IBM Sub-capacity Licensing Customer Overview

IBM Software Group

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.
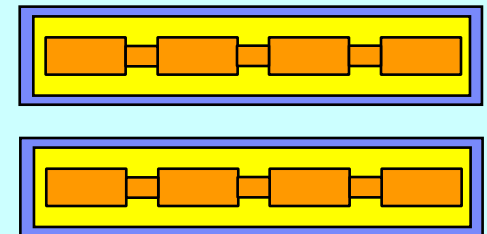
*Chip & Socket are often use interchangeably.

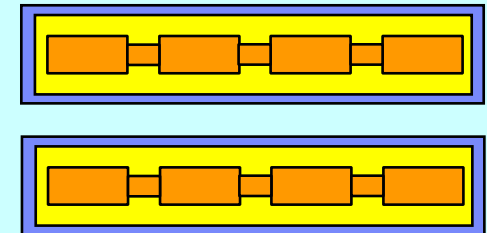**Physical Environment:**

Cluster:
- 16 cores

Server 1:
- 2 Sockets
- 4 Cores per Socket

Server 2:
- 2 Sockets
- 4 Cores per Socket
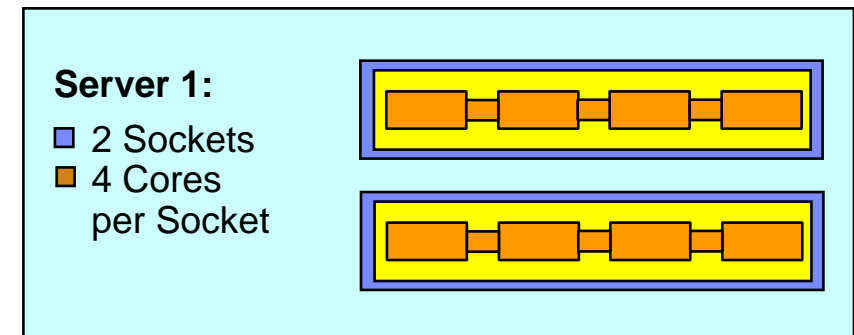
Defining the Virtual Environment

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):

VM 1:
- 4 Virtual Cores

VM 2:
- 3 Virtual Cores

VM 3:
- 2 Virtual Cores
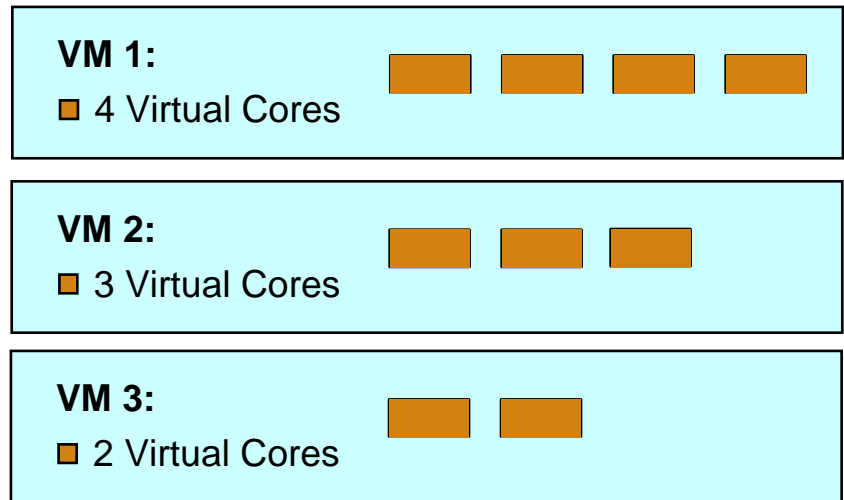
Physical Environment (8 cores):

Server 1:
- 2 Sockets
- 4 Cores per Socket

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PVU Licensing & Pricing

IBM Software PVU Pricing

Total Price =   Software Price Per PVU   X   PVUs per Core   X   **Number of Cores**

