

# Processor Value Units (PVUs)

A Processor Value Unit (PVU) is a unit of measure used to differentiate licensing of software on distributed processor technologies (defined by Processor Vendor, Brand, Type and Model Number).

- ↓ Full versus Sub-capacity
- ↓ Processor Value Units (PVUs)
- ↓ PVU tables

## Full versus Sub-capacity

Licensees can deploy Eligible Programs using either Full Capacity licensing or Virtualization Capacity (Sub-Capacity) licensing.

- If using Full Capacity licensing, the Licensee must obtain Processor Value Unit (PVU) entitlements sufficient to cover all activated processor cores in the physical hardware environment made available to or managed by the Program, except for those servers from which the Program has been permanently removed. An Activated processor core is a processor core that is available for use in a physical or virtual server, regardless of whether the capacity of the processor core can be or is limited through virtualization technologies, operating system commands, BIOS settings, or similar restrictions.
- If using Sub-Capacity licensing, according to the [Passport Advantage Sub-Capacity Licensing Terms](#) the Licensee must obtain entitlements sufficient to cover all activated processor cores made available to or managed by the Program, as defined according to the [Virtualization Capacity License Counting Rules](#).

[↑ Back to top](#)

## Processor Value Units (PVUs)

A Processor Value Unit (PVU) is a unit of measure by which the Program can be licensed. The number of PVU entitlements required is based on the processor technology (defined within the PVU Tables below by Processor Vendor, Brand, Type and Model Number) and by the number of processors made available to the Program. IBM defines a processor, for the purpose of PVU-based licensing, to be each processor core on a chip (socket). A dual-core processor chip, for example, has two processor cores.

[↑ Back to top](#)

# PVU tables

The tables below list existing generally available processor technologies only, as of the published date. PVU requirements for future processor technologies may differ. For help identifying your Processor Model Number, check the [Processor Model Number Discovery Guide](#) (US).

— PVU Table per Core (section 1 of 2 - RISC and System z)

Processor Vendor	Processor Name	Server model numbers	Maximum number of sockets per server	Proc. Model Number	PVUs per Core
	POWER IFL, Any POWER system core running Linux	All	All	All	70
	POWER10	E1080	>4	All	120
		E1050	All	All	100
		S1022, L1022, S1022s, S1014, S1024, L1024	All	All	70
		E980	>4	All	120

	IBM	POWER9	E950	4	All	100
			H922, H924, S914, S922, S924	2	All	70
		POWER8	870, 880	> 4	All	120
			E850	4	All	100
			S812, S814, S822, S824	2	All	70
		POWER7 <sup>4</sup>	770, 780, 795	> 4	All	120
			750, 755, 760, 775, PS704, p460, Power ESE	4	All	100
			PS700- 703, 710-740, p260, p270	2	All	70
			550. 560.	All	All	120

			570, 575, 595			
		POWER6	520, JS12, JS22, JS23, JS43	All	All	80
		POWER5, POWER4	All	All	All	100
		POWER5 QCM	All	All	All	50
		z16 A01, z15 T01, z14 M01-M05 & L01-L05, z13, zEC12, z196, z10 EC, Linux One I-IV all Emperor Models <sup>1,5</sup>	All	All	All	120
		z16 A02, z15 T02, z14 ZR1 / LR1, z13s, zBC12, z114, z10 BC, System z9, z990, S/390, Linux One I-IV all Rockhopper models including Express <sup>1,2,6</sup>	All	All	All	100
		PowerPC 970	All	All	All	50
		PowerXCell™.	All	All	All	30

	Cell/B.E.™ 8i3'				
<b>Any</b>	All others	All	All	All	100
<b>Processor Technologies</b>					
<b>Processor Brand</b>					
<b>Processor Vendor</b>	<b>Processor Name</b>	<b>Server model numbers</b>	<b>Maximum number of sockets per server</b>	<b>Proc. model numbers</b>	<b>PVUs per core</b>
<b>HP/Intel®</b>	Itanium®	All	All	All	100
	PA-RISC	All	All	All	100
	SPARC64 VI, VII, X, X+. XII	All	All	All	100
	UltraSPARC IV	All	All	All	100
	SPARC M5 / M6	All	All	All	120
	SPARC M7	T7-4	4	All	100
		T5-8, M7-8, M7-16, M8-8	>4	All	120

