



IBM Software

IBM Sub-capacity Licensing Customer Overview

IBM Software Group



Updated: December 2014

Agenda

- Defining the Environment
- PVU Licensing & Pricing
- Sub-capacity Licensing Requirements
- License Counting Rules
- Summary



Defining the Environment

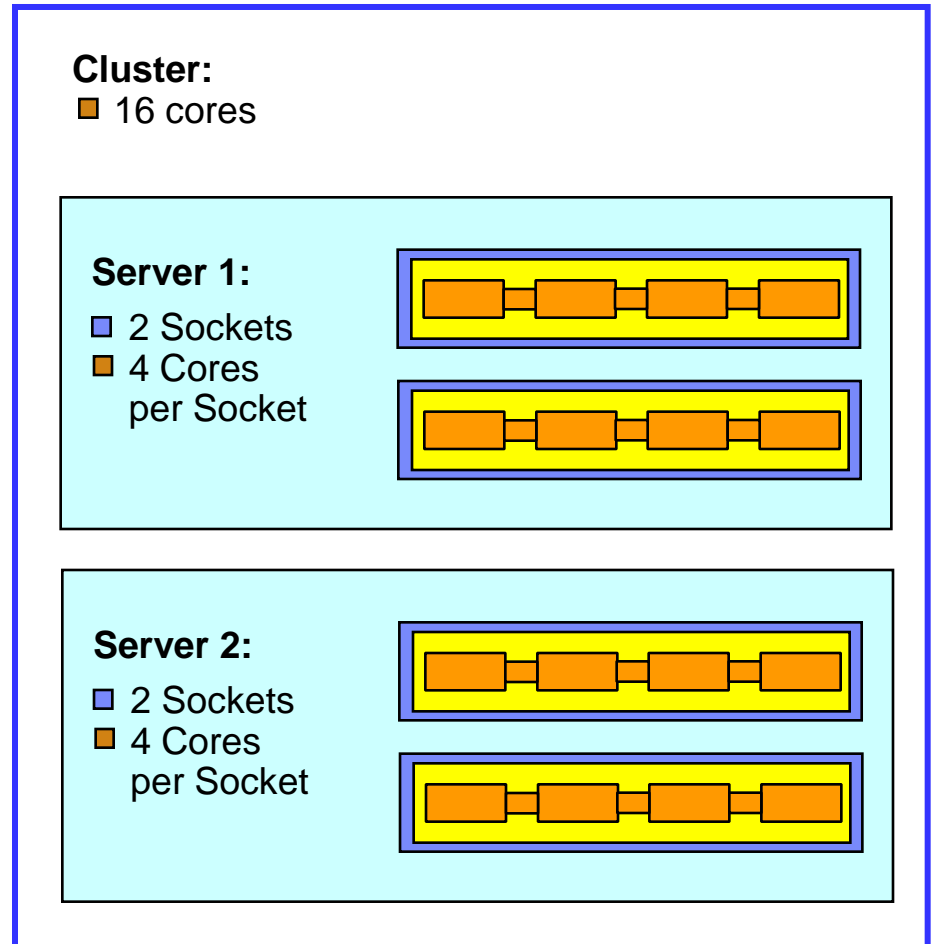


Defining the Physical Environment

- **Processor core** – a single computing unit, referred to by some vendors as a processor or CPU.
- **Chip*** – microprocessor containing one or more processor cores, e.g. single core or multi-core.
- **Socket*** – slot in the server that holds and provides mechanical and electrical connections to the chip.
- **Server** – a physical machine that provides resources, i.e. processor core capacity.
- **Cluster** – a group of servers linked together to share resources and operate as a single machine.

*Chip & Socket are often use interchangeably.

Physical Environment:

