Rolling 4-Hour Average calculated for each combination of LPARs
  - Charges based on Monthly Peak R4HA of appropriate LPAR combination
  - Not based on individual Product measurement

  *e.g. DB2 is charged 80 MSUs because LPARs 1&2 had a peak R4HA utilization of 80 MSUs and DB2 ran in LPARs 1&2, **not** because DB2 "used" 80 MSUs*

Sub-Capacity Example

System z @ 240 MSUs

SYSA	SYSB	SYSC
	136 MSUs	
	219 MSUs	
	PL/I **DB2**	
z/VSE	**z/VSE**	**z/VSE**

SCRT Report:

Product	Sub-Cap MSUs
PL/I	136 MSUs
DB2	136 MSUs
z/VSE	219 MSUs

SYSB actual utilization — Rolling 4-Hour Avg SYSB

One Month

A&B&C actual utilization — Rolling 4-Hour Avg A&B&C

One Month

Agenda

- **z/VSE Pricing**
  - Pricing Metrics
  - Sub-Capacity Pricing
  - Sub-Capacity Reporting
  - Multi-Version Measurement
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Sub-Capacity Measurement and Reporting on z/VSE

Data Collection

Data Submission

| CMT Capacity Measurement Tool | → | SCRT89 Records | → | SCRT Sub-Capacity Reporting Tool | → | Sub-Capacity Report(s) | → | IBM License Management Support (LMS) Application |
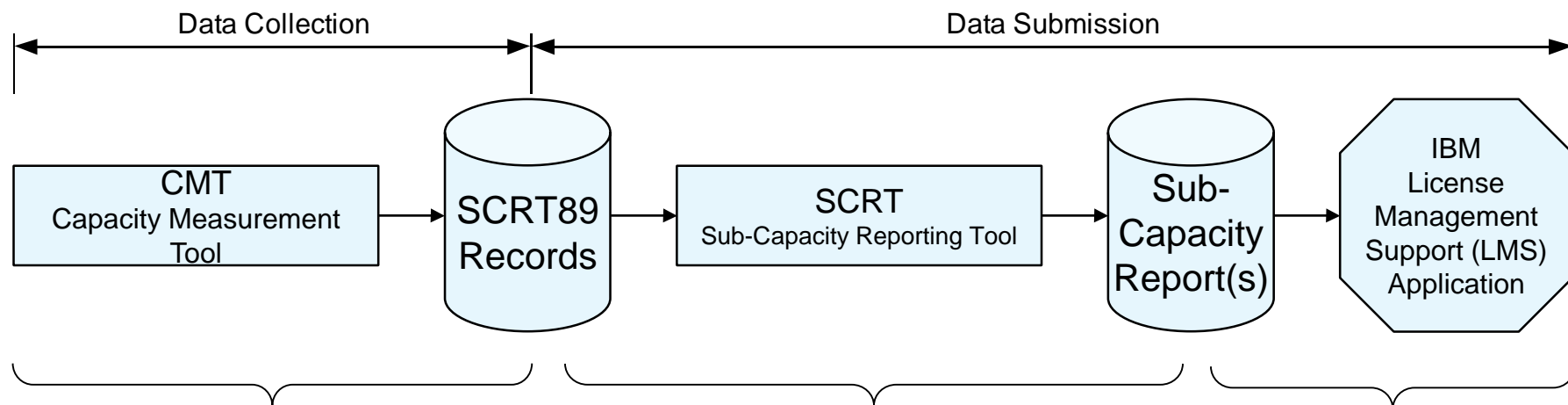
In case of a problem:
Open a Problem Record
(PMR / SR) against z/VSE.
This will then be handled by
the z/VSE support people

In case of a problem:
Open a Problem Record
(PMR / SR) against z/VSE.
This will then be routed to
the SCRT support people

In case of a problem:
For help with submitting SCRT Reports
to IBM using the License Management
Support (LMS) application, please
contact the LMS Customer Support Center:
• via email: kmsweb@dk.ibm.com
• via phone: +44 2392 28 98 80
The LMS Customer Support Center
provides support in English, 24 / 7

z/VSE Capacity Measurement Tool (CMT)

- **CMT System Task**
    - Measures used CPU capacity
    - Generates an SCRT89 record every measurement interval (30 minutes)
    - Writes the record to the CMT files (wrap-around)