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

IBM Distributed Software Price List

IBM Distributed Software Price List: Americas

Field	Value
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 Vendor	Processor Brand		Maximum number of sockets per server	Processor Type							Proc. Model Number	PVUs per Core
	Processor Name	Server model numbers		Cores per socket						IFL Engine		
				One-Core (1)	Dual-Core (2)	Quad-Core (4)	Hexa-Core (6)	Oct-Core (8)	16-Core (16)			
IBM	POWER7 [4]	770,780,795	> 4			■	■	■			All	120
		750,755,775 PS704	4				■	■			All	100
		PS700-703, 710-740	2			■	■	■			All	70
	POWER6	550,560,570, 575,595	All		■						All	120
		520, JS12,JS22, JS23,JS43	All		■						All	80
	POWER5, POWER4	All	All		■						All	100
	POWER5 QCM	All	All			■					All	50
	z196, System z10 [1,5] z114, System z9	All	All							■	All	120
Sun / Fujitsu	SPARC64 VI, VII	All	All		■	■					All	100
	UltraSPARC IV	All	All		■						All	100
	SPARC T4	T4-4	4					■			All	100
		T4-1, T4-1B, T4-2	2					■			All	70
	SPARC T3	All	All					■	■		All	70
	UltraSPARC T2	All	All			■	■	■			All	50
	UltraSPARC T1	All	All			■	■	■			All	30

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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 July 2011 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 http://publib.boulder.ibm.com/infocenter/tivihelp/v31r1/index.jsp?topic=/com.ibm.license.mgmt.doc/welcome.html

  ‣ 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 should be run quarterly and maintained for 2 years.

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

ILMT Help

1. **For help installing ILMT, always point customers to web resources first.**
http://www.ibm.com/developerworks/wikis/display/tivoli/IBM+License+Metric+Tool

   – There is a new Readiness Planning Template that you may use to help customers plan for the installation and implementation of ILMT.

     http://w3.tap.ibm.com/medialibrary/media_view?id=141008

2. **ILMT QuickStart Services is always recommended.**
http://www.ibm.com/developerworks/wikis/display/tivoli/ILMT+Service+Offerings

3. **For technical support, customers should call or submit an online service request.** http://www-947.ibm.com/support/entry/portal/Open_service_request/Software/Tivoli/IBM_License_Metric_Tool

4. **For assistance with new installations, contact ILMT Central Team (ICT)**

   – The ILMT Central Team (ICT) is a dedicated group of ILMT product experts that have been tasked with specifically assisting new ILMT customers, primarily geared towards customers receiving a request from our Sales and Compliance team to produce an ILMT Audit Report.

   – We drive the customers to education collateral, ILMT Self Paced Virtual Classroom course, selling paid IBM Services, removing enablement issues from L2/L3, and providing targeted development enablement advice to these customers to get them from product ordering to generating their first audit report in as little time as possible.

   – GOAL: To drive ILMT compliance campaign customers to success through the successful generation of their first ILMT audit report.

   – EXIT: Campaign customers may leverage the central team up until they generate their first audit report.

   – WWW: https://www.ibm.com/developerworks/wikis/display/tivoli/ILMT+Self-help+and+Education

   – E-mail: LMTHelp@us.ibm.com

Tivoli Asset Management Family

- **Customers may choose to install ILMT at no charge or upgrade to TAD4D for a fee.**
  - ▶ ILMT is the most basic offering which discovers distributed PVU software products and reports capacity available to installed software (required for sub-capacity).
  - ▶ TAD4D uses the same code base and adds discovery capabilities that extend to most of the distributed software portfolio, non-IBM software and hardware.
  - ▶ TAMIT integrates with TAD4D for full asset management, including usage analysis, procurement and financial management.

Tivoli Asset Management for IT (TAMIT)

- 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

Tivoli Asset Discovery for Distributed (TAD4D)

- Discovers detailed information on installed hardware, IBM software and third party software

- Delivers flexible options for software use monitoring including 'Last Used', 'Summary and Trend', and 'Details' which provides all software use information

- Integrates with TAMIT

IBM License Metric Tool (ILMT)

- Discovers installed PVU software

- Measures maximum core capacity in PVUs available to deployed software.

