

# Managing IBM License Complexity

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Many organizations use IBM software products to manage critical aspects of their business. In mid-sized to enterprise organizations, IBM products often represent a significant portion of their overall software estate where licensing needs to be carefully managed to optimize spend. As one of the world's largest software companies, IBM provides thousands of products in its portfolio and uses a variety of license models, contract terms and conditions. These license models can be very complex, causing frequent confusion for organizations trying to grasp the concepts while maintaining license compliance. Even within IBM, there are experts who understand their software licensing policies, while the general population does not. In fact, the IBM sales team uses automated calculators to determine software licensing as they put deals together for their customers.

To understand IBM licensing, do you need to be a mathematical genius like Albert Einstein? The answer is no. While at first IBM licensing may seem incomprehensible, some education on the license models and licensing scenarios will help minimize the confusion. In addition, a more automated approach to managing licenses enables organizations to gain control, reduce ongoing software costs and minimize license liability risks.

## Challenges

What are some of the challenges associated with IBM software licensing? To begin, IBM installation media are delivered with no constraint on the number of installations. In other words, IBM customers can download software without restrictions as there are no embedded software keys preventing installations. As a result, in distributed environments, installations of software covered under the same license may proliferate and bring an organization out of compliance.

A second challenge is that IBM uses multiple contractual documents to define license entitlements and product use rights. These documents include the IBM Customer Agreement (ICA), International Product License Agreement (IPLA), International Passport Advantage Agreement (IPAA), License Information (LI) documents, and Software Announcement Letters. Each of these documents carries their own set of terms and conditions which sometimes creates confusion on license rights. Some policies such as backup and disaster recovery license rights are often not detailed in any of the above agreements, but are described on the IBM website, which can change at any time. It is important to monitor the IBM website regularly to maintain awareness of any changes that will impact license compliance. When possible, organizations should capture important policies like these in their contracts to safeguard

against the risk of expensive changes. Many enterprises negotiate these potentially volatile policies as addendums to the executed agreements so they only change through bilateral agreement.

A third challenge is the variety of products and license models. IBM products are grouped into the following categories: Infrastructure Software, Operating Systems, Development Tools, Databases, Middleware and Network/Systems Management. The leading brands in these categories are AIX, Websphere, DB2, Lotus, Tivoli, Rational and Cognos. The various license models include: Authorized User, User Value Units, Processor Value Units, and Resource Value Units. The wide variety of license models makes it difficult for IBM customers to get their arms around the licensing.

Another challenge for long-term IBM customers is that they tend to struggle with shelfware, or software they have purchased that is not being used but is sitting on the "shelf." This is due to Enterprise License Agreements (ELAs) they have signed with IBM, or multi-year, "all you can eat" contracts that provide the end-user with access to numerous products and the ability to substitute one for another. Often times IBM customers cannot find a use for all the software entitlements they have purchased, thus creating a shelfware problem.

Finally, IBM frequently audits its customers and it is important for organizations to be prepared. Audits provide a software vendor with the opportunity to uncover low-hanging fruit, or non-compliance situations that generate "easy" revenue. Recent industry analyst research indicates that IBM is among the top 10 companies most likely to request an audit. IBM customers need to fully comprehend licensing policies and know their actual state of deployment and compliance prior to the commencement of an audit. Doing so can eliminate or at least reduce the probability of an audit before it happens.

## IBM License Models

Let's examine the most common license models, which IBM separates into 3 categories: User-based, Capacity-based and "other" licensing.

### User-Based Licensing

User-based licensing is one of the most common IBM license types for both its desktop and server software and aligns to the number of unique individuals given access to an application. There are several classifications:

#### *Authorized User*

An Authorized User is defined by IBM as a unique person given access to an application. Much like other major vendors with server based access, especially by thin or web client, it can be very challenging to determine all the end-users that need a license.

#### *Concurrent User*

A Concurrent User accesses an application at the same time as other users, up to the number of concurrent licenses purchased. Each Concurrent User may simultaneously access the software multiple times (i.e. using different 'Installs') under a single license. Typically, the software may be installed on any number of machines for use by those users.

