WHITE PAPER

Software License Optimization for the Datacenter

FLEXERA® SOFTWARE

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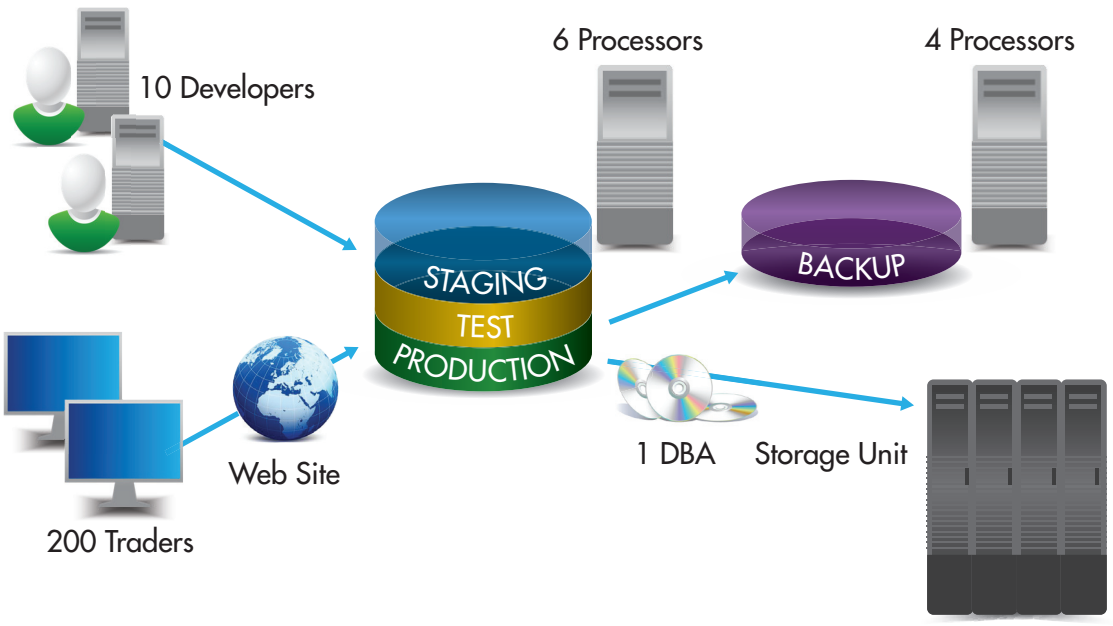
Introduction

Optimized license management is a necessity for all software licenses owned by the enterprise, from desktop to datacenter and beyond. While many organizations understand their license position for the desktop estate, the reality is that licensing in the datacenter still presents a daunting set of challenges that require a robust, automated Software License Optimization solution. Compounding this, it is difficult to take the same set of processes, technologies, and remediation techniques used to manage desktop licenses and apply them to datacenter license management. Organizations need a solution to address the unique license management requirements of enterprise IT environments including the desktop, datacenter and private and/or hybrid clouds.

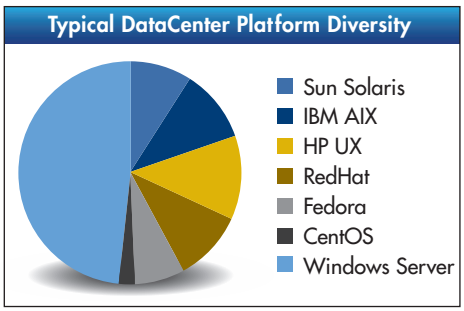
Applications in the datacenter are strategic and run the business, but they are also typically the most expensive. Optimizing license and maintenance spend in the datacenter typically represents the greatest potential cost-savings in the software portfolio. Decreasing ongoing costs of multi-million dollar applications in the datacenter is a fundamental component of overall IT spend reduction. As organizations continue datacenter consolidation through virtualization, license optimization in the datacenter becomes even more critical to reduce the associated risk of software license noncompliance – and more difficult without an automated solution. Datacenter license management challenges include:

- Heterogeneous / Multi-platform environments
- Complex License Models
- Virtualization
- License Entitlements: Product Use Rights



Heterogeneous / Multi-platform Environment

In most companies, the datacenter and server infrastructure represent the most diverse computing environment in the company. Companies typically have multiple flavors of Linux, UNIX and Windows operating systems in the estate. Effective license management within this heterogeneous environment requires a robust multi-platform discovery and inventory solution.



