

Putting the Puzzle Together

IBM's Answer to Managing Server Virtualization

Virtualization has taken a strong hold in the modern IT infrastructure. Today, we see virtual solutions in the server farm, at the desktop, in centralized storage and streaming application delivery. The ability to deliver more IT services with the same (or fewer) resources is the new paradigm in IT. However, the rapid adoption of virtualization has left software companies with a dilemma in licensing products and, more importantly, governing license compliance. The historic licensing models and compliance mechanisms are no longer valid. In response to the growing adoption of virtualization, IBM has changed how it monitors and governs the use of sub-capacity licensing. While changes to licensing agreements and metrics aren't a surprise to seasoned IT Managers, the changes include a new twist—a contract addendum which requires customers to implement an IBM tool set to monitor contract compliance. Utilizing sub-capacity licensing structures to create cost benefits is a wise choice, as is implementing the required tools, but IT Managers must be aware of the challenges.

Those of us who remember a time before the dominance of the video game might recall the good old fashioned puzzle. The box top had a pretty picture of the assembled puzzle which gave you the necessary clues. First, you found the border pieces and then you filled in the center. The IT architecture of days past was very similar. Each component played a specific role that fit neatly into its place. Life for the SAM Practitioner was easier since the hardware and associated licenses were constants, much like the little puzzle pieces. Now imagine that the pieces from a hundred different puzzles are all mixed together. Your job is to categorize the pieces and assemble the puzzles. This is Software Asset Management in the world of

virtualized IT — a variety of puzzle pieces which we, as SAM practitioners, are expected to put together.

The governance problems wrought by virtualization are not the IT Manager's alone. The software publishers must adopt licensing practices for virtual platforms to which customers can adapt. Licensing terms for virtual servers that are too onerous will only anger clients and drive them away. Instead, publishers must find a way to allow customers to gain from virtualization while protecting their business model. IBM's response is one of the first, most realistic approaches. In 2006, IBM introduced sub-capacity licensing. Sub-capacity licensing allows customers to license only the portion of processing power allocated to a particular virtual machine, rather than the full capacity of the physical server. IBM Distributed and Middleware licenses are procured in Processor Value Units (PVU). Each IBM application lists a specific quantity of PVUs per license or entitlement. The amount of PVUs required correlates to the number of cores in a particular server (see figure 1). Until sub-capacity was introduced, the PVU requirement was for the total number of cores on a server, regardless of which percentage of the cores were allocated to a particular virtual instance. The sub-capacity model, in conjunction with PVU calculations eliminated this issue or the need for fractional licenses. Until now, customers would need to purchase a specific sub-capacity SKU to receive this benefit. Obviously, there are many advantages to using sub-capacity licensing and PVUs to determine the necessary entitlements, not the least of which is cost savings. While on the surface this was financially advantageous to the customer, the management of multiple SKUs for the same product made life difficult.

Table of Processor Value Units (PVU Table) per core *

Processor Technologies									
Processor Vendor	Processor Brand	Processor Type					IFL Engine	Processor Model Number ¹	PVUs per Core
		One-Core (1)	Dual-Core (2)	Quad-Core (4)	Hexa-Core (6)	Octi-Core (8)			
		Multi-Core							
IBM	POWER6 550,560,570,575,595 ²		■					All Existing	120
	POWER6 520,JS12,JS22,JS23,JS43 ²		■					" "	80
	POWER5, POWER4		■					" "	100
	POWER5 QCM			■				" "	50
	System z10 ³						■	" "	120
	System z9, z990, S/390 ^{3,4}						■	" "	100
	PowerPC 970		■					" "	50
	PowerXCell™, Cell/B.E.™ 8i ⁵	■						" "	30
HP	Itanium®		■					All Existing	100
(Intel®)	PA-RISC		■					" "	100
Sun / Fujitsu	SPARC64 VI, VII		■	■				All Existing	100
	UltraSPARC IV		■					" "	100
	UltraSPARC T2			■	■	■		" "	50
	UltraSPARC T1			■	■	■		" "	30
Intel®	Xeon® (Nehalem)		■	■				3400 to 3599, ⁶ 5500 to 5599 ⁶	70
	Xeon® (pre-Nehalem)		■	■	■			3000 to 3399, 5000 to 5499, 7000 to 7499	50
AMD	Opteron		■	■	■			All Existing	50
Any	Any single-core (i.e. Xeon Single-Core)	■						All Existing	100

