Hardware Agnostic and Commodity Hardware

Introduction

Modern IT is all about virtualization. It's not a question of whether to virtualize or not to virtualize, it's when and how far it will go. Fully realizing your virtualization potential, having some sort of shared storage is "A MUST". Shared storage is also necessary for achieving High Availability and Fault Tolerance on the hypervisor or virtual machine level, fast live VM migration, to protect from planned or unplanned downtime, etc. The classic approach to providing shared storage is using either standalone SAN, NAS or even shared DAS (in the way of SAS JBOD, clustered RAID controllers, etc).

Problem

Proprietary SAN/NAS boxes cannot be commodity by design because they are still produced with much lower amount compared to ordinary servers. Going with non-commodity means accepting a few negative aspects:
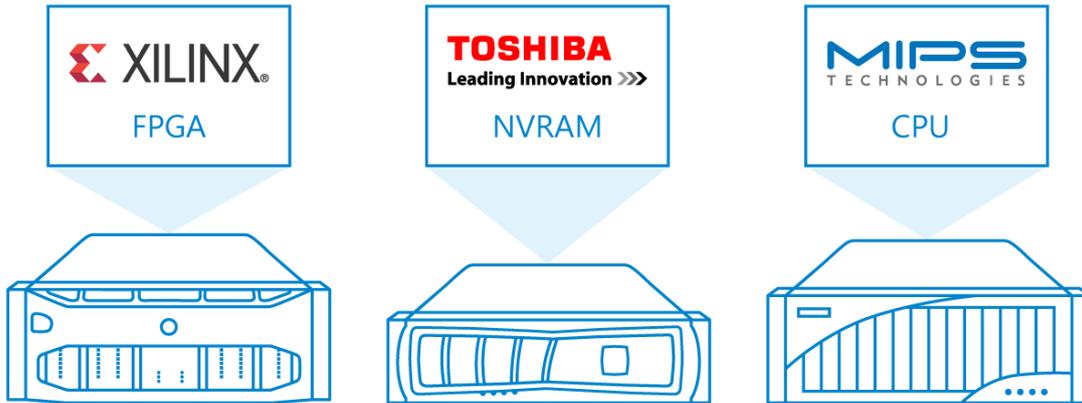
High cost: Since proprietary hardware based storage systems are not mass-produced, the "economy of scale" never kicks in, and so the price of the resulting solution goes through the roof. Moreover, quite often non-commodity boxes have expensive "magic hardware" (NVRAM, ASICs, custom IO processors, etc.), further driving your expenses through the roof.

Going non-commodity typically means a longer generation life cycle. While new generations of proprietary hardware are developing 4-5 years, the commodity boxes are renewing every 1-2 years. Thus for two years of deployment commodity servers will evolve: physical disks and RAM capacity, CPUs with more cores and higher frequency, high-speed multi-port NIC, etc. while the proprietary box will remain the same. As the result, the user gets less performance for a bigger cost when going non-commodity.

Hardware maintenance is an issue when talking about non-commodity. Getting a new replacement of baked IO controller from vendor can take weeks or even more.

Another big thing is using off-the-shelf storage components like hard disks and flash memory. High-end storage systems do not accept common off-the-shelf hard drives and flash memory, they use only rebadged ones by vendor with modified firmware. Thus there is no way to buy them from anybody but the storage vendor directly. Going with rebadged components is by order of magnitude more expensive comparing to ordinary ones. The vendor may just stop developing certain hardware, so when the time comes - nothing is there to replace the old hardware with.

Non-commodity cannot be re-provisioned. EOLed storage system can serve as the SAN or NAS only, nothing else since firmware that allows using it for another purpose don't exist after it will reach EOL.


