

IBM Z Software Licensing An Overview

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IBM Z

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Some keywords

SCRT VWLC zIIP zAAP MLC PSLC
MSU AWLC zCAP ICA
zIPLA S&S zNALC ALP SVC
VUE ECO TTO CMP MWP MVM
OTC DevTest (ADTS) GSSP
R4HA NAS PPS SCLC

Some keywords

SCRT = Sub-Capacity Reporting Tool
VWLC = Variable Workload License Charges
AWLC = Advanced Workload License Charges
zIPLA = System z International Program License Agreement
OTC = One Time Charge
S&S = Subscription & Support
ECO = Enterprise Containers
zNALC = zSystems New Application License Charges
zCAP = zSystems Collocated Application Pricing
CMP = Country Multiplex Pricing
ADTS = Application Development & Test Solution
NAS = New Application Solution
PPS = Payments Pricing Solution
ALP = Agreement for Licensed Program
MLC = Monthly License Charge

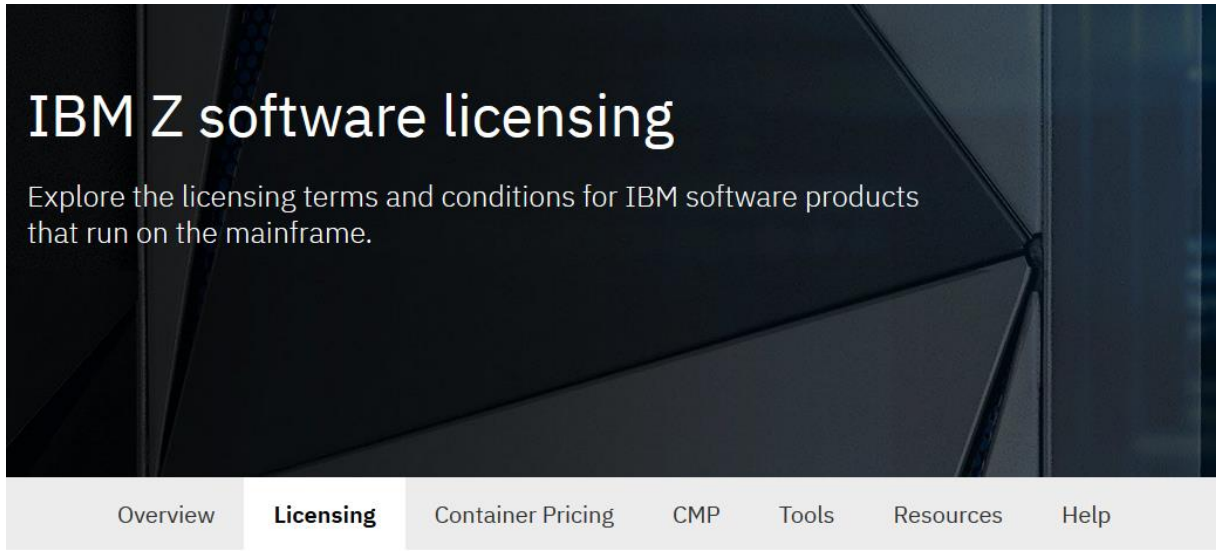
Some keywords

ICA = IBM Customer Agreement
MWP = Mobile Workload Pricing
PSLC = Parallel Sysplex License Charges
SVC = Single Version Charging
MVM = Multiple-Version Measurement
GSSP = Getting Started Subcapacity Pricing
R4HA = Rolling 4 Hours Average
MSU = Million Service Units per hour
zIIP = zSystems Integrated Information Processor
zAAP = System z Application Assist Processor
SCLC = Solution Consumption License Charges
VUE = Value Unit Edition
TTO = Technology Transition Offerings

Where to get information

IBM Z Software Licensing

(<https://www.ibm.com/it-infrastructure/z/software/pricing-licensing>)



The screenshot shows the top portion of a web page. The background is dark with a geometric pattern of lines. The main heading is "IBM Z software licensing" in white. Below it is a sub-heading: "Explore the licensing terms and conditions for IBM software products that run on the mainframe." At the bottom of the screenshot is a navigation bar with several menu items: "Overview", "Licensing" (which is highlighted with a white background), "Container Pricing", "CMP", "Tools", "Resources", and "Help".

IBM Z software licensing

Explore the licensing terms and conditions for IBM software products that run on the mainframe.

- Overview
- Licensing**
- Container Pricing
- CMP
- Tools
- Resources
- Help

IBM Z Software Licensing, Overview

System z: Monthly License Charges (MLC)	System z: IPLA (One Time Charges)	Distributed/ zLinux: IPLA (One Time Charge)
IBM Customer Agreement (ICA) mit System z Amendments	International Program License Agreement (IPLA) mit System z Amendment	International Program License Agreement (IPLA) mit Passport Advantage Amendment
Monatliche Mietgebühr (enthält Support)	<ul style="list-style-type: none"> • In der Laufzeit unbegrenzte Lizenz • Jährliche Subscription & Support ist optional erhältlich 	<ul style="list-style-type: none"> • In der Laufzeit unbegrenzte Lizenz • Jährliche Subscription & Support ist im ersten Jahr mit Kauf der Lizenz enthalten. Für die weiteren Jahre optional erhältlich
Auf die Maschine lizenziert	Auf ein Unternehmen lizenziert	Auf ein Unternehmen lizenziert
z.B. z/OS, DB2, CICS, Compiler	z.B. Tivoli tools, DB2 Tools, CICS Tools, PD Tools	z.B. alles was auf Unix, Windows und zLinux läuft

Licensing based on processing power

MIPS

- Technische Rechenleistung

MSUs: Million of Service Units

- „Relative Kapazität“ – Basis für Softwarepreise
- 1 MSU entspricht 5.7 → 6.4 → 7.2 (z9) → 8.0 (z10) → 8,0 – 8,5 (z196, EC12) MIPS – Faktor
- MSUs werden für jede IBM Mainframe Generation festgelegt

Aggregation

- Aufaddierung der MSUs über mehrere Maschinen
- MLC: Sysplex Aggregation

MLC license models

Verschiedene Metriken ermöglichen die individuelle Anpassung der Terms & Conditions und Preismodelle auf die Kundensituation –
Übersicht für Standalone-Maschinen

Sub-Capacity fähig

	Sysplex Aggregation		z13	zEC12 Z196	z10EC Z9 EC	z990 z900	zBC12 z114	Z10 BC Z9 BC	z890
CMLC	Country Multiplex License Charges	Y	x	x			x		
MzNALC	Multiplex System z New Application License Charges	Y	x	x			x		
AWLC	Advanced Workload License Charges	Y	x	x					
VWLC	Variable Workload License Charges	Y			x	x			
FWLC	Flat Workload License Charges		x	x	x	x			
AEWLC	Advanced Entry Workload License Charges						x		
EWLC	Entry Workload License Charges							x	x
TWLC	Tiered Entry Workload License Charges						x	x	x
SALC	Select Application License Charges				x	x		x	x
zNALC	System z New Application License Charges	Y	x	X	x	x	x	x	x
PSLC	Parallel Sysplex License Charges	Y	X	X	x	x			
ULC	Usage License Charges	Y	X	x	x	x			
MWLC	Midrange Workload License Charges	Y		x	x			x	
zELC	zSeries Entry License Charges						x*	x*	x*

