

PARTNER'S GUIDE TO Hyper-V Backup



The current Windows Server 2012 and Windows Server 2012 R2 release shipping this month give Microsoft partners plenty of reasons to consider recommending the technology to customers for their virtualization needs. **By Scott Bekker**

Microsoft partners with deep expertise in the Microsoft stack are looking harder than ever at adding Microsoft Hyper-V to their solution practices as the virtualization technology makes gains in the market. Those who do are also finding big opportunities in incremental business and improved customer satisfaction by focusing on Hyper-V backup.

A few years ago, Hyper-V wasn't a big topic of discussion, even for those interested in virtual backup. Anyone looking to build a virtualization business of any scale looked to VMware first.

VMware created the modern virtualization market and until relatively recently owned nearly all of it. Microsoft, Citrix Systems Inc., KVM and others have been chipping

away at VMware's position for a long time, though. The combined effort is starting to have an effect.

As recently as 2008, VMware still owned 65.4 percent of the market, according to market research firm IDC. As of 2012, however, VMware's lead was down to 56.8 percent. That may still be the lion's share of the market, but it's nowhere near the share VMware enjoyed a few years ago.

The prime beneficiary of VMware's slide in market share has been Microsoft. IDC puts the Redmond-based software giant at a solid No. 2 in virtualization market share behind VMware. And Microsoft is gaining share almost as quickly as VMware is losing it. In 2008, IDC estimated Microsoft's share of new virtualized servers at 20.3 percent. At the end of last year, IDC had Hyper-V at 27.6 percent.

According to IDC analyst Al Gillen in a May interview with *The Wall Street Journal*, Microsoft's fastest areas of server virtualization growth are in the emerging markets

of Asia and South America. Another area of growth for Microsoft Gillen pointed out is of particular interest to the majority of Microsoft partners—smaller companies in developed markets.

Other observers have noted increasing interest among larger companies already using virtualization in pursuing a multiple-vendor strategy. Bringing on Microsoft or another vendor in addition to an installed base of VMware machines helps avoid lock-in and some of the unpopular price increases that VMware has pushed through in recent editions.

This story of virtualization growth over the last three years is one that Microsoft is strongly emphasizing, including recently in a May speech by COO Kevin Turner at the Sanford C. Bernstein Annual Strategic Decisions Conference in New York. "We got a little bit of a late start

as it relates to virtualization,” Turner acknowledged. “We’re now at a situation where we’re at very, very strong market share. We’re growing every quarter. And the dominant guy is losing every quarter, as it relates to virtualization.”

The classic Microsoft strategy is to wait for a product category to prove itself, then rush out an in-house or acquired version for a lower price and steadily improve the product through internal engineering teams or tactical acquisitions—all the while building market share. The best example of that strategy working was use of the free Internet Explorer by Microsoft to undercut Netscape Navigator in the 1990s. That case got Microsoft in trouble with antitrust regulators, but ultimately destroyed the competition.

Lately, Microsoft has had more trouble getting that strategy to work. Trying to match Google Inc. with a series of search engines ending with Bing hasn’t gotten very far. Microsoft’s similar attempt to match the Apple iPod with the Zune failed. Efforts to combat the iPhone with Windows Phone-based devices and the iPad with the Windows 8-based Microsoft Surface and Surface RT combination both appear to be coming from too far behind and progressing too slowly.

Virtualization, however, seems to be an example of the classic strategy paying off. Microsoft acquired its core virtualization technology about a decade ago and bundled it at no additional cost into Windows Server 2008. At the Windows Server 2012 release, some observers noted that the Hyper-V 3.0 version number was apt-3.0 is the fabled version when Microsoft products supposedly graduate from a hasty catch-up release to a competitive product.

In May, Turner took up the theme that Windows Server 2012 was a key release for Hyper-V. “The game all changed when we launched Windows Server 2012. When we put Windows Server 2012 in market, we have a superior piece of technology all across the technology measurements and metrics that people check. And we’re a third the price of the other guy. So the share momentum we have in this private cloud space is all driven off of a better product, and a better price. When you get a better product and a better price, I’d tell our own team, you’d better grow share,” Turner said.

Some of the key improvements to Hyper-V in the Windows Server 2012 release include concurrent live migration, dynamic memory, Hyper-V Replica, storage enhancements, and continuous availability enhancements that increase the potential size of clusters from 16 nodes to 64 nodes supporting up to 4,000 virtual machines.

WINDOWS SERVER 2012 R2 RELEASE

Hyper-V technical progress will continue with the Windows Server 2012 R2 release scheduled for Oct. 18.

In a Microsoft TechEd presentation in June, Ben Armstrong, a program manager on the Hyper-V team at Microsoft, laid out some of the coming improvements to Hyper-V in the Windows Server 2012 R2 release:

*** Unified Extensible Firmware Interface (UEFI) Security:** Hyper-V with gen-2 VMs will take advantage of the security enhancements in the UEFI instead of the old BIOS. Tapping UEFI will give IT organizations the advantage of having “secure boot” protection inside a VM, according to Armstrong. The secure boot capability, which is part of the UEFI specification, is a method for thwarting potential rootkits that could get injected into the pre-bootup processes of an OS.

*** SCSI Boot:** Armstrong said the real benefit of using gen-2 VMs is the ability to boot off a SCSI controller. There are also a couple of performance benefits, such as enabling the OS to boot 20 percent faster, and speeding up OS installations by about 50 percent. That said, he gave the opinion that gen-1 VMs wouldn’t be going away, but that IT organizations would run the two VM types side by side.