#### *Floating User*

Each Floating User may only access a single install of the program at any given time under a single license. The Floating User can 'float' around from one install to another. Like with Concurrent User licenses, typically there is no restriction on the number of times an application may be installed to support licensed users. An organization might choose the Floating User license type when the number of active users at any given time is a fraction of the number of total users. Many Rational products, for example, offer a choice between Floating and Authorized User.

#### *User Value Unit (UVU)*

The number of users who have access to a specific software program are converted to the required number of point-like UVU entitlements per IBM's UVU tables and methods, which vary substantially from product to product.

### Capacity-Based Licensing

Capacity-based licensing aligns to the available hardware resources (processor cores, memory, etc.) on the machines where a software program is installed or on the machines that the program manages. There are several types:

#### *Processor Value Unit (PVU)*

A processor, or central processing unit (CPU), is the logic circuitry that processes the basic instructions that drive a computer. IBM continues to define a processor, for the purpose of PVU-based licensing, to be each core on a processor chip. With PVU licensing, the required value units—which vary by processor technology (vendor, brand, type and model number) per the IBM PVU table, are calculated for each activated processor core that is available to the software program.

#### *Server Based License*

An IBM server license is required for each server that is available to the software program, regardless of the number of processor cores or partitions in the server or the number of copies of the program on the server.

#### *Virtual Server*

A virtual server is generally a virtual machine created through either hard or soft partitioning, but can also be an unpartitioned physical server. An IBM virtual server license is required for each virtual server made available to the software program, regardless of the number of processor cores or installs on the server.

### PVU Full Capacity and Sub-capacity Licensing

PVU Capacity-based licensing comes in two flavors: Full-capacity and Sub-capacity (aka Virtualization capacity). For Full-capacity licensing, organizations must obtain PVU entitlements sufficient to cover all activated processor cores in the physical hardware environment where the software program is installed, including other partitions on a server even if they are not also being used to run the application. Simply put, organizations must license the full capacity of the physical server or group of servers. For Sub-capacity licensing, organizations must obtain entitlements sufficient to cover only those activated processor cores available to the specific virtual machine(s) or hardware partition(s) where that software is installed. IBM customers are licensed for the lower of Full-capacity or Sub-capacity of an individual server or cluster and IBM offers these options to help their customers drive down licensing costs.

One issue with Sub-capacity licensing is that it is easy to spiral out of compliance due to the movement of virtual machines within and between server groups. Virtual environments tend to change frequently, making it critical to track movement to maintain an understanding of the organization's license position and make licensing adjustments as necessary.

Generally speaking, many IBM products can be licensed as User-based or Capacity-based. If the product has a server component, it will commonly be licensed as Capacity-based

and if the product has only client components, then it will usually be User-based. Oftentimes, however, products contain both server and client components and IBM gives organizations the option to license some products either with Capacity-based or User-based metrics.

