PARTNER'S GUIDE TO
Top Trends in Server Virtualization

> Virtualizing server workloads is a mature technology, but that doesn't mean the industry is standing still. A look at top trends that are leading to expanded business opportunities for solution providers. **By Scott Bekker**

Server virtualization is a mature technology. It's invaded most enterprise datacenters, made significant headway in others, and is a foundational technology of public cloud offerings industrywide. Nonetheless, most information technology staples tend to evolve or die, and server virtualization is no exception. Here are a few of the ways server virtualization is expanding, changing and serving as a springboard that could point to new opportunities for solution providers.

1. CONTAINERS

A sister technology to the hypervisors that make up the bulk of virtualized systems is called containers.

The basic way a container differs from a hypervisor is that a hypervisor emulates virtual hardware for an entire system. A container abstracts only part of the OS kernel, meaning it's much less bulky on the system, so it's better able to support multiple containers on one server. A downside is that all of the containers must run the same OS. In other words, with traditional hypervisors, users can run some flavor of Linux in one hypervisor and a version of Windows Server in another hypervisor on the same machine. Google Inc. is a high-profile user of containers in its datacenters. The entire category got a boost with the release of the Docker open source containerization project last year. Parallels offers containerization software for Windows. This technology remains nascent, but solution providers that are able to effectively explain the advantages and disadvantages of containerization might help their customers achieve increased performance and more efficient operations.

2. SOFTWARE-DEFINED NETWORKING (SDN)

SDN itself is a virtualization idea, but because servers are involved, it's a logical place for further use of server virtualization. At a high level, SDN, which dates as an idea back to about 2008, divides networking into two "planes"—a control plane and a data plane—and separates them. The traditional networking stack intersperses network logic and network policies throughout its seven layers. Policies emerge in part from the topology of the network and are hard to change. SDN can be defined as an effort to abstract the network logic and policies from the networking hardware. If you place the policies on a server, they can be modified faster with more user-friendly tools. SDN is one of those technologies that so far is more talked about than implemented, but it's an area on which to keep an eye. Meanwhile, major battles are brewing between companies with the inclination to concentrate management of an SDN in centralized tools, such as VMware Inc., versus those that want to

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concentrate the management within the hardware, such as Cisco Systems Inc.

3. VIRTUAL DESKTOP INFRASTRUCTURE (VDI)

Yes, VDI is a desktop technology, but it's powered by substantial back-end infrastructure—in other words, virtual servers. VDI is one of those trends poised to take over the industry that seems to just not quite materialize every year. Its prospects have faded slightly as other alternatives emerged, such as Desktop as a Service (DaaS), and as computing devices from desktops to laptops to tablets have seen their prices plunge, undercutting some of the justification for the existence of VDI. Nonetheless, VDI continues to mature and seems to be finding its level in certain niches. Meanwhile, some analysts see explosive potential for VDI in the proliferation of mobile devices. Being able to display corporate resources on small screens anywhere fits a growing need.

4. PRIVATE CLOUDS

The public cloud offerings of Amazon Web Services (AWS), Microsoft Azure and Google Cloud aren't for everyone. Local regulations requiring sovereign providers or at least within-border data storage are an issue in many countries. HIPAA and other restrictions are another justification to keep data local. Others don't trust the security of public cloud offerings, especially given the revelations of the last 18 months about the reach of the U.S. National Security Agency. Still, others are put off by reports of outages by main providers, such as Microsoft's late June outage on Office 365 that left users on the East Coast of the United States offline for an entire workday. Vendors commonly claim their extensive experience with the products and highly optimized datacenters make their offerings more reliable than on-premises applications, but such outages go a long way toward undermining those claims. Yet, cloud, especially Infrastructure as a Service (IaaS), offerings have enough benefits that many customers are interested in emulating the on-demand, flexible resource model for their internal departments. Private cloud environments depend heavily on server virtualization technologies and deployments benefit from solution provider expertise.