*** Automatic Activation of VMs:** On the licensing side of things, the new Hyper-V will enable automatic activation of VMs when running the Datacenter edition of Windows Server 2012 R2, which makes things easier for services providers and enterprises. Armstrong added that this capability doesn’t require having volume licensing in place because “if it’s Datacenter and it’s activated, you’ve got it.” He added that the VMs don’t depend on keys, so it’s possible to move them around without worrying about that issue. This automatic activation feature depends on having the host run Windows Server 2012 R2 Datacenter edition with Windows Server 2012 R2 running in the VMs.

*** VM Copy and Paste:** Microsoft enabled copy-and-paste operations from one VM to another with Windows Server 2012 R2. Armstrong explained these sorts of operations can now take place without a network connection. This offline copy-and-paste capability is enabled via Remote Desktop Services in the VM and applies to smartcards, folder redirection and USB drives. The capability will work with both gen-1 and gen-2 VMs using the new Hyper-V.

*** Live Migration Improvements:** Microsoft supports live migrations while the VM is running with the new Hyper-V. It’s also possible to export VMs or export a snapshot of a VM while they’re running. During Armstrong’s demo, the live migration of a VM still running took about 90 seconds. He also demonstrated compression during a live migration, which is now the default option in Windows Server 2012 R2. Adding compression brought the live migration time down to 41 seconds. A third option is to turn on remote direct memory access (RDMA) during the live migration, which uses Server Message Block Direct (SMB Direct). Armstrong said that compression uses the

CPU to reduce the data sent over the network and that approach is a good option in IT environments that have bandwidth limitations. RDMA, on the other hand, is the best option when there are plenty of network resources available, but limited CPU use. Microsoft's guideline is to use compression with bandwidths of 10 gigabits or less, but use SMB or SMB Direct with bandwidths of more than 10 gigabits.

*** Using Live Export for Analysis:** IT pros can use the live export (or "clone") capability enabled by Windows Server 2012 R2 to do things such as perform a diagnosis on a failed app without taking down the whole VM, Armstrong explained. It's possible to live migrate VMs from Windows Server 2012 to Windows Server 2012 R2 without compatibility issues. That VM compatibility also holds up after performing an in-place upgrade from Windows Server 2012 to Windows Server 2012 R2, he said.

*** Shared VHDX:** The "biggest game changer" with this upcoming release of Hyper-V will be guest clustering with shared VHDX, according to Armstrong. IT pros no longer need standardized storage hardware but can use commodity hardware instead. VHDXs can be resized even while the VM is running.

*** Linux Guest Support:** The new Hyper-V provides a number of features that support Linux systems. The features include "dynamic memory" provisioning, online backups and VHDX resizing, as well as a new virtualized video driver for Linux. Armstrong said Microsoft now has the best backup story for Linux. Linux VMs can be backed up online with "zero downtime." He added that IT organizations can use "any enterprise backup solution that supports Hyper-V and you'll get full Linux backup support."

*** Hyper-V Replica Improvements:** Microsoft added "extended replication," as well as "finer grain control of replication" with the new Hyper-V Replica. Extended replication is a feature for hosters, which lets them use Hyper-V Replica to provide disaster recovery support for tenants. It's possible to replicate from one VM into another, and the new finer grain controls consist of faster and slower options for when that replication takes place. A new 30-second option ensures the replication won't ever be a minute behind the VM, Armstrong said. The other option, a 15-minute replication option, is useful for when data isn't sent as frequently, such as over a satellite link.

In one way or another, almost all of these improvements have backup implications.

VENDORS ADDING ON

Microsoft offers a bare-bones backup tool and the ability to use Windows PowerShell to script some backup activities. As with

most Microsoft enterprise products, though, there's plenty of room for third-party vendors to embrace and extend the Microsoft platform.

As a testament to the improving Microsoft market share, more virtualization backup vendors are releasing products to help IT administrators and Microsoft partners handle VM backup. Some of the capabilities the tools provide include:

*** Backup and Recovery Speed:** One of the biggest benefits third-party tools vendors offer their Hyper-V customers today is a reduction in the time it takes to back up VMs and quicker recovery times. Few considerations are more important for users than those two metrics.

*** Better Look and Feel of Management:** Microsoft offers its own internal management tools for virtualization, but third-party vendors are focusing on the look-and-feel, as well as bringing a better understanding of customer use cases to their products. The third-party consoles are often more intuitive both for partners and partner customers.

*** Self-Service Recovery:** Some of the tools let users restore their own failed VMs or perform recoveries at the file level, both from failed VMs or from point-in-time backups.

*** Integrated Management:** Coming from the VMware side (as many of the third-party vendors are), some of the tools allow for sophisticated integrated management of combined VM environments that include VMware, Hyper-V and other vendor technologies. This functionality is especially valuable for partners working in larger organizations that take a dual-vendor approach to virtualization.

*** Reporting –** Many of the tools offer canned and customizable reports on the progress of VM backup and recovery.

While it will take a few months for vendors to roll out Windows Server 2012 R2-enhanced versions of their tools, much of the opportunity for Hyper-V-based virtualization work for partners right now and for the next few years will be in optimizing and enabling virtualization in existing Windows Server 2012 environments. Some of the vendor tools allow R2-type functionality immediately in the Windows Server 2012 version. •

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