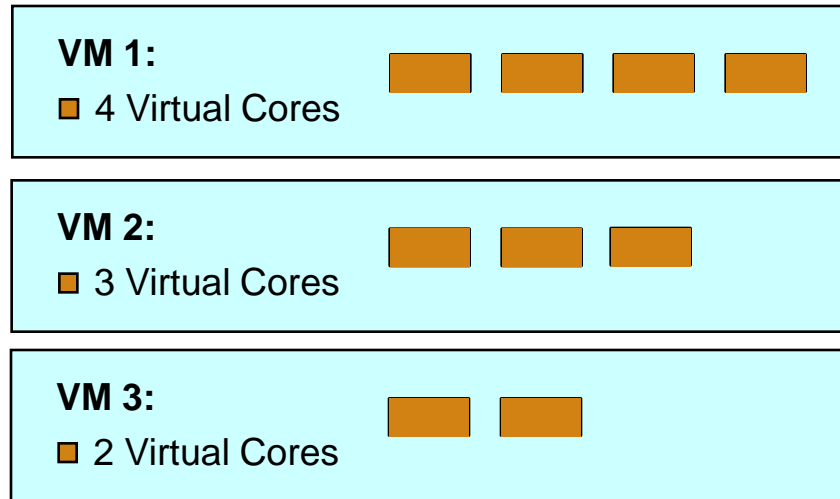


Defining the Virtual Environment

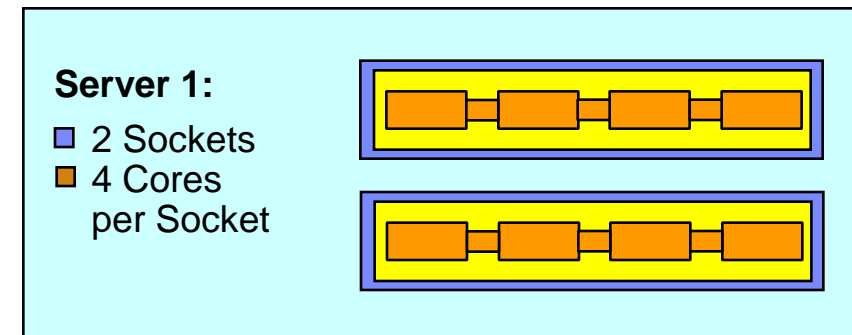
The computing resources of the virtual environment comes from the physical environment. Although VM or Virtual Core quantities may be lower or higher than quantities of servers or physical cores, the total processing capacity is equal.

- **VM (Virtual Machine) or Partition** – a software implementation of a physical machine or server.
- **Virtual Core** – each VM is assigned a virtual core quantity. Each virtual core is equal to one core for PVU licensing.
- **Physical Server (Host Server)** – a physical machine that provides the computing resources to the virtual environment.

Virtual Environment (9 cores):



Physical Environment (8 cores):



PVU Licensing & Pricing



IBM Software PVU Pricing

$$\text{Total Price} = \text{Software Price Per PVU} \times \text{PVUs per Core} \times \text{Number of Cores}$$

(Distributed Price List) (PVU Table) (Sub-capacity Terms)



IBM Distributed Software Price List

IBM Distributed Software Price List: Americas

Part Number: D55IULL
 Part Description: **IBM DB2 ENTERPRISE SERVER EDITION PROCESSOR VALUE UNIT (PVU) LICENSE + SW SUBSCRIPTION & SUPPORT 12 MONTHS**
 Software Brand: Information Management
 Reseller Authorization: IM Data Management
 Reseller Authorization Terms: SW Value Plus Authorized
 Product Subgroup: IBM Database 2
 Product Tradename: DB2 UDB Enterprise Server Edition
 Product Name: DB2 Enterprise Svr Ed
 Product Platform: All OS per ESD/PA Media Pks
 PID: 5765F41
 Encryption Level: Not Applicable
 Media Type: NOT APPLICABLE
 Part Language: All Lang per ESD/PA Media Pks
 Part Version: N/AP
 Part Type: **License + SW Subscription & Support**
 Charge Unit: **Processor Value Unit (PVU)**
 Price Country/Region/Currency: USA / USD
 Price Effective Date: 10/01/2009

Entry OEM

SRP	405.00
-----	--------

Passport Advantage Express

SRP	405.00
-----	--------

Passport Advantage

	Points	BL	D	E	F	G	H	I*	J*	ED	GV
SVP	1.80	405.00	356.40	351.10	347.90	345.90	344.30	323.20	322.40	162.00	344.30

* I and J SVP pricing is available only where the customer has received prior IBM approval for a Relationship SVP at those levels using IBM special bid process and approvals.

This product supports operating systems where a media pack is made available for a required O/S in a specific country/region. It in no way guarantees language, version or encryption availability.





