

Technology Brief: VCA 2.0



VCA 2.0 (Virtualized Controller Architecture) is the next step in the evolution of enterprise flash virtualization layers. This is the follow up to the original VCA and presents as a complete storage subsystem, but with an improved and expanded feature-set allowing system architects unprecedented flexibility and industry-leading performance and reliability.

Rich Enterprise Features

OCZ SuperScale™ storage controller enables infinitely scalable performance.

VCA 2.0™ in OCZ enterprise PCIe devices supports the creation of a virtual pool of logical units (LUNs) and features best-in-class configurable performance aggregation.

VCA 2.0 is the only virtualization layer in the industry with TRIM and SCSI Unmap Support to enhance sustained performance by significantly reducing the overhead associated with garbage collection.

Consolidated SMART support provides system administrators with advanced features for monitoring analyzing and reporting device attributes.

User-selectable data recovery and non-stop modes allows for unprecedented data protection.

Unlike other flash virtualization layers, OCZ VCA 2.0 supports complete power fail protection; OCZ enterprise PCIe devices store all metadata in nonvolatile memory while power fail protection completes all in-progress transactions in the event of an unexpected system power loss.

OCZ SuperScale™ storage accelerator enables infinitely scalable performance

The OCZ SuperScale™ storage controller combines processing and full DMA (direct memory access) cores, as well as internal PCIe, SATA and SAS interfaces. This controller, combined with VCA 2.0 provides unique benefits to users by allowing certain DMA and data management functions including OCZ's unique command queuing and queue balance algorithms to be handled by the onboard processing core, resulting in higher performance and reduced burden on the host CPU.

OCZ is currently offering single slot PCIe solutions with up to 2 SuperScale™ accelerators per slot as standard parts.

New LUN Addressing with VCA 2.0™ in OCZ Enterprise PCIe Devices

In the enterprise PCIe implementation of VCA 2.0, users have the option of treating each SuperScale™ accelerator as one more Virtual Logical Drive (LUNs). Storage management software such as file systems, volume managers, and applications are able to access a number of LUNs allowing unprecedented flexibility in storage, while maintaining the hardware assisted features of VCA 2.0 and enabling the host to boot from the PCIe device.

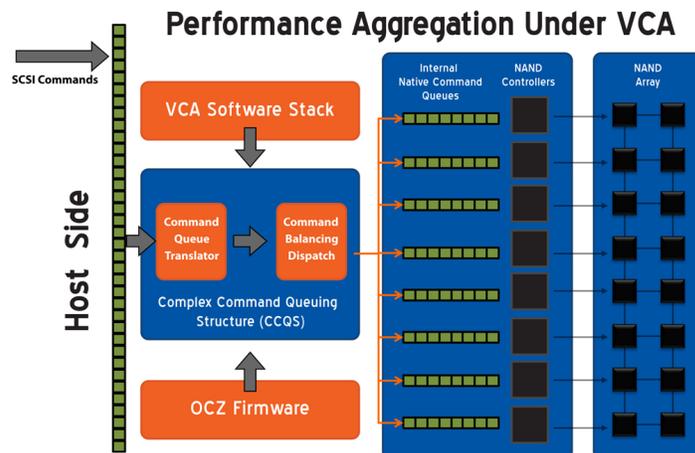
User Friendly -SCSI Over PCIe Functionality Allows Seamless Installation

OCZ VCA 2.0 supports the industry standard SCSI command set over our PCIe interface. Because SCSI is the command set of choice of enterprise storage architects, this feature makes installation of OCZ PCIe devices in enterprise applications seamless.

VCA technology can interpret and execute both SCSI and ATA commands across any physical interface and utilize any available internal interface to facilitate communication across multiple elements of the overall drive architecture. Current OCZ hardware implementations support SCSI commands over PCIe (Z-Drive) and Serial (Talos). This storage virtualization currently allows SCSI commands to be sent through PCIe or SAS physical interfaces to an internal virtualized array of NAND devices.

Configurable Performance Aggregation

VCA provides highly efficient performance aggregation across physical LUNs via an intelligent complex command queuing structure that utilizes both native and tagged command queuing (NCQ, TCQ). This is a unique technology that enables command switching and balancing based on OCZ's proprietary Queue Balancing Algorithm (QBA™) algorithm; this balances drive loading while maximizing internal bandwidth for nearly linear performance aggregation. VCA 2.0 LUNs can be further aggregated through cascading with host-side striping dependant on the storage architects needs.



Conclusion

OCZ's proprietary VCA 2.0 is the next step in the evolution in enterprise flash virtualization layers. Supporting a rich enterprise feature-set, VCA enables system architects unprecedented flexibility and industry-leading performance and reliability when designing the high throughput storage systems of the future.