



IBM Passport Advantage Software

Sub-capacity (Virtualization) License Counting Rules

x86 Virtualization Environment

NOTE: Please use these rules along with the Passport Advantage Agreement

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Summary of Virtualization Capacity Licensing Requirements

- **Customers must:**
 - ▶ Adhere the to Sub-capacity licensing terms of the Passport Advantage agreement, including:
 - [Use Eligible Sub-capacity Products](#)
 - [Use Eligible Virtualization Technologies](#)
 - [Use Eligible Processor Technologies](#)
 - [Use the IBM License Metric Tool or other approved validated tools](#)

Follow Virtualization Capacity License Counting rules for their Eligible Virtualization Environment(s)

PLEASE NOTE:

- *The above is only a summary. For details about sub-capacity licensing requirements, see the Sub-capacity Attachment and other information referred to above, at [Passport Advantage Virtualization Capacity website](#)*
- *Customers are responsible for the installation of the IBM License Metric Tool (or other approved validated tools) and for the server it runs on.*

x86 Virtualization Technology - Definitions

- **VM – Virtual Machine (also Containers w/o Orchestration)**
 - ▶ A VM represents a complete system with processors, memory, disk and network resources
 - ▶ Multiple VMs can share physical resources and run side by side on the same server

- **Virtual Core (also vCPU)**
 - ▶ Each VM is assigned a virtual core quantity
 - ▶ Each virtual core is equal to one core for PVU & VPC licensing

- **Server**
 - ▶ A machine that provides resources (i.e. processor core capacity) to the VMs
 - ▶ Includes single standalone servers or servers within clusters or resource pools

x86 Virtualization Technology - Definitions

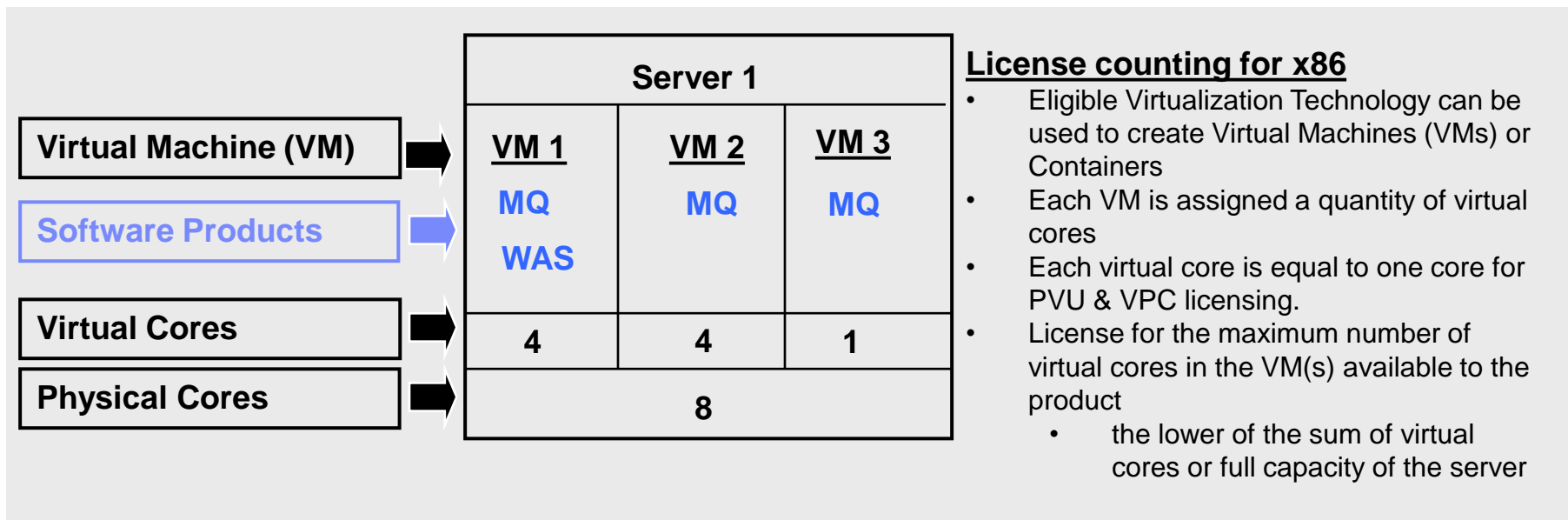
- **Cluster**
 - ▶ A group of servers, that are linked together using vCenter Server or Microsoft Failover Clustering Feature to provide resources (i.e. processor core capacity) to the VMs

- **Mobility Event**
 - ▶ Movement of a running VM from one physical server to another

- **SMT (Simultaneous Multi-Threading)**
 - ▶ Is a technique for improving the overall efficiency of superscalar CPUs with hardware multithreading. SMT permits multiple independent threads of execution.

