



IBM Passport Advantage Software

## Sub-capacity (Virtualization) License Counting Rules

### Microsoft Hyper-V Virtualization Environment

**NOTE:** Please use these rules along with the Sub-capacity licensing attachment

April 7, 2009

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# Summary of Virtualization Capacity Licensing Requirements

- Customers must:
  - ▶ Agree to the terms of the Sub-capacity Attachment, and follow Virtualization Capacity License Counting rules for their Eligible Virtualization Environment(s)
  - ▶ Use Eligible Sub-capacity Products
  - ▶ Use Eligible Virtualization Technologies
  - ▶ Use Eligible Processor Technologies
  - ▶ Use the IBM License Metric Tool (ILMT) and maintain report documentation
    - Certain ILMT use exceptions may apply

**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 and for the server it runs on.*

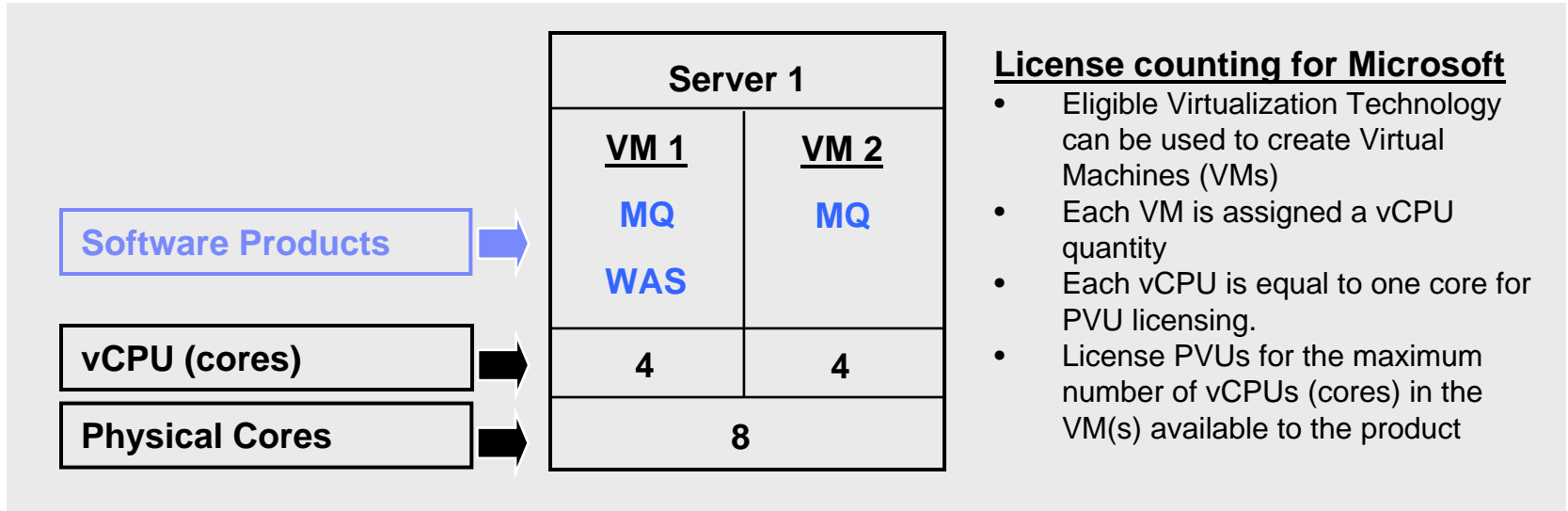


# Microsoft Hyper-V Server Virtualization Technology - Definitions

- **VM – Virtual Machine**
  - ▶ 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
- **vCPU – Virtual CPU**
  - ▶ Each VM is assigned a vCPU quantity
  - ▶ The processing capacity of a vCPU cannot be more than one physical processor core
  - ▶ Each vCPU is equal to one core for PVU licensing
- **Single Server**
  - ▶ A stand alone server that provides resources (i.e. processor core capacity) to the VMs
- **Cluster**
  - ▶ A group of servers, that are linked together using Microsoft Failover Clustering Feature to provide resources (i.e. processor core capacity) to the VMs
- **Quick Migration**
  - ▶ Allows the movement of a running VM from one physical server to another.

