



Dynamic Storage Mobility for Hyper-V

Migrating VHD LUNs between Storage Devices without Downtime

VHDs used to store Hyper-V virtual machine (VM) images frequently need to be relocated to different storage devices. Requests for a different quality of service, a hardware refresh, or capacity expansion likely trigger the move. Understandably, system administrators try to schedule disruptive LUN relocations around other planned outages, but that seldom meets the business urgency.

DataCore™ SANsymphony™-V software migrates VHD LUNs non-disruptively behind the scenes and later reclaims the disk space from the decommissioned location. Transparent virtual LUN migration is one of several device-independent functions provided by DataCore's storage virtualization software for the Microsoft Windows Server 2008 R2 with Hyper-V platform.

Move VHD LUNs at will

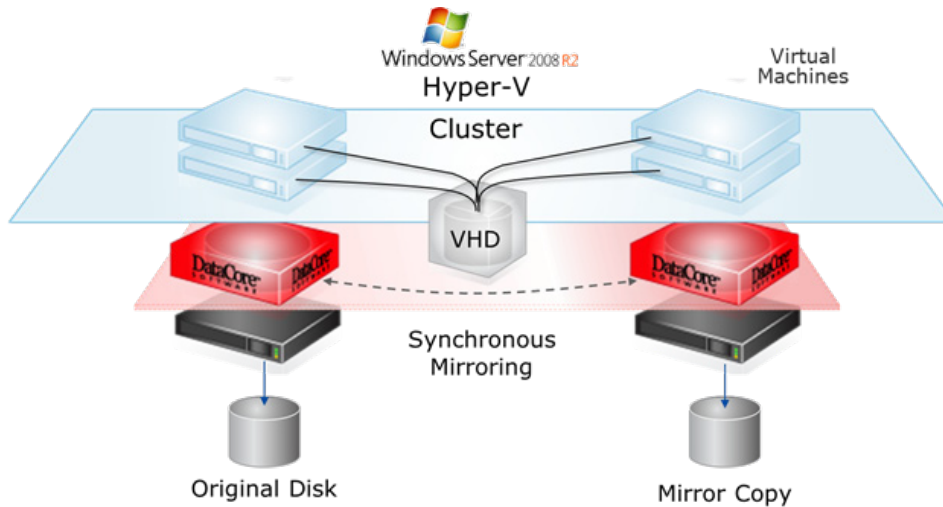
Let's face it, Hyper-V's live migration feature has spoiled us. We've become accustomed to dynamically moving running virtual machines from one physical host to another without disrupting service. So why should it be any harder to relocate the VHDs on which those VMs are stored?

Turns out that it is neither hard nor disruptive when you use DataCore SANsymphony-V software to virtualize the physical storage resources. You simply designate which physical pool you'd like to move the LUN to, and the storage virtualization software transparently copies the image across, synchronizes all I/Os and logically redirects all future reads and writes to the new location.

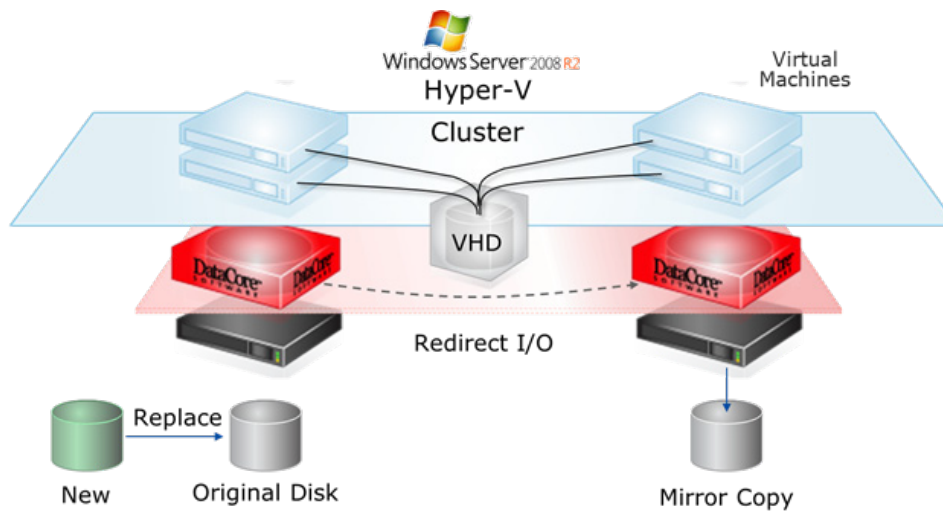
Once the migration is complete, the software cleans up after itself. It zeroes out the blocks originally used to store the VHD LUN and reclaims the vacant space into the free pool.

You can do this volume replacement on a moment's notice without having to schedule an outage or sound the downtime alert.