- **CMT Batch Interface (IJBCMT)**
    - Initialize CMT files (INITDS)
    - Start measurement and specify CMT ID (START,ID=…)
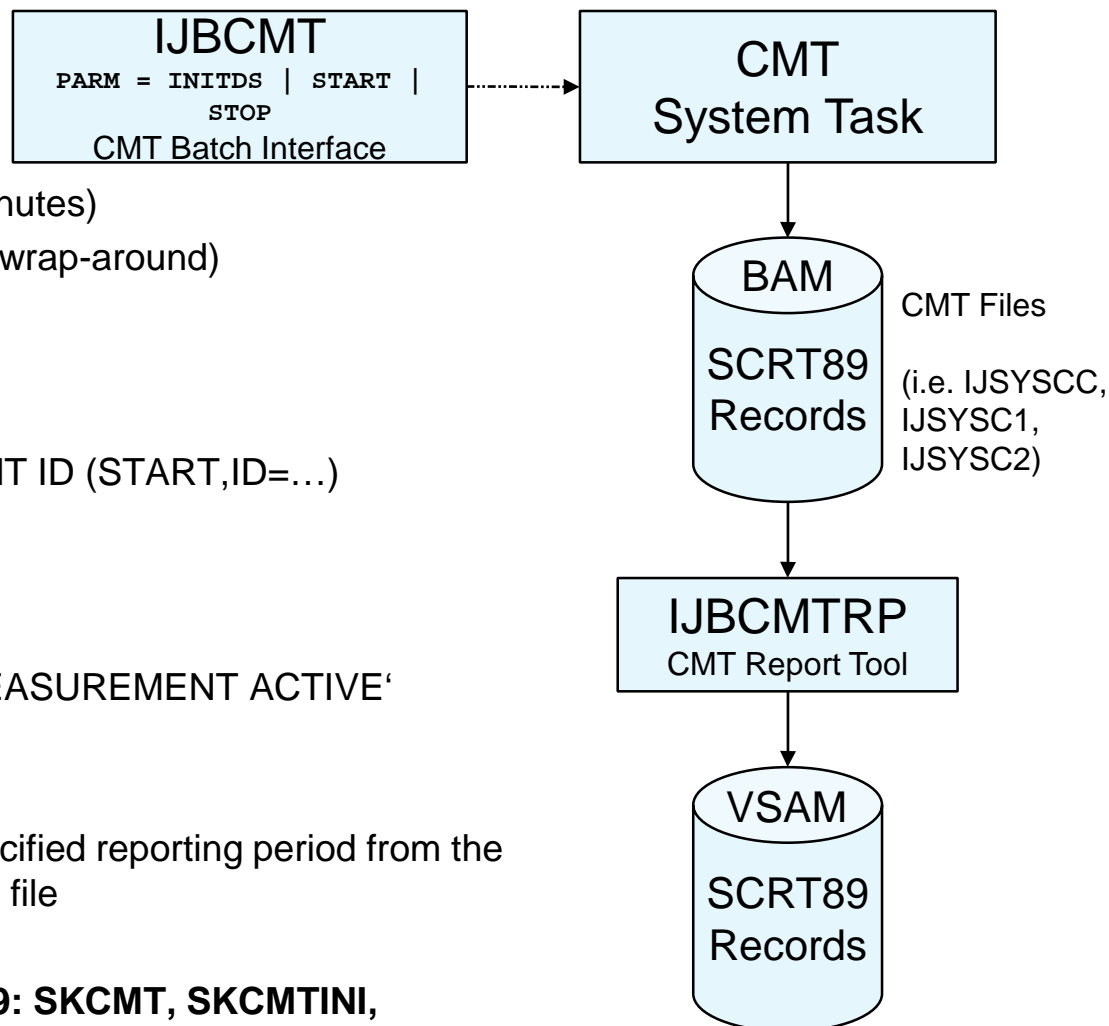   - Stop measurement (STOP)

- **SIR AR Command**
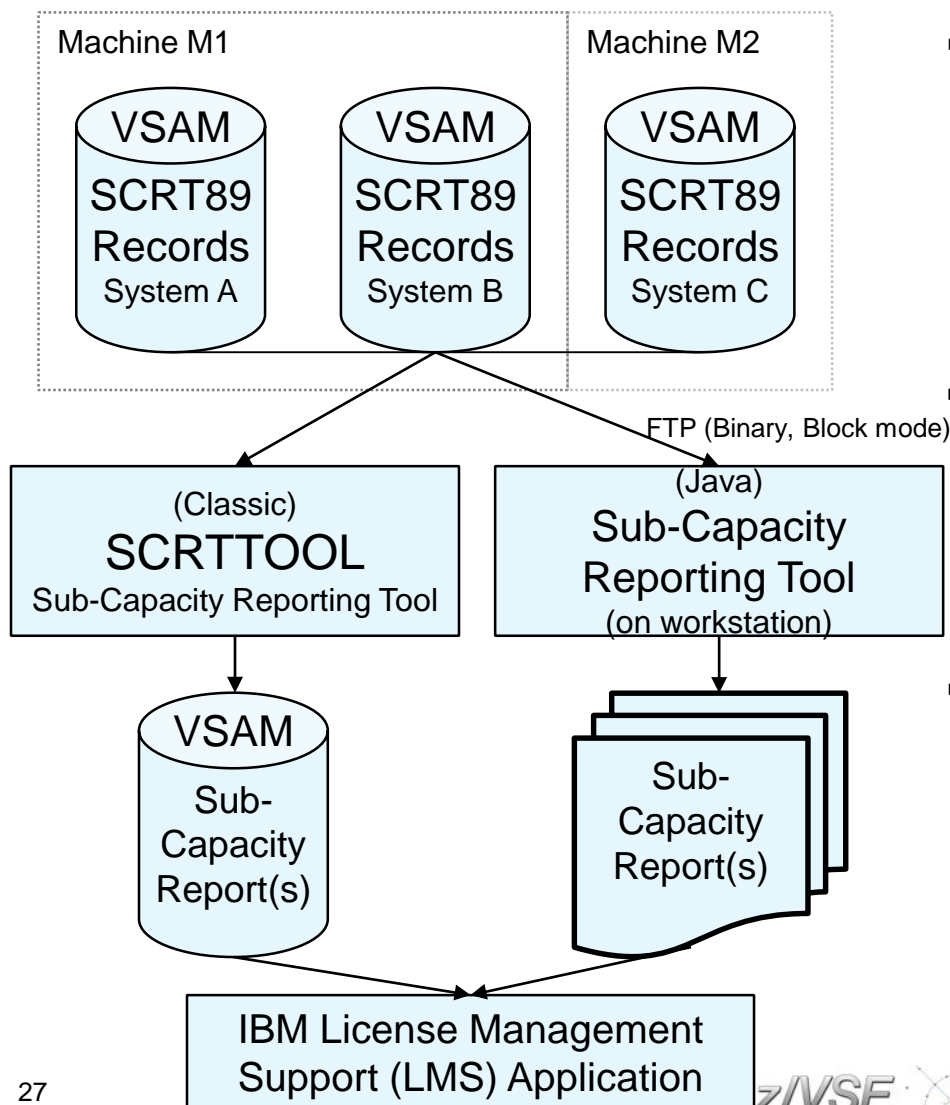   - Query CMT status: 'CAPACITY MEASUREMENT ACTIVE'

- **CMT Report Tool (IJBCMTRP)**
    - Extracts SCRT89 records for a specified reporting period from the CMT BAM files into a VSAM ESDS file

- **Setup using skeletons in ICCF library 59: SKCMT, SKCMTINI, SKCMTREP (Manual: *Using the Sub-Capacity Reporting Tool ("SCRT User's Guide")*, SG24-6522)**

```
IJBCMT
PARM = INITDS | START |
            STOP
CMT Batch Interface
```