# License counting in a “Single Server”

1 Server	8 Virtual Cores	8 Physical Cores
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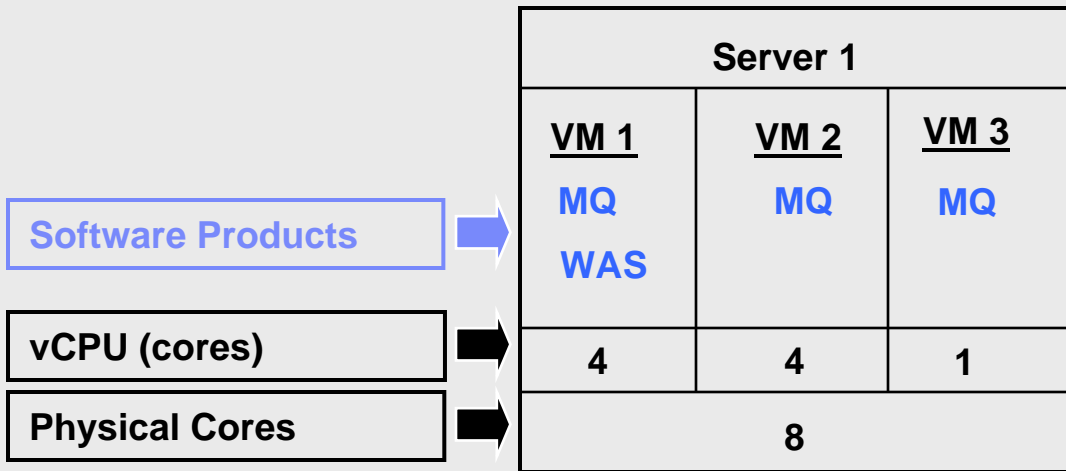
▶ For above example, the PVU Virtualization Capacity licensing requirement is based on the maximum number of vCPUs (cores) in the VM(s) available to a product

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

# License counting in a “Single Server”

**Virtualization Capacity greater than Full (Physical) Capacity**

1 Server	9 Virtual Cores	8 Physical Cores
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### License counting for Microsoft

- Eligible Virtualization Technology can be used to create Virtual Machines (VMs)
- Each VM is assigned a vCPU quantity
- Each vCPU is equal to one core for PVU licensing.
- License PVUs for the maximum number of vCPUs (cores) in the VM(s) available to the product
  - the lower of the sum of vCPU or full capacity of the server

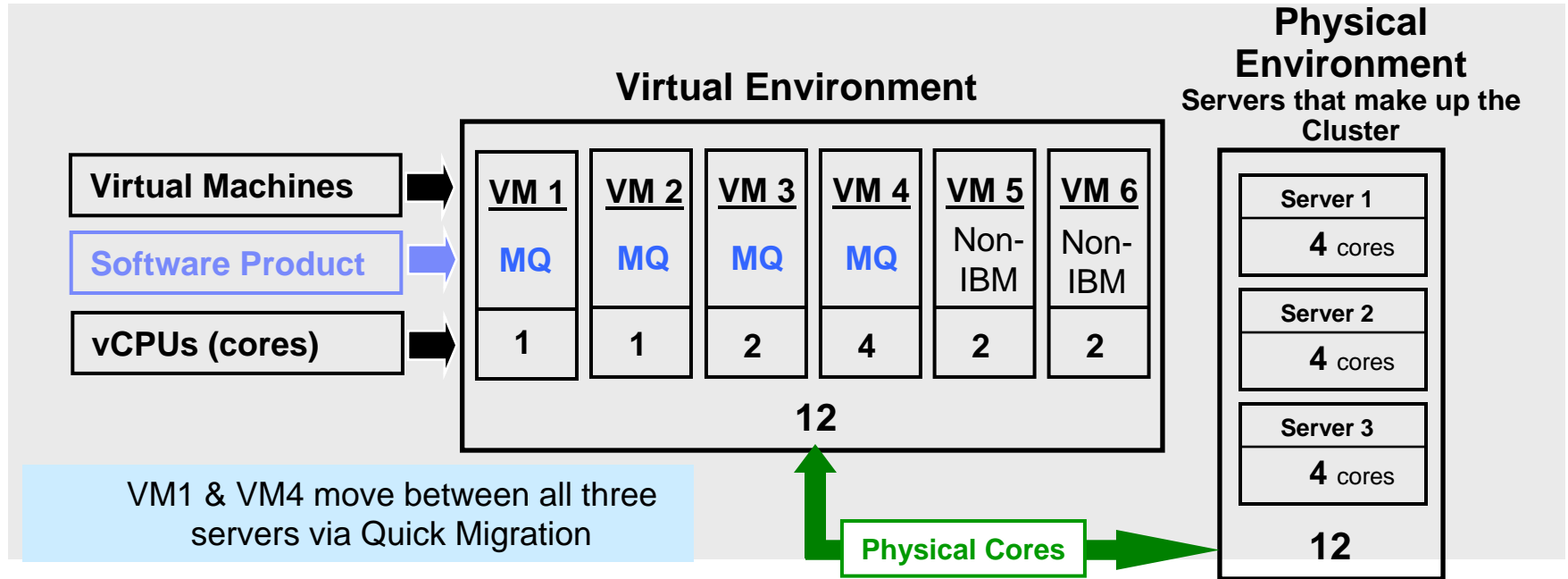
▶ For above example, the PVU Virtualization Capacity licensing requirement is based on the maximum number of vCPUs (cores) in the VM(s) available to a product