IBM PVU Table (excerpt)

PVU Table per Core (section 1 of 2 - RISC and System z)

Processor Technologies														
Processor Brand		Processor Type												
Processor Vendor	Processor Name	Server model numbers	Maximum number of sockets per server	Cores per socket								IFL Engine/Central Processor	Proc. Model Number	PVUs per Core
				(1)	(2)	(4)	(6)	(8)	(10)	(12)				
IBM	POWER Systems cores running Linux OS	PR1, TR2, TR4 POWER iFL, p24L, S812L, S822L	All			■	■	■					All	70
		Any POWER System core running Linux												
	POWER8	870, 880	> 4				■	■					All	120
		E850	4					■	■				All	100
	POWER7+	S814, S822, S824	2				■	■					All	70
		770, 780, 795	> 4				■	■					All	120
		750, 755, 760, 775, P8704, p460, Power ESSE	4				■	■					All	100
	POWER6	P8700-703, 710-740, p260, p270	2				■	■					All	70
		550, 560, 570, 575, 585	All				■						All	120
	POWER5, POWER4	520, JS12, JS22, JS23, JS43	All				■						All	80
		All	All				■						All	100
	POWER5 OCM	All	All				■						All	50
z13, zEC12, z196, System z10.4	All	All									■	All	120	
zBC12, z114, System z5, z990, S390 1.2.8	All	All									■	All	100	
PowerPC 970	All	All				■						All	50	

Processor Technologies															
Processor Brand		Processor Type													
Processor Vendor	Processor Name	Server model numbers	Maximum number of sockets per server	Cores per socket								IFL Engine/Central Processor	Proc. Model Number	PVUs per Core	
				(1)	(2)	(4)	(6)	(8)	(12)	(16)					
HP/Intel®	Itanium® 1.2	All	All		■	■							All	100	
	PA-RISC	All	All		■								All	100	
Sun / Fujitsu	SPARC64 V1, V1L, X, X+	All	All			■	■				■		All	100	
	UltraSPARC IV	All	All			■							All	100	
	SPARC M5 / M6	All	All					■					All	120	
	SPARC T4/T5	T5-6	8									■		All	120
		T4.4, T5-4	4									■		All	100
	SPARC T3	T4-1, T4-1B, T4-2, T5-1B, T5-2	2									■		All	70
		All	All									■		All	70
	UltraSPARC T2	All	All				■	■					All	50	
UltraSPARC T1	All	All				■	■					All	30		
Any	Any single-core	All	All	■									All	100	

PVU Table per Core (section 2 of 2 - x86)

Processor Technologies																					
Processor Brand			Processor Type																		
Processor Vendor	Processor Name	Proc. Model Number ¹	Cores per socket															Maximum number of sockets per server	PVUs per Core		
			(1)	(2)	(4)	(6)	(8)	(10)	(12)	(14)	(15)	(16)	(18)								
Intel®	Xeon®	3400 to 3699 5500 to 5699 6500 to 6599 7500 to 7599 E3-1000 to 1099 E3-1200 to 1299 E3-1200 V2 to 1299 V2 E3-1200 V3 to 1299 V3 E5-1400 to 1499 E5-1400 V2 to 1499 V2 E5-1400 V3 to 1499 V3 E5-1600 to 1699 E5-1600 V2 to 1699 V2 E5-1600 V3 to 1699 V3 E5-2400 to 2499 E5-2400 V2 to 2499 V2 E5-2400 V3 to 2499 V3 E5-2600 to 2699 E5-2600 V2 to 2699 V2 E5-2600 V3 to 2699 V3 E5-4600 to 4699 E5-4600 V2 to 4699 V2 E7-2800 to 2899 E7-2800 to 2899 V2 E7-4800 to 4899 V3 E7-4800 to 4899 E7-4800 to 4899 V2 E7-8000 to 8099 E7-5800 to 5899 V2 E7-4800 to 4899 V3																>4	120		
																			4	100	
																				2	70
	Xeon®	3000 to 3399 5000 to 5499 7000 to 7499		■	■	■												All	50		
	Core®	All i3, i5, i7		■	■	■												All	70		
AMD	Opteron	All		■	■	■	■	■	■	■	■	■	■	■	■	■	■	All	50		
Any	Any single-core	All		■														All	100		



Sub-capacity Licensing Requirements



IBM Software Licensing

There are two ways to license IBM software, both are based on capacity.

- **Full capacity licensing – License all cores on the server.** Customers acquire Processor Value Unit (PVU) licenses based on the physical core capacity of the server where the IBM program is installed (all processor cores x PVUs per core)
- **Sub-capacity licensing for virtualized systems – License fewer than all cores on the server when compliant with Sub-capacity terms.** Customers acquire PVU licenses based on the virtual core capacity of a partition or VM available to the IBM program, not to exceed the physical core capacity of the server.
- Reference both the [PVU Licensing](#) and the [Virtualization \(Sub-capacity\) Licensing](#) web pages for terms on full capacity and sub-capacity licensing.

