IBM License Metric Tool tracks and manages licenses for WebSphere® Application Server

IBM Redbooks Solution Guide

Virtually every aspect of managing an IT environment has drastically increased in complexity as new technologies and business shifts have altered the way businesses organize their IT infrastructure. As companies move to greater usage of virtualization, sub-capacity based technologies, and cloud based technologies to manage their infrastructure requirements, the licensing of that software has become increasingly difficult to track and manage. In addition, licensing models have changed to accommodate modern IT infrastructure models.

This IBM® Redbooks® Solution Guide describes how IBM sub-capacity licensing functions and specifically how the IBM License Metric Tool shown in Figure 1 can be implemented to track and manage licenses for WebSphere® Application Server instances that are present in a customer's infrastructure. The goal will be to demonstrate specific scenarios that target some of the complex environments and licensing models mentioned above in a clear and reproducible manner that customers can replicate in their environments. When you have a clear understanding of what is presented within this Redbooks Solution Guide, we suggest that you take a deeper dive into the new IBM Redpaper: Effectively Managing Your WebSphere Application Server Licenses using IBM License Metric Tool, REDP5107

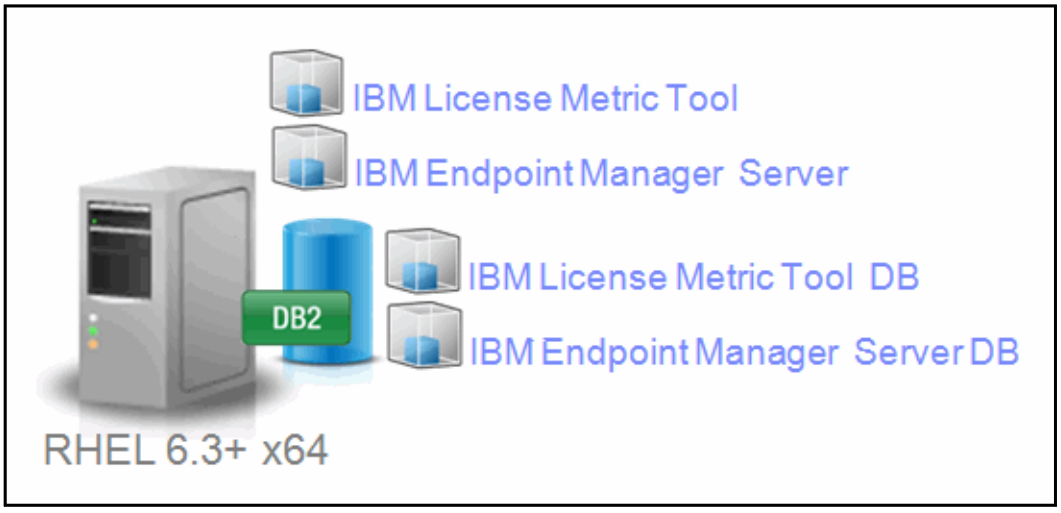

Figure 1. IBM License Metric Tool (ILMT) implementation with IBM DB2® and IBM Endpoint Manager

Did you know?

The IBM licensing model is built to offer these benefits:

- Flexibility for all customers to run software where it best fits into their system's design across numerous platforms and virtualization technologies, and allows them to optimize on the factor which is most important to their business (that is, cost, performance, reliability, and so on).
- Capability to leverage the underlying technology to reduce costs. Virtualization is a common example, where the IBM licensing allows customers to leverage a wide variety of virtualization technologies. Virtualization licensing enables the customer to better manage system utilization, software images, and ultimately reduce costs while providing equal or better performance.