▶ 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 “Cluster”

3 Servers	12 Virtual Cores	12 Physical Cores
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- ▶ For above example, the PVU Virtualization Capacity licensing requirement is based on the maximum number of vCPUs (cores) in the VM(s) available to a product
  - ▶ License Rule: lower of the Virtualization Capacity or Full (physical) Capacity available in the Cluster (group of servers)

MQ software	VM1	VM2	VM3	VM4	VM5	VM6	Virtualization Capacity	Full Capacity
Virtual Cores	1	1	2	4	-	-	8	12

# Microsoft Virtualization Technology – Licensing Rules

- Single Server: (A stand alone server that provides resources (i.e. processor core capacity) to the VMs)
  - License PVUs for the maximum number of vCPUs (cores) in the VM(s) available to the Eligible Product
    - lower of the sum of vCPU or Full (physical) Capacity of the server
  
- Cluster: (A group of servers, that are linked together using Microsoft Failover Clustering feature to provide resources (i.e. processor core capacity) to the VMs)
  - License PVUs for the maximum number of vCPUs (cores) in the VM(s) available to the product
    - lower of the sum of vCPU or Full (physical) Capacity of the Cluster
  
- Virtualization Capacity licensing is available only if
  - all servers in the Cluster are located in the same physical site and
  - a VM (involved in Quick Migration) is not running in two servers simultaneously



- The licensing rules in the preceding pages reflect how ILMT will operate to calculate PVUs
- If ILMT does not yet support a Eligible Virtualization Environment, or you qualify for an exception to use ILMT, you will need to follow the Manual Calculation of Virtualization Capacity.
- The Manual Calculation of Virtualization Capacity rules can be found in the following pages
- To find out if a Eligible Virtualization Technology is supported by ILMT visit [Passport Advantage Sub-capacity licensing information](#)

## 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 and identify the following detail: Each Eligible Sub-Capacity Product deployed in each Eligible Virtualization Environment
  - ▶ An Eligible Virtualization Environment can be a Single Server or a Group of Servers (Server Cluster)
  - ▶ 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 **signed and date stamped**, at least once per quarter

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

# Manual Calculation of Virtualization Capacity – Rules

- Single Server: (A stand alone server that provides resources (i.e. processor core capacity) to the VMs)
  - License PVUs for the maximum number of vCPUs (cores) in the VM(s) available to the Eligible Product
    - lower of the sum of vCPU or Full (physical) Capacity of the server
  
- Cluster: (A group of servers, that are linked together using Microsoft Failover Clustering feature to provide resources (i.e. processor core capacity) to the VMs)
  - License PVUs for the maximum number of vCPUs (cores) in the VM(s) available to the product
    - lower of the sum of vCPU or Full (physical) Capacity of the Cluster
  
- Virtualization Capacity licensing is available only if
  - all servers in the Cluster are located in the same physical site and
  - a VM (involved in Quick Migration) is not running in two servers simultaneously

# Manual Calculation of Virtualization Capacity - Worksheet Example

## Worksheet has 3 tabs

- Instructions & Information
- Single Server
- Group of Servers "Cluster"

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

<b>VIRTUALIZATION ENVIRONMENT - SINGLE SERVER</b>		
- 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 of the information below		
- Enter data in input fields below (shaded area) <span style="float: right;">* Mandatory</span>		
Date of this Audit Report *	March 31, 2009	
Product Name *	IBM WEBSHERE APPLICATION SERVER NETWORK DEPLOYMENT	
Program Identification Number (57xx-xxx)	5724-H88	
P/N Description	IBM WEBSHERE 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#) * <b>(A)</b>	Intel Xeon Quad Core Model 35XX	
PVUs per core * <b>(A)</b>	70	
Total Activated Cores on Server * <b>(C)</b>	8	
Full Capacity PVUs for Server * <b>(C)</b>	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>(B)</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 * <b>(C)</b>	<b>560</b>	
* Mandatory Field		
<b>(A)</b> PVU's required for each physical processor core are listed on the PVU table (see link below, including vendor/brand designations) <a href="http://www-01.ibm.com/software/lotus/passportadvantage/pvu_licensing_for_customers.html">http://www-01.ibm.com/software/lotus/passportadvantage/pvu_licensing_for_customers.html</a>		
<b>(B)</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.		
<b>(C)</b> 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](#)

- [Sub-capacity licensing attachment](#)