PVU full-capacity and sub-capacity licensing

Processor Value Unit (PVU) is a unit of measure by which the Program can be licensed. The number of PVU entitlements required is based on the processor technology defined within the [PVU Table](#) by Processor Vendor, Brand, Type and Model Number and by the number of processors made available to the Program. IBM continues to define a processor, for the purpose of PVU-based licensing, to be each processor core on a chip. A dual-core processor chip, for example, has two processor cores.

The Licensee can deploy the Program using either Full Capacity licensing or Virtualization Capacity (Sub-Capacity) licensing according to the Passport Advantage Licensing Terms. If using Full Capacity licensing, the Licensee must obtain PVU entitlements sufficient to cover all activated processor cores* in the physical hardware environment made available to or managed by the Program, except for those servers from which the Program has been permanently removed. If using Virtualization Capacity licensing, the Licensee must obtain entitlements sufficient to cover all activated processor cores made available to or managed by the Program, as defined according to the [Virtualization Capacity License Counting Rules](#).

* An Activated processor core is a processor core that is available for use in a physical or virtual server, regardless of whether the capacity of the processor core can be or is limited through virtualization technologies, operating system commands, BIOS settings, or similar restrictions.

Sub-capacity Licensing Requirements

▪ Customers must comply with the Sub-capacity Licensing terms as stated in the [IBM Passport Advantage Agreement \(IPAA\)](#)*. Customers have 90 days to comply.

1. License an Eligible Sub-capacity Product (primarily PVU offerings)
2. Use an Eligible Virtualization Technology
3. Use an Eligible Processor Technology
4. Install the IBM License Metric Tool (free of charge) unless
 - ILMT does not yet provide support for the Eligible Virtualization Environment
 - the enterprise has fewer than 1,000 employees and contractors
 - the total physical capacity of the Environment, measured on a Full Capacity basis, but licensed using sub-capacity terms is less than 1,000 PVUs.

▪ Reference the [Virtualization \(Sub-capacity\) Licensing](#) web page for Eligibility Tables.

Note as of July 18, 2011 Sub-capacity Licensing terms are included in the IPAA. Prior to July 18th, terms appeared in a separate attachment.

* Reference a current version of IPAA for any changes.

IBM License Metric Tool (ILMT)

- The use of ILMT is recommended for full capacity environments and mandatory for sub-capacity environments
- ILMT is free of charge for PPA Customers
- ILMT must be installed according to instructions provided on ILMT Information Center:
https://www-01.ibm.com/support/knowledgecenter/SS8JFY/Imt_welcome.html?lang=en
 - ▶ ILMT agents must be installed on every partition with Eligible Products licensed under sub-capacity terms
 - ▶ The agents will send information about installed IBM software to the ILMT server
- Exceptions include:
 - ▶ When ILMT does not yet provide support for the Eligible Virtualization Environment
 - ▶ If your enterprise has fewer than 1000 employees and contractors worldwide, you are not a service provider, and you have not contracted with a service provider to manage your Eligible Virtualization Environment
 - ▶ If your enterprise's total physical capacity of your servers with an Eligible Virtualization Environment, measured on a full capacity basis but licensed under sub-capacity terms, is less than 1000 PVUs
 - ▶ For the above exceptions, customers must manually manage, track and prepare a [Manual Calculation of Virtualization Capacity worksheet](#)

Sample ILMT Report

- The ILMT Report details maximum capacity used for the reporting period by product, by server.
- Both full and sub-capacity are reported in PVUs and CPU cores.
- The ILMT Report must be run quarterly at a minimum and maintained as evidence of on-going license compliance per the terms of the IBM Passport Advantage Agreement (IPAA).

IBM Tivoli Asset Discovery for Distributed 7.2.2



Audit Report Details (Oct 18, 2010 - Oct 25, 2010)

IBM Tivoli Monitoring for Databases

Product Summary

	Full Capacity	Subcapacity
CPU cores	8	1
PVU	800	100

Product is installed on the following servers

Server ID: IBM 9133 061504H

Processor type: IBM(R) Power5(TM) Dual-core All Existing

PVU per core: 100

Server Summary

	Subcapacity Limit	Subcapacity
CPU cores	8	1
PVU	800	100

Help



Wiki

[License Metric Tool](#)
[Software Use Analysis](#)



E-mail

LMTHelp@us.ibm.com
talk2sam@us.ibm.com



Forum

[License Metric Tool](#)
[Software Use Analysis](#)



Twitter

[@ILMTCentralTeam](#)



YouTube

[License Metric Tool](#)
[Software Use Analysis](#)



Documentation

[License Metric Tool](#)
[Software Use Analysis](#)