* gilt nur für z114 model A01, z10 BC model A01, z9 BC model A01 und z890 model 110

Advanced Workload License Charges (AWLC)

Für Sub-Capacity berechtigte Produkte

- Advanced Workload License Charges (AWLC)

Für nicht Sub-Capacity berechtigte Produkte

- Flat Workload License Charges (FWLC)

Advanced WLC Preisstruktur	
Level	Range
Base	0 – 3 MSUs
Level 0	4 – 45 MSUs
Level 1	46 – 175 MSUs
Level 2	176 – 315 MSUs
Level 3	316 – 575 MSUs
Level 4	576 – 875 MSUs
Level 5	876 – 1315 MSUs
Level 6	1316 – 1975 MSUs
Level 7	1976 + MSUs

Flat WLC Preisstruktur

Pro Server	single charge
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Full-Cap mode

Basiert auf Maschinen-Kapazität

Sub-Cap mode

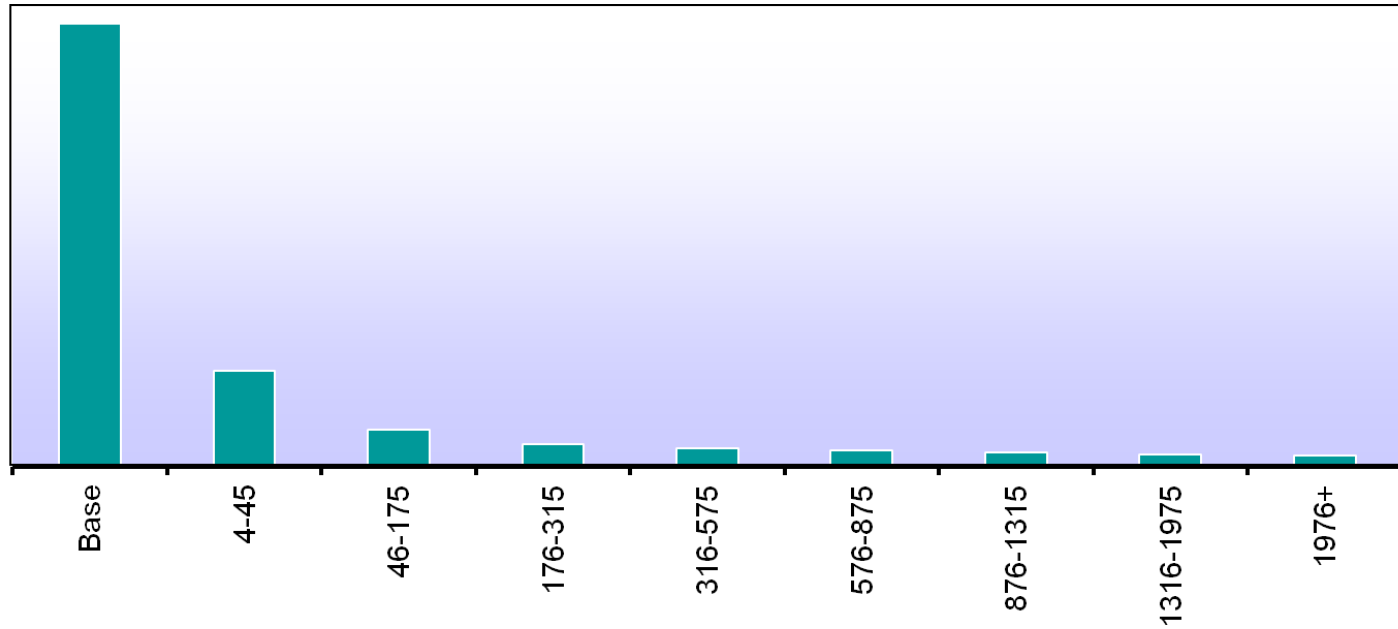
Basiert auf MSU Werten aus den Sub-Capacity Reports



