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Three Keys to Cost Effective Hyper-V Storage

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Microsoft Hyper-V is quickly becoming the preferred choice of small to medium sized businesses (SMBs) looking to tap into the power and flexibility of server virtualization. In addition, many enterprises are looking at Hyper-V as a parallel architecture to VMware. Enterprises are also using it for remote and branch office environments (ROBO).

In both cases, Hyper-V provides a reliable and cost effective alternative that is easy to set up and operate. Similar to VMware though, it requires shared storage to fully leverage server virtualization. While shared storage has a role, the cost of these shared storage solutions negatively impacts the cost appeal that Hyper-V enjoys. For Hyper-V to continue its march into both the SMB data center and the enterprise, it requires an alternative storage solution that can be cost effective, reliable and easy to set up and operate. The typical Hyper-V administrator, especially in the SMB or Branch office, is not familiar with UNIX or SAN management.

KEY 1: Native Storage Software

One method to drive down the cost of storage is to use storage software, also known as software defined storage, to abstract the data services from the physical storage media. This allows for commodity storage to be used. As a result, storage software designed for Hyper-V is rising in popularity. The first key to bringing down the cost of Hyper-V storage solutions is delivering storage as software so it can leverage the potential excess compute of the hypervisor cluster.

This trend started by abstracting the storage software from the traditional array so that it could be run on a commodity appliance (server) with commodity storage arrays attached to it. It has now been taken a step further ahead by allowing the storage software to run on the same physical servers that are running the virtual machines (VM). The problem is that many of these solutions run as VMs themselves instead of being integrated into the hypervisor. To make matters worse, VM is typically running some form of Linux.

While Linux has its place in the larger data center, the typically 100% Windows SMB data center would prefer a native Windows based solution because of the already mentioned Hyper-V administrator skills. A native Windows solution will be easier to both install and operate, while causing less conflict with the current infrastructure.

The other key advantage of a native solution is that it should perform better. This approach is something that VMware has itself endorsed. There can be overhead and latency introduced when a process is forced to run as a VM instead of natively within the operating system or hypervisor. This is especially true of something latency sensitive like storage software. Fortunately, Microsoft has a safe method for integrating these functions natively into the operating system.

KEY 2: Leverage Current Hardware

The second key to bringing down the cost of Hyper-V storage solutions is to leverage the hardware that is already in place. For most SMB data centers, the processing power and internal storage capacity of the servers they will use to host VMs is more than enough to also run the storage software. Dedicating additional hardware for shared storage, on the other hand, increases costs and complexity. It is important to remember that shared storage comes with an entire ecosystem of required components like Ethernet or FC switches, cabling, zoning, cooling, powering, management burden, etc. As a result, both CapEX and OpEX have the potential to increase dramatically.

With the storage software running on the servers, the internal storage capacity of these servers could then be aggregated into a virtual pool that can be allocated to the VMs hosted across the Hyper-V architecture. Using internal server class storage and leveraging server CPU power to execute the storage software can significantly reduce the cost of storage.

If the software based storage solution is designed correctly, it should be able to leverage its architecture to actually increase performance. In these configurations, storage is internal to the server, so a proper design would allow for reads to be delivered via those local channels but allow writes to be confirmed with multiple nodes in the cluster. Executing reads from local storage or especially local flash cache resources saves the application from having to traverse the network to respond to a read request.

The ability to leverage current hardware is of special value to an enterprise with many ROBOs. In many cases, these large enterprises deploy a pair of physical hosts in each remote or branch office, which runs a limited number of VMs.

While Hyper-V's Shared Nothing Live Migration eliminates some of the need for a shared storage environment, physical servers are still vulnerable to unplanned downtime when there is not time to evacuate the VMs. Shared storage is needed to overcome this situation. However, due to the cost of the implementing a dedicated shared storage solution, many SMBs can't justify this added level of protection. With a native, software driven storage solution, a shared storage environment can easily be created with full redundancy at a minimal price and minimal hardware footprint.

For similar reasons, cloud providers also may see the appeal in a native software defined solution. An increasing number of providers are choosing Hyper-V over VMware and Linux because it provides both lower complexity and cost effectiveness. It allows them to leverage the same nodes that they are deploying for compute to deliver storage services. These types of solutions fulfill the providers need for flexible scaling since as they add compute nodes to meet subscriber demand; they are also adding storage capacity and performance.

KEY 3: Storage Choice

The final key to bringing down the cost of Hyper-V storage is to provide storage choices to these environments. Some data centers and certainly many virtualized applications don't need flash SSD and can meet their performance needs with an all hard disk drive (HDD) environment. Other data centers may only need a small amount of SSD acting as a cache. Again, if the storage software is native, Windows should be able to inter-operate with any Windows certified caching solution. Finally, some SMB data centers could benefit from having a few MS-SQL or Exchange VMs on a completely flash SSD tier. Using aggregated server SSDs to create this tier is one of the most cost effective ways to deliver those capabilities.

Of course, the SMB data center requires other storage features like high reliability and a robust set of software services. However, the SMB can uniquely benefit from a solution that is native to Windows, leverages current hardware, and still provides storage media choices. Companies like StarWind Software can provide these capabilities while also delivering a reliable, feature rich solution.

Conclusion

In a competition that many had pronounced over, Microsoft's Hyper-V is now a viable candidate in the SMB, the remote office, and even the enterprise data center. It brings the key virtualization features that most data centers need while being affordable. Needless to say, Hyper-V is also delivered by a company, Microsoft, with the financial wherewithal to stand behind the product and is not going to be bought.

The challenge facing Hyper-V adoption is similar to that facing VMware: the cost and complexity of the supporting storage infrastructure. This problem is compounded with Hyper-V if its key value of lower cost is overshadowed by expensive storage.

Companies like StarWind Software provide the perfect compliment to Hyper-V and allow it to reach its full potential. By abstracting storage services that can run natively within Hyper-V, StarWind provides a cost effective, solid performing and reliable storage infrastructure that those administrators should consider.

About Storage Switzerland

Storage Switzerland is an analyst firm focused on the virtualization and storage marketplaces. For more information please visit our web site: <http://storageswiss.com>



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