The license optimization solution should also leverage existing IT investments by integrating with common discovery and inventory tools used in the datacenter, such as BMC Atrium Discovery and Dependency Mapping (ADDM), IBM Tivoli, HP Discovery and Dependency Mapping Inventory (DDMI), etc. An advantage of this approach is that yet another agent doesn't need to be deployed. Once the hardware and software inventory data is collected, it must be processed and normalized to quickly identify and categorize server-based applications, including publisher, title, version and edition.

Agent and Agentless Inventory

For organizations that do not have a standard inventory solution for the server estate the datacenter license management solution should provide a multi-platform agentless and/or agent-based inventory capability. Particularly for datacenter server environments, an agentless inventory capability is often required for server performance and security reasons—an agent may not be allowed to be installed on many of these systems. As shown in the pie chart above, the typical datacenter has a mix UNIX, Linux and Windows operating systems that may include: Sun Solaris, HP UX, IBM AIX, RedHat Linux, CentOS, SuSE Linux, Fedora, Windows Server, and other OS platforms.

In some cases, specialized discovery and inventory tool capabilities are needed. This is true for Oracle and Microsoft SQL Server database software, for example. The Oracle database products require the collection of important option, and management pack information, and Microsoft SQL Server requires data to determine the installed edition. This information is not available in most standard inventory tools but is necessary for license management.

Virtual Machine Discovery & Inventory

With the growing deployment of server virtualization technologies from vendors such as VMware (ESX/vSphere) and Microsoft (Hyper-V), organizations must also collect inventory for virtual machines across the network. In these environments, it's necessary to not only bring back inventory of software on each virtual machine, but also identify the relationship between virtual machines and physical host servers. The hardware details— number and type of processors and cores, memory size, etc., are important, as is the allocation of hardware resources to virtual machines. This data is often required to perform license management in virtual environments, particularly where the license model is based on server and/or processor characteristics. Examples of vendors that use processor/core based licensing for enterprise server software abound: Microsoft, IBM, Oracle, and Symantec, to name just a few.

Complex License Models

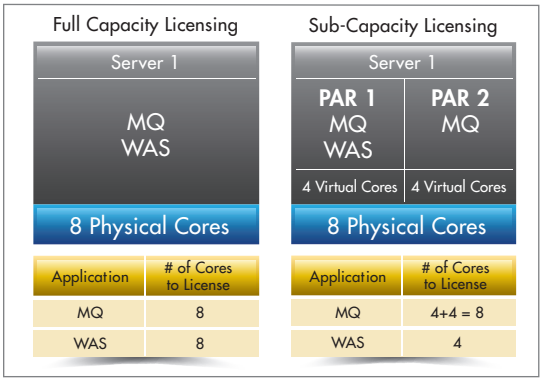
License metrics in the datacenter are becoming increasingly complex. More publishers are moving to capacity-based licensing models which make it difficult to calculate an accurate license position without automation. Organizations must be able to determine how many licenses are consumed based on the license models in effect and the capacity characteristics of installed machines (e.g. processors, cores, and memory). As a simple example, the organization must calculate processor-based license consumption based on the number of processors in each (physical or virtual) server to determine whether the appropriate number of licenses have been purchased and allocated in the most optimal way.