<b>Oracle / Sun / Fujitsu</b>	SPARC T4/T5/M7/S7/M8	T4-4, T5-4, T7-4, T8-4	4	All	100
		T4-1, T4-1B, T4-2, T5-1B, T5-2, T7-1, T7-2, S7-2, S7-2L, T8-1, T8-2	2	All	70
	SPARC T3	All	All	All	70
	UltraSPARC T2	All	All	All	50
	UltraSPARC T1	All	All	All	30
<b>Any</b>	All others	All	All	All	100

*\*Requirements as of publish date: 05 July 2023*

#### Notes:

1. Each Integrated Facility for Linux (IFL) or Central Processor (CP) engine is equivalent to 1 core.
2. Refers to System z9, eServer zSeries, or System/390 servers.
3. Entitlements required for Power Processor Element (PPE) cores only.

- 4. The PVU requirement for the POWER7/7+ processor technology is dependent on the maximum possible number of sockets on the server. NOTE: Power 7 Refers to Power 7/7+ 5
- 5. z196 refers to IBM zEnterprise 196, zEC12 refers to IBM zEnterprise EC12.
- 6. z114 refers to IBM zEnterprise 114.

- Cell Broadband Engine is a trademark of Sony Computer Entertainment, Inc. in the United States, other countries, or both and is used under license therefrom.
- Intel, Intel logo, Intel Inside, Intel Inside logo, Intel Centrino, Intel Centrino logo, Celeron, Intel Xeon, Intel SpeedStep, Itanium, and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

— PVU Table per Core (section 2 of 2 - x86)

Processor Vendor	Processor Name	Proc. model number <sup>1</sup>	Maximum sockets per server	PVUs per Core
Intel®	Xeon® <sup>2</sup>	All post-Nehalem (launched 11/2008) Xeon Processor Models including Xeon 6 (6th Gen) & Xeon Scalable (5th Gen)	2 4 >4	70 100 120
	Xeon®	All pre-Nehalem Xeon Processor Models 3000 to 3399 5000 to 5499 7000 to 7499	All	50



	Core®3	All i3, i5, i7,i9	All	70
AMD	Opteron	All	All	50
AMD	EPYC	All	All	70
Any	All others	All	All	100

*\*Requirements as of publish date: 08 May 2024*

Notes:

1. IBM offers Software for both Intel and AMD processors. Intel refers to its processors by "Processor Number" and AMD by "Model Number". The processor model can be preceded by a letter. For example, 'x5365 refers to '5365', which is included in the table within the '5000 to 5499' range.
2. The PVU requirement for the Intel processor technology indicated is dependent on the maximum number of sockets on the server. If sockets on two or more servers are connected to form a Symmetric Multiprocessing (SMP) Server, the maximum number of sockets per server increases. See single server examples and two or more servers example below.

**Single server examples:**

- 2 socket server with 6 cores per socket requires 840 PVUs (70 per core x 12 cores )4 socket server with 6 cores per socket requires 2400 PVUs ( 100 per core x 24 cores )
- 8 socket server with 6 cores per socket requires 5760 PVUs ( 120 per core x 48 cores)

**Two or more servers with connected sockets example:**

- When sockets on a 2 socket server with 6 cores per socket are connected to sockets on another 2 socket server with 6 cores per socket, this becomes an SMP server with a maximum of 4 sockets per server and 24 cores, and requires 2400 PVUs (100 per core x 24 cores).
3. The newest generation of Intel Core processors is not covered by this entry, therefore, excludes processors that use Intel Performance Hybrid Architecture containing two different core types

### PVU Calculator

Use the [Processor Value Unit calculator](#) to determine required number of pVUs based on your environment.

### PVU FAQs

See answers to some of the most [frequently asked PVU questions](#).

### PVU Licensing for IBM Netezza and PureData System Appliances

Learn how to [calculate the required number of PVU entitlements](#) for Programs that run on or manage a Netezza or PureData System appliance.