

## Blank Rome LLP

### EMC and VMware solutions create a consolidated, reliable, and flexible virtualized IT infrastructure for rapidly growing law firm



For 60 years, businesses from nearly every industry and market sector have relied on Blank Rome's comprehensive range of expert legal services and counsel. Counted among the fastest growing law firms in America today, Blank Rome operates with a staff of over 1,200 in eight U.S. locations, from New York to Florida, as well as an office in Hong Kong. Revenues for this rapidly expanding Am Law 100 law firm approached \$300 million in 2006.

With its main data center in Philadelphia nearly out of floor space, power, and cooling resources, Blank Rome's IT management team needed to find a more efficient way to provision for new services required by the growing business. VMware® Infrastructure 3 server virtualization technology, supported by an EMC® CLARiiON® CX series-based SAN, was determined to provide the best solution for positioning the company to flexibly and cost-effectively handle current and future IT requirements.

"We were approaching 200 physical servers in operation across the enterprise, with about 150 in Philadelphia," says Frank Gurfolino, chief network architect. "Among those, we identified 125 servers that were candidates for virtualization. We were already using VMware technology for development and testing, and we had experience with VMware in formal training environments. We knew it was solid enough for our production environments."

"We refer to what we have created with EMC and VMware solutions as our virtual infrastructure," adds Larry Liss, chief technology officer. "Clearly the physical consolidation of our servers and the ability to centralize storage were key reasons why we went this route, but another key advantage is the level of reliability we now have that we didn't have before. With VMware's resiliency and the call-home features on the SAN, the stability of this environment is remarkable."

#### **A consolidated server environment supported by centralized storage**

In the final stages of consolidation at the Philadelphia data center, roughly 150 of the firm's physical servers will have been successfully reduced to 19. There will be 12 VMware ESX Servers™ with approximately 10 to 15 virtual machines running on each; five Microsoft Exchange servers which may eventually be supported by virtual machines; and two additional servers used to serve up large "LUN sizes" of legacy data.

Set up in a VMware Infrastructure 3 cluster using VMFS, the firm's virtual servers can read and write concurrently to a high-performance, highly available, 32.5 terabyte EMC CLARiiON CX series-based SAN. This SAN has replaced the direct-attached storage of the previous environment with a centralized storage infrastructure that enables simplified provisioning and easier administration across the new virtualized sever environment via powerful, yet easy-to-use EMC Navisphere® storage management tools.

Equipped to accommodate both high-speed Fibre Channel and more economical ATA drive options within the same box, the EMC CLARiiON CX series system allows Blank Rome to match various application service levels with the most cost-efficient storage option.

"Our tiered storage approach is somewhat experimental at this point," explains Gurfolino. "We plan to keep the more resource-demanding applications running on servers supported by our tier-one Fibre Channel storage. However, for the mostly static information coming from applications such as

litigation support and e-mail archives—both huge consumers of storage—it makes the most sense to take advantage of ATA drives which we can cost-effectively scale as needed.”

The majority of the LUNs supporting VMware environment applications were configured as 256 gigabyte metaLUNs with a designated maximum metaLUN size of 500 gigabytes. To help ensure that I/O is evenly distributed across the SAN within the virtualized server environment, EMC Global Services collaborated with Blank Rome’s IT team to create a manual configuration scenario. In this scenario, all even-numbered LUNs and metaLUNs are on one storage processor, and all odd-numbered LUNs and metaLUNs are on another storage processor, so that when the LUNs are numerically selected for use in the production virtual machine environment, disk usage will traverse the RAID groups evenly. Within this set up, each ESX host maintains four virtual machine host-bus adaptor (HBA) connections to the Fibre Channel fabric, and access at the virtual machine level is configured as fixed, as opposed to most recently used, so that Blank Rome’s IT administrators can dictate the preferred path for any particular LUN to spread I/O across the fabric. Future releases of VMware will support multi-pathing and help simplify this configuration considerably.

“We have certain applications, particularly ones with heavy I/O, where it’s critical to ensure the storage is provisioned correctly,” says Gurfolino, “EMC engineers met with us and said, ‘we really want to squeeze as much I/O out of this solution for you as possible to ensure application availability and service quality levels are as high as they can be.’ We realized during this project just how good they were at helping us get the most benefit out of our VMware and EMC solutions. Performance has remained optimal since deployment.”

**“With VMware’s resiliency and the call-home features on the SAN, the stability of this environment is remarkable.”**

**Larry Liss, Chief Technology Officer**

Legacy data that requires greater than a 500 gigabyte LUN size is presented to the production environment via the network by front-ending the larger LUNs with the two physical stand-alone Windows servers located in the main data center. These stand-alone servers use EMC PowerPath® path management software to balance LUN access across multiple HBAs which are attached to the SAN fabric, and have been zoned for access to the larger LUNs. Exchange servers will be connected to the SAN in the same way.

“PowerPath takes away all of the concerns about what path to use, load balancing, and failover,” says Gurfolino. “It’s a great tool.”

Fast and automated backup capabilities for the entire EMC CLARiiON CX series-supported environment are provided by EMC NetWorker® data protection software.

“In our previous environment every server had its own stand-alone backup,” says Gurfolino. “It was expensive and an incredible effort to manage as far as changing tapes, scheduling jobs, and other tasks. As things were moved to the new VMware environment, they were moved over to the centralized NetWorker backup as well. The performance is excellent and the amount of time NetWorker saves us is considerable. It’s a very robust and powerful solution.”