### Other Licensing

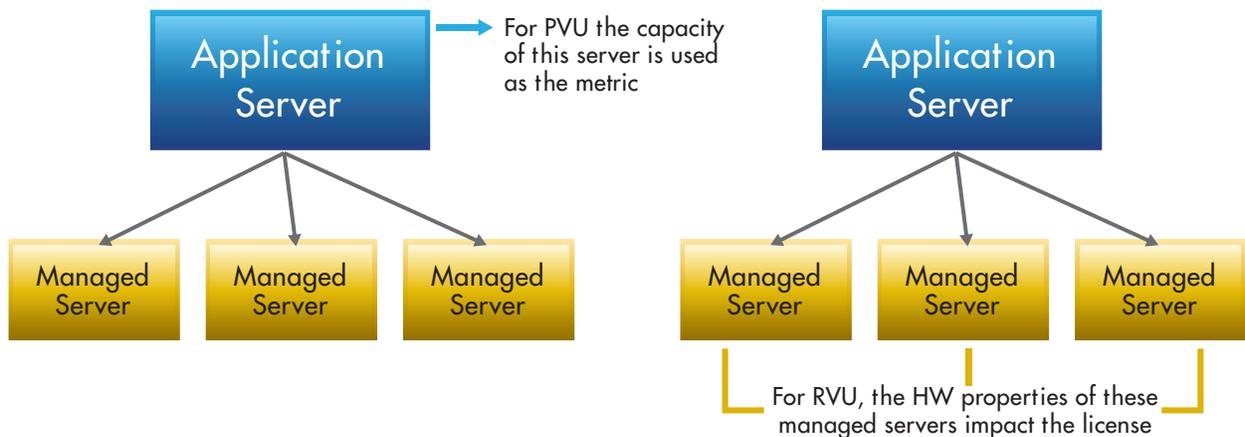
IBM defines its third category of licensing as "other," referencing Client Device and Resource Value Units (RVU).

#### Client Device

A Client Device is essentially a single user computer. It may also feed data to another system, whether a traditional server or not, like an appliance, kiosk, or sensor. An IBM Client Device license is required for every Client Device which runs, provides data to, uses services provided by, or otherwise accesses the software.

#### Resource Value Units (RVU)

This model is based on the number of units of a specific resource (e.g. the amount of memory in the system) used or managed by the application. RVUs are counted in a tiered fashion much like UVUs, and the tiered RVU tables and counting methods vary just as much. With RVU licensing, organizations can make changes in virtual environments with less impact on licensing than with the PVU model, since the RVU metric is not usually a function of the hardware characteristics of the machine(s) where the application is installed and running, unlike PVUs.



PVU vs. RVU License Models

**IBM Licensing Scenarios**

To further illustrate IBM licensing calculations, let’s examine examples of both User-based and PVU Full-capacity license models.

**Example #1 – UVUs:**

Your organization is designing a company intranet and requires Tivoli Security to manage the authentication and authorization of users. How do you determine accurate licensing for this application? The first step is to identify authorized users. Then you need to separate them into internal users as well as infrequent or external users.

As defined by IBM, infrequent users utilize their IDs less than five times per year and the “chargeable” number of users is calculated at a ratio of 15:1. Let’s say your organization consists of 50,000 internal users and 105,000 external users. Using the 15:1 ratio calculation, external users become 7,000 chargeable users (105,000/15). So, altogether, there are 57,000 chargeable users in this example.

The next step is to calculate the UVUs required using IBM’s UVU table. Each tier has a number of chargeable users which is multiplied by the respective factor.

Tiers	Users	Factor	Users in Tier	Total UVUs in Tier	Cumulative UVUs
1	250-5K	1.0	5K	5K	5K
2	5K-15K	0.5	10K	5K	10K
3	15K-50K	0.3	35K	10.5K	20.5K
4	50K-150K	0.2	7K	1.4K	21.9K

**UVU Calculation**

**Tier 1 (250-5K):**  
*5,000 chargeable users x 1.0 tier factor = 5,000 UVUs*

**Tier 2 (5K-15K):**  
*10,000 chargeable users x 0.5 tier factor = 5,000 UVUs*

**Tier 3 (15K-50K):**  
*35,000 chargeable users x 0.3 tier factor = 10,500 UVUs*

**Tier 4 (50K-150K):**  
*Only 7,000 chargeable users left x 0.2 tier factor = 1,400 UVUs*

**Total UVUs for 57,000 Chargeable Users:**  
*5,000 UVUs (tier 1) + 5,000 UVUs (tier 2) + 10,500 UVUs (tier 3) + 1,400 UVUs (tier 4) =*  
**21,900 UVUs**

