March 2, 2022

Microchip Introduces Industry's Highest-Performance 16-Channel PCIe® Gen 5 Enterprise NVMe® SSD Controller

The Flashtec® NVMe 4016 controller enables unparalleled performance and a rich 'cloud-ready' feature set including industry-leading security features

CHANDLER, Ariz., March 02, 2022 (GLOBE NEWSWIRE) -- As data processing requirements continue to evolve, cloud-scale infrastructure requires solutions that maximize bandwidth, minimize latency, and are optimized for efficient resource utilization. Microchip Technology Inc. (**Nasdaq: MCHP**) today announced the newest member of the **Flashtec® controller family**, the NVMe® 4016 SSD controller. As the industry's highest-performing PCIe® Gen 5 NVMe SSD controller, the Flashtec NVMe 4016 addresses the market demand for high-reliability, high-performance solid-state drives (SSDs) delivering greater than 14 GB per second throughput and over 3 million IOPS. With advanced Credit Management technology, this next-generation controller offers the stringent Quality of Service (QoS) required by today's cloud-focused data center applications.

"Microchip is proud to announce the next generation of our Flashtec NVMe controller product line. Its market-leading performance, coupled with our proven and flexible architecture, means the NVMe 4016 can provide our cloud and OEM customers with a cutting-edge platform for their PCIe Gen 5 NVMe SSD solutions," said Pete Hazen, vice president of Microchip's data center solutions business unit.

With 16 high-speed programmable NAND Flash channels capable of up to 2400 MT/s, this fourth generation Flashtec controller can utilize full PCIe Gen 5 x 4 speed bandwidth. The NVMe 4016 allows current customers to leverage their existing firmware investment in previous generations and gives new clients the confidence and flexibility to adopt this proven platform for their toughest cloud and enterprise applications.

"Microchip's controller solutions are a strong match for our wide array of TLC and QLC SSDs and future NAND technologies," said Greg Matson, vice president of strategic planning and marketing, Data Center Group, Solidigm™. "They offer a compelling combination of features, scalability and security for next-generation cloud and enterprise architectures."

"How we rapidly promote cutting-edge technology to our clients is crucial for us," said Mr. Zhong Ji, deputy general manager, Storage R&D, Inspur. "Maximizing the benefits of reusing known generational architectures reduces development risk and effort. Having a fully mature reference solution such as the Flashtec controller PCIe Gen 5 design will definitely accelerate the efficiency and quality with which we provide leading technology to the market."

As an NVMe 2.0 compliant controller, the NVMe 4016 not only supports all the latest storage and performance compute applications, including Zoned Name Spaces (ZNS) and cloud Open Compute Platform (OCP), its flexible architecture also enables customers to future proof for continually evolving NVMe specifications.

"Meeting the challenging demands of hyperscale data center environments for scalable efficiency in terms of manageability, power, performance and thermals has been the focus of industry standards such as the OCP data center NVMe SSD Specification and EDSFF E1.S as a form factor," said Ross Stenfort, hardware system engineer, Storage at Meta. "The Flashtec NVMe 4016 controller supports these requirements to enable SSD makers to meet hyperscale needs."

"The Flashtec NVMe 4016 Gen 5 SSD controller provides the needed performance and architecture for next-generation NAND," said Dr. Taile Zhang, chief executive officer of Memblaze. "Memblaze and Microchip have developed a great partnership to advance data center efficiency and bring the flexibility needed to address the cloud storage requirements of today and tomorrow."

The NVMe 4016 is also the first PCIe Gen 5 controller to introduce PCIe link encryption support as one of the many feature enhancements in this new generation of Flashtec controllers. With dual signature authentication and Trusted Platform support, the NVMe 4016 controller meets all critical storage and enterprise application security needs. The NVMe 4016's advanced virtualization capabilities enable the large-scale deployment of Virtual Machines (VMs) as well as Physical Functions (PF) per port for the most efficient utilization of the PCIe resources in ever-growing data center and cloud computing infrastructures.

"Intel's upcoming Next Gen Intel Xeon Scalable processors, code named Sapphire Rapids, will implement PCI Express 5.0 running at up to 32.0 GT/s to deliver the low-latency and high-bandwidth I/O solutions our customers need to deploy," said Dr. Debendra Das Sharma, senior fellow and chief architect, I/O Technologies and Standards, Intel. "We are pleased to see Microchip's PCIe 5.0 Flashtec drive controller investment strengthen the ecosystem and drive broader deployment of PCIe 5.0 solutions."

"Supporting ecosystem growth with the industry's latest standards is key for enabling modern data centers," said Raghu Nambiar, corporate vice president, Data Center Ecosystems and Solutions, AMD. "Our next-generation technologies are well positioned to take advantage of new standards like PCIe Gen 5, enabling next-generation applications in the data center. We are pleased to collaborate with key industry leaders such as Microchip to enable the performance and scalability our customers need for their demanding workloads."

The advanced ECC features armed with stronger bit error correction capabilities continue to pave the way for utilization of denser NAND Flash technologies like Qual-Level-Cell (QLC) Flash into the mainstream and storage space. The Flashtec controller's innovation continues with the addition of a new, programmable Machine Learning (ML) engine in the NVMe 4016 controller, capable of a variety of pattern recognition and classification functions that are employed in Artificial Intelligence (AI) and ML applications. The NVMe 4016 controller's new ML technology presents endless opportunities for SSD builders and suppliers to manage SSDs for maximum performance and cost benefits.

"We are pleased to work with enablers like Microchip that continue to advance the PCIe SSD ecosystem," said Scott Beekman, vice president of memory products for KIOXIA America, Inc. "We congratulate Microchip on their newest addition, which features a flexible architecture to enable compatibility with the latest-generation Flash, including TLC, QLC and potentially future PLC, and new machine learning technology."

“Supporting a wide variety of form factors allows growth and new development in the SSD ecosystem,” said Jin Lim, vice president of NAND Technology SK hynix America. “Flashtec’s PCIe Gen 5 provides endless opportunities for our partners to optimize the management of NAND Flash while enjoying maximum performance.”

Flashtec controller flexibility supports a wide variety of form factors, including EDSFF. Supported by a comprehensive development platform, debugging tools and dedicated, best-in-class, applications team, the Flashtec NVMe 4016 controller serves all the requirements for the latest SSD solution needs: high capacity, high performance, security, power optimization, and computational-storage ready.

Development Tools

Microchip’s Flashtec NVMe 4016 SSD controller offers several options for software and hardware support. A complete software development kit includes Microchip’s reference firmware with optional hardened firmware modules, simulation tools, debug tools including Microchip’s Chiplink diagnostic tools, evaluation boards and reference designs, global support and a full suite of collateral.

Availability

Now Sampling

Resources

High-res images available through Flickr (feel free to publish):

- Application image: https://www.flickr.com/photos/microchiptechnology/51888530610/sizes/l/
- Block diagram: https://www.flickr.com/photos/microchiptechnology/51888208039/sizes/l/

About Microchip Technology

Microchip Technology Inc. is a leading provider of smart connected and secure embedded control solutions. Its easy-to-use development tools and comprehensive product portfolio enable customers to create optimal designs which reduce risk while lowering total system cost and time to market. The company’s solutions serve more than 120,000 customers across the industrial, automotive, consumer, aerospace and defense, communications and computing markets. Headquartered in Chandler, Arizona, Microchip offers outstanding technical support along with dependable delivery and quality. For more information, visit the Microchip website at **www.microchip.com**.

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Source: Microchip Technology Inc.