

Processor Value Unit Licensing Structure Overview

IBM's Processor Value Unit (PVU) structure enables relative simplicity in software licensing in response to rapidly evolving hardware technologies. The two primary technology changes which created the impetus for PVU licensing were the widespread adoption of multi-core chip technology (multiple processor cores on a single silicon chip) and the evolution and increasingly widespread adoption of virtualization technologies. IBM's PVU structure provides a foundation for middleware licensing which can adapt to these advances more easily. In addition, PVU licensing provides customers with increased licensing flexibility and granularity, and reduces the impact of software licensing on systems design decisions, including:

- Creates a licensing structure that strikes a balance between a precise measure of value and licensing simplicity
- Supports flexible and granular licensing where a customer can run a product on as few or as many processor cores as they require for any particular workload
- Supports the adoption of virtualization technologies by enabling sub-capacity licensing at the processor core

- Continues to deliver software price performance improvements when workloads are migrated to newer processor technologies
- Continues license transferability across distributed systems.

Processor Value Unit Defined

A Processor Value Unit is simply a unit of measure used to license middleware on processor cores. A software licensing metric, such as PVUs, represents a surrogate for the value a customer can receive when running a particular workload. IBM introduced PVUs in order to better reflect the relative value a customer can receive when it runs a workload on any particular processor core technology, over time requiring fewer PVUs on slower versus faster processor cores.

Licensing to the processor core has been used as a key metric for many years. This began when most systems were single application servers, and it was generally accepted that the number of processor cores used to drive workload was a fair representation of business value received.

In today's environment where different processor core technology implementations can have significantly different workload performance characteristics, it has become important to reflect these differences in software licensing. For instance, a customer would

need more relatively slow processor cores to run a particular workload than they would using faster processor cores. The price a customer pays should fairly represent the potential value they can receive from those systems, which comes from the amount of useful work the processor core can perform.

Processor Value Unit Structure

IBM middleware which is licensed to the processor core is licensed in PVUs. The PVU structure currently has a few broad tiers or levels and all existing processor families have been assigned to one of those tiers. For each product, customers will need to acquire the appropriate number of PVUs for the level or tier of the specific processor on which the software is deployed.

PVU Table Excerpt

Processor family	PVUs <u>per</u> processor core
POWER6™	120
Single core (all platforms) and most RISC (IBM, HP, Sun) dual-core	100
X86 dual- and quad-core, Sun T2 octi-core	50
Sun T1 octi-core	30

The most current PVU table with a complete list of supported processor families can be found at the [PVU website](#).¹

Customers can continue to use previously acquired per processor license entitlements on an “as if converted” basis using a ratio of 1 per processor license equals 100 PVU licenses.

Key Web Links

- PVU details, including complete PVU table, is available at the [PVU website](#).¹
- Sub-capacity details, including terms and conditions, can be found at the [sub-capacity website](#).²

To access these websites, go to www.ibm.com/software/passportadvantage, select “Find out more. . .” on the upper right, then select “Licensing” on the left navigation bar.

Important Definitions

In the rapidly changing world of technology, old words may take on new meanings. Following are four key definitions that are important to understand:

- **Core** - A functional unit within a computing device that interprets and executes software instructions

- **Chip** – electronic circuitry, containing one or more cores, on a silicon wafer
- **Socket** – the mount that secures a chip(s) to a motherboard
- **Processor** – Hardware and software vendors often define this differently. For purposes of software licensing, IBM continues to define a processor as the core, which we have done consistently since the first multi-core chip was introduced in 2001. For example, a dual-core chip has two processor cores and a quad-core chip has four processor cores.

What Is A Processor?

Many middleware vendors, including IBM, continue to define a processor as a core because this is where the software actually executes. Some hardware vendors, though, define the processor as a chip or socket. This divergence in definition really began with the introduction of x86 dual-core chips in 2005.

With the power available in today’s processor cores, customers increasingly want to partition their systems so that an application runs in a subset of the processor cores in a server, and have the licensing structure support this. IBM’s sub-capacity licensing program allows customers to take advantage of more granular licensing in their virtualized

environments. This is why licensing to the processor core, rather than the chip or socket, provides the most value for customers.

For an example, let’s look at a customer who has a server with two quad-core chips (8 processor cores) and only wants to run a program, such as DB2, on one core. If per chip licensing were used, they would effectively have to license for the four processor cores on that chip, not just the one processor core on which the middleware is actually running. Leveraging sub-capacity licensing, however, they would only require the program to be licensed on one processor core. Having the flexibility to license to just the active processor cores will become increasingly important as the number of cores per chip continues to increase in the coming years.

¹ http://www-306.ibm.com/software/lotus/passportadvantage/pvu_licensing_for_customers.html

² <http://www-306.ibm.com/software/lotus/passportadvantage/subcaplicensing.html>