IBM services

The IBM Lab Services organization offers a full range of service offerings from a base 40 hour quick start to fully customized offerings. [IBM service offerings](#)
For information regarding purchase of IBM Services, please contact your regional representative or for additional questions please contact your IBM Software Client Leader (SCL). [Contacts](#)



IBM support

To engage the IBM support team see the [Service Request instructions](#) .
To receive support notifications subscribe to the IBM Support RSS Feed [IBM Support RSS feed](#)

Tivoli Asset Management Family

- **Customers may choose to install ILMT at no charge or upgrade to IBM Endpoint Manager for Software Use Analysis (IEM SUA) for a fee.**
 - ▶ ILMT is the most basic offering which discovers IBM distributed software products and reports on capacity available to installed software (required for sub-capacity).
 - ▶ IEM SUA uses the same code base and adds discovery and software usage capabilities that extend non-IBM distributed software products and hardware.
 - ▶ IBM SmartCloud Control Desk (IBM SCCD) integrates with IEM SUA for full asset management, including usage analysis, procurement and financial management.

IBM SmartCloud Control Desk (IBM SCCD)

- Full asset lifecycle management support for hardware and software license management.
- Identifies under or over utilized software to reduce costs due to over-purchasing and to reduce risk to under-purchasing
- Procurement capabilities to create and route purchase orders
- Financial management for cost tracking, usage accounting and TCO estimation

IBM Endpoint Manager for Software Use Analysis (IEM SUA)

- Discovers detailed information on installed hardware, IBM software and third party software
- Delivers flexible options for software usage analysis
- For some licensing types Identifies under or over utilized software to reduce costs due to over-purchasing and to reduce risk to under-purchasing
- Integrates with IBM SCCD

IBM License Metric Tool (ILMT)

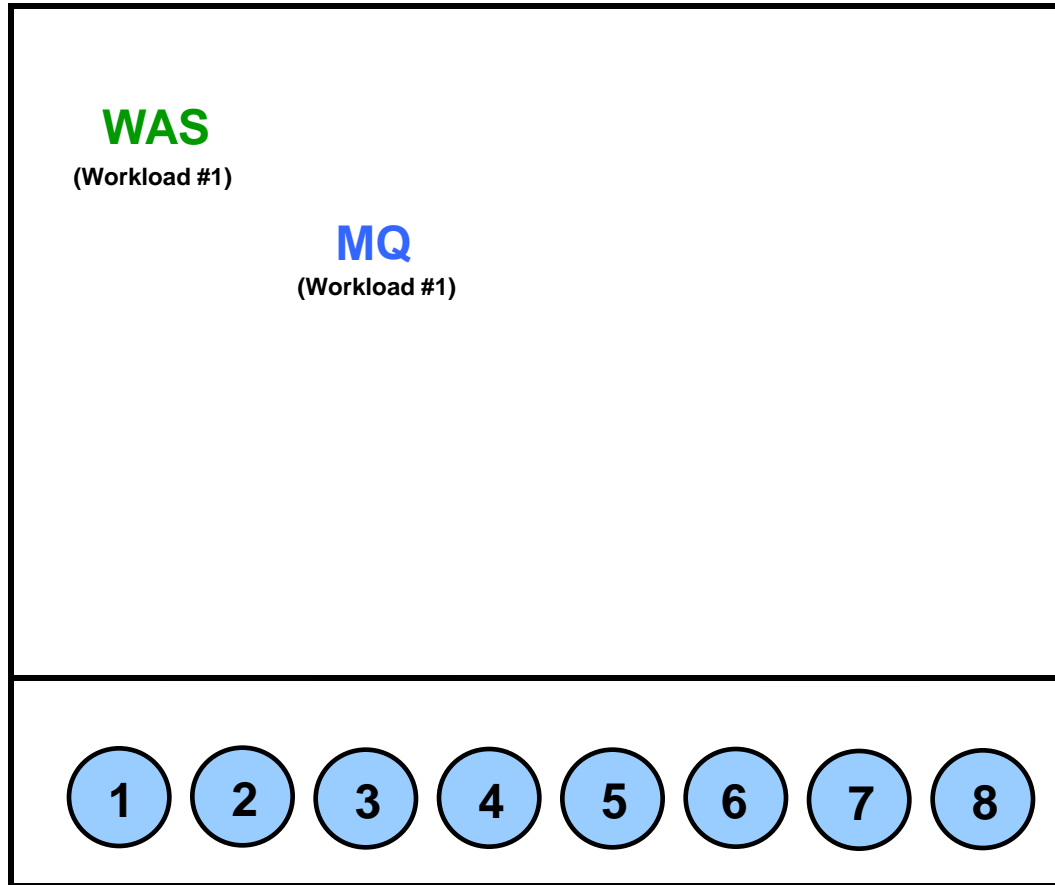
- Discovers IBM installed software
- Measures maximum core capacity in PVUs and RVUs available to deployed software.
- Required for sub-capacity licensing