- Required for sub-capacity licensing

License Counting Rules

License Counting Rules: (1) Server with No Partitions
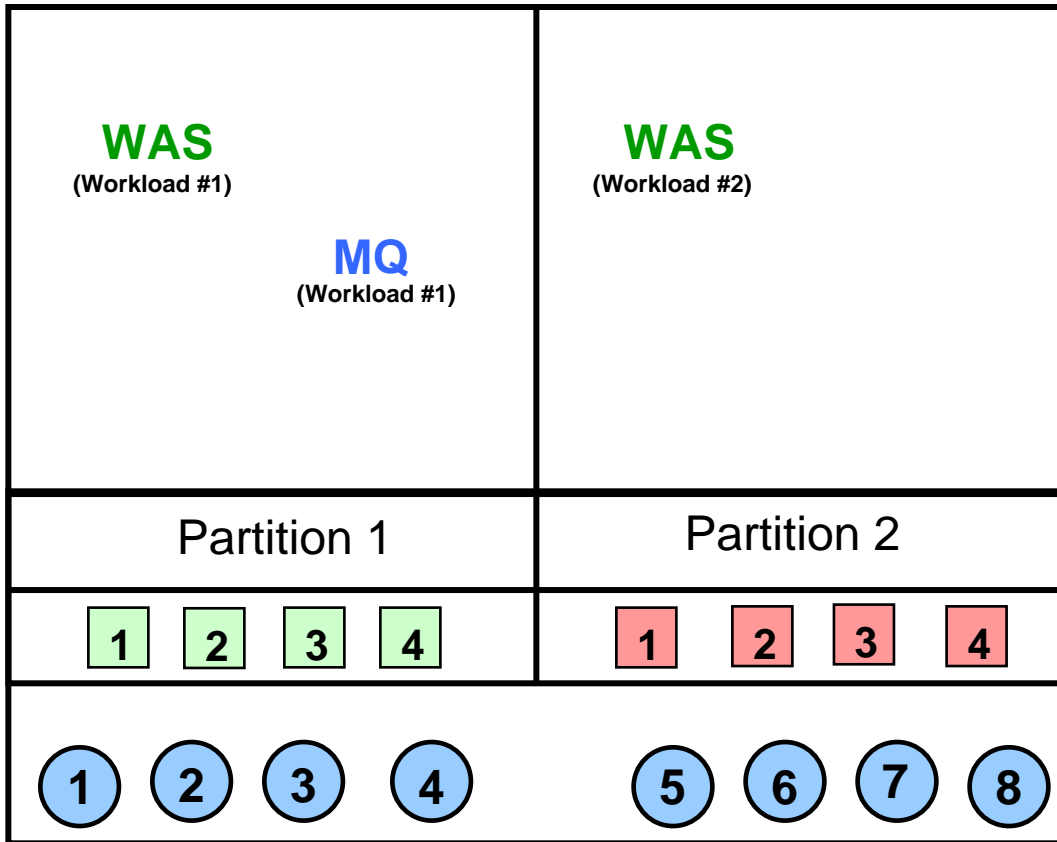
Full Capacity Licensing required

WAS
(Workload #1)