Business value

The business value of this solution focuses on the following areas:

- Achieve and maintain compliance with IBM Passport Advantage® license terms. The software generates reports to help you determine if you have the appropriate number of PVU license entitlements (full and sub-capacity) for each Passport Advantage PVU-based product installed in your environment.
- Comply with Passport Advantage sub-capacity offerings license terms. These terms require that you create, verify, adjust, sign, and save IBM License Metric Tool reports. With sub-capacity licensing, you are only charged for the logical or virtual server capacity in use by Passport Advantage PVU-based software.
- Support distributed server virtualization. This tool helps provide PVU-based software inventory reports to help manage diversified workload consolidations onto virtualized servers.
- Lower liability risks. Now you can reduce the risk of not meeting your Passport Advantage PVU-based contractual licensing conditions, along with avoiding the expense of unplanned license compliance payments.
- Track IBM PVU-based software inventory. This tool helps maintain that continuously updated inventory of Passport Advantage PVU-based software assets are installed on your network.
- The tool is geared to help optimize software license usage and help customers reduce over and under buying of software licenses. Also, it will help business minimize the need to siphon from their IT budgets for unplanned software purchases.
- In addition, usage of this tool can greatly assist in helping companies track previous usage, model current usage, and ideally accurately forecast future software licensing needs so they can accurately plan future expenditures.

Solution overview

The solution detailed in this document will provide a step by step guide on how to enable comprehensive license management of WebSphere Application Server instances in an environment that is deployed on the available sub-capacity of a set of systems. The intent is to show real world scenarios where sub-capacity licensing can be implemented and specifically to demonstrate how this is done for customers using WebSphere Application Server.

The guide will take the reader through every step of the process to complete this task. This includes deployment and configuration of IBM License Metric Tool V9.0.1, steps on how to correctly discover the required WebSphere Application Server components, how to bundle the existing WebSphere products owned by the customer in the IBM License Metric Tool tool, how to execute and understand the sub-capacity reports in the WebSphere specific use case, and ultimately how to compare the results in the reports against the clients WebSphere entitlements in the Passport Advantage Portal. In addition, some helpful tips and tricks as well as maintenance and troubleshooting details will be provided.

At the end of the document, a customer should be able to successfully use the tool to validate audit readiness against all WebSphere Application Server instances in their environment and should have full confidence in case of an audit on WebSphere Application Server components.

Solution architecture

IBM License Metric Tool V9.0.1 leverages the IBM Endpoint Manager (IEM) infrastructure and is built on top of that framework. This enables customers to take advantage of functionality within the IEM product to help seamlessly provide asset and software data back to the IBM License Metric Tool server.

Figure 2 illustrates an overview of the common deployment topology for IBM License Metric Tool customers. In this illustration, you can see how one server installation communicating with a single agent (IEM client) on each target system can report many software products back for analysis. This hub and spoke configuration allows for a single place to manage a large amount of data across the customer infrastructure. License specific information (for example, software asset information and PVU/RVU data) is harvested for use by the IBM License Metric Tool server.