CMT System Task

BAM
SCRT89 Records

CMT Files
(i.e. IJSYSCC, IJSYSC1, IJSYSC2)

IJBCMTRP
CMT Report Tool

VSAM
SCRT89 Records

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Sub-Capacity Reporting Tool (SCRT)

Machine M1		Machine M2
VSAM SCRT89 Records System A	**VSAM** SCRT89 Records System B	**VSAM** SCRT89 Records System C

FTP (Binary, Block mode)

(Classic) SCRTTOOL Sub-Capacity Reporting Tool

(Java) Sub-Capacity Reporting Tool (on workstation)

VSAM Sub-Capacity Report(s)

Sub-Capacity Report(s)

IBM License Management Support (LMS) Application

- **Sub-Capacity Reporting Tool (SCRT)**
  - Processes SCRT89 records from multiple systems (and optional from multiple machines) together
  - Generates a Sub-Capacity Report ("SCRT report") for each machine

- **The SCRT report is in Comma Separated Values (CSV) format**
  - Can be viewed and edited using spreadsheet applications (e.g. MS Excel, OO.org Calc)

- **Submission process to IBM License Management Support (LMS) application:**
  - Download report to workstation for review and editing, then use either e-mail or web for submission to LMS
  - Send by e-mail to LMS, then manage, edit, and confirm via web

Types of Products
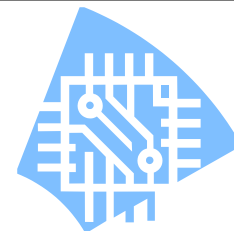
- **SCRT89-Products: Monitored by CMT**
  - SCRT89 record contains information if product was active during the measurement interval
    - VSE Base (z/VSE V4, V5 and V6; 5686-CF8, 5686-CF9, 5686-VS6)
    - CICS TS for VSE/ESA (5648-054) and CICS TS for z/VSE (5655-VSE)
    - ACF/VTAM V4 VSE/ESA (5686-065)

- **NO89-Products: Not monitored by CMT**
  - Customer provides list of LPARs and VM guests where the products were active in SCRT JCL NO89 section
    - DB2 Server for VSE & VM (5697-F42)
    - DITTO/ESA for VSE (5648-099)
    - DL/1 DOS/VS (5746-XX1)
    - High Level Assembler VSE & VM (5696-234)
    - IBM C for VSE/ESA V1 (5686-A01)
    - IBM COBOL VSE/ESA (5686-068)
    - IBM DFSORT/VSE V3 (5746-SM3)
    - IBM PL/1 for VSE/ESA (5686-069)
    - MQSeries for VSE/ESA V2 (5686-A06)
    - WebSphere MQ for VSE/ESA V3 (5655-U97)
    - TCP/IP for VSE (5686-A04)
    - IBM Rational COBOL Runtime for z/VSE V7 (5648-F66)
    - IPv6/VSE V1 (5686-BS1)

Hints & Tips

- **CMT BAM files (IJSYSCC, IJSYSC1, IJSYSC2):**
  - Must not be shared among multiple systems (for write)
    - each system requires its own set of files
  - Can reside on a shared disk as long as disk sharing is set up correctly:
    - IPL DLF statement (one single shared lock file)
    - IPL ADD statement with option SHR (for each shared disk)
  - Must not be relocated (neither moved on the disk nor to another disk)
  - It is recommended to stick to the default configuration values
    (e.g. number of tracks or blocks specified for ECKD and FBA disks)

- **CMT ID (=SYSID in z/OS) must be unique among all systems and across all operating systems:**
  - If every machine (=CPC) is processed on its own SCRT run, then the IDs must only be
    unique for each machine (this is the preferred solution)
  - If multiple machines (=CPCs) are to be processed in one SCRT run, then the IDs must be unique
    among all machines being processed together

- **SCRT User's Guide:**
  - http://www.ibm.com/systems/z/resources/swprice/subcap/scrt/

News and Updates

- **IBM announces that the Classic Version deliverables of SCRT will no longer be supported after October 2017**

- **Customers currently using an SCRT Classic Version deliverable should begin planning their migration to one of the Java Version deliverables prior to October 2017**

- **z/VSE customers without z/OS will have the choice of the Windows or Linux deliverables**

- **The Java tool is already available for download:**
  - http://www-03.ibm.com/systems/z/resources/swprice/subcap/scrt/download.html

- **The Classic Version (JCL) of the SCRT Tool is still available (until October 2017)**

- **SCRT development is considering options to provide enhanced functionality to the new SCRT tool, including command line functionality**
  - If there are other requirements that you would like the SCRT team to consider, please submit an Request for Enhancement (RFE) at https://www.ibm.com/developerworks/rfe/execute?use_case=changeRequestLanding .

SCRT Algorithm

Hour	1	1	2	2	3	3	...	719	719	720	720
LPAR	A	B	A	B	A	B		A	B	A	B
r4hr avg*	70	30	75	30	50	50		100	30	100	10
r4hr A/B	100		105		100			130		110	
z/VSE	yes 100	yes	yes 105	yes	yes 100	yes		yes 130	yes	yes 110	yes
CICS	yes 70		yes 75		yes 50						
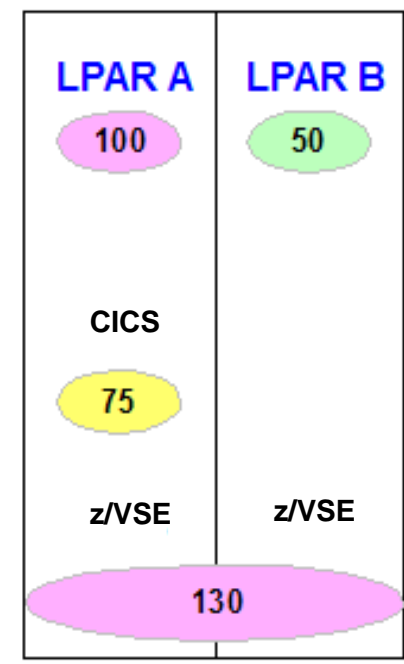
* Respective r4ha for each LPAR

