

# *The Legal Intelligencer*

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## **Save Green and Go Green with Virtualization**

In this economy, it is essential that law firms implement new technologies that reduce both economic and environmental costs. Not only are firms trying to create environmentally-friendly computing environments, but their limited information technology budgets are expected to deliver even more to support automation that will enable other departments or areas within their firms to reduce spending.

Firms should not overlook the many advantages of paying for cutting-edge technologies, specifically virtualization, which have a long-term payoff. By consolidating servers with virtualization, firms can increase hardware utilization by up to 10 times and significantly lower their overall energy consumption, ultimately resulting in major cost savings.

With virtualization's multitude of benefits, it is easily recognizable why so many firms have either already embraced this proven technology solution or are planning to implement some form of the technology in the near future.

### **Server Virtualization at a Glance**

Virtualization, "server virtualization" specifically, helps solve the technical challenge that most organizations face of server underutilization. With server virtualization, one server became capable of doing the job that was once performed by multiple servers.

Virtualization allows a server to run multiple operating systems, also known as OS, concurrently. This ability for servers to multitask in this manner is significant because it allows firms to use their IT resources in a more efficient manner. Without virtualization, servers would be radically underutilized since they were originally designed to run only one OS, with its associated applications, at a time.

Remarkably, industry statistics demonstrate that organizations tend to use only about five to fifteen percent of their total server load capacity. For organizations that do not employ virtualization, only a small piece of each server – housing only one of the organization's services such as its file, print, Exchange, SQL, or Web services – is utilized, instead of running multiple services at a time.

Server virtualization affords organizations the opportunity to have multiple "virtual servers" on one physical piece of hardware. In this virtual environment, server

resources are shared and allocated as needed, therefore dramatically increasing the traditionally low percentage of hardware utilization levels.

The two key players currently in the virtual space, Microsoft and VMware, offer virtualization software products that can be installed on a server and will act like a broker to handle the requests from the server's multiple OSs and their software applications. Each virtualization product simply distributes the hardware's resources to the various OSs, or "virtual machines," that sit above it.

### **A Focus on Savings**

According to the 2008 International Legal Technology Association Technology Purchasing Survey, 51 percent of respondents rolled out some form of virtualization technology in the past year. The movement was stimulated primarily by a focus on savings, including a reduction in energy costs and capital expenditures, efficiency, and risk management. Notably, virtualization was also voted one of the most popular 2009 planned purchase technologies, and the No. 1 most exciting technology. Without a doubt, this trend will continue particularly because of virtualization's financial and green benefits.

Servers have reached the point where they require a greater amount of power than ever before to keep them up and running, resulting in a more substantial monetary investment. In fact, Carbonfootprint.com indicates that energy consumed by computer servers has actually doubled in the last five years in the United States, and the rising trend is expected to continue. Server virtualization allows organizations to combat these rising costs by consolidating the number of servers they utilize.

Firms are able to avoid the steep capital investment of purchasing multiple servers since one "virtual server" can do the job of several non-virtualized servers. Electrical consumption is drastically reduced because fewer servers are operating. For example, a firm with 10 freestanding high-end servers, which require approximately 3.6 amps each to operate, is equivalent to 36 total amps of power. One virtual server running the services of 10 physical servers, on the other hand, requires only about 6 amps of power – a dramatic reduction in the environmental impact due to the decreased level of electrical consumption.

Let us also keep in mind that every server contains hazardous materials such as mercury and lead and also exudes a great amount of "waste heat," which inevitably takes us down a very slippery slope to increasing our carbon footprint. And, with technology changing so rapidly, every few years firms find themselves disposing of their old servers and replacing them with new ones.

Understandably, it is more ecologically friendly to dispose of one server rather than four or five servers. And from an economic standpoint, there is a considerable benefit of only having to purchase one replacement server rather than multiple, which can set a firm back several thousand, or even tens of thousands of dollars, for just one new piece of hardware.

Deploying a virtual server infrastructure also saves on physical space because having fewer servers will require less storage space – plus, the consolidation centralizes server management, which ultimately improves the security of the equipment and the data being housed. The bottom line: Becoming more eco-friendly typically consists of making small changes over a period of time. But little by little, firms can save money, operate IT more efficiently and reduce their overall carbon footprint by consolidating servers with virtualization.

### **A Step Further with Desktop Virtualization**

With the increasing trend of firms adopting server virtualization, more firms are going a step further and deploying complete “desktop virtualization.” As described on Wikipedia.com, desktop virtualization gives end users the best of both worlds with the ability to host and centrally manage desktop virtual machines in a data center while giving end-users a full PC desktop experience.

In this server-centric computing model, firm employees connect over a network to a virtual server using a thin-client protocol. The server’s OSs and specified applications are shared with the users, essentially giving them a “piece” of the server to perform business-essential computing functions, as opposed to having the OSs and their software applications stored directly on the employees’ local PCs.

This approach can spare organizations the headache and expense of developing, housing and operating on-premise computing infrastructures. Users can simply access applications running on servers at a convenient network location – typically a remote, secure data center which is operated and maintained by a team of skilled, experienced specialists. Since all processing is centralized, the financial cost of administering and managing individual desktops is greatly reduced and there are vast improvements in system stability, reliability and overall user experience.

Server-based desktop virtualization also fosters green savings. One key example lies in the fact that virtual desktop devices – aka thin-client or dumb terminals – have significantly smaller power footprints than traditional PCs. Therefore, organizations enjoy considerable power savings on each user’s virtual desktop. According to Forrester Research, virtual desktops consume anywhere between five and 60 watts per device compared to the 150 to 350 watts typically used by a standard PC. Forrester also reports that traditional desktop PCs and notebooks last only three to four years, where virtual devices last quite a while longer – seven years on average.

Firms with 150 employees or fewer, which typically have a small number of in-house IT staff or no IT staff at all, usually find it quite beneficial to subscribe to an outsourced desktop virtualization service delivered by a trusted managed services provider, or MSP. In this scenario, a firm can completely offload the

management and support of all of the firm's desktops to an MSP, usually for a fixed monthly fee.

### **Less is More with Virtualization**

The old adage of "less is more" can clearly apply to virtualization technologies. Utilizing fewer servers will ultimately result in more cost savings, both economically and environmentally. During these tough economic times particularly, firms should fully explore how information technologies like server virtualization and desktop virtualization may add value to their business. Since a high level of expertise is needed to implement and manage a virtual environment, it is imperative that a firm's IT staff or MSP have a system management team in place that possesses a sharpened skill-set to handle such complex technologies. If executed properly, virtualization technologies can make sense, and better yet a lot of "cents," for almost any size firm.

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