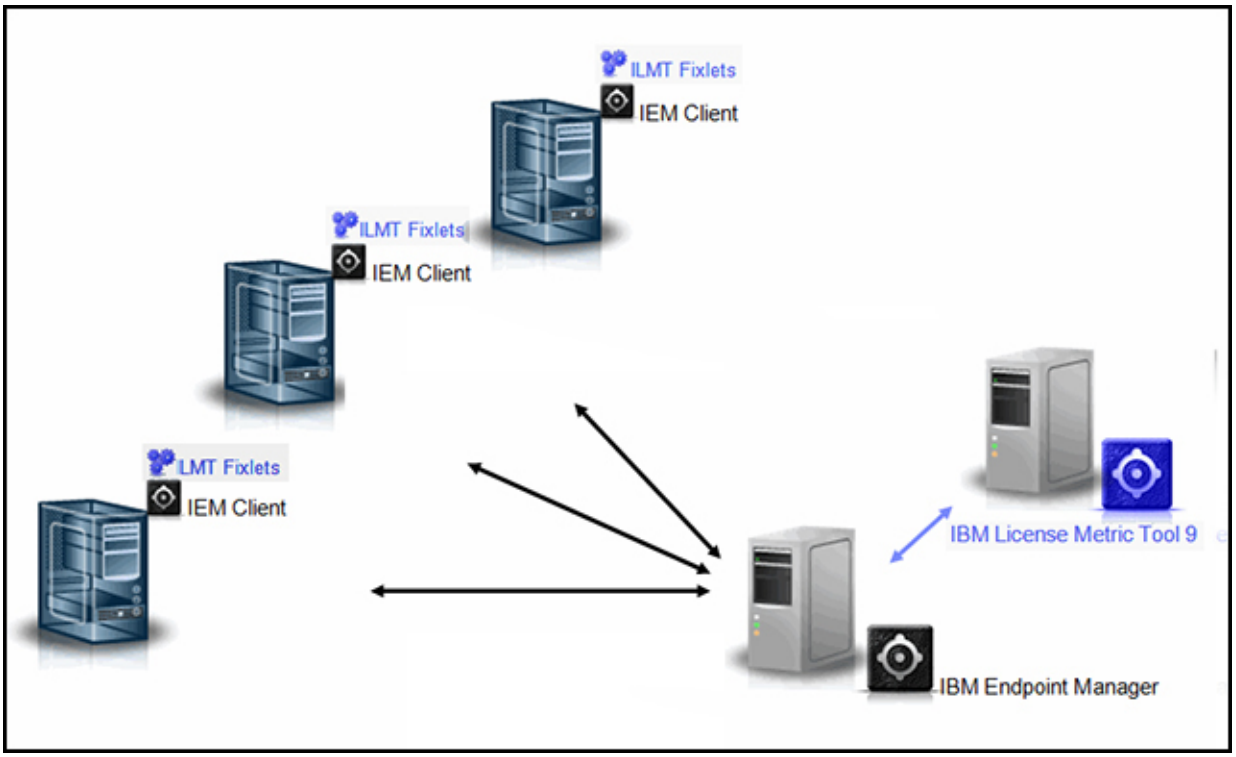

Figure 2 Architecture overview

Figure 3 shows all of the individual functional elements that make up a standard configuration of the IBM License Metric Tool and how they work together:

- IBM Endpoint Manager: Server and database
- IBM Endpoint Manager: Clients
- IBM Endpoint Manager Console: User Interface
- IBM License Metric Tool: Server and database
- IBM License Metric Tool Web UI; User Interface