LPAR A	LPAR B
100	50
CICS 75	
z/VSE	z/VSE
130	

- **True**: Peak interval for A&B where z/VSE ran = hour 719, so z/VSE is 130
- **False**: z/VSE Runs in LPAR A and B, add A (100) + B (50), so z/VSE is 150
- **True**: Peak interval for A where CICS ran = hour 2, so CICS is 75
- **False**: CICS Runs in LPAR A, LPAR A peaks at 100, so CICS is 100
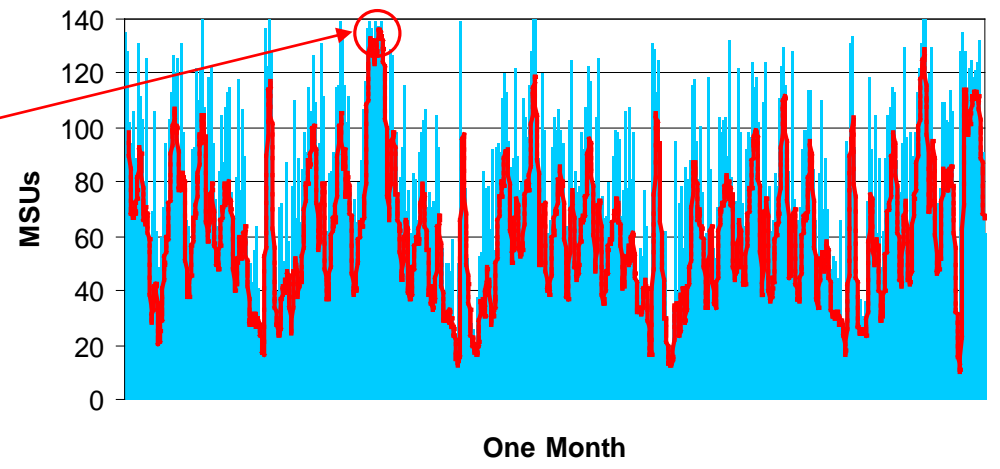
Sub-Capacity Example 2

System z @ 240 MSUs

SYSA	SYSB	SYSC
	136 MSUs (NO89)	
	129 MSUs (SCRT89)	
	TCP/IP	
	CICS	
z/VSE	z/VSE	z/VSE

SCRT Report:

Product	Sub-Cap MSUs
TCP/IP	136 MSUs
CICS	129 MSUs
z/VSE	219 MSUs

Legend: SYSB actual utilization — Rolling 4-Hour Avg SYSB

MSUs (0–140) vs One Month

Legend: SYSB actual utilization — Rolling 4-Hour Avg

MSUs (0–140) vs One Month
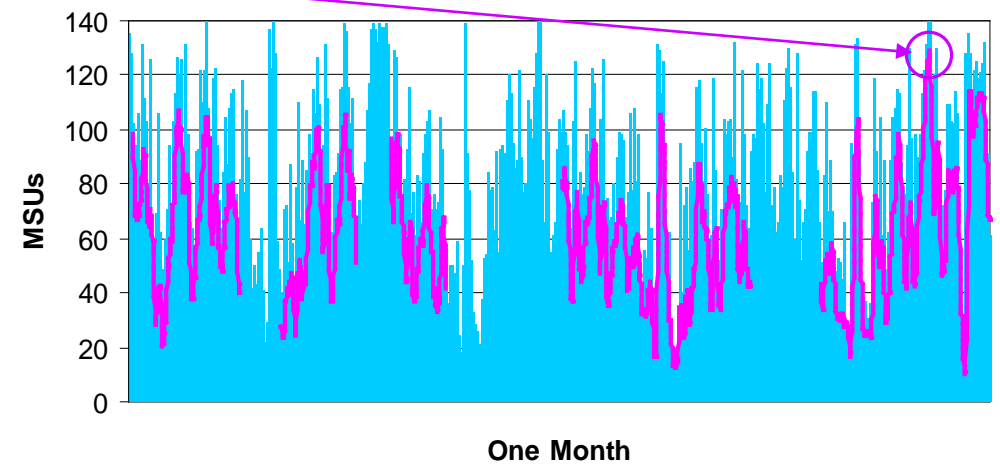
Benefits of Sub-Capacity Pricing

- **Disconnect HW growth from SW charges for sub-capacity eligible products**
  - Allows to grow HW capacity independently from SW capacity
  - Spike into „spare" capacity without inccuring SW charges
  - Manage utilization without having to turn engines on and off

- **Grow an LPAR without affecting SW in other LPARs**
  - Isolate products in certain LPARs to reduce SW cost
  - Reduce LPAR utilization to reduce SW cost
  - Add capacity to grow your production LPARs withour impacting test/Development LPARs

- **Align SW charges with utilization**
  - Pay based on highest R4HA each month, not peak utilization
  - SW charges increase/decrease based on variations in utilization

Agenda

- **z/VSE Pricing**
  - Pricing Metrics
  - Sub-Capacity Pricing
  - Sub-Capacity Reporting
  - Multi-Version Measurement
  - Summary

Key Dates

- **On Feb 14, 2017, IBM formally announced:**

  - The replacement of Single Version Charging (SVC) & Migration Pricing Option with Multi-Version Measurement (MVM) for eligible z/OS and z/VSE software programs.

- **Key MVM billing dates:**

  - **June 1, 2017**, is the earliest billing effective date for programs under MVM terms.

  - By Year End 2017, all eligible products will be billed using MVM terms.

What are SVC and MPO ?

- **Single Version Charging (SVC)**

    - The waiver of charges for the older version during an upgrade, for up to 12 months.

    - After the waiver period, all versions are charged until old version is completely removed.

- **Migration Pricing Option (MPO)**

    - Similar to SVC, but calculated differently and limited mainly to z/OS and z/VSE.

    - Old version waiver period typically 18 or 24 months, dependent on product.

