



IBM Passport Advantage Software

Sub-capacity (Virtualization) License Counting Rules

IBM i Workload Groups

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

February 7, 2012

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Summary of Virtualization Capacity Licensing Requirements

- **Customers must:**
 - ▶ Adhere to the 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) may be used in lieu of IBM License Metric Tool*
 - *Certain ILMT / TADd 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 [IBM Passport Advantage Agreement](#) 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.*

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

- **Virtual Core (also vCPU)**
 - ▶ Each VM is assigned a virtual core quantity
 - ▶ Each virtual core is equal to one core for PVU licensing
 - ▶ The processing capacity of a virtual core cannot be more than one physical processor core

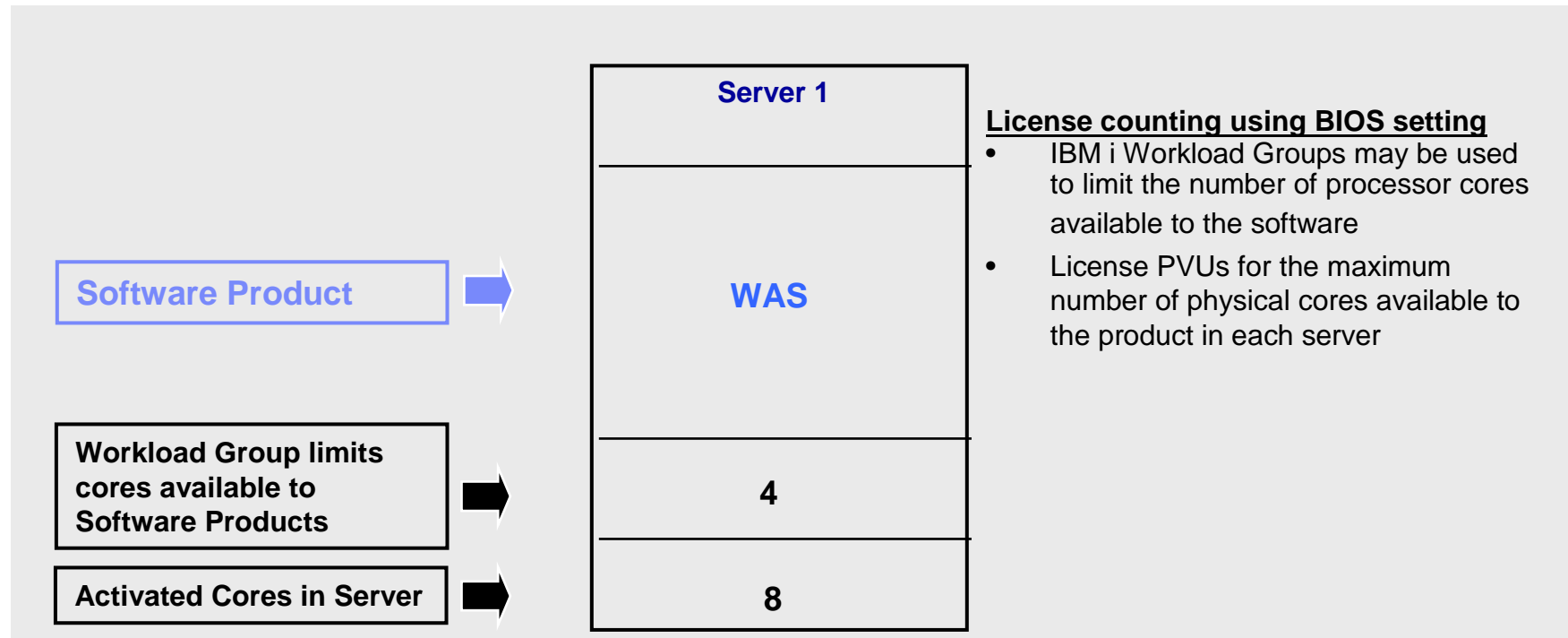
- **Server**
 - ▶ A machine that provides resources (i.e. processor core capacity) to the VMs
 - ▶ Includes single standalone servers or servers within clusters or resource pools

- **Workload Group**
 - ▶ A workload group defines the number of processor cores that can be used concurrently by jobs and threads that are associated with the group.

