

VMware vSphere 5.1 Feature Spotlight:

Storage

Storage is an important, if not one of the most important sector of a successful virtualization and/or cloud environment. We often take storage for granted as we see the prices dropping significantly compared to previous decades. What makes great storage even better is great tools to utilize, manage and truly amplify the awesomeness that existing and upcoming storage platforms have to offer.

Throughout the vSphere versions we have seen interesting leaps in how the hypervisor is able to leverage the storage layer. What makes vSphere 5.1 even more awesome is the introduction of a number of really cool features such as:

- Space reclaim
- Increase VMFS host access limits from 8 to 32
- APD (All Path Down) condition handling
- 16 Gb FC support
- VAAI improvements
- Datastore correlation
- Parallel Storage vMotion

These are just a few of the new features and enhancements but they certainly stand out as breakout features for the vSphere 5.1 environment which will add more versatility to your vSphere 5.1 and vCloud Director solutions.

Space Reclaim

vSphere has given us the ability to dynamically grow our storage since version 4.x and with 5.0 we were introduced to VMFS-5 which added the unified block size for volumes which allowed a much more efficient layout for VMFS volumes.

With vSphere 5.1 VMware has added the space reclaim features which will now let us use the Space-Efficient Sparse Disks (SE Sparse Disks) feature to mark unused blocks in the guest file-systems and allow vSphere to wrestle back that space to re-thin the volume allocated to the guest OS.

For file servers and database servers with highly randomized I/O and lots of fragmentation, this will be a great way to leverage Thin Provisioning and let you get the most out of your storage platform.

Increase VMFS host access limits from 8 to 32

While this may not have affected your systems just yet, it is something that frees up future limits if you are looking towards VDI and vCloud deployments. Currently, with a VMFS file-system you are capped at 8 hosts sharing a read-only file. When you begin ramping up your VDI environment and put vCloud together to fully utilize its scale out capability, this could be a problem.

Now with the vSphere 5.1 implementation of VMFS-5 (note that it is only available with 5.1 hosts access VMFS-5) you open the door for a better multi-host implementation to spread the load and add

more resiliency and redundancy for your organization.

APD (All Path Down) condition handling

Have you had a situation where you lost all paths to your storage? Not a problem anymore...well, less of a problem. The issue with APD situations is that vSphere 4 and earlier could often run into I/O path query threads that took priority over other host threads. If that



We've got a piper down...I mean path down!!

happens, a Permanent Device Loss (PDL) condition should trigger the restarting of guest resources on hosts with available paths, but because of queuing of thread requests it could result in guest outages or even worse, host disconnections from vCenter.

Enter vSphere 5.0 with better handling of APD and PDL situations, and now with the 5.1 VMware has added better handling of APD and PDL by letting the hosts communicate more deeply to the storage environments to query for path status and look for PDL conditions more effectively. It has also added those functions to single LUN targets which allows iSCSI target loss to be re-queried and confirmed as PDL before marking it as unavailable.

16 Gb FC support

While your environment may have contained and supported the hosting of 16 Gb FC HBAs with vSphere 5.0, they were actually running in 8Gb mode for all intents and purposes. Now your entire storage chain can operate at the full 16 Gb to enjoy the full bandwidth that your hardware can give.

VAAI improvements

For those who have been able to leverage VAAI support for their storage it has been a great feature. With vSphere 5.0 there were great enhancements for VMware View. Now with vSphere 5.1 you will extend those enhancements into your vCloud Director environment to make more gains with I/O efficiency for vApps and Linked Clones.

Datastore Correlation

Datastore clusters were cool. Storage DRS in vSphere 5.0, even cooler. Being able to set storage affinity to force guests to different datastores was (and still is) a massive feature to have for best performance.

Now VMware has extended the datastore toolkit to include Datastore Correlation. This is a feature where the I/O injector not issues load to datastores and measures if other datastores experience latency. So now the storage layer is not just volume aware, but extends its awareness to detect if multiple volumes are sharing back-end spindles on the physical array. Now that is pretty awesome.

Parallel Storage vMotion

Up to now, Storage vMotion has been a serial function. If you have had to migrate a number of machines at the same time, this was painfully obvious. Now with vSphere 5.1 Storage vMotion you will have up to 4 parallel migrations happening simultaneously, and just as importantly, it will perform parallel migrations only on distinct datastores which means that it won't overload a single area of storage.



Much, much more

There are a number of really cool features and enhancements, and if you are running in VMFS-3 at the moment you will really love when you migrate to VMFS-5 and vSphere 5.1 in the future.

There are lots of really great resources on storage in VMware, and with VASA and VAAI integrated storage it just gets more and more awesome with every step. Keep your eyes on the VMware site and monitor the Twitterverse for the storage gurus. Even more importantly, keep watching your storage vendor for some exciting features that they will be offering to better integrate with vSphere going forward.

Here is the VMware vSphere 5.1 Storage Whitepaper that was introduced at VMworld 2012: <http://www.vmware.com/files/pdf/techpaper/Whats-New-VMware-vSphere-51-Storage-Technical-Whitepaper.pdf>

If you are like me, you are counting down the days to release date. Purchase of vSphere 5.1 is available on September 10th with download access beginning on the 11th. Can't wait!!