    - After the waiver period, all versions are charged until old version is completely removed.

Introducing Multi-Version Measurement

- ## What Multi-Version Measurement is:

    - A complete replacement for the existing SVC, MPO price offerings.

- ## What Multi-Version Measurement does:

    - Removes all the time limit restrictions associated with SVC and MPO

    - Dramatically simplifies pricing by replacing completely different pricing policies with one single, more flexible, standard policy.

- ## What Programs are eligible for MVM:

    - Full lists of products reported by SCRT available and will be maintained at:

    http://ibm.com/systems/z/swprice/reference/exhibits/mlc.html

Key benefits of Multi-Version Measurement

- **Eliminates the possibility of being charged separately for multiple versions**

- **MVM has no time limits during a temporary upgrade period**

  - Clients have more control over upgrade cycles, allowing to prioritize and stage software upgrades as their business requirements demand.

  - Clients have more flexibility to react to unforeseen issues by altering their upgrade projects plans, without needing to notify IBM or apply for technical waivers.

- **MVM has no time limits during longer-term production deployments**

  - Clients can deploy new capabilities delivered in new software versions, without being required to upgrade everything else.

  - In cases some older and less critical workloads cannot easily be upgraded, clients can now chose to leave those on an older version, while upgrading everything else.

How Multi-Version Measurement works

- **Multiple versions will be treated like multiple releases within a version**

  - All versions and releases are reported and charged as though they were a single version.

    - Versions are never "double counted" even when running in the same LPAR.

  - The price point applied will be that of the latest version licensed.

  - Identical to how multiple releases within a version are charged today.

  Releases within a version are already measured like this ➜ | CICS TS V2.1 | **+** | CICS TS V2.2 | **=** | CICS TS V2 |

  Under MVM, versions are measured in the same way ➜ | z/VSE V5.2 | **+** | z/VSE V6.1 | **=** | VSE ALL |
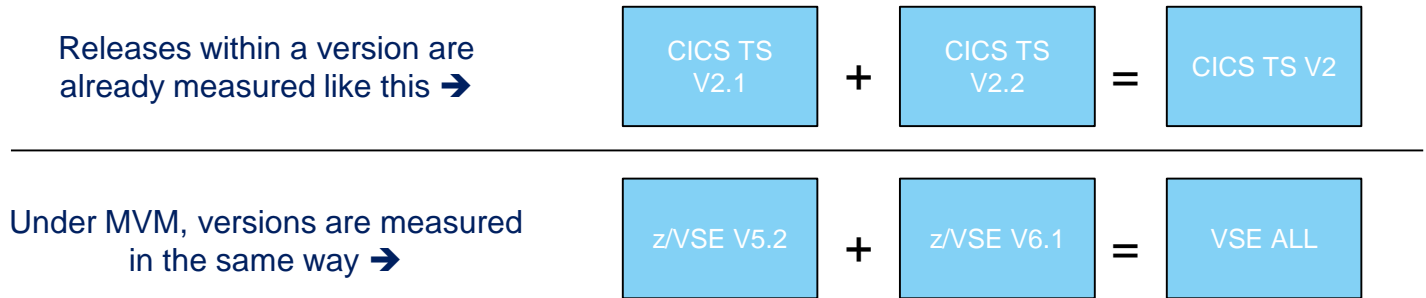
  - Identical to how the Operating System (All) MSUs are currently reported and charged under MPO (the only difference being that there is no longer a time limit).

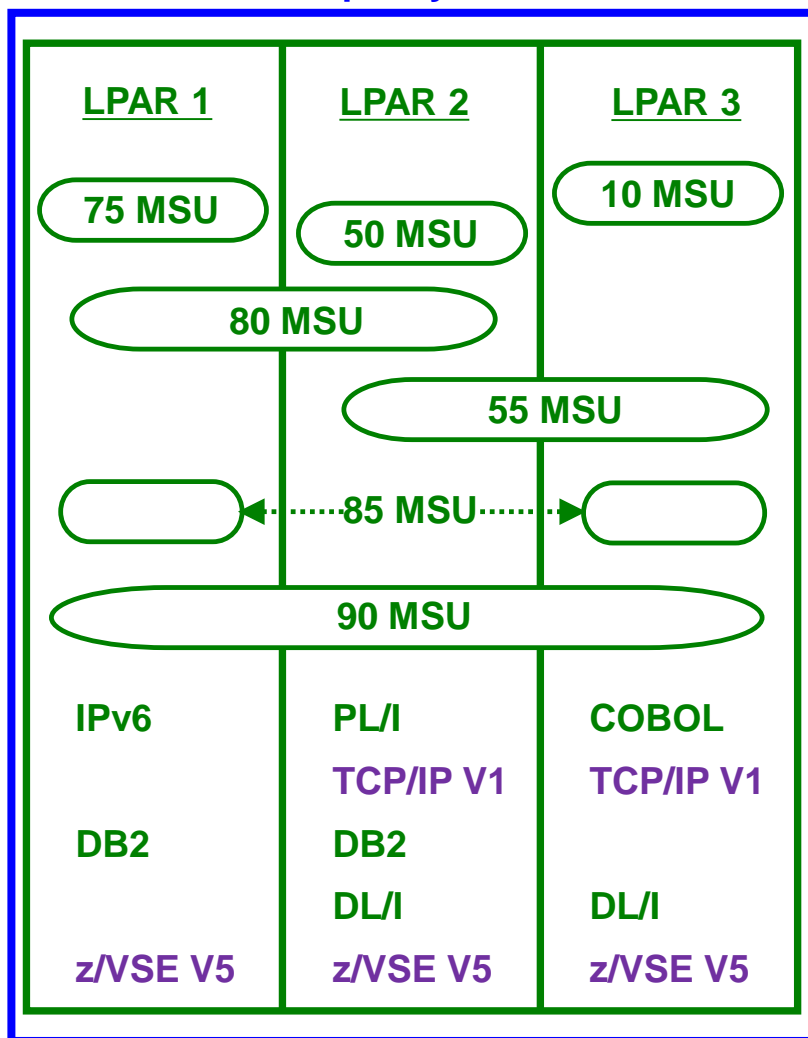 - MVM does not extend support dates for programs withdrawn from service.