Ab zEnterprise 196

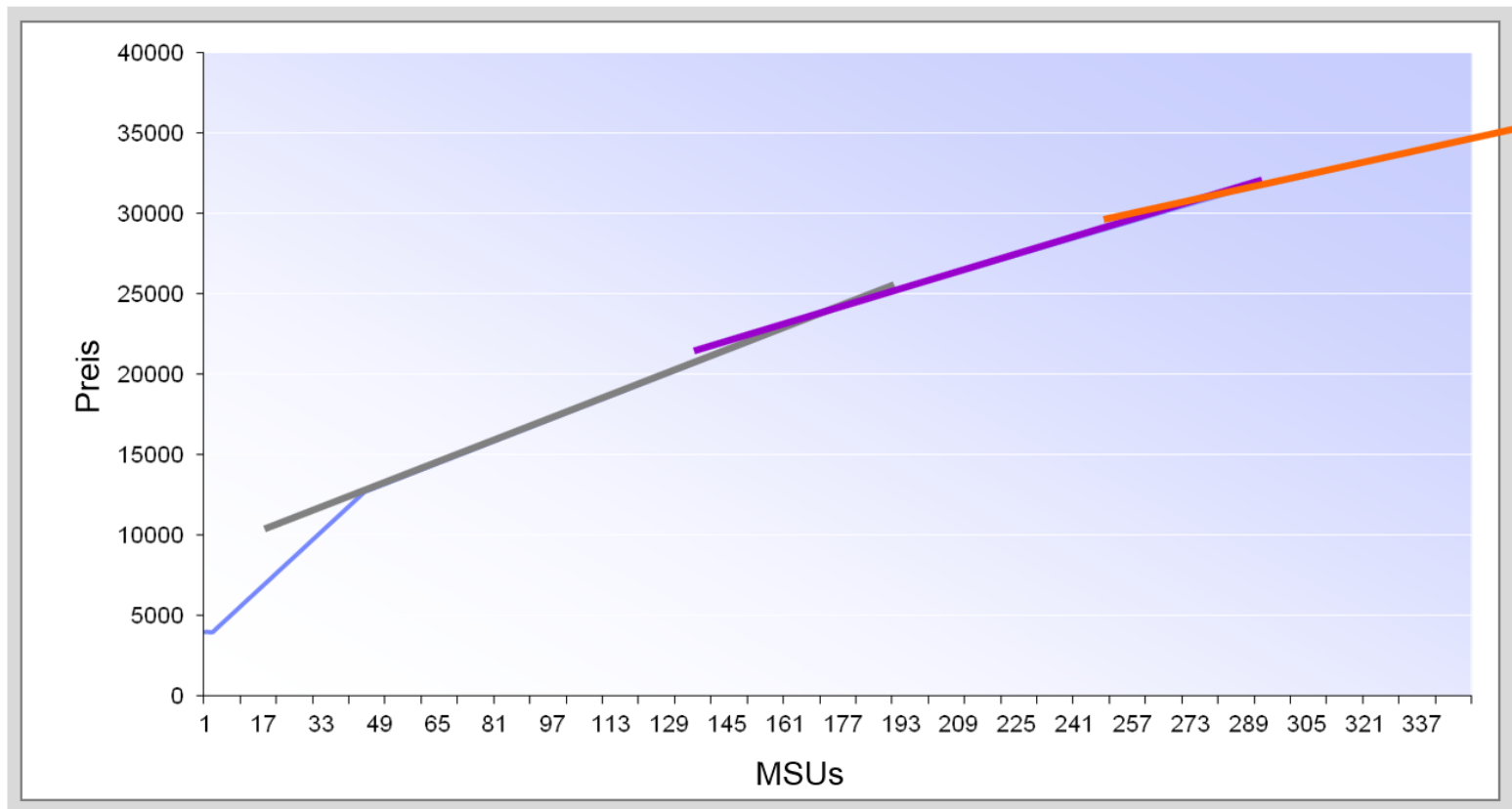
*AWLC ist ab System z196 verfügbar

MSU based metrics - WLC



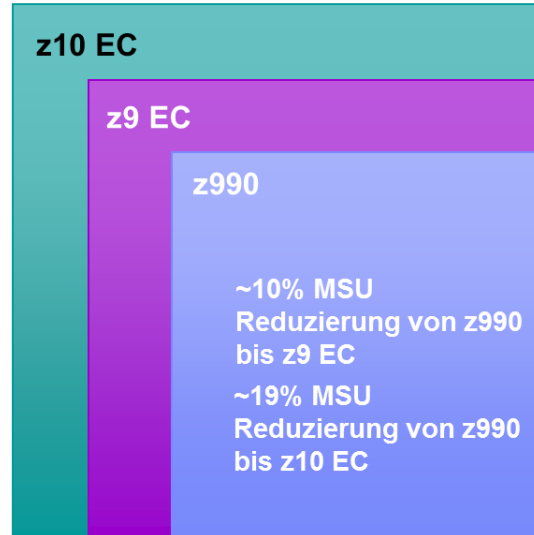
Zusätzliche Preisstufen für größere, da aggregierte Umgebungen

Slopes

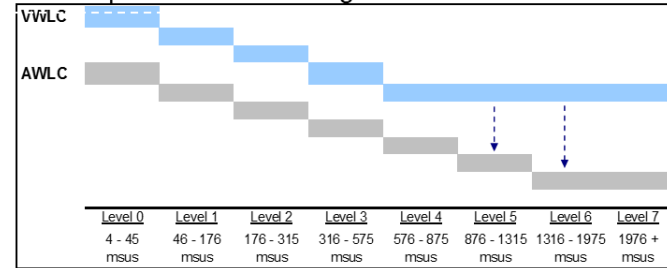


Hardware – MSU development

Bis einschließlich IBM System z10
Technologiedividende – Reduzierung
der MSUs um ca. 10% pro
Rechnergeneration



Für **z196** Einführung einer neuen Preismetrik AWLC,
die gegenüber VWLC eine bessere
Preisperformance aufzeigt



Einführung des
Technology Update
Pricings für AWLC ab
der HW-Generation
zEC12, die eine
Reduzierung auf
AWLC Preise
gewährt gemäß TTO
Dokument

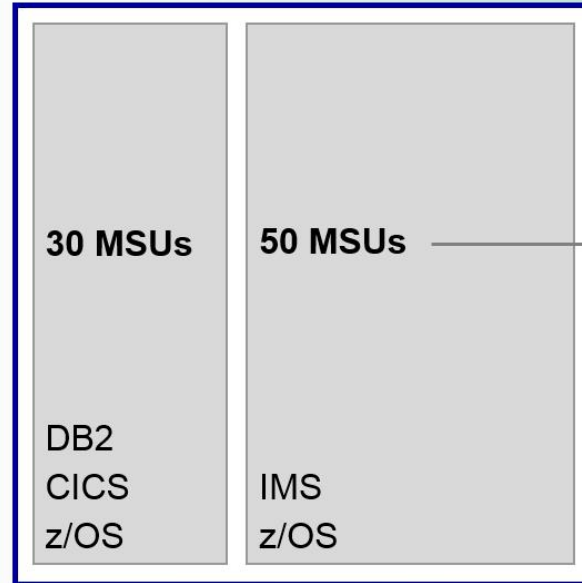
Technology Update Pricing for AWLC
Exhibit 1 (TU1) - zNext Pricing

Machine rated MSUs	Reduction to AWLC
1-3	0.0%
4-45	2.0%
46-315	4.0%
316-1315	4.5%
1316-2676	5.0%
2677-5476	6.0%
5477+	7.0%

Sub-Capacity



zSeries @ 100 MSUs



Full-Capacity

Preismetriken beziehen sich auf die gesamte Kapazität der **MASCHINE**, auf der das Produkt ausgeführt wird.

Sub-Capacity

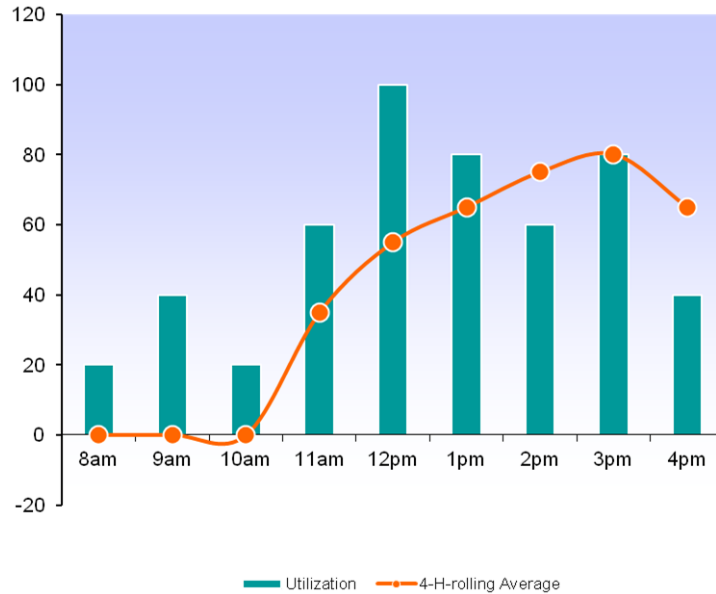
Preismetriken beziehen sich auf die Auslastung der **LPAR(s)** in denen ein Produkt ausgeführt wird.