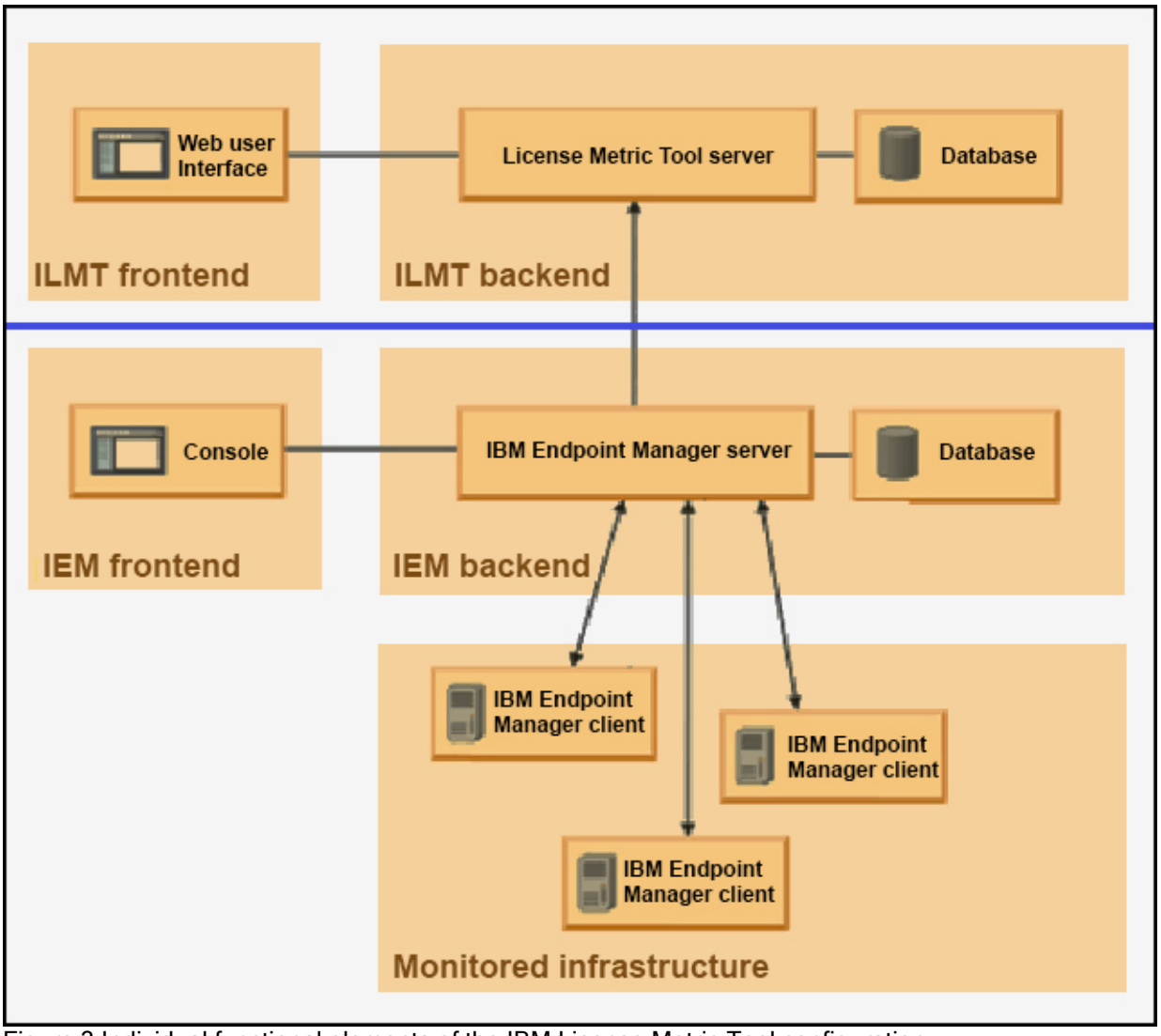

Figure 3 Individual functional elements of the IBM License Metric Tool configuration

As illustrated in the preceding images, the user controls the IEM infrastructure through the IEM console and deployment of new fixlets are triggered through this console and are pushed down to the monitored infrastructure components. Results of client actions are kept in the IEM database. The IEM server is the overall coordination tool for this work effort.

The user controls the IBM License Metric Tool specific functionality through the IBM License Metric Tool Web User Interface. All of the software inventory data and the PVU/RVU information is pulled from the IEM server and stored in the IBM License Metric Tool database and the IBM License Metric Tool server coordinates the work effort related to that information.

Data needed by IBM License Metric Tool is synchronized between the IEM and the IBM License Metric Tool databases on a defined schedule (default is once per day); this process is called extract, transform, and load, or ETL for short. This ETL effort can also be requested on demand through the IBM License Metric Tool Web UI. This and other configuration options are available from the management section of the user interface.

Different licensing models in IBM

IBM employs many different licensing models to provide flexibility to allow customers to purchase software based on their individual usage patterns. The following link describes in detail the specific types of licenses offered by IBM:
http://www-01.ibm.com/software/passportadvantage/about_software_licensing.html

Table 1 illustrates some of the licensing models that are described in the preceding link.

Table 1 Licensing models

License Metric	Synopsis
User Based Licensing	
Authorized User	Count the number of unique users who have access to the software program.
Floating User	For each install of the software program, count the number of simultaneous users who have access to that install, then add those totals together.
Concurrent User	Count maximum number of users who simultaneously access the software program.
User Value Unit (UVU)	Count the number of users who have access to the software program and convert to the required number of UVU entitlements. See program specific UVU table in the License Information document.
Capacity Based Licensing	
Processor Value Units (PVU)	Count the PVUs for each activated processor core, by processor technology, available to the software program. See the PVU table for the PVU values required for each processor technology.
Virtual Server	Count the number of virtual computers created by partitioning the physical server of unpartitioned physical servers made available to the program.
Install	Count the number of copies of the software program installed on physical or virtual disks.
Other Licensing	
Client Device	Count the number of client devices: a) managed by the software program and/or b) on which the software program is installed.
Resource Value Units (RVU)	Count the number of resources: a) used by the software program or b) managed by the software program and convert to the required number of RVU entitlements. See program specific RVU table in the License

	Information document.

Instead of focusing on the many different licensing models that IBM may offer, this section is going to focus specifically on some key aspects of sub-capacity licensing that are relevant to the solution that this Redpaper is addressing. First, what is sub-capacity (virtualization) licensing and how is it different from standard licensing?