What happens next..   http://ibm.com/systems/z/swprice/mvm.html

- **Sub-capacity clients must take action to ensure conversion**

    - Sub-capacity clients must submit an SCRT report using SCRT V24.2.0 (Classic) or SCRT V24.11.0 (Java), available since 10 April 2017.

    - Until SCRT V24.2.0 reports are submitted, previous pricing rules apply.

    - **New SCRT Version to be available in October 2017 will be mandatory**
        - MVM terms will go into effect on 1 December for all sub-cap customers by default.

- **Full-capacity SVC & MPO clients will be converted automatically on 1 June**

    - Other Full-capacity clients must take action to start conversion to MVM

    - When all the program versions within a program family are charged under Full Capacity MSUs the latest licensed version of the program is charged at the Full Capacity MSUs of the machine and charges for any earlier versions of the program are waived.

z/VSE

Sub-Capacity Overview

100 MSU Rated Capacity

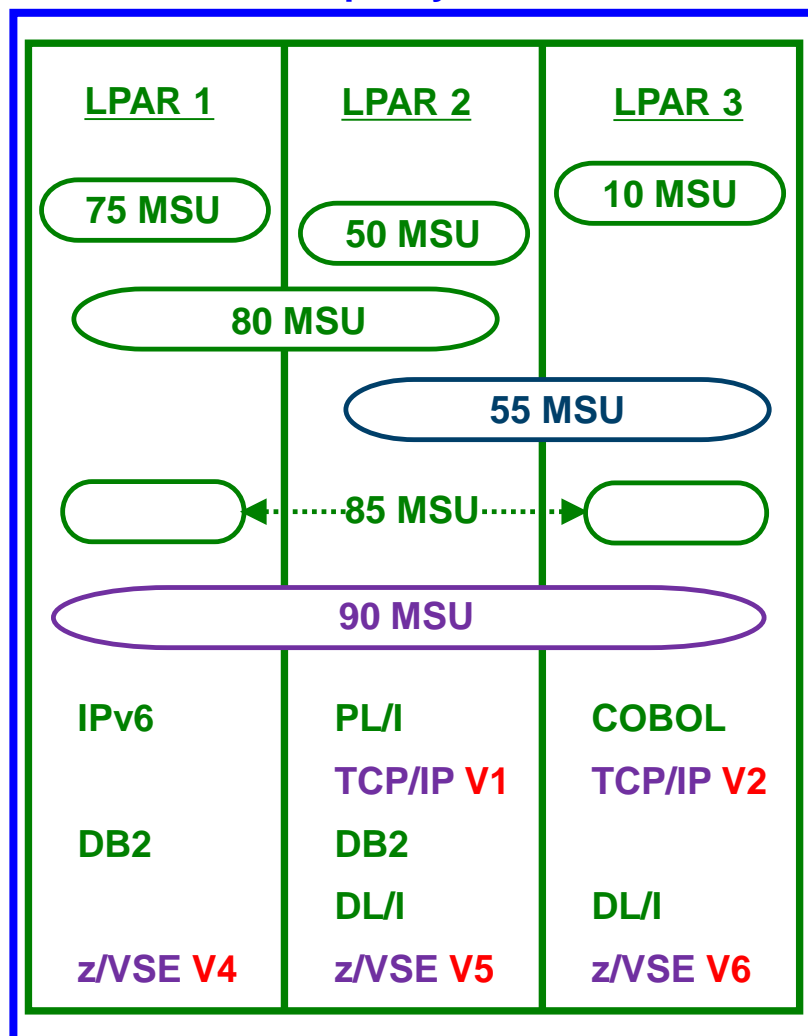| LPAR 1	LPAR 2	LPAR 3
75 MSU		10 MSU
	50 MSU	
80 MSU		
	55 MSU	
← 85 MSU →		
90 MSU		
IPv6	PL/I	COBOL
	TCP/IP V1	TCP/IP V1
DB2	DB2	
	DL/I	DL/I
z/VSE V5	z/VSE V5	z/VSE V5

- **Sub-Capacity Pricing**
  - To charge VSE we need to know in which LPAR z/VSE was running in
  - Charges based on Monthly Peak R4HA of appropriate LPAR combination
  - Not based on individual Product measurement

    *e.g. TCP/IP is charged 55 MSUs because LPARs 2&3 had a peak R4HA utilization of 55 MSUs and TCP/IP ran in LPARs 2&3, **not** because TCP/IP "used" 55 MSUs*

z/VSE

Sub-Capacity Overview – MVM Sample

100 MSU Rated Capacity

LPAR 1	LPAR 2	LPAR 3
75 MSU	50 MSU	10 MSU
80 MSU		
	55 MSU	
	85 MSU	
	90 MSU	
IPv6	PL/I	COBOL
	TCP/IP V1	TCP/IP V2
DB2	DB2	
	DL/I	DL/I
z/VSE V4	z/VSE V5	z/VSE V6

- **Sub-Capacity Pricing**
  - To charge VSE we need to know in which LPAR z/VSE was running in
  - Charges based on Monthly Peak R4HA of appropriate LPAR combination
  - Not based on individual Product measurement
  - The *only* thing that changes with MVM is that we ignore the different Versions when finding the LPAR combination peaks for a Program Family!
  - Charged 90 MSUs on z/VSE V6
  - Charged 55 MSUs on IBM TCP/IP for z/VSE V2