Rolling Four-Hour Average calculation

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

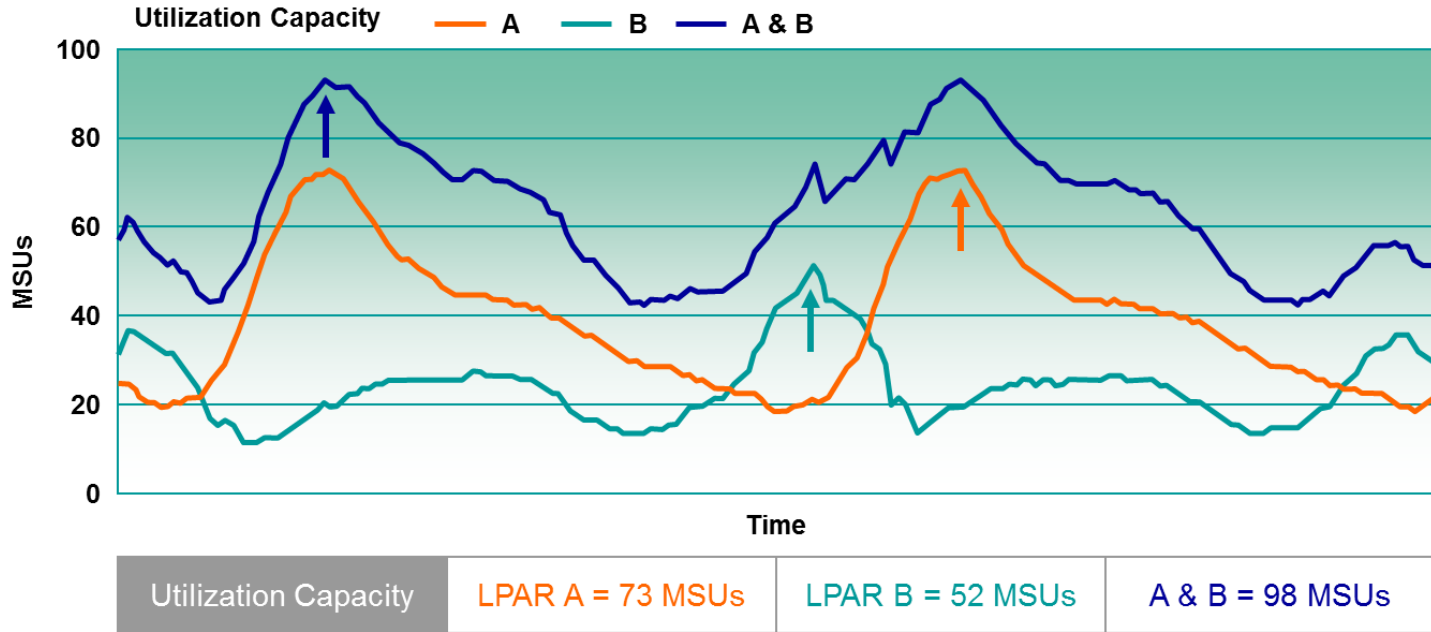
z/OS WLM erfasst den 4-Hour-Rolling-Average Verbrauch für jede Stunde im Monat

Rolling-Average glättet absolute Lastspitzen weg!



Messgröße ist die LPAR, nicht der Ressourcenverbrauch der Applikation!

Workload License Charges – “combined utilization”



Es wird der gemittelte Summen-Peak (hier 98 MSU), nicht die Summe der gemittelten Peaks ermittelt! (hier 73 MSU + 52 MSU= 125 MSU)

Tools for Sub-Capacity

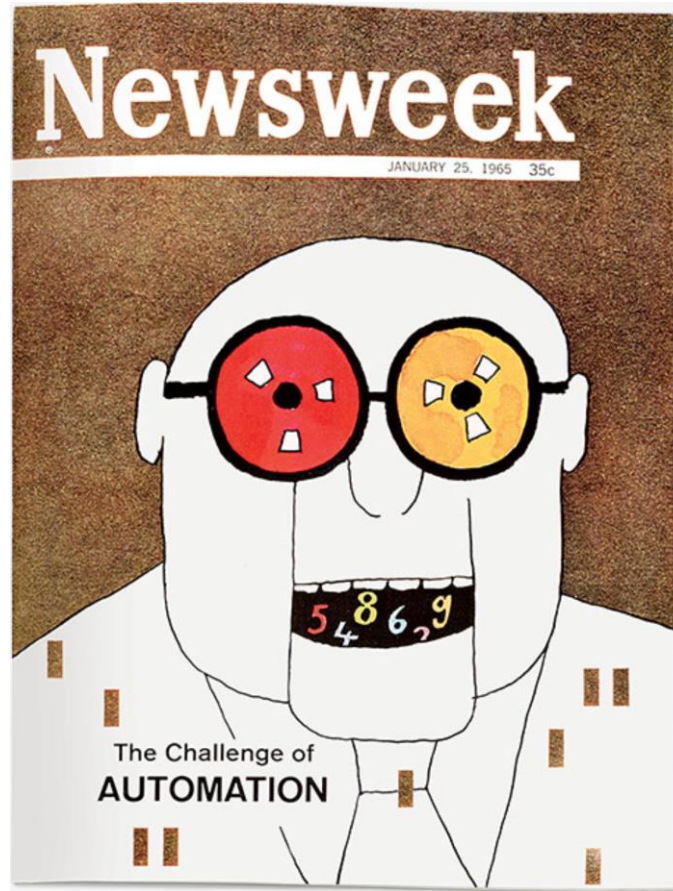
Sub-Capacity Planning Tool

- for **PLANNING** for Sub-Capacity
- processes **SMF70** records
- analyzes data from any mainframe environment
- produces a planning report used for estimating
- <http://ibm.com/zseries/swprice/scpt>

Sub-Capacity Reporting Tool

- for implementing Sub-Capacity
- processes **SMF70** and **SMF89** records
- analyzes data from a System z server running z/OS in 64-bit
- produces a Sub-Capacity Report used for billing
- <http://ibm.com/zseries/swprice/scri>

Why is it as it is?



There is a history

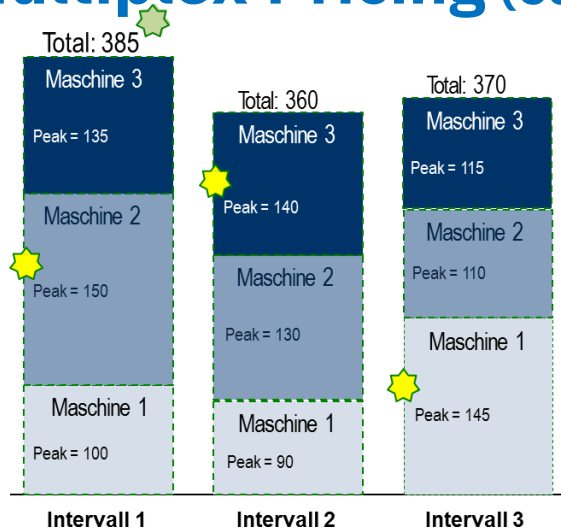
The history of Z license charges

	Full Capacity
Timeframe	1st ~30 years (~1970-1999)
Construct purpose	<ul style="list-style-type: none">• Simple way to charge for zSW
Construct Limitations	<ul style="list-style-type: none">• As hardware got bigger, software costs prevented customers purchasing bigger, newer hardware
Future Potential	<ul style="list-style-type: none">• Discounted Full Cap is a legitimate model to encourage growth• Used in 'Enterprise Capacity Container' construct.

The history of Z license charges

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Future Potential	<ul style="list-style-type: none">• Discounted Full Cap is a legitimate model to encourage growth• Used in 'Enterprise Capacity Container' construct.	<ul style="list-style-type: none">• R4HA still a good model for workloads that can use whitespace.

Country Multiplex Pricing (Country Multiplex License Charges)



Multiplex-Peak = Höchstwert der gemeinsamen Höchstwerte aller Maschinen

Peak Gesamt: 385

Messdynamik:

Die Multiplex-MSU werden gleich oder geringer als die SCRT- Werte ausfallen. Grund hierfür ist der Glättungseffekt bei der Messung aller Maschinen zu gleichen Zeitintervallen.