Most vendors offer their own proprietary technologies

Solution

StarWind runs on Windows OS which runs on top of the commodity servers thus eliminating typical proprietary hardware problems:

High cost is never an issue since commodity servers are mass-produced, which makes them cheaper than proprietary. Also, since commodity hardware hasn't got any built-in "magic hardware" the price is becoming lower and more reasonable.
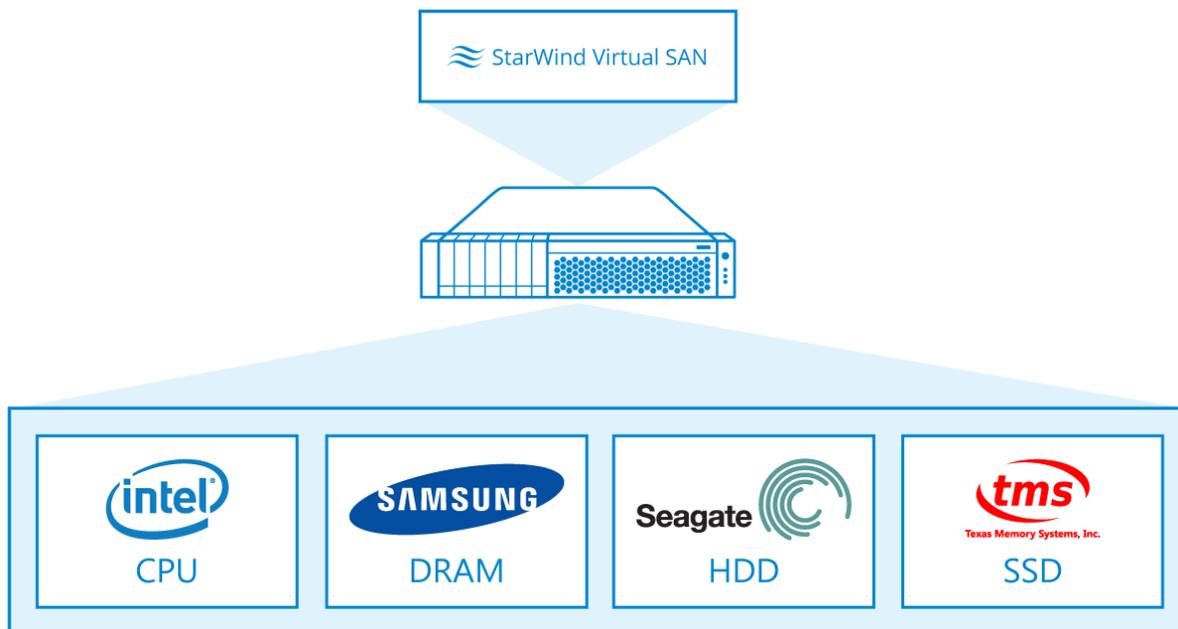
StarWind runs on commercial off-the-shelf hardware

Commodity hardware generation life cycle is shorter comparing to non-commodity, thus decreasing TCO thanks to the economy of scale effect. Most common commodity hardware boxes have a 1-2 year life cycle allowing users to always be on the cutting edge technologies and run their applications on the most performing and powerful hardware: maximum number of CPU with highest frequency, storage components with greatest capacity and biggest IOPS numbers, highest-bandwidth NICs with lowest latency, etc.

Using commodity servers allows for fast and easy hardware maintenance by general availability of its components. All the hard disks, flash, RAM, CPU, NICs, etc. are ready-to-be-purchased in any PC shop or even eBay. Thus the need to waste time on proprietary hardware shipping is fully eliminated making the operations fast and easy.

Re-badged storage component problems are eliminated. Using commodity servers assumes using usual hardware parts that come directly from the hard disk or flash vendor, not repackaged by the SAN/NAS vendor. Thus, the user gets what he paid for, not even a penny more, and he can rest assured that the required component or its equivalent will always exist and will not be dropped down from the product line.

Commodity boxes allows for simple re-provisioning. Once the applications that run on the commodity server stop being required, the new ones can be easily installed on the commodity box instead, thus making the system more flexible and increasing the hardware utilization. Also, since StarWind software licenses are perpetual, it is possible to move between the servers, thus giving the second live to old hardware or adding tasks to the new one.

Conclusion

Using StarWind Virtual SAN on the commodity hardware, which significantly decreases the CapEx and OpEx of the entire system, provides the ability for fast and easy maintenance and re-provisioning, while keeping the storage components on the cutting edge of technology.

In 2016, Gartner named StarWind "Cool Vendor for Compute Platforms".
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