Agenda

- **z/VSE Pricing**
  - Pricing Metrics
  - Sub-Capacity Pricing
  - Sub-Capacity Reporting
  - Multi-Version Measurement
  - Summary

z/VSE Software Pricing Metrics
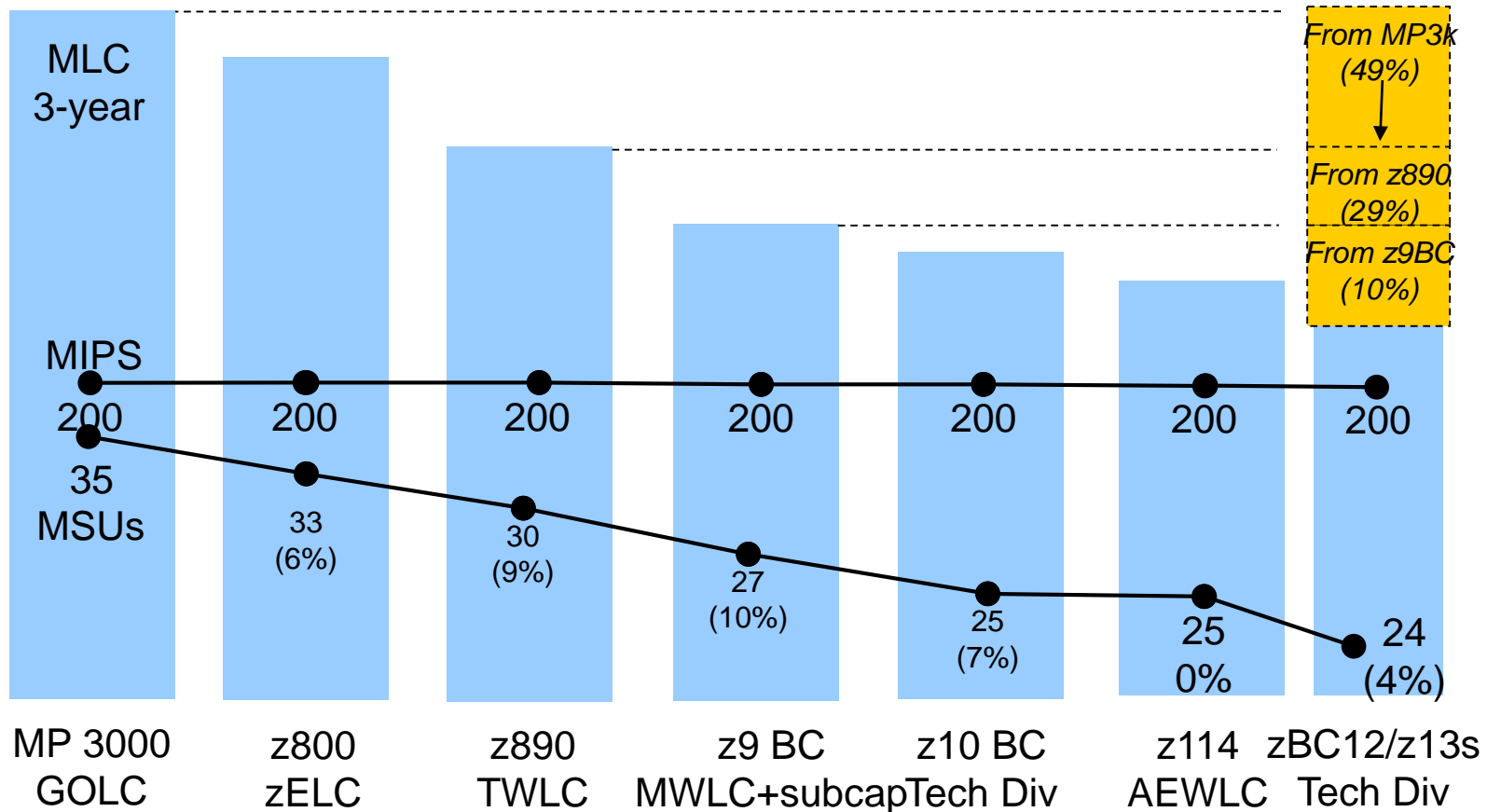
Price for typical z/VSE stack

MP2000, G4, G5, G6, z900, z990

MP3000, z800, z890

z9, z10, z196, zEC12, z13

z890-110

z114, zBC12, z13s (*)

Legend:
- GMLC — blue square line
- GOLC (MP3000) — red line
- zELC (z800-z13s) — green triangle line
- TWLC (z890-z13s) — cyan triangle line
- MWLC (z9/10/196) (zEC12/z13) — light triangle line
- AEWLC (z114/zBC12) — green triangle line

$ (y-axis)