* Requirements as of Publish Date: Sep 15, 2009

Figure 1
Source: IBM Website

IBM's new metrics and compliance requirements attempt to make license governance and audit ability manageable while

eliminating some of the complexity for the customer. From a licensing perspective, IBM has chosen to eliminate all sub-capacity specific SKUs and make any product that supports virtualization (just about every IBM product) eligible for sub-

capacity using the regular product SKU. On the surface, this should be a windfall for customers, especially those of us in charge of managing contracts and license compliance. Fewer products to track and manage are always a positive change for a SAM Manager. Plus, knowing that a particular license can be deployed in either a full capacity or sub-capacity situation eases administration while also relieving some of the SAM challenges. However, IBM also needed to find a way to ensure compliance in a virtualized environment. IBM's answer was to require a tool set based upon its Tivoli product line.

To take advantage of sub-capacity licensing customers must implement one of two tools. Tivoli License Compliance Manager (TLCM) is a licensed product that is part of the Tivoli suite that may be used to manage sub-capacity licensing. The other option called IBM License Metric Tool (ILMT), unlike TLCM, is provided at no charge for Passport Advantage customers. Not only are customers required to run one of these tools, they must ensure quarterly reporting from the system is performed and make both historical and current reports available to IBM upon request.

The requirement supports IBM's plans on governing license use in a virtualized environment. This isn't necessarily a bad thing for customers but it does place the additional burden of a tool implementation upon their organization and the creation of policies and processes to meet IBM's terms. Through testing and experience, Siwel has found that the implementation is not as simple as it is made out to be and there are many nuances to address.

Sorting out the Pieces

Most organizations will find that ILMT is the right choice. For IBM customers not already licensed for or using the Tivoli License Compliance Manager, choosing ILMT makes sense. To use ILMT in support of sub-capacity, the product needs to be integrated into your environment and an agent is required to be installed on every server utilizing sub-capacity licenses. Derived from IBM's Tivoli Asset Discovery suite, ILMT is a "lite" version of the full product. An important fact to remember is unlike its parent, the Tivoli Asset Discovery suite, ILMT is not a traditional discovery tool. It is not intended to go out, scan your network, install itself and report back. Instead, ILMT is a limited purpose, targeted tool that determines the number of cores and processors utilized by a particular server instance. The specific purpose is to determine license compliance for a server hosting an IBM application.

While the architecture shown in Figure 2 may look simplistic, like many tool implementations, ILMT deployments can present challenges. In addition to developing the host environment and deploying the agents, managing the tool set in steady state and ensuring you have the right processes in place to support your use of ILMT is a critical component to success. Having performed several ILMT installations, Siwel has built a set of implementation best practices that can be leveraged to deploy the tool.

There are several things to keep in mind as you consider taking advantage of sub-capacity licensing and deploying ILMT. As SAM Managers, it is often easy for us to pass the