License Counting Rules



License Counting Rules: (1) Server with No Partitions

Full Capacity Licensing required



Cores to be licensed

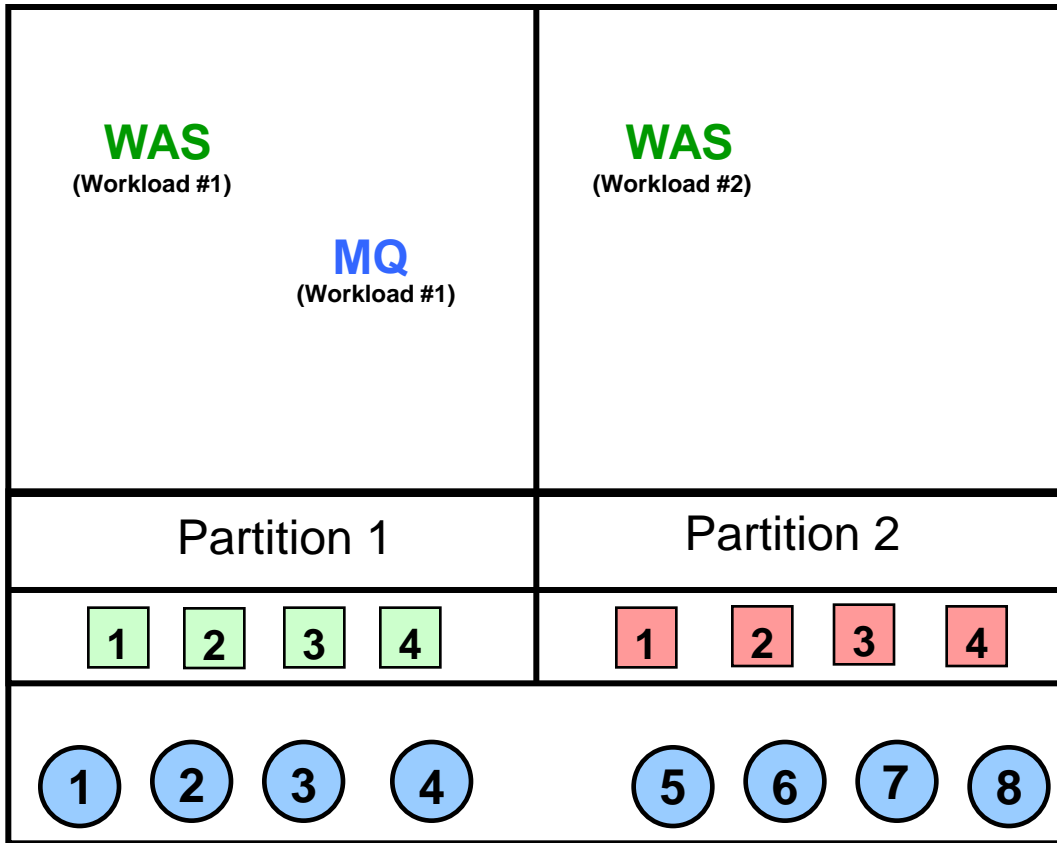
<u>WAS</u>	<u>MQ</u>	
8	8	Total Cores

← 8 Physical Cores in the Server

License Counting Rules: (2) Server with 2 Static Partitions

Sub-capacity Software Licensing optional

- ▶ Same server, more workload, fewer software licenses
 - ▶ Static partitioning increases processor capacity utilization
 - ▶ Total Cost of Ownership (TCO) improves as workload increases and cores to be licensed decreases



Cores to be licensed

<u>WAS</u>	<u>MQ</u>	
4	4	Partition 1
<u>4</u>	<u>—</u>	Partition 2
8	4	Total Cores