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						IFL Engine			
				One-Core (1)	Dual-Core (2)	Quad Core (4)	Hexa-Core (6)	Octi-Core (8)	16-Core (16)				
IBM	POWER7+	770, 780, 795	> 4			■	■	■				All	120
		750, 755, PS704	4				■	■				All	100
		PS700-703, 710-740	2			■	■	■				All	70

PVU Table Excerpt

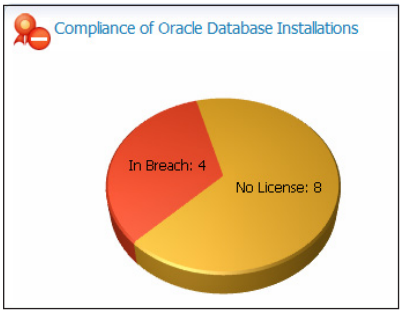
Some examples of complex datacenter/server license models include:

- **IBM Processor Value Unit (PVU)** – license position is calculated based on cores, sockets, and processor type. IBM provides PVU tables that define the number of points assigned to each type of processor *(as well as based on the other parameters, as shown in the example below)*, and publishes PVU license rules. IBM PVUs can be used in both full and sub-capacity *(aka "virtualization capacity")* licensing scenarios. Sub-capacity licensing allows the organization to reduce software costs by licensing only the "activated processor cores made available to or managed by" the IBM application—i.e. you can license less than the full capacity of the server or group of servers. In the past, sub-capacity licensing required the customer to install and use the IBM License Metric Tool *(ILMT)*. Now, Flexera Software's FlexNet Manager for IBM solution can be used in lieu of ILMT, TADd and SUA for IBM sub-capacity reporting. IBM Full Capacity versus Sub-capacity Licensing Example:



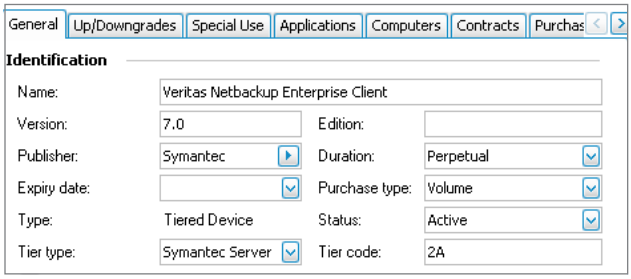
Sub-capacity Licensing Can Save You Money!
(But, it Adds Complexity)

- **Oracle Named User Plus** – Oracle currently uses two different license models for their database software—Named User Plus (NUP) and Processor based. Named User Plus is a user based license where named users can access multiple database instances on multiple servers. Depending on the database edition, there is either a 25 or 5 NUP license minimum per processor in the server (which means that organizations must still know the hardware details of the Oracle servers).
- **Oracle Processor** – The Oracle Processor license is based on the type and number of processor cores in the server. The number of cores is multiplied by the Oracle Core Factor value for that processor type to come up with the number of licenses needed for that server. Note that Oracle software running on a "soft partitioned" virtual machine (e.g. using VMware vSphere/ESX server virtualization technology) will still require the same number of licenses as the full physical server—there is no sub-capacity licensing here. Sub-capacity licensing can be used for hard partition virtualization technologies (for example Solaris Zones).



The Processor license is attractive when there are large numbers of users accessing the database. The Oracle pricing ratio is 50 to 1 for processor licenses compared to user licenses, so an organization would need to have more than 50 times the number of users relative to processors on Oracle servers to make the processor model more cost effective.

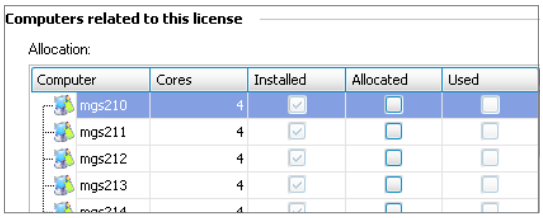
- **Tiered Device** – A license that is tiered according to a processor or server type. Symantec is an example of a publisher that utilizes this license model for their popular Storage Foundation, Netbackup, and other enterprise server products.