MQ
(Workload #1)
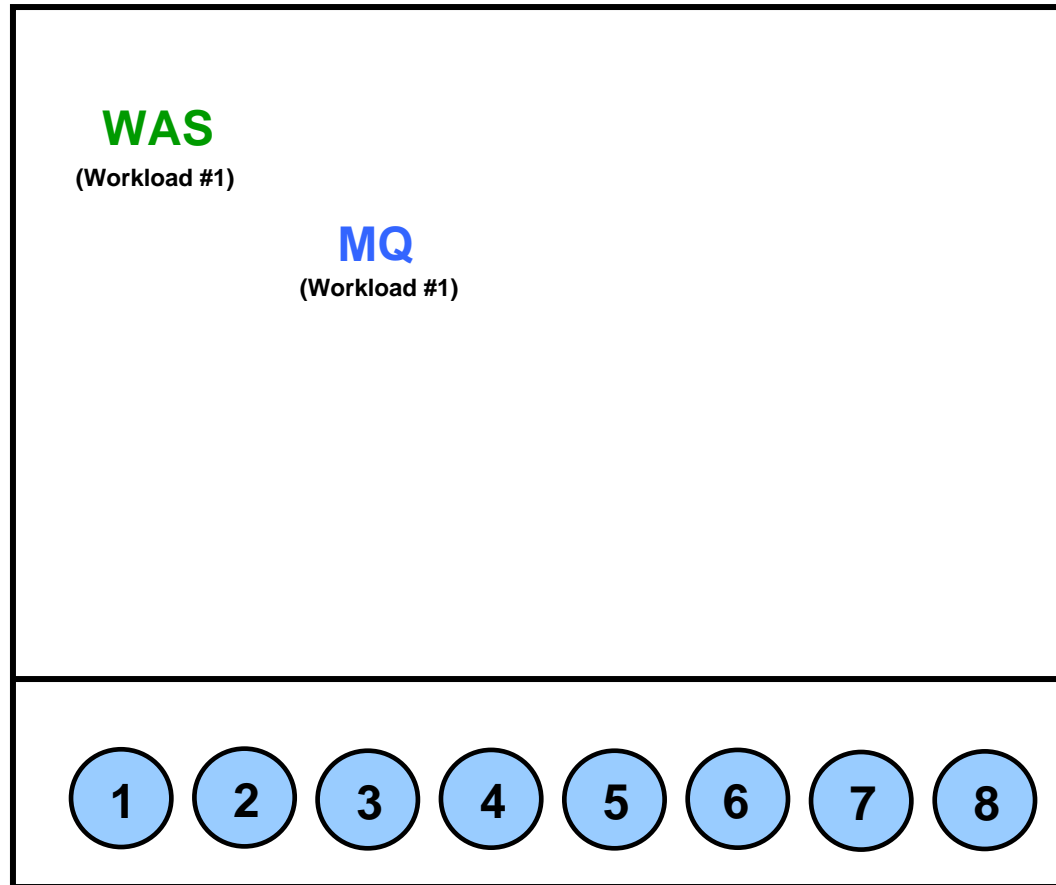
Cores to be licensed

WAS	MQ	
8	8	**Total Cores**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

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

WAS
(Workload #1)

MQ
(Workload #1)

WAS
(Workload #2)

Partition 1

Partition 2

| 1 | 2 | 3 | 4 |

| 1 | 2 | 3 | 4 |

← **4 Processor Cores Available to each Partition**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

← **8 Physical Cores in the Server**

Cores to be licensed

WAS	MQ	
4	4	Partition 1
4	—	Partition 2
8	**4**	**Total Cores**

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
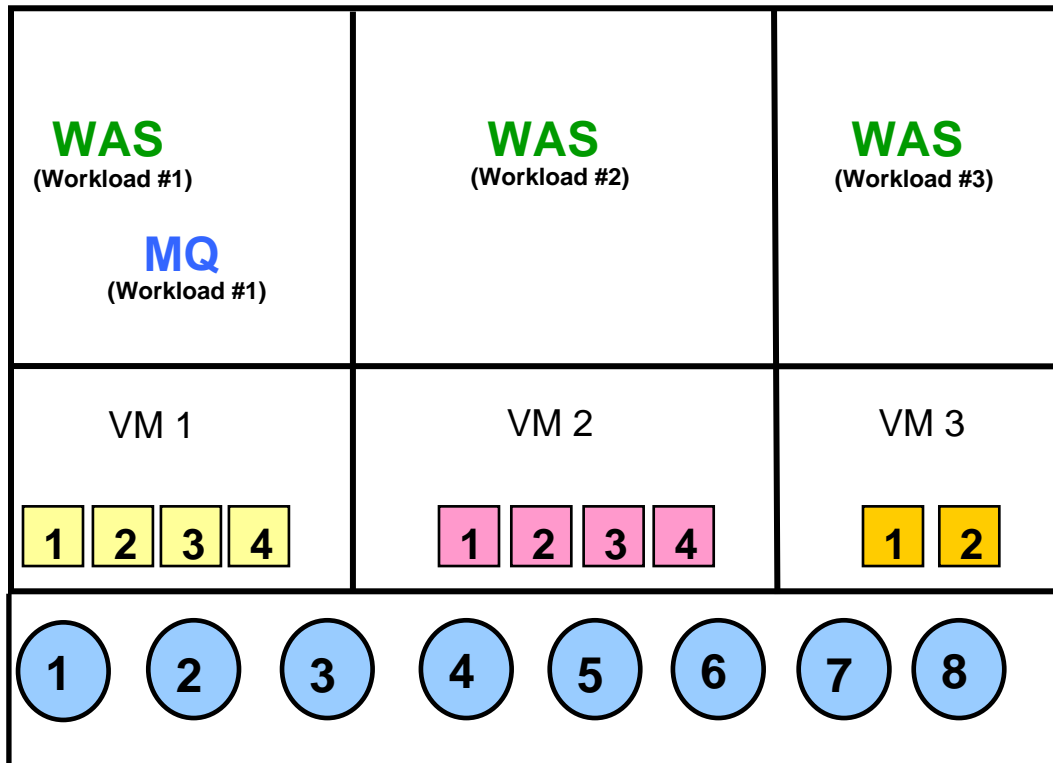
Cores to be licensed

