Sub-capacity (Virtualization) License Counting Rules

x86 Virtualization Environment

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

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IBM Corporation

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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 (ILMT) and maintain report documentation*
      - *Tivoli Asset Discovery for Distributed (TADd) or IBM BixFix Inventor may be used in lieu of IBM License Metric Tool*
      - *Certain ILMT / TADd / BigFix use exceptions may apply*
  - 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 and for the server it runs on.*
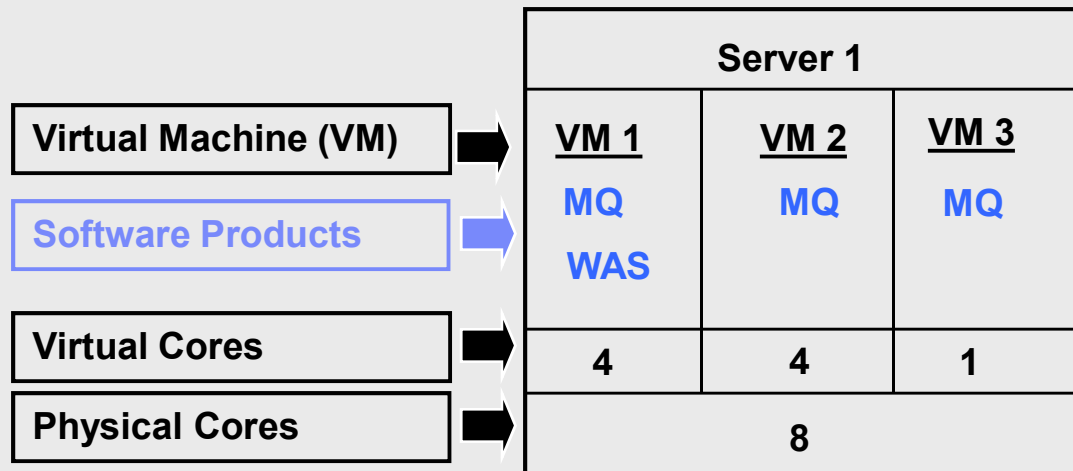
x86 Virtualization Technology - Definitions

- **VM – Virtual Machine (also Containers)**
  - 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 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

License counting in a Server

1 Server	9 Virtual Cores	8 Physical Cores

Virtual Machine (VM) ➡

Software Products ➡

Virtual Cores ➡

Physical Cores ➡

Server 1		
VM 1	**VM 2**	**VM 3**
MQ	MQ	MQ
WAS		
4	4	1
8		

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 licensing.
- License PVUs 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

▶ For above example, the PVU 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

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 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

- <u>Eligibility Criteria</u>: 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

- <u>Requirements:</u> 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

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 Sub-capacity licensing terms