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**IBM Z**  
**Introduction**  
**July 2017**

# **IBM z/VM Sub-capacity Pricing**

Frequently Asked Questions

Worldwide  
July 2017



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## What is IBM Z® and IBM LinuxONE™ virtualization technology?

IBM Z and IBM LinuxONE virtualization technology allows customers to create virtual processors, communications, memory, I/O, and networking resources, thus helping to reduce the overhead of planning, purchasing and installing new hardware to consolidate and support new workloads. The virtualization technology for IBM Z and LinuxONE platforms has multiple layers, which are considered when the IBM Z and LinuxONE servers are designed. IBM Z and LinuxONE virtualization is not an afterthought; it is designed in from the ground up.

## How is IBM z/VM® licensed?

IBM z/VM is licensed per Value Unit (VU). VU entitlements are based on the number of units of a specific designated measure used or managed by the program. The designated measure for the z/VM VU calculation is Engines. An Engine is a central processor (CP), or a specialty processor called an Integrated Facility for Linux (IFL), configured for use on an IBM Z server.

When the program is under Full Capacity terms the license requirements are:

- If the program is used on any CP Engine on an IBM Z server, client must acquire entitlements sufficient to cover all CP Engines on that IBM Z server.
- If the program is used on any IFL Engine on an IBM Z server, client must acquire entitlements sufficient to cover all IFL Engines on that IBM Z server.

Client must acquire sufficient VU entitlements as specified in the Value Unit Exhibit 021 (VEU021) provided below for the total required number of CP Engines and IFL Engines.

### *Value Unit Exhibit 021 (VUE021)*

<b>Cumulative Engine Range</b>	<b>Value Units per Engine</b>
1 - 3 engines	10 VUs/engine
4 - 6 engines	9 VUs/engine
7 - 9 engines	8 VUs/engine
10 - 12 engines	7 VUs/engine
13 - 16 engines	6 VUs/engine
17 - 20 engines	5 VUs/engine
21 - 25 engines	4 VUs/engine
26+ engines	3 VUs/engine

## Is sub-capacity pricing available on z/VM?

On July 17, 2017, IBM announced Sub-capacity pricing for the z/VM V6 operating environment for clients running z/VM Version 6 Release 3 or higher. Software pricing at less than full machine capacity can provide more flexibility and improved cost of computing as a client manages the volatility and growth of new workloads.

### **Does a client require a PTF/APAR for z/VM 6.4?**

No. However, z/VM V6.3 requires the PTF for APAR VM65419, available on RSU 1501 or newer.

### **Is IBM z/VM sub-capacity pricing available for LinuxONE?**

z/VM sub-capacity pricing is available for IBM Z and LinuxONE, as described in the announcement material.

### **What can clients do with the implementation of sub-capacity pricing for select z/VM programs?**

In essence, z/VM sub-capacity pricing enables pricing for z/VM itself and select z/VM programs based on the number of engines in the logical partition where z/VM is running.

- Pay for z/VM programs based on defined workload requirements and not necessarily the full engine capacity of the machine.
- Add hardware capacity for new workloads, capabilities, and functions, e.g. KVM, and not have IBM software pricing for z/VM programs automatically increase for existing workloads, providing no additional software capacity is required at the time.
- Potentially benefit from improved price performance as workloads grow.

### **What are the licensing considerations when I add more engines to an existing server?**

Whether or not any additional license entitlement will be required when engines are added depends upon the specific configuration.

- If the z/VM LPARs on the server are configured with more engines in aggregate than are on the server, adding more Engines that can be used by z/VM will require more z/VM license entitlement.
- If the z/VM LPARs on the server are configured with the same or fewer engines in aggregate than are on the server, adding more Engines that could be used by z/VM will not require more z/VM license entitlement unless and until the z/VM LPAR configuration(s) are adjusted to take advantage of the new engines.

You must run and review the ILMT report monthly to determine if any additional license entitlement is required.

### **When can a client start to take advantage of z/VM sub-capacity pricing?**

Clients can take advantage of z/VM sub-capacity pricing as soon as the pre-requisites are satisfied. When you install incremental IFLs, you should refer to the ILMT report and the LPAR definitions to determine how much additional z/VM capacity is required. The ILMT report will report on the required capacity, and you can confirm that you have adequate z/VM and other program entitlement or whether you need to order additional entitlement.