How it works

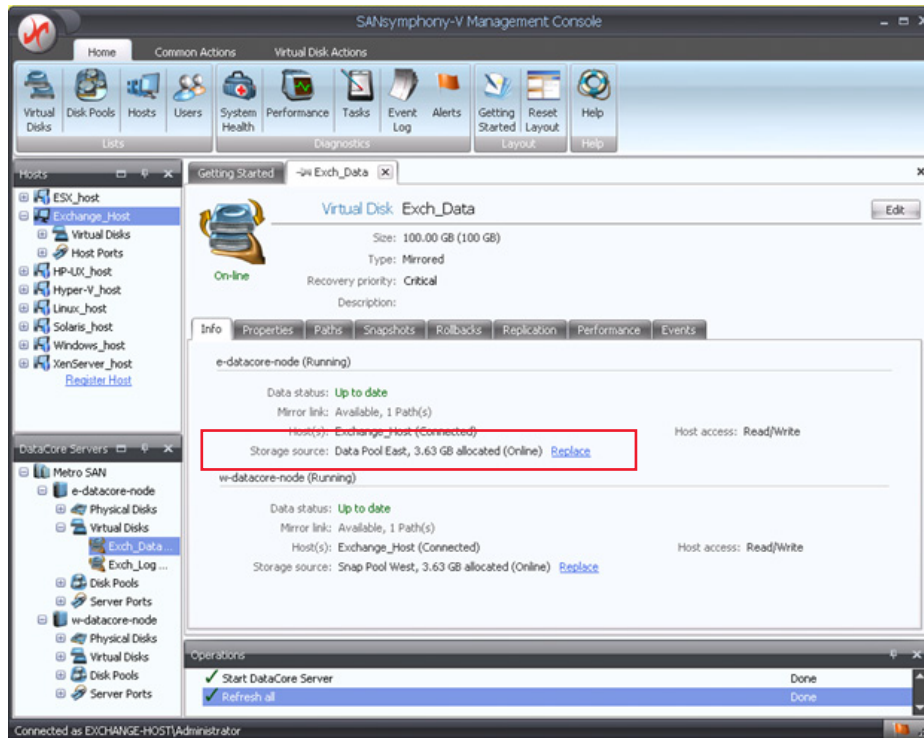


LUN migration takes advantage of synchronously mirrored copies maintained in the background by SANsymphony-V storage virtualization software.

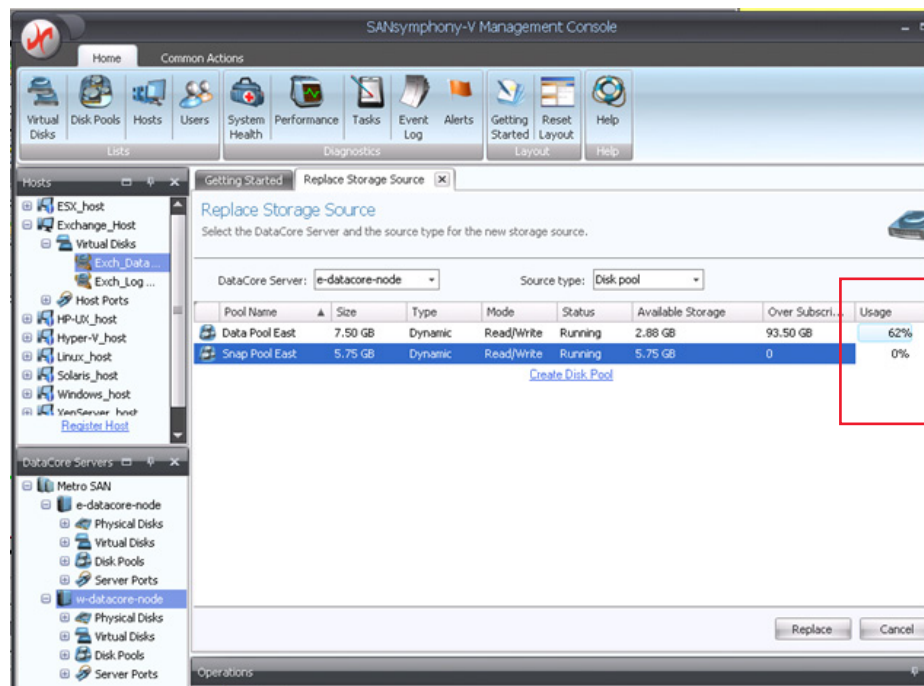


From the management console, you simply request to "Replace" the source location for the virtual disk. The software then temporarily redirects the host I/Os to the mirrored copy while it copies the original LUN contents to the new location. In the diagram to the left, the original disk will be replaced by the new disk.