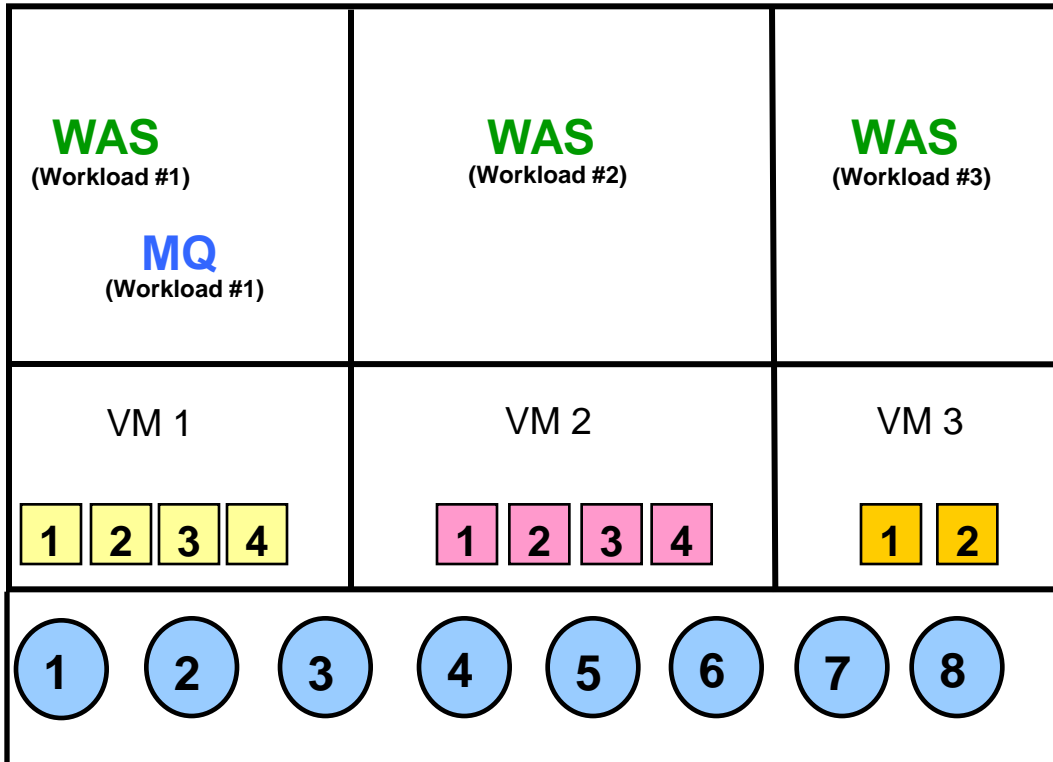
4 Processor Cores Available to each Partition

8 Physical Cores in the Server

License Counting Rules: (3) Server with Virtualized Environment

Sub-capacity Software Licensing optional

- ▶ Same server, more workload, fewer software licenses
 - ▶ Virtualized partitioning further increases processor capacity utilization
 - ▶ Total Cost of Ownership improves as cores to be licensed decreases



Cores to be licensed

<u>WAS</u>	<u>MQ</u>	
4	4	VM/Partition 1
4		VM/Partition 2
<u>+ 2</u>	—	VM/Partition 3
10	4	VM Capacity
8	8	Capacity limit
8	4	Total Cores

← **10 Virtual Processor Cores**

* License rule is the lower of: (a) the sum of each partition for a product or (b) the processor capacity of the shared pool