### **What are the pre-requisites for z/VM sub-capacity requirements?**

Sub-capacity terms and conditions for z/VM are available only for eligible IBM Z programs and only on IBM Z servers that have implemented z/VM sub-capacity pricing.

Prerequisites:

- Run z/VM Version 6 Release 3 (5741-A07) or higher on a supported IBM Z or LinuxONE server. z/VM V6.3 requires the PTF for APAR VM65419, which is available on RSU 1501 or later.
- Install and configure the most recent version of the IBM License Metric Tool (ILMT).
- Install and configure the z/VM Hypervisor Proxy in each logical partition (LPAR) running z/VM.
- Agreement to the terms of the IBM Attachment for z/VM Sub-Capacity Pricing (Z126-7731)
- Run ILMT to prepare ILMT Reports on a monthly basis, and keep these reports on file for presentation to IBM upon request.
- Each month, determine from the ILMT Report if any additional program license entitlements are required, and if so promptly place an order for that additional required license entitlement.

ILMT and instructions for its ordering and installation and use are available from <http://ibm.com/software/passportadvantage/ibmlicensemetrictool.html>

The z/VM Hypervisor Proxy and instructions for its installation and use are available from <http://ibm.com/systems/z/swprice/subcap/zVM.html>

z/VM supported IBM Z and LinuxONE server information is available from "Appendix A. IBM servers supported by z/VM" in the "z/VM General Information" publication available from <http://www.vm.ibm.com/techinfo>

### **Why is the IBM License Metric Tool required?**

The IBM License Metric Tool (ILMT) is used to determine z/VM sub-capacity program licensing requirements, and is the same tool used to support sub-capacity pricing for Linux® on IBM z Systems® middleware programs from IBM.

### **How long do I have to keep the ILMT reports for a possible audit?**

ILMT reports must be retained for at least 2 years. For more information:

<https://www-01.ibm.com/software/passportadvantage/ibmlicensemetrictool.html>

### **How soon does a client have to react to changes in my entitlements to be in audit conformance?**

Each month, determine from the ILMT Report if any additional program license entitlements are required, and if so promptly place an order for that additional required license entitlement.

### **What is the z/VM Hypervisor Proxy? Where can I obtain it?**

The z/VM Hypervisor Proxy is a separate Linux guest running on a z/VM LPAR that you want to qualify for z/VM sub-capacity pricing. This Linux guest must be enabled for ILMT by installing and running the Proxy files provided from the z/VM section of the IBM Z Software Pricing website (<http://ibm.com/systems/z/swprice/subcap/zVM.html>) and installing the ILMT agent. IBM provides only the files to enable the ILMT agent to work. The z/VM Hypervisor Proxy is only supported on supported Linux distributions from SUSE and Red Hat.

The z/VM Hypervisor Proxy and instructions for its installation and use are available from <http://ibm.com/systems/z/swprice/subcap/zVM.html>

For more information on ILMT, please visit:

[https://support.podc.sl.edst.ibm.com/support/home/product/S950336I97682E07/IBM\\_License\\_Metric\\_Tool](https://support.podc.sl.edst.ibm.com/support/home/product/S950336I97682E07/IBM_License_Metric_Tool)

### **What are the requirements needed to install and configure the z/VM Hypervisor Proxy?**

Besides the requirements for a Linux on IBM z Systems guest and enablement for ILMT, it is important that the z/VM directory entry for the z/VM Hypervisor Proxy guest allows the maximum number of virtual CPUs to be defined, currently 64.

### **Why does the z/VM Hypervisor Proxy guest need 64 virtual CPUs?**

The proxy maps the physical cores defined to the z/VM LPAR. It adapts the number of virtual CPUs automatically to match the number of physical cores defined in the z/VM LPAR.

### **How is the z/VM Hypervisor Proxy serviced?**

Problems with the z/VM Hypervisor Proxy may be reported by sending e-mail to [IBM Z Hypervisor Proxy Support](#) and including any logs or other information relevant to describing the problem.

Updated versions of the proxy will be delivered via its Web site:

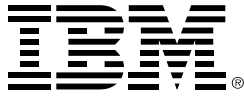
<http://ibm.com/systems/z/swprice/subcap/zVM.html>

### **Will this z/VM Hypervisor Proxy guest impact a client's z/VM workload?**

No, the proxy and ILMT agent are the only processes that run in the guest and are active only infrequently.

### **Can the z/VM Hypervisor Proxy be deployed in a normal Linux guest with other workload?**

This configuration is not a supported environment.



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