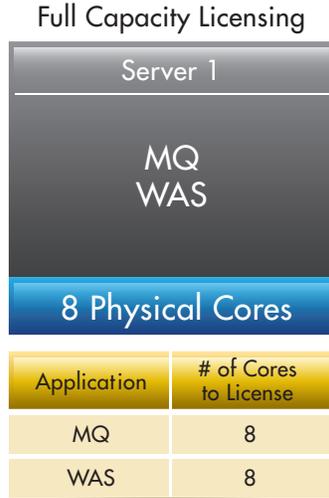
Note however, that some products licensed by UVU do not follow the example above. For example, InfoSphere Content Collector requires the purchase of separate entitlements for Authorized, External and Employee UVUs. This is a common theme in IBM licensing; there are many important

variations to the main licensing models that must be taken into account. This is where a next generation license management tool, that has built-in knowledge of these license entitlement details, can really help organizations gain control of complex license models.

**Example #2—PVUs:**

To execute the company intranet, your organization needs to run Websphere Application Server (WAS). When an employee navigates to the company intranet and clicks on the link, this request is processed by WAS. In this scenario, how do you determine accurate licensing for WAS?

WAS can be licensed as either Full or Sub-capacity. With the Full-capacity model, you must acquire licenses for all physical processor cores in the server where WAS is installed.



IBM Full-capacity Licensing Example

Suppose you are running WAS on an IBM Pseries POWER770 and need to determine Full-capacity licensing. First, you determine the number of PVUs per core per IBM’s PVU table (see excerpt below). Let’s say the POWER770 has

16 cores and there are 120 PVUs per core. To calculate the cost, multiply the number of cores by the number of PVUs and the cost per PVU, as follows:

# of Cores	# of PVUs	Cost per PVU
16	120	\$49

Calculation: 16 cores x 120 PVUs per core x \$49 per PVU = \$94,080

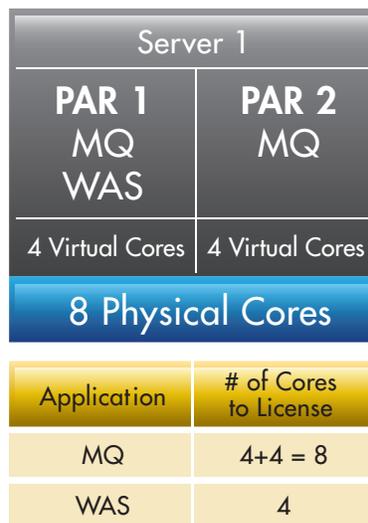
Processor Technologies												
Processor Vendor	Processor Brand			Processor Type						Proc. Model Number	PVUs per Core	
	Processor Name	Server model numbers	Maximum number of sockets per server	Cores per socket					IPL Engine			
				One-Core (1)	Dual-Core (2)	Quad Core (4)	Hexa-Core (6)	Octi-Core (8)				16-Core (16)
		770, 780, 795	> 4			■	■	■			All	120
IBM	POWER7 <sup>4</sup>	750, 755, PS704	4				■	■			All	100
		PS700-703, 710-740	2			■	■	■			All	70

PVU Table Excerpt

If you are using server virtualization technology and have virtual machines or hardware partitions, then Sub-capacity licensing can be more cost effective. In this scenario, you would license WAS for the number of virtual cores that

are allocated to the virtual machine or hardware partition running the WAS software, as shown in the graphic on the next column.

### Sub-Capacity Licensing



IBM Sub-capacity Licensing Example

PVU licensing requirements can fluctuate as virtual machines and other sub-capacity technologies dynamically adjust to use more or different processor cores under certain conditions. IBM tends to take the high water mark and license for the upper level, asking 'what is the highest number of PVUs required for this product at any point in time.'

As you can see, each licensing example resembles a math word problem or brain teaser from our former school days. They first require an understanding of the problem, how to apply the license model, followed by the actual calculation to arrive at the solution.

**IBM License Metric Tool**

To assist with managing Full and Sub-capacity licensing terms, IBM provides the IBM License Metric Tool (ILMT) which is recommended for IBM Passport Advantage customers that are using Full-capacity licensing and mandatory for Sub-capacity PVU licensing in environments of more than 1,000 employees that are not using Tivoli Asset Discovery for Distributed (TAD4d) . Customers are required to generate quarterly ILMT reports and keep them for a period of two years. These reports must be provided if IBM conducts an audit.