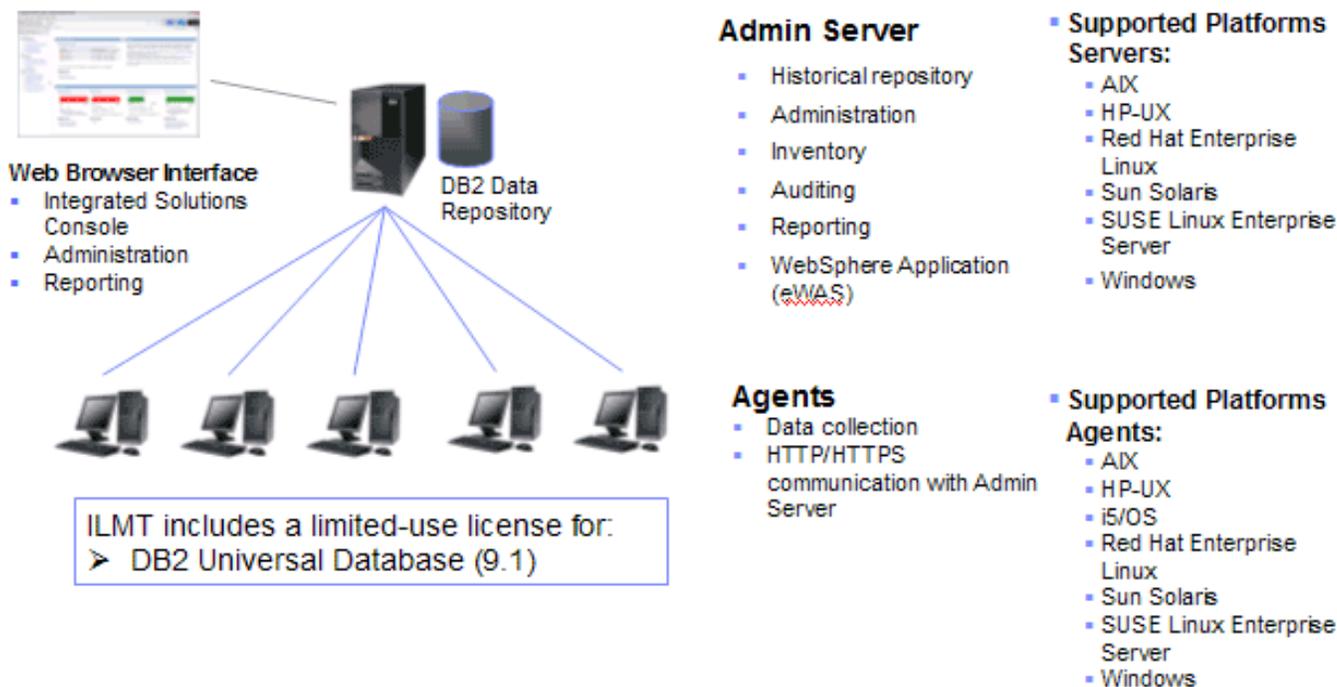


Figure 2 – ILMT Architecture



ball to the implementation teams. Staying involved with the project as a stakeholder is not only a good best practice but, in the case of ILMT, it is paramount to project success. The first consideration is where to host the ILMT environment and the infrastructure required to support it. Many variables can affect this such as data center footprint, disaster recovery, and the number of endpoints involved. ILMT requires a DB2 and Websphere environment to work and configuring them to the size of your environment is integral to the implementation. ILMT is designed to support up to 8,000 agents out of the box, using the included, limited use DB2 license. If your organization requires more agents for compliance, additional configuration needs to be performed in both DB2 and Websphere environments. Additionally, the ILMT console is designed to communicate with each agent every 60 minutes. Depending on your organization's size and geography, this may generate significant network traffic.

The second consideration is agent deployment which will impact infrastructure resources, data analysis, and IT processes. After your infrastructure is up and running, you must determine where to deploy the agent. As noted earlier, ILMT is not designed to do internal network discovery or determine where it should be installed, so your organization must be diligent in finding the proper servers upon which to deploy. The requirements of the sub-capacity addendum are that any server running IBM software which is sub-capacity eligible must have the ILMT client installed. Keep in mind that virtual pools which may host IBM applications should be included in the deploy base. IBM recommends deploying ILMT to your entire server infrastructure, and this too may be an option for your organization, depending on the size of the environment and the amount of virtualization in use. Deploying to all servers can raise overhead on the technology teams, as well as take up additional infrastructure resources. It also generates greater quantities of data that the SAM teams must sift through. On the positive side of the equation, by deploying to all servers, it reduces the amount of governance required after implementation and the need to track what servers are running both virtualization and IBM applications. The decision should be made in partnership with your IT management teams to address your organization's specific needs.

Another decision once the deployment targets have been defined is how to deploy the agent. While some organizations have the ability to execute targeted deployments, others do not. Depending upon which servers have been identified as requiring the agent, your approach to deployment may differ. IBM suggests deploying through the use of logon scripts or by using a response file installation. Our experience has shown that both methods can create a void in the target base if not planned and executed properly. The use of a logon script is very ineffective to servers, as most of the time, no one logs onto them directly. The best option is to "push" the agent to the appropriate servers using a distribution tool such as SCCM, Tivoli, Altiris, or any other existing internal distribution software. Another option would be a combination of

methodologies, ensuring the complete target is hit. Again, every company is different, so take your time and diligence in making the decision on how to deploy and you will save a tremendous amount of effort in remediation later.

Lastly, but likely most importantly, is putting the processes in place to run the reports, validate the data, and ensure the clients are deployed to the right servers. Understanding that the issue at hand is proving compliance to IBM, the process to manage the data is certainly the most critical component. Running the reports, warehousing the historical data, and providing the results on demand are all a matter of having the right processes in place. There are a host of concerns to be addressed and you will likely need to develop many new processes or policies to ensure compliance. Organizations need to address policy to ensure ILMT is deployed on the right servers and is continuously monitored across the virtual environment. Failure to keep the agents deployed to the appropriate server instances negates the ability to track compliance and has far reaching consequences.