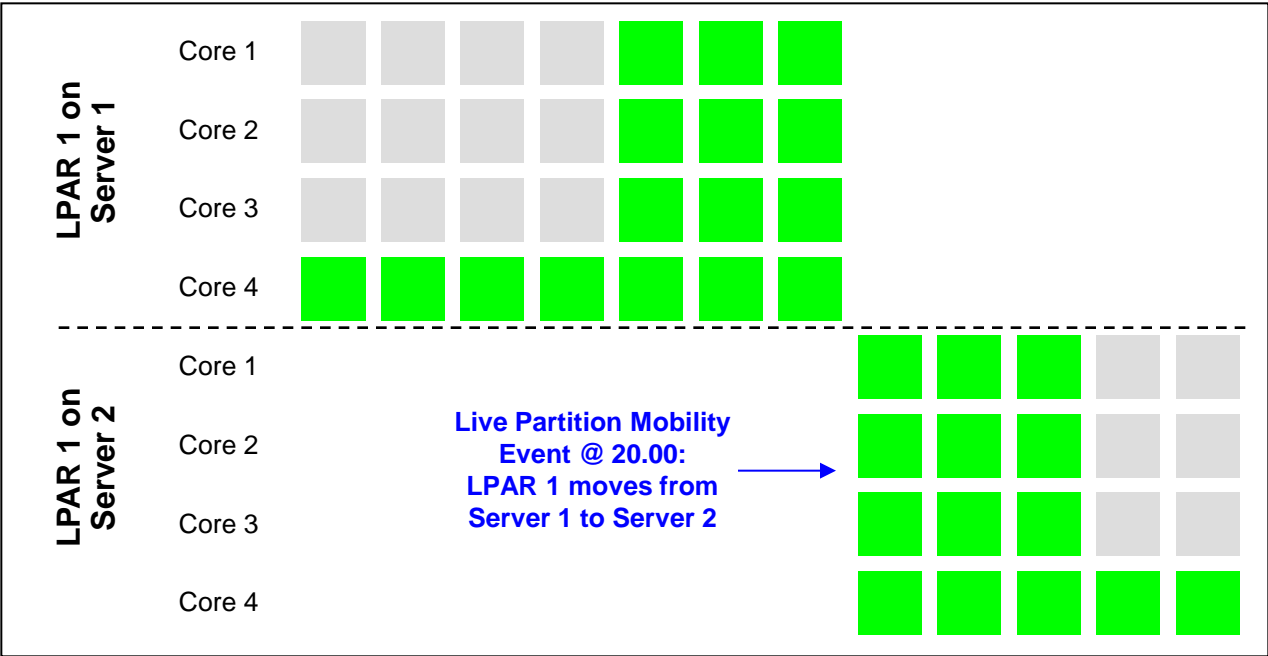
← **8 Physical Cores in the Server**

License Counting Rules: (4) Partition Mobility

- ▶ License maximum capacity made available to the software at any point in time.
- ▶ Power customers can utilize live partition mobility to move a VM to a new server without being charged more.

24 Hour Clock (GMT)

6:00 8:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00 02:00



Concurrent Counting Methodology:

License 4 cores.

- Count maximum cores made available at any point in time.
- No more than 4 cores were in use at any point.

One ILMT Server

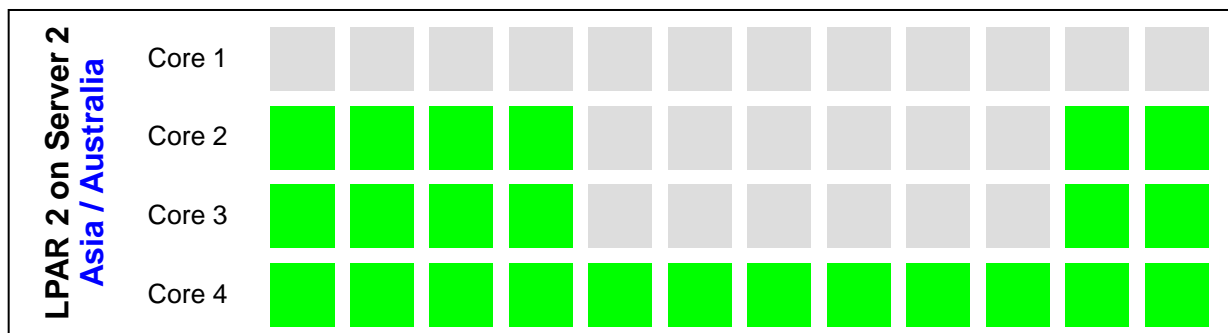
Unavailable processor core Available processor core

License Counting Rules: (5) Multi-Region Partition Mobility



- ▶ License mobility is restricted to within a region, requiring customers to install at least 1 ILMT server per region. Three regions defined by continents – (1) North America & South America; (2) Europe & Africa; (3) Asia & Australia.

24 Hour Clock (GMT)

6:00 8:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00 02:00 04:00



Two ILMT Servers

Unavailable processor core 
Available processor core 

Proposed Counting Rules:

License 6 cores.

- Count maximum cores made available at any point in time within each region.
- ILMT would report 3 for NA/SA plus 3 for Asia/Australia, for a total of 6.

Summary



Important Links

- IBM Passport Advantage Agreement: http://www.ibm.com/software/passportadvantage/pa_agreements.html
- Sub-capacity Licensing: <http://www.ibm.com/software/passportadvantage/subcaplicensing.html>
- Eligible Sub-capacity Products: http://public.dhe.ibm.com/software/passportadvantage/SubCapacity/Sub_Capacity_Eligible_Programs.pdf
- Eligible Processor Technologies: http://public.dhe.ibm.com/software/passportadvantage/SubCapacity/Eligible_Processor_Technology.pdf
- Eligible Virtualization Technologies: http://public.dhe.ibm.com/software/passportadvantage/SubCapacity/Eligible_Virtualization_Technology.pdf
- ILMT Central: http://www.ibm.com/support/knowledgecenter/SS8JFY/lmt_welcome.html?lang=en