WAS	MQ	
4	4	VM/Partition 1
4		VM/Partition 2
+ 2	__	VM/Partition 3
10	4	VM Capacity
8	8	Capacity limit
8	**4**	**Total Cores**

WAS (Workload #1)

MQ (Workload #1)

WAS (Workload #2)

WAS (Workload #3)

VM 1 — 1 2 3 4

VM 2 — 1 2 3 4

VM 3 — 1 2

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
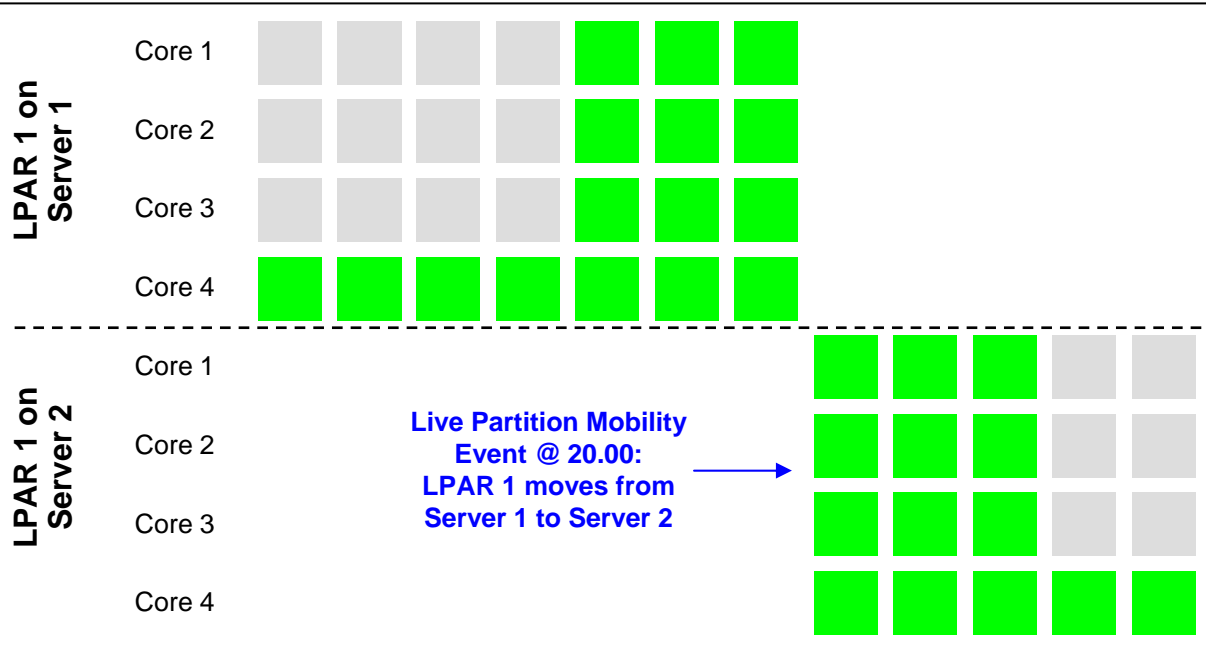
1 2 3 4 5 6 7 8

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.