Erlaubt dynamische Workload-Verschiebungen ohne doppelte MSU Peaks, da Maschinengrenzen nicht mehr berücksichtigt werden

Vergleich SCRT und Multiplex - bei drei Intervallen pro Monat

SCRT
★ Maschine 1: 145 MSU
Maschine 2: 150 MSU
Maschine 3: 140 MSU
Summe: 435 MSU

CMP
Multiplex-Peak
(Höchstwert über alle Ma

Summe: 385 MSU ★

Calculation MLC for CMP

1. Mplx-SCRT MSUs @ CMLC Preis ermitteln
2. Listpreis der Base MSUs @ CMLC ermitteln
3. Ziffer 2 mit MLC Basefaktor multiplizieren
4. Ziffer 1 + Ziffer 3 addieren

Multi-Version Measurement (MVM)

Multi-Version Measurement (MVM) for z/OS and z/VSE removes time limits for running multiple eligible versions of a software program. Clients may run different versions of a program simultaneously for an unlimited duration during a program version upgrade. Clients may also choose to run multiple different versions of a program simultaneously for an unlimited duration in a production environment. MVM allows clients to selectively deploy new software versions, providing more flexible control over their program upgrade cycles.

MVM replaces Single Version Charging (SVC)

Mobile Workload Pricing (MWP)

- Keine Veränderungen der Infrastruktur und keine separaten LPARs erforderlich
- Neues Reporting-Tool (MWRT) ersetzt SCRT, zusätzlich sind die mobilen Transaktionsdaten - in einem vorgegebenen Format - einzuspielen
- MWRT zieht 60% der mobilen Workload pro Intervall ab, falls das höhere Transaktionsvolumen den Gesamt-Peak beeinflusst, zeigt der MWRT Report einen angepaßten Höchstwert
- Falls eine Anpassung eines LPAR Wertes erfolgt, werden alle SW-Programme, die in dieser LPAR laufen, von dem verringerten MSU Verbrauch profitieren
- IBM Freigabe erforderlich
Unterzeichnung der zMobile Workload Vereinbarung und ergänzenden Bedingungen, als Ergänzung zu AWLC Vertragsdokumenten

Collocated Application Pricing (zCAP)

Berechnungsmodell für neue Anwendungen oder Applikationen, die nicht in einer dedizierten Umgebung laufen

- Keine separaten LPARs erforderlich
- IBM Freigabe notwendig
- Einsatz eines definierten Programmes wie CICS, DB2 , IMS, MQ , WAS
- Verwendung des neuen Reporting Tools MWRT
- Zusätzliche Datei notwendig, die die CPU-Zeit für definierte Programme ausweist – in einem bestimmten Format (ähnlich Mobile Workload Pricing für z/OS jedoch weniger komplex)
- Zusätzliche Vertragsbedingungen müssen unterzeichnet werden

- Software-Preisgestaltung für bestehende Programme in denselben LPARs :
 - Keine Auswirkung auf andere Sub-Capacity-Middleware Programme (MSU werden wie bei Offload-Engines angepaßt - analog Mobile Workload Pricing für z/OS)
 - Für z/OS werden 50% der definierten Programm-MSU reduziert
 - Inkrementelles Wachstum für bereits installierte Programme wird über den Standardweg berechnet

zCAP sample

Beispiel für ein neues Produkt = MQ Workload von 100 MSU *

1. Existierende LPARs

MSU für Subcapacity Berechnung:

z/OS	1.000
DB2 und CICS	1.000

2. Neues MQ, Standardberechnung

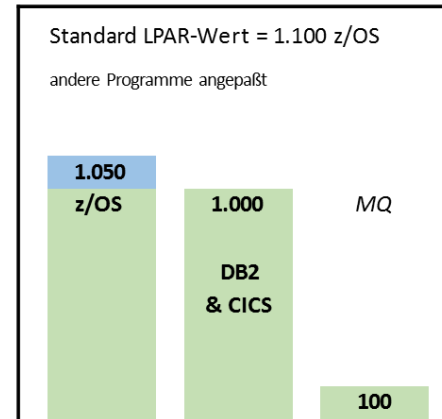
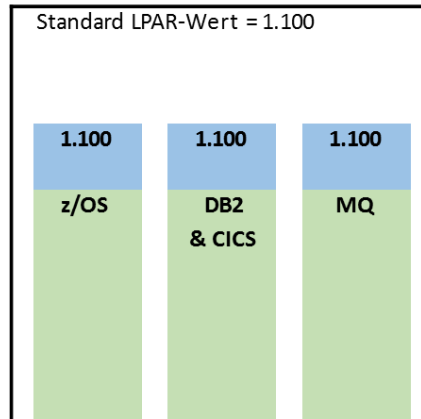
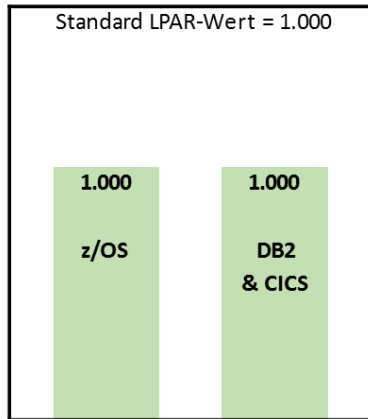
MSU für Subcapacity Berechnung:

z/OS	1.100
DB2 und CICS	1.100
MQ (LPAR-Wert)	1.100

3. Neues MQ mit zCAP-Berechnung

MSU für Subcapacity Berechnung:

z/OS	1.050
DB2 und CICS	1.000
MQ (Produktenutzung)	100



* geht davon aus, dass der Workload Peak zur selben Zeit gemessen wird

The history of Z license charges

	Full Capacity	Sub-Capacity (R4HA)	Container Pricing
Timeframe	1st ~30 years (~1970-1999)	2nd ~20 years (~1999-2018)	NEXT 20+ years (~2018-.....)
Construct purpose	<ul style="list-style-type: none"> Simple way to charge for zSW 	<ul style="list-style-type: none"> Designed as 'pseudo full-cap' (modeled on 90% utilization) Allowed upfront HW purchase, but staggered software cost growth 	<ul style="list-style-type: none"> Solution Containers works <u>alongside R4HA model</u> as an alternative for specific workloads (New, DevTest, Payments). Enterprise Containers are/will be a <u>complete replacement for the R4HA model</u>.
Construct Limitations	<ul style="list-style-type: none"> As hardware got bigger, software costs prevented customers purchasing bigger, newer hardware 	<ul style="list-style-type: none"> Workload patterns dramatically different than in 1993 (~40 to 60% av. Utilization) and much more unpredictable. Pricing variations make this model very complex. Inhibits growth and encourages bad technical practices 	<ul style="list-style-type: none"> Inevitably, there are some limitations (i.e., IPLA) that we are working to solve. Goal is to work through any limitations in a standard and scalable way.
Future Potential	<ul style="list-style-type: none"> Discounted Full Cap is a legitimate model to encourage growth Used in 'Enterprise Capacity Container' construct. 	<ul style="list-style-type: none"> R4HA still a good model for workloads that can use whitespace. 	<ul style="list-style-type: none"> Public announcement of 'Enterprise Containers' in 2019

Container Pricing key concepts

THE CONTAINER



The **container** is the infrastructure

THE SOLUTION



The **solutions** are the specific offerings

Container Pricing key concepts

the ‘**container**’