- **Hyper-threading**
 - ▶ It is Intel's proprietary simultaneous multithreading (SMT) implementation.

License counting in a Server



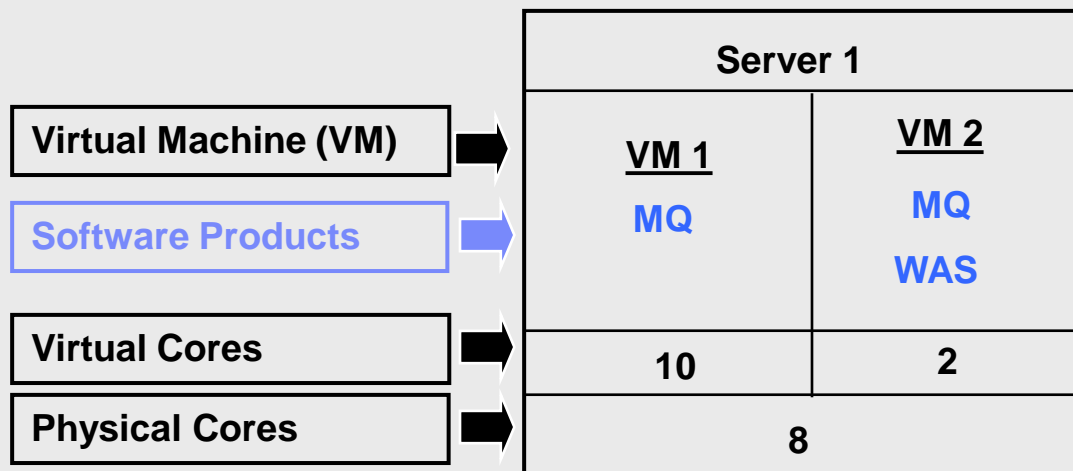
▶ For above example, the Virtualization Capacity licensing requirement is based on the maximum number of virtual cores in the VM(s) available to a product

▶ License Rule: lower of the Virtualization Capacity or Full (Physical) Capacity available in the Server

Cores to License	VM 1	VM 2	VM3	Virtualization Capacity	Full capacity
MQ software	4	4	1	9	8
WAS software	4	-		4	8

License counting in a Server with SMT/Hyper-threading

1 Server	8 Physical (SMT-enabled) Cores	16 Virtual Cores available for the virtualization manager in total
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License counting for x86

- Eligible Virtualization Technology can be used to create Virtual Machines (VMs) or Containers
 - Each VM is assigned a quantity of virtual cores
 - Each virtual core is equal to one core for PVU & VPC licensing.
 - License for the maximum number of virtual cores in the VM(s) available to the product
 - the lower of the sum of virtual cores or full capacity of the server
- So, exactly the same as in previous example without SMT. SMT **does not change** the rules.

In above example for VM2 are assigned 2 virtual cores which in case of SMT 2 can happen to run on the same single physical core, but this **does not change** the counting rules and programs on it will be charged for 2 vCPU.

Cores to License	VM 1	VM2	Virtualization Capacity	Full capacity
MQ software	10	2	12	8
WAS software	2		2	8

ILMT Licensing Counting Rules

- ▶ the Virtualization Capacity licensing requirement is based on the maximum number of virtual cores in the VM(s) available to a product
 - ▶ License Rule: lower of the Virtualization Capacity or Full (Physical) Capacity available in the Server

License Rule for Qualified Mobility:

- ▶ Count the maximum processor core capacity for each program concurrently within an ILMT Region.