LPAR 1 on Server 1

Core 1
Core 2
Core 3
Core 4

LPAR 1 on Server 2

Core 1
Core 2
Core 3
Core 4

Live Partition Mobility Event @ 20.00: LPAR 1 moves from Server 1 to Server 2

One ILMT Server

Unavailable processor core
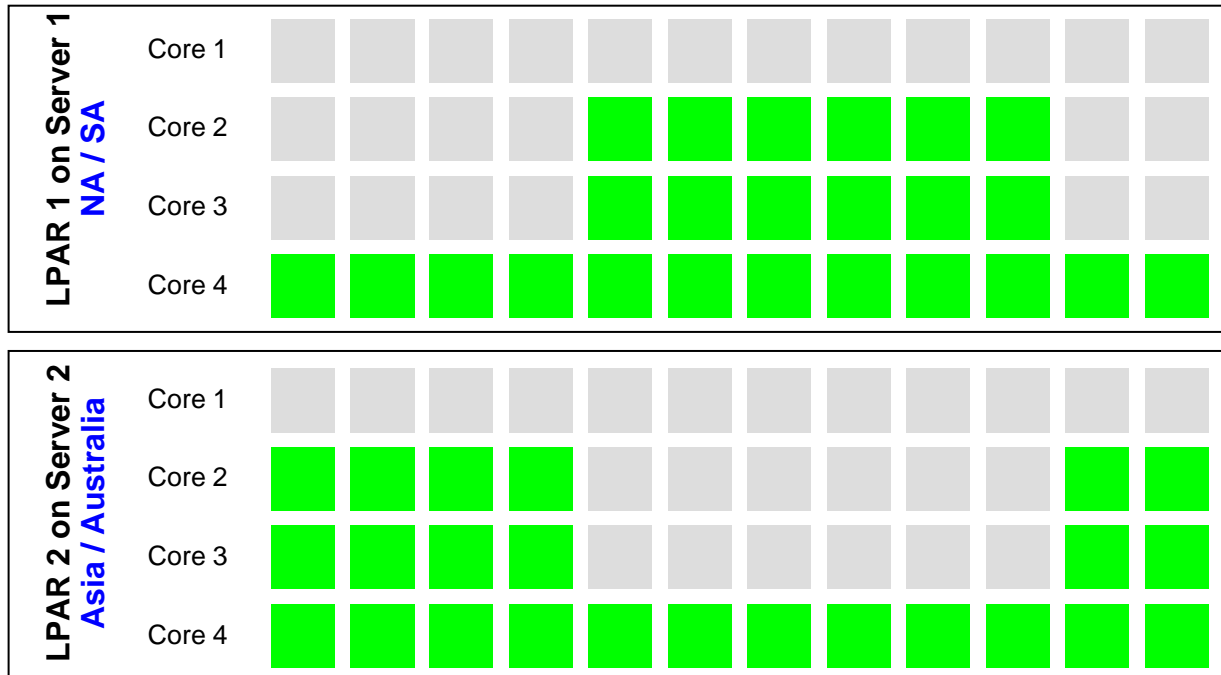
Available processor core

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 |

LPAR 1 on Server 1 — NA / SA

	6:00	8:00	10:00	12:00	14:00	16:00	18:00	20:00	22:00	24:00	02:00	04:00
Core 1												
Core 2					●	●	●	●	●	●		
Core 3					●	●	●	●	●	●		
Core 4	●	●	●	●	●	●	●	●	●	●	●	●

LPAR 2 on Server 2 — Asia / Australia

	6:00	8:00	10:00	12:00	14:00	16:00	18:00	20:00	22:00	24:00	02:00	04:00
Core 1												
Core 2	●	●	●	●							●	●
Core 3	●	●	●	●							●	●
Core 4	●	●	●	●	●	●	●	●	●	●	●	●

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 <u>within each region</u>.
- 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-01.ibm.com/software/lotus/passportadvantage/pa_agreements.html

- Sub-capacity Licensing Web Page: http://www-01.ibm.com/software/lotus/passportadvantage/subcaplicensing.html

- Eligible Sub-capacity Products: ftp://ftp.software.ibm.com/software/passportadvantage/SubCapacity/Sub_Capacity_Eligible_Programs.pdf

- Eligible Processor Technologies: ftp://ftp.software.ibm.com/software/passportadvantage/SubCapacity/Eligible_Processor_Technology.pdf

- Eligible Virtualization Technologies: ftp://ftp.software.ibm.com/software/passportadvantage/SubCapacity/Eligible_Virtualization_Technology.pdf

- ILMT Central: http://www.ibm.com/developerworks/wikis/display/tivoli/IBM+License+Metric+Tool