Sub-capacity licensing lets you license a PVU-based software program for less than the full processor core capacity of the server, when the software program is deployed in an eligible virtualization environment. With full capacity licensing, customers are required to obtain PVU license entitlements for all activated processor cores in the server, regardless of how the software was deployed. One of the ultimate goals of this type of licensing model is to allow customer to pay for only the software they use and as the company grows and they expand to more PVUs, they can acquire additional licenses as needed.

Now that we have a basic understanding of sub-capacity, how does it specifically differ from the more well understood full capacity licensing models? Briefly, full capacity licensing is based on every physical, activated processor core in the physical server. Back when servers were one processor core sitting on top of one chip plugged into one socket, software was licensed on full capacity basis by default. The concept of full capacity licensing has not changed, even with the proliferation of multi-core and multi-socket servers. Licensing was basically simple. But with partitioning and more sophisticated server virtualization technologies that create virtual CPUs, virtual servers/partitions (also known as virtual machines, LPARs, and so on) that can be moved and/or resized on the fly, came the demand for more flexible licensing terms. Thus IBM announced its sub-capacity licensing offering back in 2005. Today, IBM has the broadest support of virtualization technologies in the industry, including RISC and x86 platforms, and Linux on System z®. In addition we are the only vendor that provides a tool to assist customers in maintaining compliance.

The value of using sub-capacity based licensing seems very clear, but it does present many challenges in maintaining audit readiness and accurately finding and reporting software that is deployed on a sub-cap level. To solve this issue, IBM developed the IBM License Metric Tool, which is the preferred solution for IBM customers to use to monitor and report on their sub-capacity license usage.

Need of software management in IT companies (advantages)

As organizations come under intense pressure to deliver continuous, superior service, it is more important than ever that organizations have a way to tightly control software assets. Unlike tangible assets such as hardware, software is considered intellectual property. Organizations are contractually obligated to uphold defined usage rights and license agreements, which makes it all the more imperative to manage software deployment and use effectively.

The consequences of violating these agreements go well beyond the actual dollar amount. Not only can a violation compromise SLAs, but failure to demonstrate proper financial controls can result in internal and external audit failures with possible fines.

Even in the best run organizations, however, it is all too easy to inadvertently install software on an unlicensed machine or server logical partition (LPAR). Nor are there warning signs that a violation is about to occur. In theory, hard coding usage limits within the software would solve the problem, but in a world of 24x7 operations where backups must be available and software moved at a moment’s notice, forcibly limiting usage is simply not practical.

Instead, the onus of software asset management rests squarely with the IT operations team. And with hundreds of applications running across the IT environment at any given time, keeping an accurate software inventory and determining usage can be difficult at best. A robust software asset management practice can help simplify the process by enabling organizations to efficiently track, manage, and control software assets throughout the asset lifecycle.

Figure 4 illustrates the value of a comprehensive software asset management solution.