MSU (x-axis)
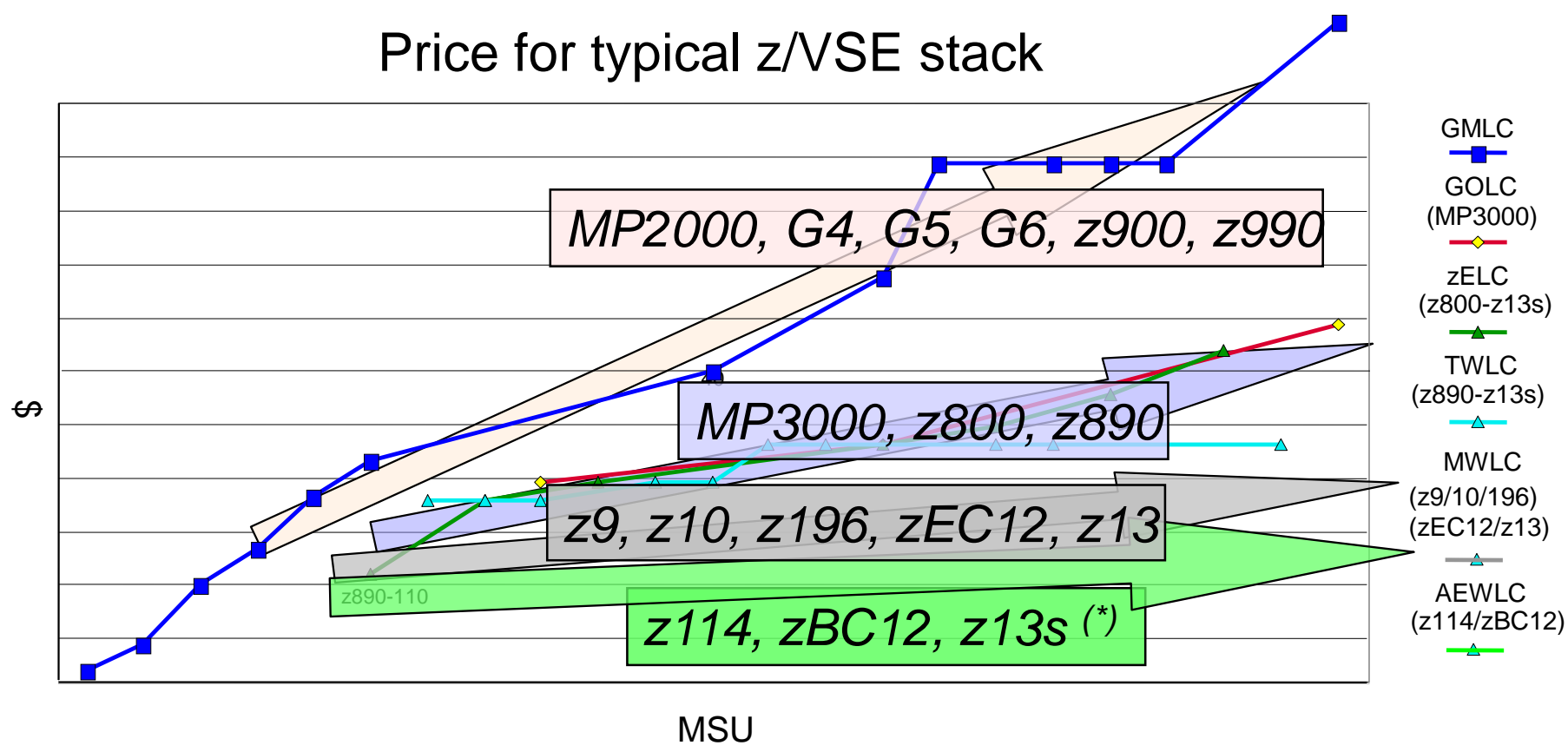
(*) The entry models of these servers, capacity settings A01, are priced using zELC.

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

z/VSE MLC Price Performance across Hardware Generations

- **This example shows a typical z/VSE software stack at 200 MIPS**

* MLC savings will vary significantly by customer - actual customer configuration must be priced out to be accurate.
* A typical z/VSE stack includes z/VSE Base, CICS TS, VTAM, TCP/IP, DB2, Ditto, Cobol, HLASM
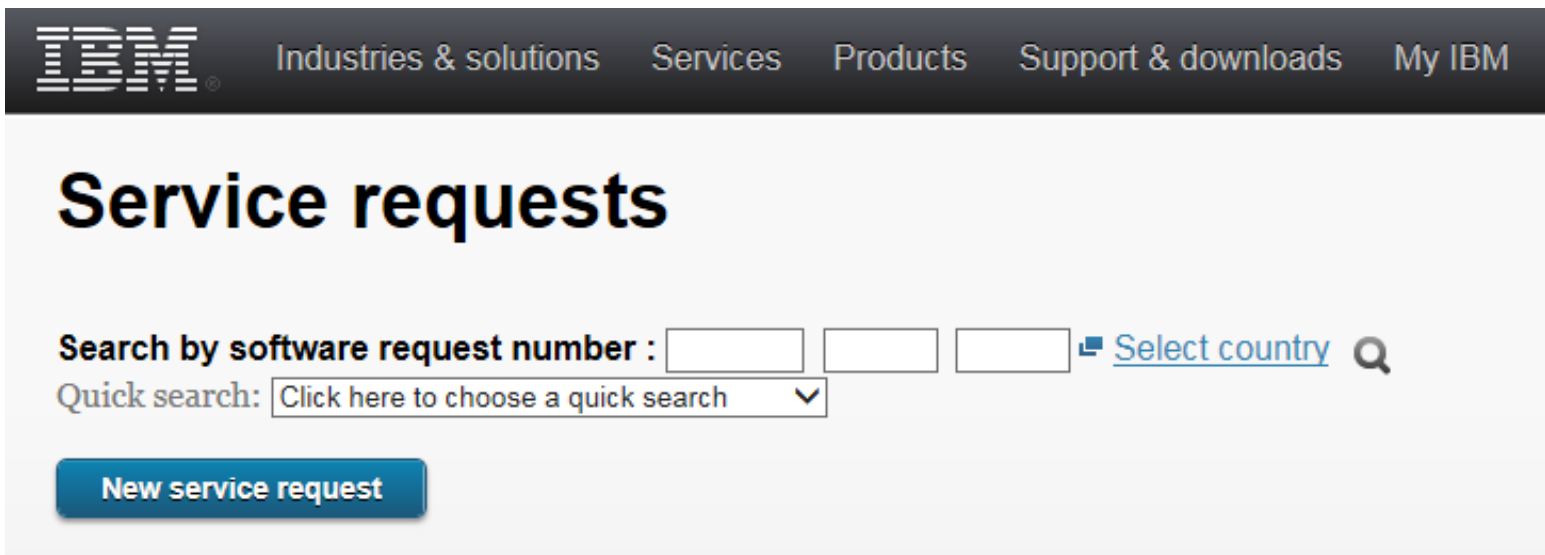
Contact the z/VSE Team

https://www-03.ibm.com/systems/z/os/zvse/contact/contact.html

- If you have comments or suggestions regarding the z/VSE home page, or if you have questions about the z/VSE operating system, or z/VSE products, complete the form below and then select Submit
- This form should not be used to report technical problems with z/VSE or z/VSE products.

Salutation: * (e.g. Mr., Mrs.) [Mr.]

First name: * [   ]

Last name: * [   ]

E-mail address: * [   ]

Phone number: [   ]

Your country or region: * [Please select one]

Help us answer your message: [Which best describes you?]

Message category: * [Select one:]

Subject: [   ]

Message: * [   ]

Contact the z/VSE Team

https://www-947.ibm.com/support/servicerequest/Home.action

▪ **Please open a PMR (Problem Management Record) for technical problems with z/VSE.**

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