



Server Consolidation

The Impact of Virtualization to IT Asset Management

Virtualization is most likely either part of your IT infrastructure today or on the project list for this year. While virtualization is a relatively new addition to the tools organizations use to manage servers, the flexibility and increase in ROI that can be gained is stirring a great deal of interest. Over the last few years, server farms have become large and chaotic, partly due to the tendency to purchase a new server for every new application or processing requirement. The influx of new servers most likely occurred due to the declining cost of servers and the cumbersome implementation procedures arising from security and compliance (SOX, HIPAA) requirements. Capacity utilization and ROI were not the top criteria in the last few years and a return to these criteria offer opportunities for increased savings and manageability.

While adding another server may be an easy short-term solution to the complex testing and security hurdles that complicate today's implementations, longer-term issues include:

- Under-utilized servers
- Lengthened disaster recovery planning
- Increased difficulty and cost preparing for change, such as Vista
- Dropping ROI on the server spend
- Increased difficulty securing the environment
- Difficult to control storage management

Server consolidation through virtualization is an attractive approach to solving these problems and is a familiar strategy to any IT professional with mainframe experience. Like the mainframe image, virtual machines on a server offer separate environments that mimic a physical server. The software simulates the operation of a physical server, with the possibility of many virtual servers per physical box. Numerous vendors have virtualization offerings, extending to the mainframe, server or even the desktop. While the physical servers can be consolidated and utilization improved, new software to create the virtualization and potentially new software to manage the virtual environment will be added into the environment.

For the IT professional responsible for managing the enterprise's IT assets, virtualization creates another

layer of complexity to the management of those assets. Managing a virtual environment requires an understanding of how the virtual machines will be used. Are virtual machines going to be created and removed frequently? Will a virtual machine be moved from one physical server to another?

With an understanding of how virtual machines are going to be used in the organization, the business practices for managing the assets will need to be reviewed and potentially adapted to reflect the changing environment. Software used in a virtual environment still requires proper licensing and to be used in a way that is consistent with the applicable software license agreement. To begin analysis of the impact of virtualization on the managing of the assets involved, begin with an examination of the tools currently used to automate and support IT asset management. For instance, direct implications to the discovery tool are possible and the following questions should be asked:

- Does the discovery tool in use identify and inventory the software used in a virtual environment?
- Can the organization determine that the software is being used in a virtual environment?
- If the virtualization technology requires an OS on the host machine, is that OS reported in the organizations' count of licensed software?
- Are virtual machines counted as physical devices?
- Is the software that creates the virtual environment discovered?

The Impact on Software

For the virtualization to provide the flexibility and ease of operation that the vendors intend, the virtual machine must act like a real machine to the greatest extent possible, including having software installed on that "server." In order to discover that software, discovery agents must be placed on a virtual machine in the same way they would be placed on a real machine. The agent will then discover all of the software information on the virtual machine with the same detail that it does on physical devices.



If there are many virtual machines running on a single physical device, then there must be a report for every virtual machine, just like the by-server reports required for physical devices. These reports insure a clear picture of the environment is provided.

When software is being used in a virtual environment, the BIOS hardware information that is reported is related to the virtual device. The “virtual” BIOS makes it obvious that the software is running in a virtual environment, with the virtualization vendor’s name or other identifying data separating that BIOS description from the physical machine’s BIOS.

If the host server runs an operating system, the agent on the server should report the OS that resides directly on the server as well as the software running within the virtual environments on that server. The more sophisticated enterprise class virtualization solutions tend to use their own proprietary software running directly on the host, replacing the OS on the server with a modified version.

There may be software that manages the links to create the virtual environment. There may also be new software to manage the virtual environment providing more information about the technical issues associated with managing a virtual environment. These software applications, along with all of the virtualization software, will be reported, depending on its location and if it is part of the software identification library for the discovery tool.

As with any major change in how software is installed in your organization, a review of the legal language governing the use of that software is absolutely essential. Does the license specify a particular size of server or type of server? Does that size apply to the physical or the virtual? Have you increased the number of “servers” that have the software installed on it without reflecting that change in your license counts? If virtualization is used to create testing environments, do you have the right to have the software installed in that environment? The license is legal document that gives permission to use the software. If the document does not specifically grant permission to use the software a certain way, you must not assume that you have permission. Clarifying the language with the legal team early in the adoption of virtualization is an excellent way to avoid expensive over-purchasing or poor audit results from under-purchasing.

A Few Comments on Hardware

From the network perspective, a virtual machine is reported just like a physical device, with a separate IP address and an operating system. A separate agent

should run on every virtual machine in the same way it does on the physical devices.

Ironically, a key issue regarding detection and inventory of virtualization software is the physical device. If the virtualization software uses its own version of an OS on the real hardware, the nonstandard and unpublished OS modifications can create difficulties for discovering hardware characteristics. As the operating systems mature in their handling of both real hardware and the portions dedicated to virtual machines, standard access and reporting methods such as those available for AS/400 and mainframes have become available.

Summary

When incorporating virtual servers, IT Asset Managers frequently uncover unexpected complications arising from those changes. Virtualization, while a growing trend and offering great potential, will have growing pains. While IT operations focus on the direct implementation of the technology, the downstream impact on business and management reporting may be missed if established procedures and tools are not examined. With virtualization, the reconciliation of the related software packages and identifying the virtual environments are critical points to insure compliance and network security. The financial and contractual aspects of the assets involved must be reviewed to ensure that the new technology has not created unplanned expenses and difficulties. The business practices for managing assets will need to be examined so that reports remain accurate and decisions are made based on the new and improved server configurations.

IT asset management tools play a key role in identifying the business issues that can arise from any technology change and are generally impacted from the change as well. Using IT asset management to prepare for change and then to report on the ramifications to the business aspects post-change remains a valuable resource for IT professionals.

Jenny Schuchert is Vice President of Marketing at Eracent, Inc.