- the scope of a workload for pricing purposes
- the technical pricing and billing infrastructure
- containers do not require any additional virtualization

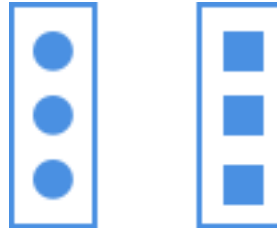
the ‘**solution**’

- the individual workload that is separately priced
- the price point that is specific to the solution
- three separately priced solutions are announced

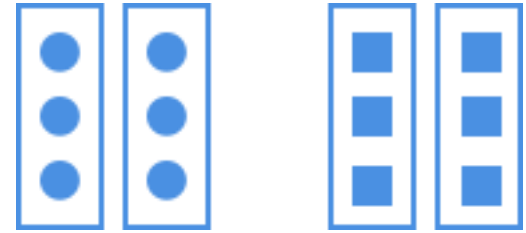
Container Pricing for IBM Z Overview



Same LPAR collocation



Dedicated LPAR solutions



Multiple LPAR solutions

No direct impact to the cost of unrelated workloads

Automated metering

The 3 Container Pricing solutions



Application Development and Test Solution

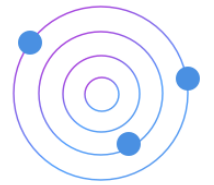


New Application Solution



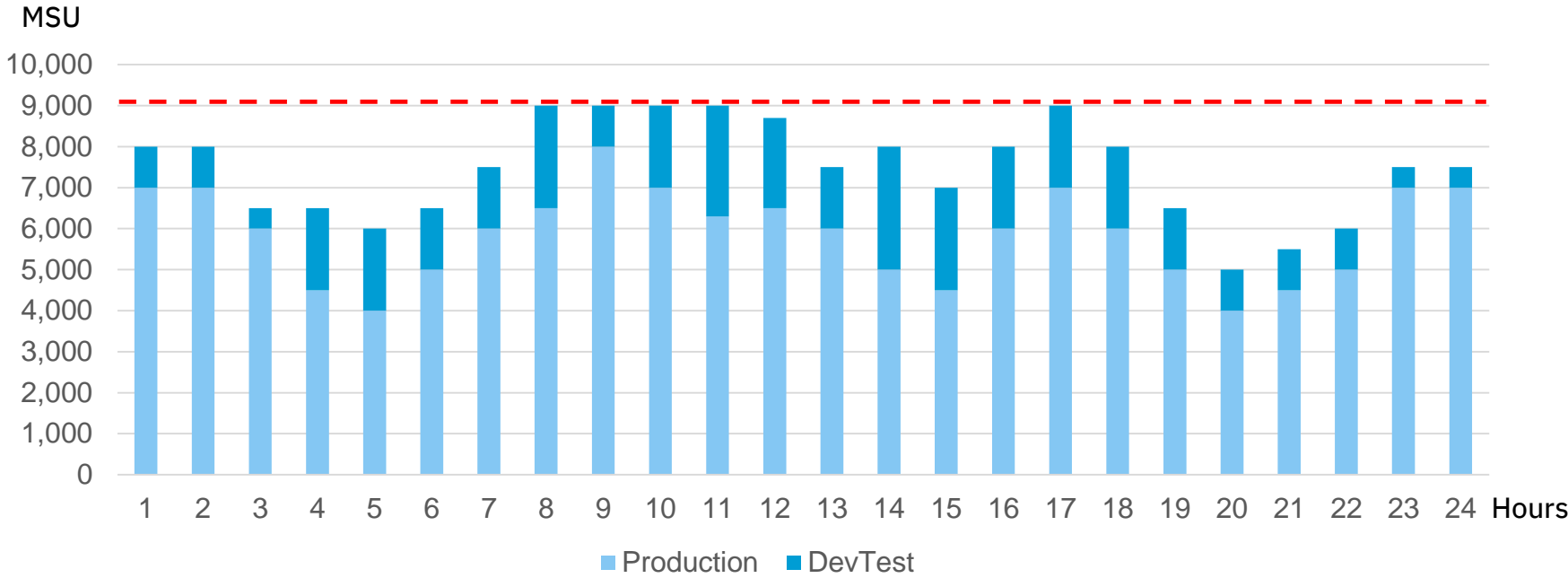
Payments Solution

Application Development and Test Solution

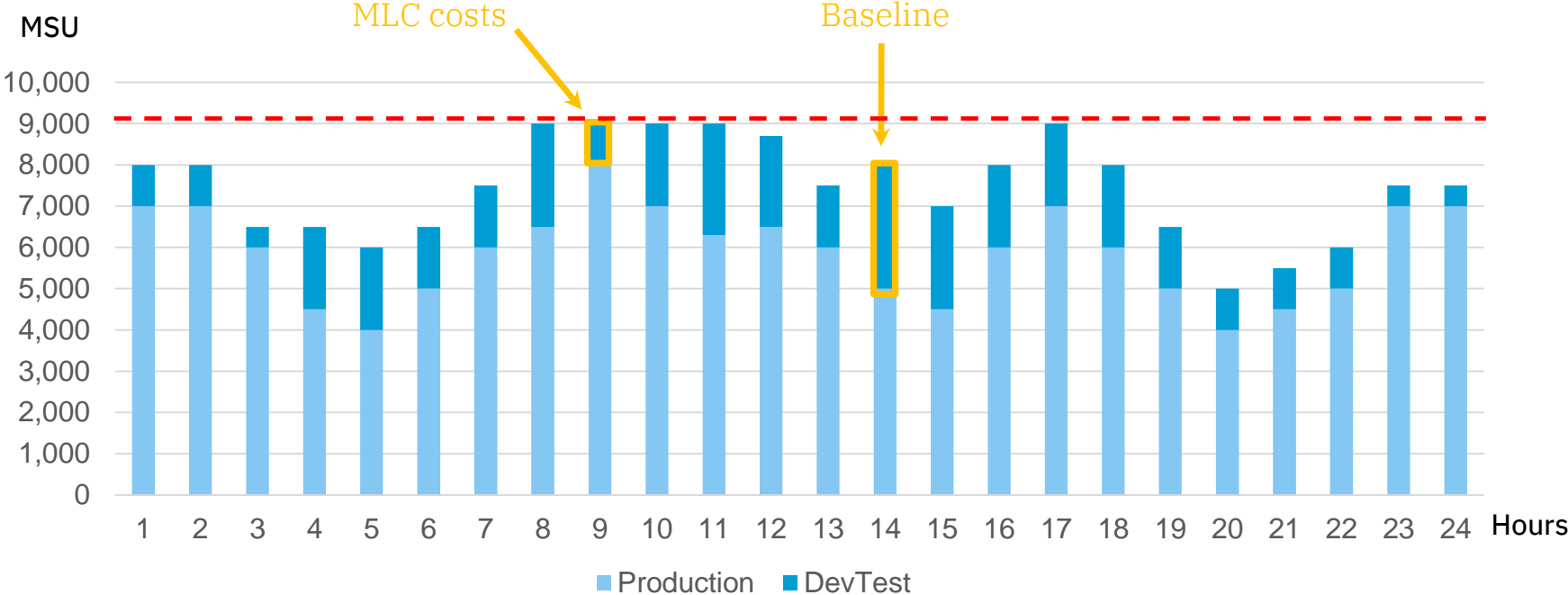


- 1.** Agree your existing base DevTest workload size
- 2.** Define your desired DevTest capacity (up to treble your existing base)
- 3.** Pay no more for MLC for up to treble the agreed base capacity