Licensing Rules

- Sub-capacity eligibility for IBM i Workload Groups is limited to the latest version of the Eligible Sub-capacity Product as of February 7, 2012 running on Power 7 processors.
- License PVUs for the maximum number of virtual cores in the VM(s) available to the Eligible Product at any point in time
- License PVUs for the lower of the sum of virtual cores for each VM for a product or the processor capacity of the workload group

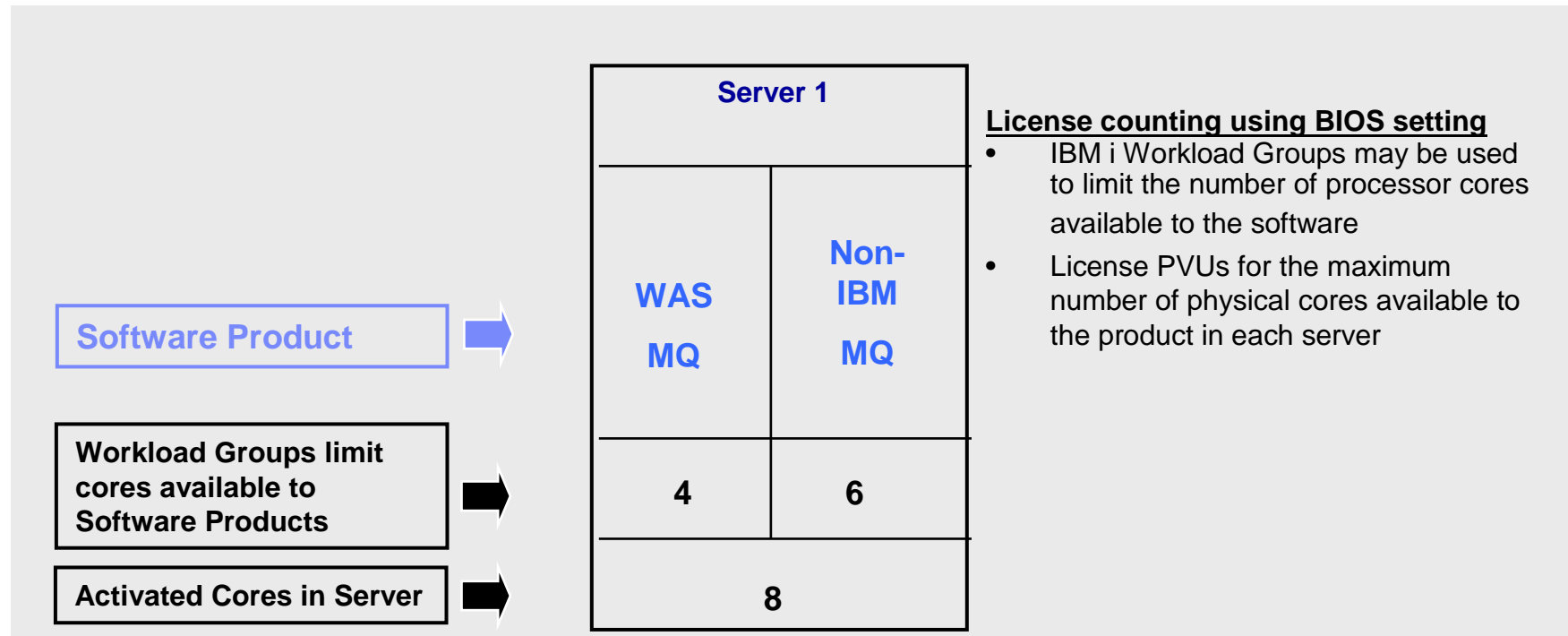
Example 1: License counting using Workload Groups to limit processor core capacity available



▶ For above example, the PVU Virtualization Capacity licensing requirement is based on the maximum number of physical cores available to a product in each server

Cores to License	Workload Group	Virtualization Capacity	Full Capacity
WAS	4	4	8

Example 2: License counting using Workload Groups to limit processor core capacity available



▶ For above example, the PVU Virtualization Capacity licensing requirement is based on the maximum number of physical cores available to a product in each server

Cores to License	Workload Group 1	Workload Group 2	Virtualization Capacity	Full Capacity
WAS	4	-	4	8
MQ	4	6	10	8

- 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

The PVU Virtualization Capacity licensing requirement is based on the maximum number of physical cores available to a product in each server

Manual Calculation of Virtualization Capacity - Worksheet Example

**Worksheet has 3 tabs;
use the following tabs**

- Instructions & Information
- Single Server
- Group of Servers “Cluster”