### **Leveraging the latest VMware technology**

The core management application for Blank Rome’s virtualized server environment is VMware VirtualCenter. It is the control point for VMware Infrastructure 3, which includes various features such as VMware HA, VMware DRS, and VMware VMotion®, and is used by Blank Rome’s IT administrators to help simplify the monitoring, management, and optimization of the virtual machine environment through a single interface.

“VirtualCenter is our centralized management tool,” says Gurfolino. “It’s essentially our eyes into the VM environment and really pulls everything together for us. It makes management much easier.”

Set up for high availability, Blank Rome’s VMware cluster configuration uses the latest VMware HA capabilities to automatically monitor the environment and provide failover protection for the firm’s virtual machines if a problem is detected with a physical server.

“Once it’s set up, you don’t have to do a thing,” says Gurfolino. “If any cluster server fails, the virtual machines on that particular server just get restarted elsewhere in the cluster. It’s a great feature.”

VMware DRS software also is used within Blank Rome's virtualized IT infrastructure to help ensure optimized resource utilization. For example, if demand on an ESX Server with a few accounting virtual machines on it becomes burdensome toward month end, DRS might recommend migrating these particular virtual machines to another ESX Server with more available resources.

Although VMware DRS can make automatic resource adjustments, for now, Blank Rome's IT administrators prefer to view the application's recommendations and make the calls themselves. If a change is deemed necessary, the non-disruptive virtual machine migration capabilities of VMotion are used to manually make the adjustment.

"DRS is great for monitoring our virtual machines and making recommendations to help us balance resources across the cluster," explains Gurfolino. "As we move toward a more automated configuration, we'll be able to leverage the application's migration thresholds and configure DRS to carry out only those recommendations with, for instance, a three-star rating or more. In this way we will be able to ease into how much is done for us, and it's granular enough that we can set a comfort level."

Another valued tool utilized heavily by Blank Rome's IT administrators during migration to its virtualized server environment is VMware Converter which converts physical machines into virtual machines, even while they're operating.

"VMware Converter has been essential in helping us seamlessly move the old physical servers to virtual machines," says Gurfolino. "Once the legacy systems are migrated to the cluster, firmware and software updates to the underlying cluster servers can be completed without downtime or service disruptions, thanks to VMotion."

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**Frank Gurfolino, Chief Network Architect**

### **Enterprise-wide adoption and a new data center planned**

Blank Rome has two smaller data centers in New York and Washington, D.C. which will soon implement mini versions of the virtual machine clustered server/EMC CLARiiON configuration deployed at the firm's main data center in Philadelphia. In addition, the main data center will be upgrading its current EMC CLARiiON CX series platform to an EMC CLARiiON CX3-80, EMC's most powerful midrange platform.

Plans are also underway to create a disaster recovery center within a commercial co-location facility. The replacement for a disaster recovery process that currently relies on tape backups, this center will initially use EMC SnapView™ and SAN Copy™ software to create and migrate point-in-time copies over dark fiber from the EMC CLARiiON CX series systems at all three hubs to an EMC CLARiiON CX series platform at the disaster recovery site.

"SAN Copy is a good first step in getting multiple point-in-time copies of data out into DR," says Gurfolino. "It's cost-efficient and immediately gives us something that is considerably better than rebuilding from tape. For subsequent phases, we are in the process of evaluating more sophisticated fabric-level replication technologies that will be application-aware and help us replicate data that exceeds crash consistency."

### **Technical expertise and support for today and tomorrow**

EMC Global Services and EMC's customer service partner, Unisys Corporation, have been engaged to assist Blank Rome at all stages of its virtualized infrastructure initiative, from planning and implementation to maintenance.

"EMC's expertise has been exceptional," says Gurfolino. "During the implementation stages EMC engineers expedited virtually anything that hindered our progress. There were quick answers, work-

arounds, and fixes, and if they didn't know something, they had people around them who did. This stepped up our ability to bring everything into production as quickly and as successfully as possible.”

EMC's sales and technical support teams are expected to play key roles in supporting the continued rollout of the virtualized server and storage environment to the firm's other data centers, the EMC CLARiiON CX3-80 upgrade in Philadelphia, and the planning and deployment of EMC solutions to support the new disaster recovery site.

“The same folks who were involved in the initial equipment sales continue to maintain a close working relationship with the firm,” says Gurfolino. “We recently started monthly DR planning sessions with our EMC sales and pre-sales engineering support teams to discuss how we can best leverage EMC products within our proposed disaster recovery facility.”

In addition EMC's call-home remote monitoring service has been a key element in the proactive resolution of problems and potential issues that could cause downtime.

### **Bringing the simplicity of the past into the future**

Twelve years ago Blank Rome had 12 physical servers in its main data center. Over the years that number steadily grew to 150. In 2008, the firm's physical server count in Philadelphia will be back under 20, made possible by using cutting-edge VMware server virtualization technology and industry-leading EMC networked storage solutions.

In addition to lower hardware acquisition costs, a reduced server footprint in the data center, higher application performance, and simplified administration, Blank Rome's new virtualized IT infrastructure enables the firm to be more flexible and responsive to the growing and changing needs of the business.

“With so many new applications coming in all the time it's great to be able to quickly provision servers and storage for them,” concludes Gurfolino. “EMC and VMware solutions have given us an effective way to resolve our challenges and enable us to better and more efficiently address the IT requirements of our growing firm.”



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