Is L2 cache a best practice for all-flash arrays?

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StarWind Documents

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StarWind is a pioneer in virtualization and a company that participated in the development of this technology from its earliest days. Now the company is among the leading vendors of software and hardware hyper-converged solutions. The company's core product is the years-proven StarWind Virtual SAN, which allows SMB and ROBO to benefit from cost-efficient hyperconverged IT infrastructure. Having earned a reputation of reliability, StarWind created a hardware product line and is actively tapping into hyperconverged and storage appliances market. In 2016, Gartner named StarWind "Cool Vendor for Compute Platforms" following the success and popularity of StarWind HyperConverged Appliance. StarWind partners with world-known companies: Microsoft, VMware, Veeam, Intel, Dell, Mellanox, Citrix, Western Digital, etc.

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Content

Historically, StarWind L2 cache or Flash cache was used to improve the performance and minimize the latency of spindle-based disk arrays by processing frequently accessed blocks using SSDs. However, one of the frequently asked questions is whether L2 cache can be used to speed up already fast SSD drives. And the answer is: yes, it can be used for that purpose! How can we speed up SATA SSD-based RAID5? For example, we can use a pair of extremely fast PCIe SSDs combined into RAID1 array for L2 cache. And of course, StarWind can speed up spinning drive-based storage in the same fashion – just bring **faster** SSD drives for the L2 cache and voila, major part of random IO is offloaded to the flash thus, improves overall performance of the storage. Please note that there are configurations where L2 cache might not improve the performance in certain configurations e.g. if L2 cache is too small or the workload specifics eliminate any cache effectiveness. Therefore, L2 cache **should** be significantly faster than the main storage array. It should also be sized properly to match the average amount of unique data accessed on a regular basis. This way it will justify itself by offloading major amount of IO from the main storage array and assure good and consistent performance of your Virtual SAN. Please note that it is a best practice to benchmark all L2 cache implementations prior to putting the Virtual SAN system into production.

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