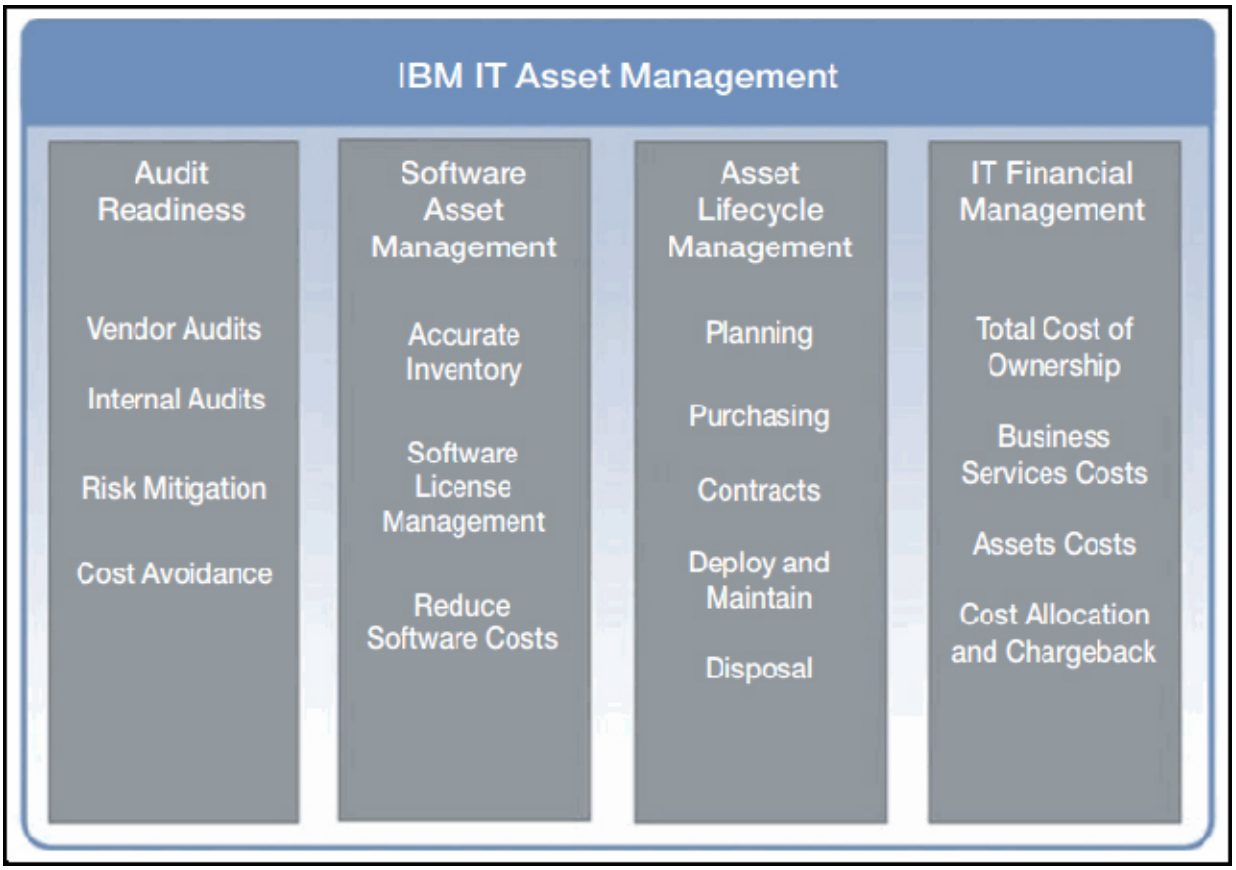

Figure 4 Software asset management value areas

Defined by IT Infrastructure Library (ITIL), software asset management is the practice of integrating people, processes, and technology to allow software licenses and usage to be systematically tracked, evaluated, and managed. With the right software asset management tools, organizations can help manage software costs and license compliance risk by identifying software inventory, measuring software use activity, and linking complex license entitlements to installed inventory and license use. At the end of the day, proper software asset management helps organizations continue to meet SLAs while ensuring IT resources are available for high value activities such as service improvements.

Ideally, the solution should take a comprehensive approach that addresses each of the following areas:

- Inventory. Collect licensed software product inventory installed on all major platforms, distributed and mainframe.
- Software usage. Monitor discovered software inventory and use activity information to gain a complete picture of who is using what software.
- License entitlements. Track entitled metric information defined in license agreements (for example, number of users, number of CPUs where software can be deployed).
- Contract management. Manage software license cost, renewal dates, terms and conditions, signed agreements and vendor demographic information.
- Software life cycle (plan, procure, deploy, manage, retire). Create a continuous loop of software asset management throughout all the phases of the lifecycle.

In addition to proactively managing compliance risk and potential service disruptions, a comprehensive approach to software asset management can free up the IT budget by matching inventory with actual deployments to eliminate over and under licensing. For example, an organization might discover a software program deployed and used but not contracted for, and therefore a compliance violation. Or a program might be deployed and contracted but not used, in which case it could be removed and the licensing costs diverted to other activities.

Automation plays a crucial role in software asset management. Through automation and the ability to link key information, organizations can help eliminate what would otherwise take countless hours and IT resources to manually inventory, monitor, and maintain software usage. This is where tools such as IBM License Metric Tool can be an invaluable asset for a company's IT organization.