If organizations are using ILMT, what else do they need? Simply put, ILMT is a no-charge tool that helps maintain a continuously updated inventory of the computers where IBM Passport Advantage PVU-based software assets are installed on a network. It is not a license management solution because it does none of the following:

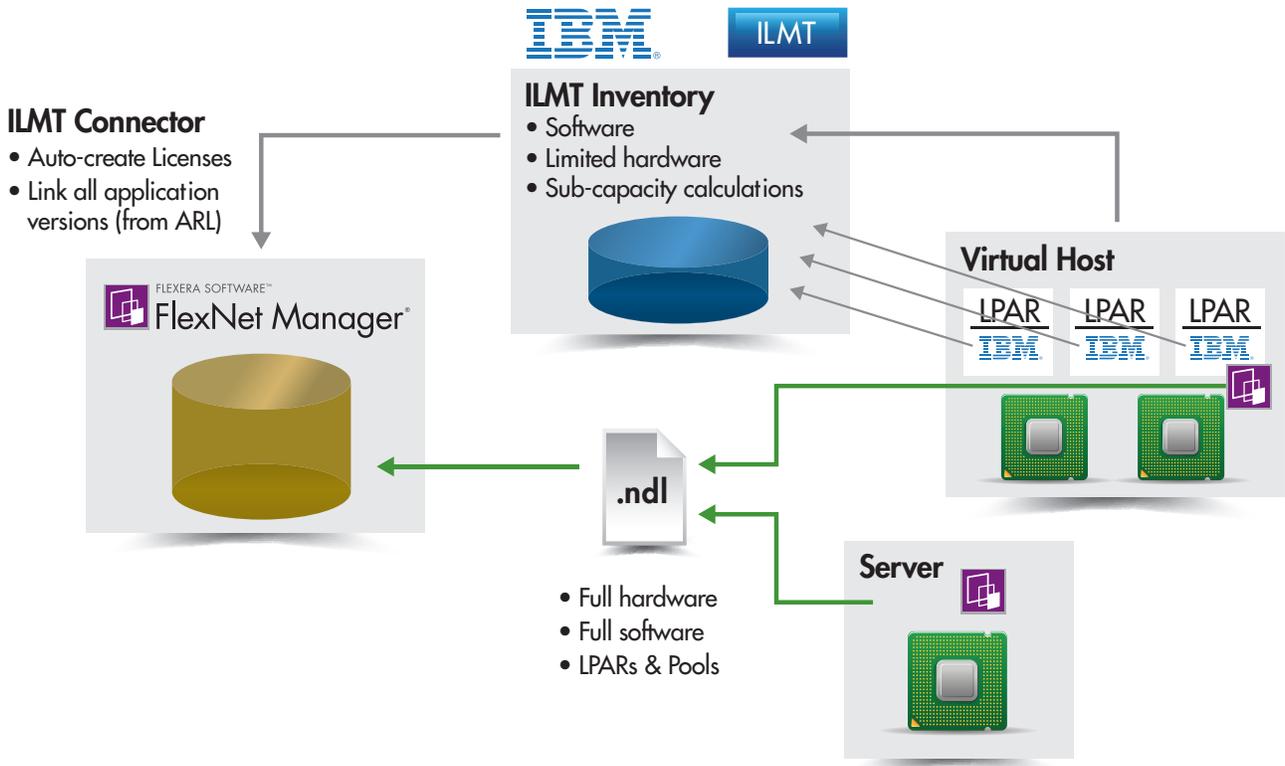
- (a) Optimize license consumption based on entitlements, or help reduce software spend,
- (b) Inventory or manage the multitude of non-PVU-licensed IBM software products or other software vendors' products, and

- (c) Manage or report on contracts, users and payment schedules. A complete, optimized software license management solution does all of these things across a wide range of software publishers, license models and agreements, for hundreds of thousands of applications.

