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VIRTUAL MACHINES – Processing Data for Electronic Discovery

By Marco S. Nasca, Esq., Regional Director, IRIS Data Services

In this edition of IRIS Eyes we discuss the technological use of virtual machines in the processing of data for electronic discovery. To put virtual machines in perspective, let's start with an analogy:

It is 4pm on Friday, the lead litigation partner walks into her paralegal's office and hands off a sizable project that needs to be completed by Monday morning. Normally this project would take at least three days; the paralegal's weekend is ruined. Colleagues sitting nearby hear the predicament and jump to his rescue, teaming up to each take a portion of the work. After hours of toiling independently, the group puts the work product together, organizes it, and then carefully proofing the results. It's 11pm on Friday, and the project is done. Together, the group accomplished more as a team than one person alone could ever have done.

This analogy exemplifies what virtual machines do for providers utilizing them for e-Discovery processing, allowing processing jobs to be completed substantially quicker by dividing up the necessary tasks to multiple processing units working together. The concept of virtualization has been known for many years, however it is only now being recognized as one of the most significant advances on the horizon in the legal industry. Yet even though this technology dramatically reduces processing time and costs, very few have made the necessary infrastructure investments necessary to keep pace with technology, relying on their costlier, out-dated technologies.

Virtual machines are servers tied to individual microprocessor cores, working in tandem to expedite a task by separating processing work amongst each of the units, collecting the product from each, and then organizing the work into its proper order. Thus, a quad-core processor is capable of running up to four processing servers to complete a unified task at a higher rate of speed then if one server was working alone.

Virtual machines can be broken down into two general concepts: *system virtual machines* (also referred to as "hardware virtual machines") and *process virtual machines* (also referred to as "application virtual machines"), with each of these having significance for the future of legal technology. This article will focus on process virtual machines. (Not to diminish in any way the importance of system virtualization, which plays significantly into the advancement of online review and the future of corporate technology infrastructures. Our next edition of IRIS Eyes will discuss system virtualization.)

Process virtual machines run as a distinct PC inside an operating system and support any process as defined by the user. The PC itself is created when the process is started and shut down upon completion. This is the equivalent of a computer telling itself to run a specialized program, and then shutting that process down when the task is completed, only to start it again when it encounters the right environment. The distinction here is that, as opposed to running a specialized program, it is running a specialized computer.

Process virtual machines have significant bearing on the expedition of processing data for e-Discovery purposes, in that these units can create efficiencies within workflows and production and take the manual burden off individuals processing data. As in the analogy provided above, the master processing unit will divide up particular processing tasks to

individual processing units that it commands, and then collects and organizes the work product when completed. As additional resources are created upon the completion of tasks by individual units, work can then be reassigned accordingly by the master to ensure the highest level of project efficiency.

One of the great advantages of virtual systems is the extreme level of scalability they provide, allowing additional "boxes" to be added to a network as resources are needed to meet the challenges of a particular job. Each server can house up to eight separate processing virtual machines, essentially allowing the number of processing units to double in a matter of hours, instead of weeks. To relate this to our law firm analogy, it would be like calling in additional staff from other departments to get the job done even faster.

Another advantage of processing through a virtually enabled system is that work is never halted when a system "snag" is met. For instance, in a standard processing situation, the occurrence of a password protected file or unknown file format might bottleneck an entire processing job as the system attempts to resolve the anomaly. However, in a virtual machine system, since work has been allotted to multiple units, the project never sits idle. Further, the master processor unit can opt to transfer workflow from the hindered processing unit to another virtual machine in real-time, ensuring that the job continues production, while the original unit handles the problem file.

Most industry observers have touted virtualization as the next significant step within e-Discovery. Always on the cutting edge of technology, **IRIS Data Services** has spent considerable resources in providing clients access to the most advanced virtual machine system in the industry, housed in our state-of-the-art data center. Additionally, **IRIS** has developed **eGo**, a proprietary processing solution that takes full advantage of the technological breakthroughs in virtualization. By utilizing **eGo**, **IRIS** is able to capture over 100 items of metadata and full text of electronically stored information and is capable of processing any type of file. It is this commitment to providing the most advanced technologies, superior client service, and the industry's highest level of quality that has made **IRIS** the fastest growing e-Discovery and forensics company in the business. To learn more about **IRIS Data Services**, visit www.irisds.com or call at 888 474-7370.

NEXT MONTH: Virtual Machines: Part II - Moving beyond processing, and changing the business world.

About The Author: *Marco Nasca is an attorney and Regional Director for IRIS Data Services, a national litigation consulting firm specializing in e-Discovery, computer forensics, tape restoration, and online hosting for law firms and corporations. Mr. Nasca is a frequent speaker on litigation technology issues, and has written or contributed to numerous articles on the subject.*

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