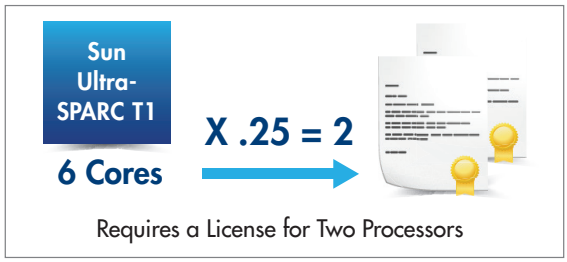
- **Per Processor** – Collect hardware inventory including the number of processors running on each machine where the application is installed and calculate the number of processor licenses required. Microsoft SQL Server, pre-2012 release, is a common example of this license type.

- **Processor Points** – Count processors based on different processor types. This is a points-based license that consumes different numbers of points according to the type of processors in the computers.

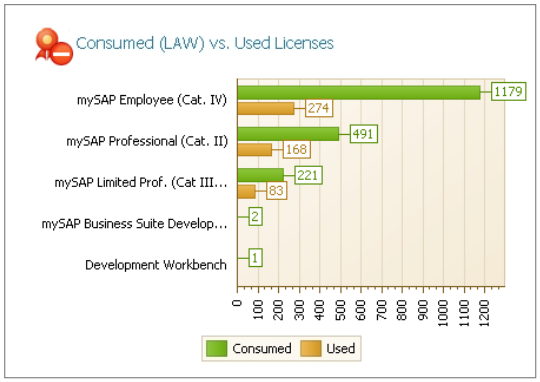
- **Processor Core** – A license priced according to the number of processor cores in the computer(s) on which the software will run. Microsoft SQL Server 2012 uses core based licensing.



- **Core Points** - Counts cores differently for different processor types. This is a points-based license that assigns different numbers of points according to the type of processors on the computers.



- **SAP Named User** – SAP defines a number of different user based license types—Professional, Limited Professional, Developer, Employee, etc. Different SAP software usage characteristics are defined for each type, and each has a different price point. Typically, SAP customers buy too many high cost Professional User licenses when lower cost licenses would meet many users' needs. Organizations should select the optimal named user license type for each SAP user based on an analysis of actual usage data to ensure appropriate licensing and reduce ongoing costs for SAP software. The SAP License Administration Workbench (LAW) report only tells you what license types are deployed, not what license types should be assigned to users to meet their needs at the lowest possible cost.



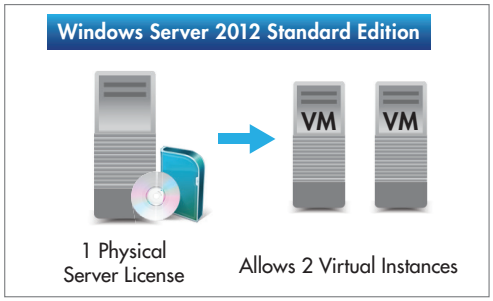
Virtualization

Virtualization adds yet another twist in the quest for license optimization in the datacenter. Organizations are increasingly deploying virtualization technologies, such as datacenter server virtualization from vendors including VMware and Microsoft. Software publishers have grappled with how to handle virtualization from a licensing perspective and have created unique product use rights around virtualization, making it even harder to calculate an accurate license position. In addition, the dynamic nature of virtual environments, due to virtual machine (VM) mobility and the speed with which VMs can be created and retired further complicates license management.

Organizations need a discovery tool which finds virtual machines in the environment, reads the capacity dedicated to the virtual machine for capacity-based license calculations, and maps virtual machines to their physical hosts, as discussed earlier in the paper. For example, software that uses a per-processor license is installed on a virtual machine that has two processors assigned to it while the physical host has 32 processors. Typical inventory tools would report 32 processors on each virtual machine—greatly increasing the license requirements for per-processor based licenses. A Software License Optimization solution will accurately count the processors allocated to the VM, minimizing license consumption and reducing costs accordingly.

