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# Marvell Introduces Bravera SSD Controllers to Enable the Highest Performing Data Center Flash Storage Solutions

## Industry's First PCIe 5.0 SSD Controllers Offer Architecture Flexibility, Security and Data Protection for Optimal Cloud Infrastructure

SANTA CLARA, Calif., May 27, 2021 /PRNewswire/ -- Marvell (NASDAQ: MRVL) today announced its new Bravera™ SC5 controller family, bringing unprecedented performance, best-in-class efficiency, and leading security features to address ever-expanding workloads in the cloud. The massive amount of data to be processed in cloud data centers is driving demand for faster and higher bandwidth storage in these environments. Marvell's Bravera SC5 SSD controllers address the critical requirements for scalable, containerized cloud storage infrastructure. By enabling the highest performing flash storage solutions, Marvell's controllers are poised to be the foundation for data centers that offer ultra-low latency, real-time applications while also providing cost-optimized, cloud-scale capacity.




As the industry's first SSD controllers to support PCIe 5.0 and NVMe 1.4b, Marvell's Bravera SC5 doubles the performance compared to PCIe 4.0 SSDs. This contributes to accelerated workloads and reduced latency, dramatically improving the user experience. In order to meet cloud service providers' stringent security requirements to ensure users' data is safe and protected, the controllers offer FIPS-compliant root of trust (RoT), AES 256-bit encryption and multi-key revocation. The new controllers are the first with a hardware-based Elastic SLA Enforcer to assure quality of service (QoS) and provide metering capabilities per

customer to increase overall storage efficiency and utilization while lowering total cost of ownership (TCO).

"Bravera SC5 SSD controllers are first to market with innovative data center features that extend Marvell's flash storage technology leadership," said Thad Omura, vice president of marketing, Flash Business Unit at Marvell. "We're working with the entire ecosystem to enable SSD vendors and Do-It-Yourself cloud service providers to deploy the most advanced flash storage solutions."

Next-generation cloud data center server architectures continue to span varying form factors, NAND types as well as performance criteria which must meet rigorous physical, thermal and signal integrity requirements. Marvell's latest SSD controller family offers high customizability to address the variety of storage options needed for the cloud as workloads continue to evolve. The new controllers enable the world's first EDSFF E1.S form factor devices that support up to 16 NAND channels while offering unthrottled performance. In addition, the Bravera SC5 family is compliant with Open Compute Project (OCP) NVMe SSD specifications, providing a standardized path for integration and testing.

In developing the Bravera SSD controller line, Marvell worked closely with leading hyperscale cloud providers such as Microsoft Azure to ensure fleet compatibility and data center SSD standardization across the open hardware landscape.

"We would like to congratulate Marvell on being first to market with its new Bravera SC5 SSD controller," said Pablo Ziperovich, GM, Azure Memory & Storage Center of Excellence, Microsoft. "Marvell's latest SSD controller enables OCP compliance, power efficiency, performance, and features which are critical to Microsoft Azure's demanding requirements."

"There are many data center technology challenges. These include the need for PCIe 5.0 for performance scaling, E1.S for density and serviceability and OCP data center NVMe SSD support for product features. Marvell's Bravera SC5 SSD controller family supports technology that enables next generation hyperscale SSD use cases," said Ross Stenfort, Hardware System Engineer, Storage, Facebook.

Marvell's new SSD controller family leverages the company's advanced and proven system-on-chip (SoC) architectures to enable up to 14 GB/s of throughput and 2 million random read IOPS. By providing the ability for customers to reuse the same firmware stack across the entire product offering, the Marvell SSD controllers allow customers to productize multiple SKUs with quick time-to-market. Additionally, the Bravera SC5 SSD controllers are the industry's first flash controllers to enable multiple usage models such as SEF, ZNS, Open Channel, and more without hardware changes. This offers the flexibility to seamlessly repurpose the same underlying hardware when migrating to next-generation workloads.

"Software-Enabled Flash (SEF) is an architecture with an open-source software defined API that redefines the way SSDs are used in the cloud. We are excited to grow the ecosystem of products supporting SEF with Marvell's introduction of its new Bravera SC5 SSD controller offerings," said Eric Ries, SVP Memory and Storage Strategy, KIOXIA America Inc. "These products enable solutions that address requirements of a growing number of critical cloud workloads."

The new controllers are powered by Marvell's 5$^{th}$ generation NANDEdge™ LDPC error correction technology, which supports the latest 3D NAND QLC, TLC and SLC technologies

from various vendors in the market, extending SSD lifetime while enabling best-in-class power to performance ratios.

**Broad Ecosystem**

"AMD EPYC™ processors are powering some of the most compute-intensive workloads in the cloud, where leadership CPU performance, security and scalability are critical," said Raghu Nambiar, corporate vice president, Data Center Ecosystems and Application Engineering, AMD. "At AMD we believe in supporting ecosystem growth and working with key partners like Marvell to help enable the latest industry standards for the modern data center. We congratulate Marvell on the introduction of the Bravera SC5 SSD controller and are excited to continue our work together."

"Marvell's new Bravera SC5 SSD controller is a great example of the innovation and dynamism that results when the ecosystem rallies around open industry standards," said Jim Pappas, Director of Technology Initiatives at Intel. "PCIe 5.0 and the high-performance products designed for it will be instrumental in unleashing the full potential of next-generation Intel Xeon Scalable processors code-named 'Sapphire Rapids' across a wide range of usages."

"Marvell and KIOXIA have an excellent established relationship and have been successful from client to data center applications," said Atsushi Inoue, Senior Director, Memory Division, KIOXIA Corporation. "We believe Marvell's Bravera SC5 SSD controller featuring ultra-low latency is able to open up new opportunities with our BiCS FLASH™ for the expanding cloud storage market of our mutual customers."

"Renesas has collaborated with Marvell to develop the world's first PCIe 5.0 SSD reference design," said Andrew Cowell, Vice President, Mobility, Infrastructure and IoT Power Business Division at Renesas. "Our intelligent power management products deliver high efficiency in a highly integrated, small PCB area solution, meeting the low-profile requirements of new generation SSD form factors. Marvell's Bravera SC5 SSD controllers in combination with Renesas Power Management ICs are optimized to meet the demanding requirements of the modern cloud data center."

"We are excited to enable the next generation of SK hynix NAND devices with Marvell's new Bravera SC5 SSD controller and congratulate Marvell on bringing the first PCIe 5.0 SSD controller to market," said Jin Lim, VP, SK hynix. "Marvell's latest SSD controller family is optimized to address the critical cloud data center requirements for power and performance, and speeds time to market."

"Marvell's launch of its new Bravera SC5 SSD controller family marks a milestone for the industry in enabling next-generation cloud infrastructure," said Grace Gong, YMTC Senior Vice President of Marketing and Sales. "We are excited to be part of this ecosystem with our next generation NAND to help advance data center efficiency and bring flexibility to address emerging cloud storage requirements."

**Availability**

The new Marvell chipsets are sampling now to select customers. More information on the new cloud and data center SSD controllers can be found on the Bravera SC5 SSD controller family product page. Additional resources can be found on the Bravera SC5 media kit page.

**About Marvell**

To deliver the data infrastructure technology that connects the world, we're building solutions on the most powerful foundation: our partnerships with our customers. Trusted by the world's leading technology companies for 25 years, we move, store, process and secure the world's data with semiconductor solutions designed for our customers' current needs and future ambitions. Through a process of deep collaboration and transparency, we're ultimately changing the way tomorrow's enterprise, cloud, automotive, and carrier architectures transform—for the better.

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