5. HYBRID CLOUDS

Closely related to private clouds are the hybrid clouds that mix together an on-premises cloud solution with a public cloud portion, either in a major public cloud environment, such as with AWS, Azure, Google Cloud or IBM Cloud, or in a public hosting company's facility. Outside the smallest organizations, almost all public cloud implementations are hybrid, although the combination of the public cloud and an implementation of a private cloud is the defining characterization of the hybrid cloud solution.
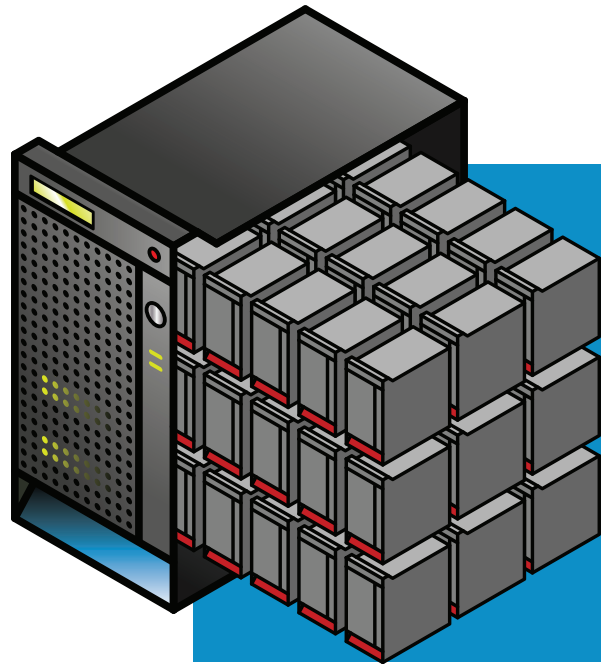
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Exercising choice over whether to keep data on-premises versus in the cloud gives organizations a way to address the regulatory, security and reliability concerns that often motivate a private cloud deployment, while leveraging the cost efficiencies and other benefits of the public cloud for less-critical data. Again, server virtualization expertise is a key area for effective hybrid cloud implementations.

6. DATACENTER MANAGEMENT

One area of fast growth and heavy industry momentum being driven by public cloud, hybrid cloud and general datacenter efficiency demands is datacenter management. VMware has been headed in this direction for years, with technologies such as vSphere. More recently, VMware has been expanding vSphere to encompass more of the datacenter through the concept of the software-defined datacenter (SDDC). At the same time, Microsoft is getting aggressive with its System Center-branded management products to provide heavier-duty management of all aspects of the datacenter, especially virtualization. In Microsoft's recently concluded fourth quarter, double-digit revenue growth for System Center was a key driver in a 16 percent revenue improvement for all of its server products.

7. OPENSTACK

While not strictly a virtualization technology, OpenStack is another key framework that customers can plug their virtualized servers into, and is a hot area of demand for solution provider expertise. The OpenStack open source software cloud computing platform started as a joint project between Rackspace Hosting and NASA in 2010, although NASA subsequently dropped out. Primarily intended as an IaaS technology for various hosters to use that will guarantee them broad interoperability, OpenStack also has promise as a private cloud solution. In August, one company, Platform9, announced plans to automate and productize the process of using OpenStack to spin up private clouds for customers. Platform9, founded by several VMware veterans, bills itself as a "cloud service that transforms your servers into an agile, self-service private cloud in minutes." With a core product in beta testing, Platform9 recently landed $4.5 million in Series A funding. This is an early-stage market with some potential.

8. BACKUP AND DISASTER RECOVERY

Server virtualization is playing a growing and critical role in backup and disaster recovery. The proliferation of hybrid environments, and all the different approaches to backup that the public cloud/private cloud combinations create, is transforming the backup industry. Another factor that's transforming backup is how inexpensive disk and even flash storage is becoming. Customers are now able to create more full backups locally for extremely rapid recovery, while sending data to their public cloud providers quickly and inexpensively for remote data protection. Vendors are beginning to build relatively quick, basic

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backup and disaster recovery capabilities into their datacenter management solutions. Meanwhile, backup specialists continue to mine the vagaries and nuances of various platforms to deliver additional value and reliability for customer backups. All of it leverages virtualization. Additionally, the growth of virtualization brings a need for effective virtual backup, which is different from traditional system backup. This is an area where partners are pursuing increased consulting revenues. Having a thorough understanding of the strengths and weaknesses of the way major datacenter management and private cloud platforms handle backups of virtualized servers gives solution providers a way to help customers ensure their customers don't lose data in case of a disaster. Partners are also guiding customers to third-party tools for virtual server backup that deliver on more specific requirements. Smart solution providers are also setting customer expectations around backup times from remote disaster recovery solutions, and helping clients plan effectively for restoring virtual and other systems in a time frame that suits their businesses.

9. SMALL AND MIDSIZE BUSINESS (SMB) MOMENTUM

One of the last segments of the market to embrace virtualization is the SMB market. While server virtualization is a mature technology among enterprises, many SMBs are just getting started. Vendors are rushing toward the opportunity and the pace of SMB-focused product launches is fast and furious. Partners looking for virtualization opportunities in SMBs are finding work in a number of areas. One of the best for SMBs is one of the early footholds for enterprises generally, which is combining workloads from multiple aging servers onto one or a few servers. A subcategory of workload combination derives from Microsoft's controversial retirement of its Windows Small Business Server (SBS) product. SBS was built as a product that combined Exchange Server, a file server and other functions, including SQL Server in advanced editions, onto one server. Customers who don't want to go to the cloud when replacing SBS (as Microsoft recommends) are often well-served by server consolidation projects featuring virtualization. Some of the other original use cases for server virtualization still apply in the SMB space, as well. Organizations with software development needs often are good candidates for virtualization. Similarly, setting up a test environment for everything from new applications to patches is another strong candidate for server virtualization. •

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