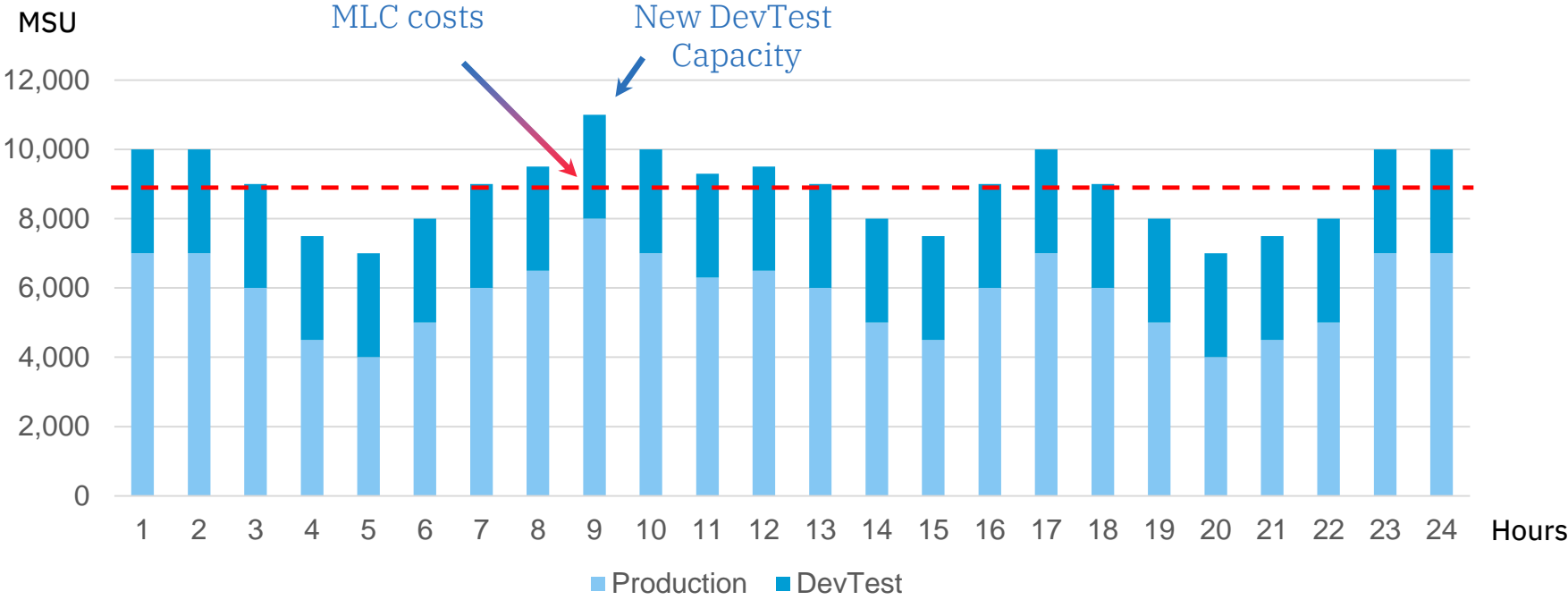
Application Development and Test Solution (DevTest)



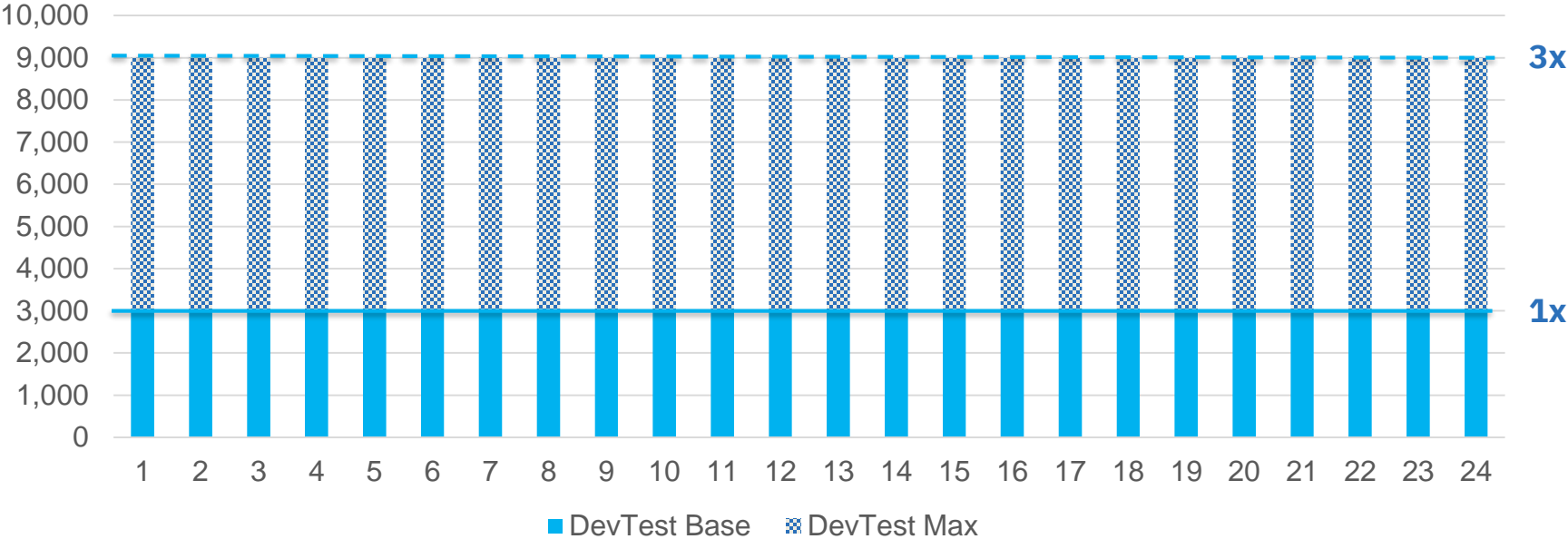
Application Development and Test Solution (DevTest)



Application Development and Test Solution (DevTest)



Application Development and Test Solution (DevTest)



DevTest Sizing Calculator

The DevTest Sizing Calculator Interface

License Management Support (<http://www.ibm.com/software/lms>)

Welcome to the LMS application.

The following functions are available:



Data submission Submit software use data to IBM or view previously submitted data.	Container Pricing solutions View the Solution IDs and other details for your Container Pricing for IBM Z® solutions and send them in an E-mail.	DevTest Sizing Calculator Use LMS to calculate the size of your potential DevTest Container solution.	Language selection Change LMS pages to your preferred language.	E-mail subscription Subscribe or Unsubscribe to newsletter e-mails about SCRT SubCap and SCRT Multiplex.
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Note: supports standard sub-capacity reports and Country Multiplex reports for DevTest workloads that can be isolated entirely at an LPAR level.