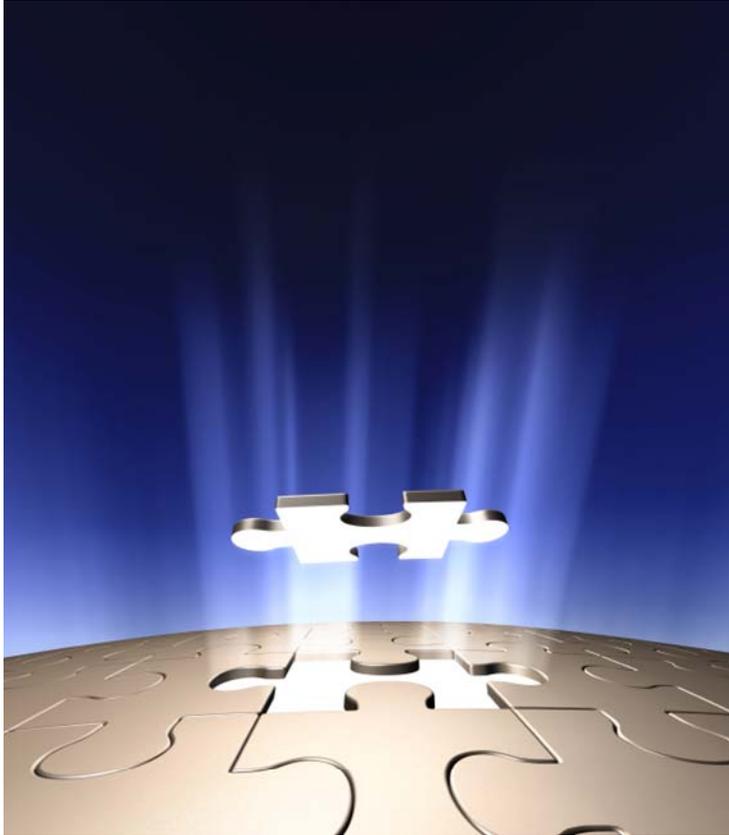
As it is a matter of governance and compliance, SAM Managers should be responsible for running the required quarterly reporting, not the IT teams or application owners. While that may be clear, another point to consider is archiving reports in a manner that is clear so when historical data is required or requested, it is easily identified. Remember, the best way to pass an audit is to be prepared for an audit.

The definition and development of internal processes is also important to verify the accuracy of the data. Checks and balances are critical in an environment as dynamic as server virtualization. With the ability to move applications across the virtual infrastructure so fluidly, keeping up with where an application resides can be a SAM nightmare. Make sure to keep open lines of communication with your IT teams and plan on meeting regularly to discuss changes in the environment. Once the virtual horse is out of the gate, it will be extremely difficult to corral and get back on track.

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Sub-capacity licensing and IBM's approach to compliance management does offer benefits to customers but there are also some important considerations. The biggest take away is to not overlook the compliance requirements of IBM and the overhead of installing and maintaining another asset management tool set. Compliance is becoming increasingly important as more vendors seek regular auditing. IBM is leading the pack by providing a specific tool set to track compliance and create a governance model.

Make certain to engage appropriately in the build out and deployment of the system. There is an old saying that "a fool with a tool is still a fool." This remains relevant when deploying ILMT. Merely implementing the console and the agents is not enough to withstand an audit. Without the proper processes in place to maintain the tool, the deploy base, and manage the data that comes from ILMT, the tool becomes useless and you expose your organization to financial risks.



The use of IBM sub-capacity licensing is certainly a win. The advantages must be considered as organizations continue to virtualize environments and drive toward cost efficiencies. The ability to reduce your PVU consumption provides the opportunity to reduce expenses as you come up for contract renewal. Implementing ILMT and sub-capacity before the end of your contract term allows for the option of re-purposing some of the already purchased PVUs to other server instances, creating immediate cost avoidance.

As a parting note, keep in mind that once successfully implemented, both the tools and processes required to manage your IBM sub-capacity licensing can provide greater insight into your environment. This knowledge provides the ability to develop a roadmap for the future of your SAM practice and provides a new, fresh perspective on monitoring and maintaining licensing in a virtual enviro

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