

DATABASE

TRENDS AND APPLICATIONS

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Virtualization Spreads Through the Data Center

By Stephen Faig

As with many of the so-called “revolutions” in IT, the emerging move to virtualization has been 40 years in the making. The basic premise has always been the same - the abstraction of resources, but the footprint has grown enormously. Virtualization means more in today’s data center than simple partitioning on a hypervisor.

Although, according to most studies, only five percent of servers in the enterprise are virtual, virtualization is at the top of many IT executives’ minds. The main drivers are hardware and software consolidation and utilization. “You might have 50 physical servers and want to get that number down to five,” Annette Miller, program director, IBM Virtualization Strategy, told DBTA. “With virtualization, you can increase your utilization and reduce the number of physical moving parts.” Most servers are only being used at 15 to 20 percent of capacity, according to Brian Reed, senior vice president of business development at Emulex. “With virtualization, you can drive them up to 80 percent.”

And there are other advantages to virtualization. Cutting back on power and cooling costs is a big plus, David F. Link, CEO of ScienceLogic, noted. “This can really benefit large data centers,” he said. In addition, floor space is often tight in these environments. “Virtualization is very compelling in these scenarios.”

Managing Virtualization

While upfront cost savings is attractive, organizations need to think of the other economic implications, Dave Leonard, CTO of Infocrossing, told DBTA. “There are management opportunities

and management challenges associated with virtualization.” In a virtual environment, it is necessary to manage the virtual machine in addition to the instances, he continued. “Some people use tools for managing the boxes, but you can have a problem farther back in the virtual machine.” Link of ScienceLogic added, “This requires a different level of monitoring and intelligence. You need to know all the excruciating details, so you can quickly get on top of any degradation in services.”

The tools for virtualized environments, however, are not as mature as those for physical environments. “This can lead to difficulties in trouble-shooting,” Leonard continued. As the tools mature, however, virtualization will become more common.

“Today, customers literally do not know what they have out there,” Miller from IBM said. “They do not know their servers. They do not know the middleware running on their servers. A repository to help them see everything and manage the processes is critical.” While customers used to worry about the technological challenges, Bogomil Balkanski, director of product marketing for VMware, reflected, the issues today, are primarily organizational. “Virtualization opens up many doors, you can create a virtual machine in 30 seconds, but you need to think through all the IT processes and components.”

One of the most dangerous aspects of virtualization, Leonard of Infocrossing concurred, is the seduction of being able to just throw up more virtual instances. “After all, there’s no hardware or cables. But somebody has to manage these.”

“So who is allowed to create a virtual

machine? Who can modify them? Do you create a center of competency? Do you retrain the staff? You must rethink your business processes,” Balkanski said. “There are tremendous change management implications.”

Therefore, if you do not have a strong command of the processes and underlying systems, Scott said, “you are inviting disaster. When you invoke virtualization and changes are happening on the fly, you need to know right away when something is affecting services. This requires automation.”

After all, Balkanski commented, “if you want to virtualize 100 servers, you cannot manage them one by one. You need to go beyond the capital cost savings and look at how to improve service levels. This is about providing automated solutions for optimizing and managing resources in the data center.”

Virtualization Phases

The virtualization story remains to be completed, Reed of Emulex opined. “The virtual data center will go through a few phases. The first phase is the plumbing, which gives you the hard dollar benefits,” he said. “The more difficult wave is putting the value-adding services on top of the virtual environment.” For this to happen, the whole ecosystem has to be in place - storage, servers and connectivity.

“Right now, there is a high correlation between virtualized servers and storage area networks,” Reed said. “To receive the benefits of virtualized servers, you really need to be attached to a SAN (storage area network). Almost 80 percent of all VMware installations are.”

With data growing every day, there is

a sustained need for the management of storage, Stefan Kochishan, director of product marketing for CA, told DBTA. "You need to combine reporting and visualization with the ability to design and manage the SAN infrastructure.

"One of the biggest hassles for our customers is backup administration - they want to improve tape utilization," Kochisan said. "We are virtualizing tapes on the mainframe to drive down cost. You can reduce your tape library, combining more data onto a smaller amount of tape."

Moreover, Leonard of Infocrossing pointed out, traditional backups in a virtual environment are complicated. "The whole OS is presented to the file system, thus, the backup utility gets the whole file, so you end up backing up more data."

Then again, if it were not for storage virtualization, Thomas J. Meehan,

vice president of Innovation Data Processing, remarked, "it would be impossible for many organizations to meet their data protection and business continuance obligations." Advances in storage virtualization technology have reduced the one to one "source-to-copy" relationship to greatly improve the economics, he continued. Even so, data continues to grow and IT continues to need to do more with less.

Data Virtualization

One way to manage the explosion of data, John Goodson, vice president of product operations for DataDirect Technologies, remarked, is a single, virtualized view of the data. "XQuery provides a consolidated view of all your data. You can still do reporting through a single back end, but the data remains in a virtual state."

One layer up from the database, ven-

dors like DataSynapse are decoupling the applications from the operating system. "Virtualizing the application layer helps maintain high availability and business continuity," Shayne Higdon, vice president of product marketing at DataSynapse, told DBTA.

Previously, he continued, a given application would be limited by the capacity of the servers. "If the application needed more power, you could not just take the application servers and move them to different physical servers. We are able to shift workloads dynamically, while a company does maintenance on the production server."

Data may be the discrete layer in the information infrastructure to be virtualized. At this point, though the entire system may appear to be a whole entity from some vantage points, the challenges of managing the constituent parts will still be considerable.