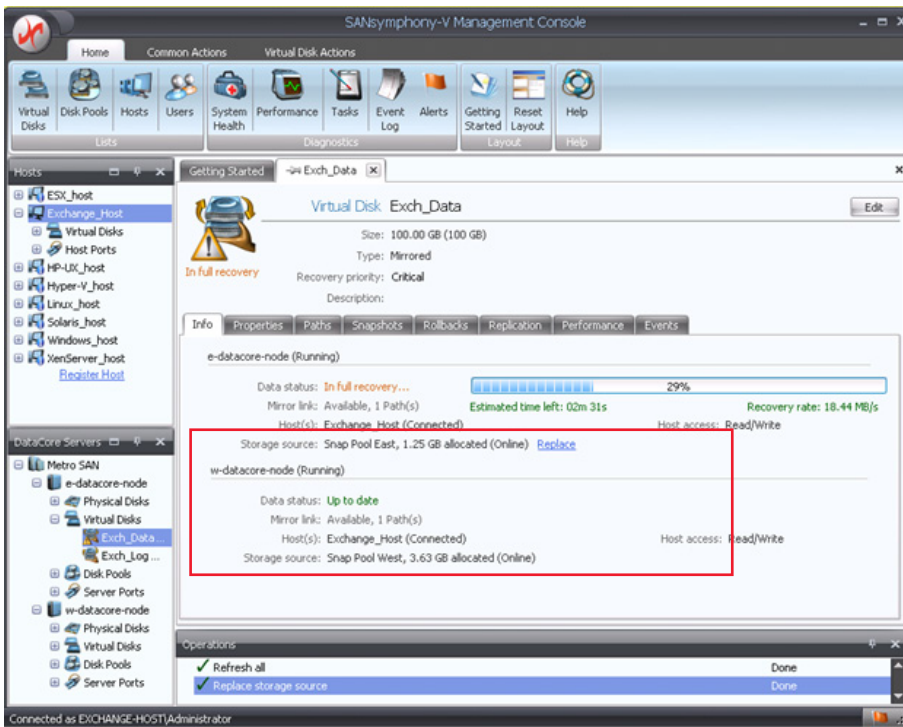
Control LUN Migration Centrally



This screen shot shows how easily you can move the LUN from one pool of disks (Data Pool East) to a different pool of disks (Snap Pool East) without interruption, merely by clicking on the "Replace" command and choosing the desired destination.



Here you can see that the command will relocate the virtual disk from a pool that is 62% full to a new location that is completely empty (0% usage).



This screenshot shows you the progress of a disk copy occurring behind-the-scenes. Note that the virtual disk remains accessible by the hosts while the migration is taking place. The same procedure can be used for purely physical environments as well.

Expandable, Thin-provisioned, shared virtual LUNs

Transparent LUN mobility is but one characteristic of virtualized storage pools under DataCore's control. The virtual LUNs are thinly provisioned from the available disk space, taking up room only in those blocks storing non-zero writes; usually a tiny fraction of the apparent virtual disk size. A three TB virtual disk may only be consuming a few gigabytes of real capacity, if that. And the virtual disk size can be set arbitrarily large in line with future expansion forecasts, so the applications and VMs don't have to be resized down the road. Better still, you don't have to buy any more disks until actual consumption catches up.

You assign virtual disks to each of the physical hosts in the Hyper-V cluster that will potentially need access to them. The physical disks may include your favorite direct-attached storage devices (DAS) and SAN-connected arrays, all managed and virtualized by the DataCore software.

Double up for High Availability and Cache for Speed

Generally, virtual disks will be synchronously mirrored across two DataCore "nodes" to eliminate single points of failure. In other words, every update to a VHD is automatically copied in real time to a second instance of the DataCore software running on a separate physical server (node) with its set of disks. Should you have to take one of the nodes or the disks underneath it out-of-service, the other active node will take over non-disruptively.

DataCore also speeds up reads and writes directed at a VHD through very sophisticated caching. This is done by tapping the node's memory (RAM) and processing muscle (CPUs).

Move it, Shake it, and Stomp on it, all you want

You can see from the discussion above how DataCore software benefits your Hyper-V environment by provisioning resilient, expandable and mobile LUNs that also run fast. The virtual LUNs can be quickly and effortlessly migrated across storage devices without disrupting the VMs that depend on them.

These SANsymphony-V benefits become even more apparent when combined with Windows Server 2008 failover clusters and CSVs to create fully dynamic data centers with unprecedented high availability and performance.

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About DataCore Software

DataCore Software develops the storage virtualization software needed to get the highest availability, fastest performance and maximum utilization from storage resources in physical and virtual IT environments. It provides the critical 3rd dimension on which the success of server and desktop virtualization projects hinge, regardless of the models and brands of storage devices used.

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