Requirements:

- ▶ Using ILMT 9.2.2 or later version: A single ILMT server can be used to manage each ILMT Region using IBM sub-capacity region functionality
- ▶ Using ILMT 9.2 or earlier version: A minimum of one ILMT server must be installed per ILMT Region where sub-capacity programs are installed

ILMT Regions:

- ▶ Region 1: North America & South America
- ▶ Region 2: Europe & Africa
- ▶ Region 3: Asia & Australia

Manual Calculation of Virtualization Capacity

- ▶ The licensing rules in the preceding pages reflect how ILMT will operate to calculate chargeable cores (e.g., PVU & VPC)
- ▶ If ILMT does not yet support an Eligible Virtualization Environment or you qualify for an exception to use ILMT, you will need to follow the Manual Calculation of Virtualization Capacity (see [Sub-Capacity](#) website for link)
- ▶ The Manual Calculation of Virtualization Capacity rules can be found on the following pages.
- ▶ For a list of Virtualization Technologies supported by ILMT visit the [Passport Advantage Sub-capacity \(Virtualization capacity\) licensing](#) website.

Manual Calculation of Virtualization Capacity

- Eligibility Criteria: Customers must use the IBM License Metric Tool, with the following exceptions
 - ▶ ILMT does not support the Eligible Virtualization Environment
 - ▶ Customer has fewer than 1000 employees and contractors - [Tool recommended](#)
 - ▶ Customer server Full Capacity licensing for a PVU product is less than 1000 PVUs (on servers with an Eligible Virtualization Environment) - [Tool recommended](#)
- Requirements: For the above exceptions, customers must manually manage, track and prepare Audit Reports
 - ▶ An Audit Report must be prepared at least once per quarter using the Worksheet for Manual Calculation of Virtualization Capacity.
 - ▶ Audit Reports must identify the following detail: Each Eligible Sub-Capacity Product deployed in each Eligible Virtualization Environment
 - ▶ In addition to the above detail, the report should provide a summary total of the required number of PVUs by and for each Eligible Sub-Capacity Product
 - ▶ Audit Reports must be prepared as frequently as is required to maintain a history of increases to Virtualization Capacity and Full Capacity
 - ▶ Each Audit Report must be **generated**, at least once per quarter

The above is only a summary. For detailed terms please see the [Passport Advantage Sub-capacity licensing information website](#)

Manual Calculation of Virtualization Capacity - Worksheet Example

Worksheet has 3 tabs

- Instructions & Information
- Single Server

[Web Link: Worksheet for Manual Calculation of Virtualization Capacity](#)

VIRTUALIZATION ENVIRONMENT - SINGLE SERVER		
- This worksheet is for one standalone server for one Software Product		
- Per the Instructions on the first tab, you may choose to leverage this approach or develop / leverage your own processes and reporting format so long as you capture all the mandatory information below		
- Enter data in input fields below (shaded area)		* Mandatory
Date of this Audit Report *	March 31, 2009	
Product Name *	IBM WEBSPHERE APPLICATION SERVER NETWORK DEPLOYMENT	
Program Identification Number (57xx-xxx)	5724-H88	
P/N Description	IBM WEBSPHERE APPLICATION SERVER NETWORK DEPLOYMENT PROCESSOR VALUE UNIT (PVU)	
Part Number	D55WJLL	
Server ID / Location	Server ID # F6015; Bldg 1, Room 1, Somers, NY	
Server Vendor / Brand	IBM System x	
Server Model	xxxxx	
Virtualization Technology used *	VMware ESX 3.5	
Processor Technology (Vendor, Brand,Type,Model#) * (A)	Intel Xeon Quad Core Model 35XX	
PVUs per core * (A)	70	
Total Activated Cores on Server * (C)	8	
Full Capacity PVUs for Server * (C)	560	
	DO NOT DELETE	ROW
VM, Partition ID * (whatever identifier used for any subdivision of a server such as LPAR #, IP address, hostname, etc.)	Cores (B) per Partition or VM *	User Comments
A	4	
B	4	
C	2	
D	2	
Sum of Virtual CoreS *	12	
PVUs per core *	70	
Virtualization Capacity PVUs by Product for Server *	840	
PVU Licenses required by Product for Server * (C)	560	
* Mandatory Field		
(A) PVU's required for each physical processor core are listed on the PVU table (see link below, including vendor/brand designations) http://www-01.ibm.com/software/lotus/passportadvantage/pvu_licensing_for_customers.html		
(B) For purposes of 'Manual Calculation' of Virtual Capacity, 1 virtual core (or CPU) is equivalent to 1 physical core. Enter values in whole cores.		
(C) Lower of Full Capacity or Virtualization Capacity		

Key Web Links

- PVU

- [PVU table and other information](#)

- Sub-capacity

- [Passport Advantage Sub-capacity licensing information](#)

- [Virtualization Capacity License Counting Rules](#)

- [Passport Advantage Agreement w/Sub-capacity licensing terms](#)