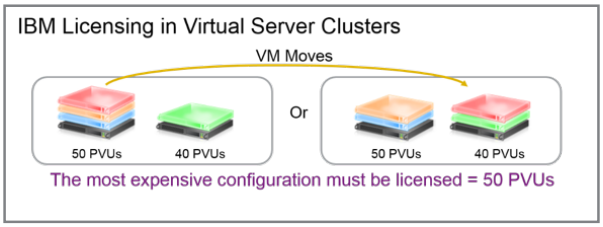
Virtual Use Rights

Publishers often have specific product use rights for software that is run on virtual machines. For example, one Windows Server 2012 Datacenter edition license can cover installations on one physical machine (with up to 2 processors per license) and an unlimited number of virtual machines (Operating System Environments (OSE)) on the same physical host. The Windows Server Standard edition, in contrast, supports only 2 VMs (OSE). The installation of Windows Server 2012 on a third virtual machine on the same host would consume another license.

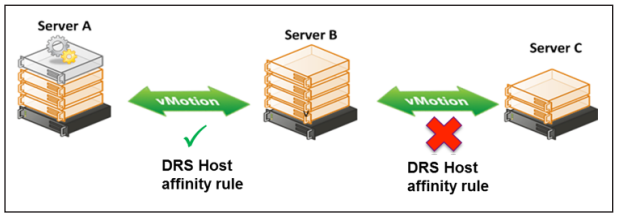


Virtualization and Server Clusters

Today's datacenters frequently have virtualized server clusters that allow VMs to move from one physical host to another. Additional licensing rules may also apply here. For example, running an IBM application such as WebSphere, which uses PVU licensing, in this type of environment requires the calculation of a "high water mark." (See diagram below). The high water mark is the most expensive server configuration in the cluster where the IBM application can be run.



To further complicate matters, there can be "host affinity rules" that specify which servers in the cluster may be used for a given application. These rules must be taken into account when determining license consumption. In the example shown below, the application can be run on Servers A and B, but not Server C.



A Software License Optimization solution must have this licensing knowledge built-in. This allows organizations to calculate an accurate license position and fully leverage their license entitlements (product use rights) to reduce license consumption and software costs.

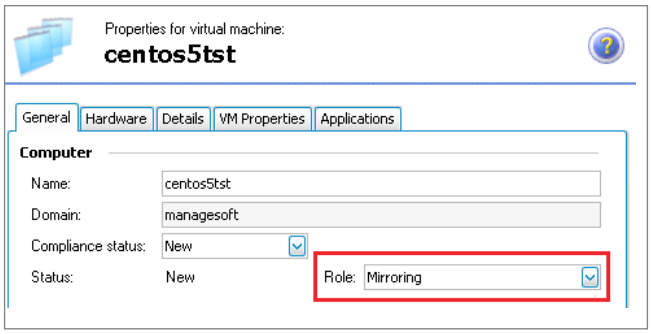
Other virtual and thin-app solutions, such as Citrix Server, may also be deployed, and the license management tools should provide comprehensive license reconciliation and optimization across multiple virtualization technologies.

Product Use Rights

Datacenter licenses often have other complex product use rights, in addition to virtual use rights, that govern how organizations can use the software and determine the number of licenses consumed in the process. Listed below are a few examples:

- Clustering with two active/passive servers on a single license
- Cold disaster recovery machines do not consume a license
- Failover machines consume a license if used during the year
- Hot Disaster Recovery machines consume a license
- Four QA and development machines allowed with no license charge

Ideally, the Software License Optimization solution will automatically apply these license entitlements to minimize license consumption and maintain license compliance. For example, server roles (disaster recovery, backup/failover, production, development, test/QA, etc.) commonly confer a set of use rights and/or restrictions. By understanding the role of the server in the IT environment and taking full advantage of the associated rights, it is possible to automatically exclude certain machines from license consumption in many cases.



Other product use rights such as upgrade rights and downgrade rights, etc., also come into play in the datacenter and must be applied to correctly calculate an effective license position.

