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 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.

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x86 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

- **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

- **Resource Pool**
  - A group of servers, with resource pool master, that provide resources (i.e. processor core capacity) to the VMs.
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

License counting for x86
- Eligible Virtualization Technology can be used to create Virtual Machines (VMs)
- 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

<table>
<thead>
<tr>
<th>Cores to License</th>
<th>VM 1</th>
<th>VM 2</th>
<th>VM3</th>
<th>Virtualization Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>MQ software</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>WAS software</td>
<td>4</td>
<td>-</td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

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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

- **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

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

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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)

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of this Audit Report</td>
<td>March 31, 2009</td>
</tr>
<tr>
<td>Product Name</td>
<td>IBM WEBSPHERE APPLICATION SERVER NETWORK DEPLOYMENT</td>
</tr>
<tr>
<td>Program Identification Number (57xx-xxx)</td>
<td>5724-H88</td>
</tr>
<tr>
<td>P/N Description</td>
<td>IBM WEBSPHERE APPLICATION SERVER NETWORK DEPLOYMENT PROCESSOR VALUE UNIT (PVU)</td>
</tr>
<tr>
<td>Part Number</td>
<td>D55WJLL</td>
</tr>
<tr>
<td>Server ID / Location</td>
<td>F6015: Bldg 1, Room 1, Somers, NY</td>
</tr>
<tr>
<td>Server Vendor / Brand</td>
<td>IBM System x</td>
</tr>
<tr>
<td>Server Model</td>
<td>xxsxxx</td>
</tr>
<tr>
<td>Virtualization Technology used</td>
<td>VMware ESX 3.5</td>
</tr>
<tr>
<td>Processor Technology (Vendor, Brand, Type, Model#)</td>
<td>Intel Xeon Quad Core Model 35XX</td>
</tr>
<tr>
<td>PVUs per core <em>(A)</em></td>
<td>70</td>
</tr>
<tr>
<td>Total Activated Cores on Server <em>(C)</em></td>
<td>8</td>
</tr>
<tr>
<td>Full Capacity PVUs for Server <em>(C)</em></td>
<td>560</td>
</tr>
</tbody>
</table>

#### DO NOT DELETE ROW

<table>
<thead>
<tr>
<th>VM, Partition ID *(whatever identifier used for any subdivision of a server such as LPAR #, IP address, hostname, etc.)</th>
<th>Cores <em>(B)</em> per VM*</th>
<th>User Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

**Sum of Virtual CoreS *(A)**: 12

**PVUs per core *(A)**: 70

**PVU Licenses required by Product for Server *(C)**: 560

**PVU Licenses 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](http://www-01.ibm.com/software/lotus/passportadvantage/pvu_licensing_for_customers.html)

**For purposes of ‘Manual Calculation’ of Virtual Capacity, 1 virtual core (or CPU) is equivalent to 1 physical core. Enter values in whole cores.**

**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