However, optimized license management solutions are not standalone systems. Ideally, these solutions leverage existing tools and infrastructure to collect the data required to manage the software estate. They should be able to import inventory data from sources such as ILMT and connect to procurement systems for purchase order data, HR systems and/or Active Directory for user and organizational data, and other systems for contract and financial information. ILMT and other inventory tools are necessary but insufficient to enable organizations to implement an optimized license management program that can help reduce software license and maintenance costs while maintaining continuous license compliance.

**Introducing FlexNet Manager for IBM**

There is a solution that automates IBM license management and helps organizations handle its complexity. FlexNet Manager for IBM enables the reduction of license, maintenance and audit costs for IBM desktop and server software while maintaining license compliance.



FlexNet Manager and ILMT Integration

## Key Features

FlexNet Manager for IBM is built on the FlexNet Manager Platform which is a state-of-the-art discovery, inventory and license management solution covering more than 100,000 applications from 11,000 vendors. FlexNet Manager for IBM automates purchased versus installed license reconciliation of IBM applications, including Cognos, DB2, Lotus Notes, Tivoli Workflow Scheduler, WebSphere Application Server (WAS), and many more. Its Product Use Rights Library for IBM includes entitlement information to optimize IBM license management.

FlexNet Manager for IBM currently handles the following IBM license types: PVU, Authorized User, Floating User, User Value Unit (UVU), Resource Value Unit (RVU), and Concurrent User. It can use ILMT as an inventory source to provide information on hardware allocations to virtual machines and hardware partitions, as well as detailed sub-capacity consumption figures for PVU-based licenses. It supports both Full and Sub-capacity PVU licensing as described above.

The FlexNet Manager for IBM License Simulation tool allows for 'what if' analysis to see the impact of changes to the IT environment on an organization's IBM license position. For example, it shows how sub-capacity license requirements will change when applications or virtual machines are moved from server to server. This industry first capability allows organizations to proactively assess changes to reduce licensing cost and compliance risk.

## Key Benefits

FlexNet Manager for IBM helps organizations gain control of IBM software assets by automating license management, reducing license liability risk, controlling license and maintenance costs, and managing IBM license complexity. Here are the major benefits:

**Improved negotiations with IBM** — Negotiate software contracts with detailed knowledge of the organization's IBM license position, application usage and payments. Better plan purchases and upgrades to maximize discounts.

**Reduced license costs** — Apply product use rights to minimize license consumption and reduce true-up costs. Automatically recycle unused licenses in the environment to defer new license purchases. Buy only the licenses that you need.

**Reduced maintenance costs** — Optimize maintenance payments based on actual software usage, where possible. Ensure that the organization is not over-spending on the multi-million dollar maintenance contracts that are associated with high-value software licenses.

**Reduced risks** — Minimize the risk of an IBM software audit, unbudgeted true-up fees, penalties, litigation and brand damage, by ensuring proper licensing of all software in use.

**Rapid ROI** — Leverage existing IT systems as part of a total FlexNet Manager Suite solution. FlexNet Manager for IBM provides rapid time to value by quickly finding software cost savings.

In summary, gain control of IBM license complexity by understanding the license models, communicating license terms and conditions to key stakeholders throughout the organization, and be aware that virtual environments need to be carefully monitored to manage license compliance risk. Finally, utilize solutions such as FlexNet Manager for IBM to automate and optimize IBM software license management.

## About Flexera Software

Flexera Software is the leading provider of strategic solutions for Application Usage Management; solutions delivering continuous compliance, optimized usage and maximized value to application producers and their customers. Flexera Software is trusted by more than 80,000 customers that depend on our comprehensive solutions- from installation and licensing, entitlement and compliance management to application readiness and enterprise license optimization - to strategically manage application usage and achieve breakthrough results realized only through the systems-level approach we provide. For more information, please go to: [www.flexerasoftware.com](http://www.flexerasoftware.com)



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