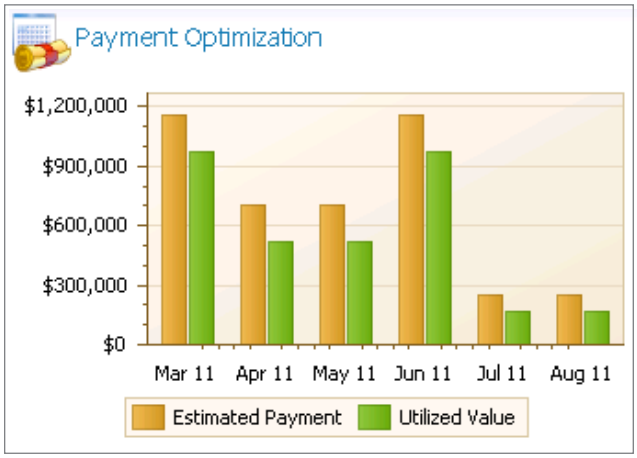
As organizations are moving more and more to the cloud, "license mobility rights" come into play for certain vendors, such as Microsoft. These rights specify whether the organization's existing on-premises software and licenses can be moved to the cloud.

FlexNet Manager Suite for Enterprises

Flexera Software's FlexNet Manager Suite for Enterprises solution uniquely meets all of these requirements for optimized license management in the datacenter. FlexNet Manager Suite delivers unprecedented levels of automation for management of datacenter software assets, producing the highest possible return on investment (ROI). With FlexNet Manager Suite, organizations can eliminate over-spending and under-spending on licenses, and reduce ongoing maintenance costs associated with server-based software. The FlexNet Manager Suite solution offers a range of benefits for datacenter software asset management, including:

- **Improved negotiations with vendors** — Knowledge of your license position, application usage and payments enables you to plan your purchases and upgrades to maximize discounts and accurately budget for future needs.
- **Reduced license costs** — Apply product use rights to minimize license consumption and reduce annual true-up costs. Automatically reclaim unused licenses in the environment to defer new license purchases. Buy only the datacenter licenses that you need.
- **Reduced maintenance costs** — Datacenter licenses have hefty ongoing maintenance streams. FlexNet Manager Suite suggests optimal maintenance payments based on the optimized license position. This ensures the organization is not over-spending on the multi-million dollar maintenance contracts that are associated with high-value datacenter licenses.
- **Reduced risks** — Minimize the risk of a software audit and the associated risks of unbudgeted true-up fees, penalties, litigation and brand damage, by ensuring proper licensing of all software in use. Protect the relationship with your most strategic software vendors.

- **Rapid ROI** — Leverage existing IT systems as part of a total FlexNet Manager Suite solution, rather than replacing them. FlexNet Manager Suite provides rapid time to value by quickly finding software cost savings in the datacenter.



FlexNet Manager Suite for Enterprises Products:

Server Software License Optimization:

- FlexNet Manager® for IBM® – Accepted by IBM for sub-capacity reporting
- FlexNet Manager® for Microsoft®
- FlexNet Manager® for Oracle® – Verified by Oracle License Management Services (LMS) for Oracle Database discovery and inventory
- FlexNet Manager® for SAP® Applications – Certified by SAP
- FlexNet Manager® for Symantec™
- FlexNet Manager® for VMware® – newest server license optimization solution; optimizes vSphere and vCenter licenses

The FlexNet Manager Suite server products are built on the base product in the suite—FlexNet Manager® Platform, which provides extensive hardware and software asset management, contract management and reporting functions, as well as desktop license optimization.

FlexNet Manager Suite is the only solution that automates license optimization for key software vendors, offers support for the broadest array of license models and manages licenses in complex virtual environments. With FlexNet Manager Suite, organizations have achieved multi-million dollar savings with their highest-spend publishers such as SAP, Oracle, IBM, Microsoft, and Symantec.

About Flexera Software

Flexera Software helps application producers and enterprises increase application usage and the value they derive from their software. Our next-generation software licensing, compliance and installation solutions are essential to ensure continuous licensing compliance, optimized software investments and to future-proof businesses against the risks and costs of constantly changing technology. Over 80,000 customers turn to Flexera Software as a trusted and neutral source for the knowledge and expertise we have gained as the marketplace leader for over 25 years and for the automation and intelligence designed into our products. For more information, please go to:
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