New Application Solution



You can add new z/OS workloads, co-located with existing environments, and pay a highly-competitive stand-alone price

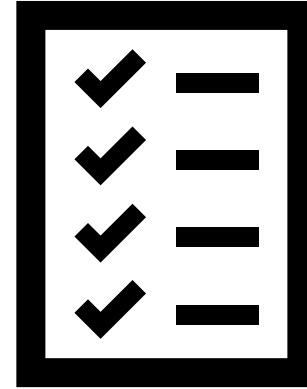


- You can determine the size of the container
- Container size sets the billing for all capacity-priced IBM software
- For reference-based software, licensing is only up to the container size
- OTC Licensing for Containers with reference products is required

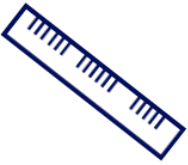
New Application Solution

Key Requirements

- New standalone business application
 - e.g. ISV application
- Set of new address storages
 - e.g. application in CICS



Introducing SCLC: A brand new MLC metric



An MSU is an amount of processing a computer can perform in one hour.

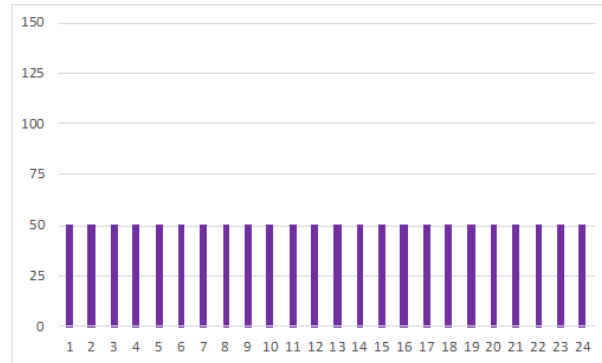
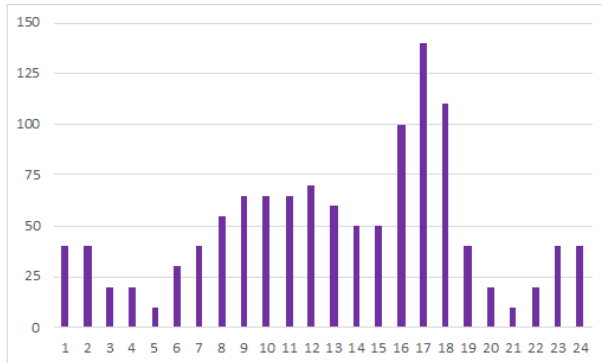
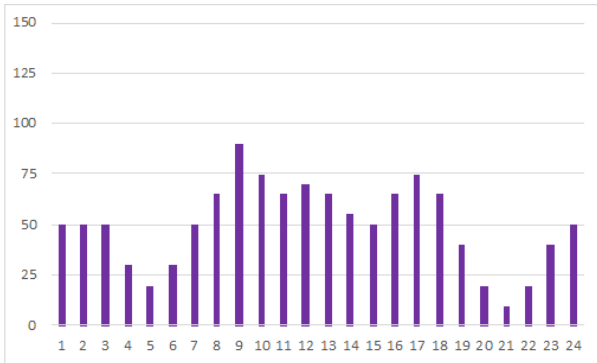


Therefore, an MSU is already an inherently hourly metric.

Solution Consumption License Charges (SCLC) simply adds up the MSUs consumed in each hour.



Counting MSUs under the SCLC pay-as-you-go model



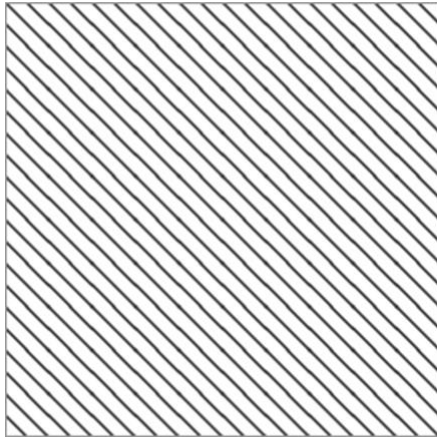
‘Peaks’ and workload patterns vary dramatically in these graphs

However, the total MSUs consumed in each period is exactly 1,200

If each MSU cost \$0.50 USD under SCLC, then each workload would cost \$600

Today's IBM Z SW MLC Pricing Landscape

DevTest: Full Cap

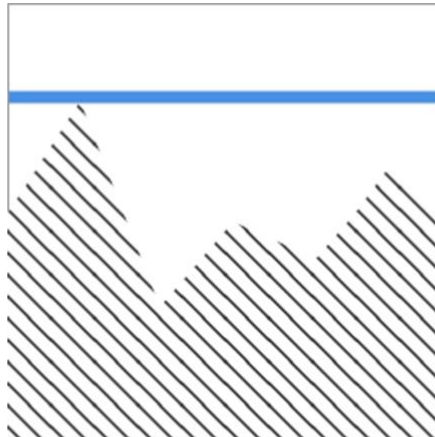


Highly discounted, stand-alone, full-cap environment.

Removes the need for capping of DevTest workloads.

Encourages best DevTest practices.

Existing Prod: R4HA

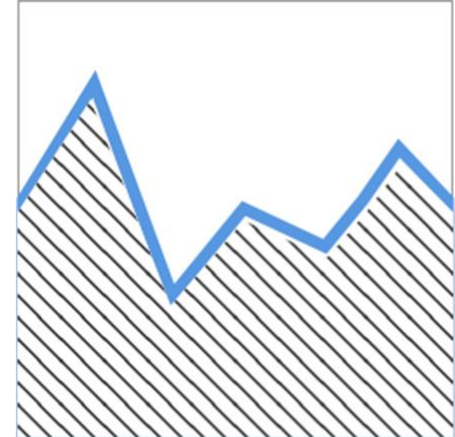


Leverage existing R4HA model and related price offerings.

Use whitespace to maximize utilization and efficiency.

Continue with R4HA management and capping.

NewApp: Consumption



Transparent, predictable, consumption-based pricing

Pay-as-you-go pricing for new applications

20% savings with a minimum commitment

Payments Pricing Solution



New "Per Payment" price metric provides predictable & consistent pricing regardless of peaks



- On Premise, Payments-as-a-Service, on z/OS
- Both SW and SW+HW variants available
- Up front licensing of IBM Financial Transaction Manager (FTM) software
- Remainder of Payments SW stack charged as MLC with a low-priced Per Payment business metric
 - z/OS, MQ, Db2, ODM

Links

Application Development & Test Solution

Announcement Letter

<https://ibm.biz/BdZ9xy>

DevTest Sizing Calculator

<http://www.ibm.com/software/lms>

Reference Case

<https://www.ibm.com/case-studies/wustenrot-systems-software-container-pricing-development>

New Application Solution

Announcement Letter

<https://ibm.biz/BdZ9xv>

New App Update 10/2018 (incl. SCLC)

<https://ibm.biz/BdYtVp>

Payments Pricing Solution

Announcement Letter

<https://ibm.biz/BdZ9xK>

IBM Z Container Pricing

<https://www.ibm.com/it-infrastructure/z/software/pricing-container>

IBM Z Software Pricing

<https://www.ibm.com/it-infrastructure/z/software/pricing>

Thank you

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