[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 of the information below		
- Enter data in input fields below (shaded area)		* Mandatory
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#) * (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		
▶ \ Instructions + Information \ Single Server / Group of Servers "Cluster" /		

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](#)

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

BACKUP

Examples

- **Workload Group** – A workload group defines the number of processor cores that can be used concurrently by jobs and threads that are associated with the group.
 - ▶ An IBM i OS may allow users to limit the number of processor cores available to the software by issuing OS commands
 - ▶ Users should refer to the users manual of their IBM i OS for the instructions and support of such commands
 - ▶ Examples provided as a reference only
- 1. **Add Workload Group**
 - **Example 1: Adding a Group Capable of Running on One Processor**
 - `ADDWLCGRP WLCGRP(MYGROUP) PRCLMT(1)`
 - This command adds a workload capping group named MYGROUP with a processor limit of 1. Jobs or threads associated with this workload capping group will be limited to run on a single processor even if more processors have been activated.
 - **Example 2: Adding a Group Capable of Running on Multiple Processors**
 - `ADDWLCGRP WLCGRP(FASTGROUP) PRCLMT(16)`
 - This command adds a workload capping group named FASTGROUP with a processor limit of 16. Jobs or threads associated with this workload capping group will be able to run on up to 16 processors concurrently.

Examples cont.

2. Add Product Information to the Group

- **Example 1: Add a Product Entry for Single Release and Feature**
 - ADDWLCPRDE WLCGRP(MYGROUP) PRDID(1MYPROD) LICTRM(V1R2M0) FEATURE(5001)
 - This command adds a product entry to workload capping group MYGROUP for the software product with identifier 1MYPROD. The license term in the product entry is restricted to release V1R2M0. The only product feature in the product entry is 5001. Product 1MYPROD does not have to be installed when this command is run.
- **Example 2: Adding a Generic Product Entry**
 - ADDWLCPRDE WLCGRP(GROUP2) PRDID(1234ABC) LICTRM(*ALLINS) FEATURE(*ALLINS)
 - This command adds one or more product entries to workload capping group GROUP2. At least the *BASE option of product 1234ABC must be installed when this command is run. Product entries will be added for each installed license term and feature.

3. Create Data Area

- **Example 1: Creating a Data Area with a Value of Zero**
 - CRTDTAARA DTAARA(TOTSALES) TYPE(*DEC) LEN(15 2) VALUE(0) TEXT('Total sales accumulator')
 - This command creates a data area named TOTSALES and stores it in the current library specified for the thread. TOTSALES has the following data attributes: it is a 15-position numeric data area with two decimal positions and with an initial value of 0.
- **Example 2: Creating a Data Area Initialized to Blanks**
 - CRTDTAARA DTAARA(CUSTOMER) TYPE(*CHAR) LEN(148) TEXT('Customer name area')
 - This command creates the data area named CUSTOMER. It can contain as many as 148 characters in the character string. Because no initial value is specified, the data area is initialized to blanks.
- **Example 3: Creating a DDM Data Area to Access a Data Area at Another System**
 - CRTDTAARA DTAARA(SOURCE/SALES) TYPE(*DDM) RMTDTAARA(REMOTE/SALES)
RMTLOCNAME(NEWYORK)
 - This command creates a DDM data area named SALES, and stores it in the SOURCE library on the source system. This DDM data area uses the remote location named NEWYORK to access a remote data area named SALES stored in the REMOTE library on a system in New York.

Examples cont.

4. Display Data Area

- **Example 1: Displaying Output in Hexadecimal and Character Format**
 - DSPDTAARA DTAARA(HEXDATA) OUTPUT(*) OUTFMT(*HEX)
 - The value and attributes of data area HEXDATA are displayed if the user has proper authority. Both character and hexadecimal representations are shown.
- **Example 2: Displaying Output in Character Format**
 - DSPDTAARA DTAARA(TIME) OUTPUT(*)
 - The value and attributes of the data area TIME are displayed if the user has the proper authority. The library list is used to find the data area.

5. Start Subsystem

- **Example 1: Starting the Batch Subsystem**
 - STRSBS SBSB(QBATCH)
 - This command starts the batch subsystem named QBATCH.
- **Example 2: Starting a User Subsystem**
 - STRSBS SBSB(QGPL/TELLER)
 - This command starts the subsystem that is associated with the TELLER subsystem description in the QGPL library. The subsystem name is TELLER.