Supported platforms

The following link provides information on deployment steps, supported platforms, minimum system requirements, and other useful data to plan your installation:
http://ibm.co/VxW5w3

In addition, the following diagrams show the specific supported platform coverage for all IBM License Metric Tool and IEM components and can be used for planning the installation.

Figure 5 shows the supported platforms for the server components.

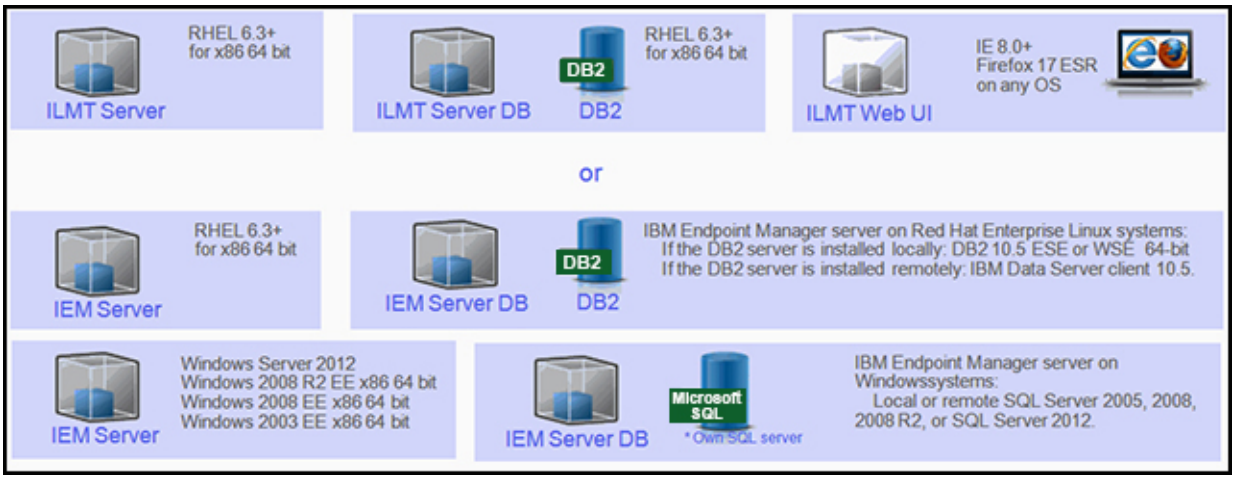

Figure 5 Platform Coverage - Servers

Figure 6 shows the supported platforms for the IEM console and clients.

Figure 6 Platform coverage - console and clients

Ordering information

In this section, all of the download details and part numbers needed to attain the IBM License Metric Tool V9.0.1 are listed. These images can be downloaded directly from Passport Advantage at the following link:
http://www-01.ibm.com/software/passportadvantage/

Specific part and ordering information is shown in Table 2.

Table 2 Ordering part numbers and feature code

Description	Part number
IBM License Metric Tool V9.0.1 QuickStart DVD Assembly	CSL1WML
IBM License Metric Tool Install V9.0.1 DVD Assembly	CSL1XML
IEM Platform Install v9.1 DVD Assembly	CSJ3LML
IEM Platform Install v9.1 Lnx DB2 DVD Assembly	CSJ3MML
DB2 LU V10.5 Linux 64Bit DVD Assembly	CSJ3RML

Related information

For more information, see the following documents and references:

IBM Offering Information page (announcement letters and sales manuals):
http://www.ibm.com/common/ssi/index.wss?request_locale=en

On this page, enter <IBM License Metric Tool (ILMT)>, select the information type, and then click **Search**. On the next page, narrow your search results by geography and language.

IBM License Metric Tool Homepage on the IBM DeveloperWorks wiki:
http://ibm.co/1tekn9y

IBM License Metric Tool YouTube Homepage (Relevant Videos and Recorded Information Sessions):
https://www.youtube.com/user/IBMLicenseMetricTool/

The IBM Information Center for IBM Endpoint Manager 9.1:
http://ibm.co/1yPP1I4

Learn About Software Licensing:
http://www-01.ibm.com/software/passportadvantage/about_software_licensing.html

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