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Hitachi GST
Solid State Drive (SSD) FAQs

Q1: What are the benefits of SSDs for Enterprise customers?

A1: Hitachi GST Ultrastar SSD family delivers ultra-high performance input/output operations per second (IOPS) for transaction-intensive server and storage applications. They reduce total cost of ownership (TCO) through low power consumption, efficient cooling and minimal space requirements as fewer SSDs are required to support the same high-IOPS applications when compared to traditional enterprise HDDs. The synergistic relationship between the new throughput-enhancing SSDs and traditional HDDs in servers and storage arrays provides a cost effective, end-to-end enterprise-class storage solution, in terms of reliability, compatibility and system performance.

Q2: Where do SSDs fit in typical Enterprise storage environments?

A2: Enterprise storage environments can be classified into long-term archive (Tier-3), capacity optimized (Tier-2) and high performance (Tier-1) workloads. I/O intensive applications, such as financial transactions and e-commerce, have pushed the envelope of storage and processor capabilities, creating a new tier in storage: ultra-performance (Tier-0). This new tier in the storage hierarchy describes applications requiring the ultra-high levels of performance and power efficiency. SSDs deliver the ultra-high I/O performance required for these demanding workloads.

Q3: Why is Hitachi GST entering the Enterprise SSD market?

A3: Tier-0 enterprise applications are of increasing importance to our global OEM customers as more and more IT managers are redesigning their data centers for improved TCO, and to support advances in cloud computing, virtualization and thin provisioning. Enterprise SSDs offer a significant growth opportunity, expanding the overall storage market by creating a new tier in the enterprise storage hierarchy for applications requiring ultra I/O performance and power efficiency.

Q4: How will SSDs complement Hitachi's existing Enterprise HDD business?

A4: Hitachi GST will continue to market and sell a comprehensive portfolio of enterprise HDDs for high performance (Tier-1) and capacity optimized (Tier-2) applications. We expect HDDs and SSDs to be used interchangeably in tiered pools of storage, depending on the need for either capacity or performance/power efficiency.

Q5: How will SSDs be priced, relative to traditional hard drives?

A5: Hitachi GST does not disclose OEM or channel pricing. Although the initial costs of deploying SSDs are higher than traditional hard drives, their performance attributes translate to a reduction in the number of drives required to support a given set of IOPS requirements. This serves to offset higher purchase costs and reduce long-term operating expense.

Q6: Why did Hitachi GST select Intel as a partner?

A6: Intel has substantial expertise in NAND flash memory and advanced SSD technology, as well as world-class manufacturing capabilities. Hitachi brings proven enterprise storage expertise in SAS and FC design, firmware, reliability, customer qualification and system integration. This combination delivers world-class solutions with the performance and reliability that enterprise storage customers' demand.

Q7: Will your SSDs be branded and sold by Hitachi or Intel?

A7: The jointly developed products will be exclusively branded, marketed and sold by Hitachi GST.

Q8: What will differentiate Hitachi SSDs from those of other suppliers?

A8: When you combine our proven expertise in SAS and FC design, firmware, reliability, and customer qualification and system integration, no one can match our total value proposition. The Ultrastar SSD family is the world's first jointly develop SAS and FC enterprise-class SSDs, combining Hitachi GST's proven enterprise HDD strength with Intel's extensive capabilities developing high-endurance, NAND flash memory and advanced SSD technology. All of this powers a new generation of leading SSDs with high endurance, reliability and sustained performance for Tier 0, mission-critical server and storage workloads.

Q9: What SSD products is Hitachi offering?

A9: Hitachi GST announced its new Ultrastar™ SSD400S family, which is first in a series of high performance, high endurance and reliable solid state drives (SSD) from Hitachi GST for Tier 0, high I/O enterprise applications. As the world's first jointly developed Serial Attached SCSI (SAS) and Fibre Channel (FC) enterprise-class SSDs, the Ultrastar SSD400S family combines Hitachi's proven enterprise hard disk drive (HDD) leadership with Intel's extensive capabilities developing high-endurance 34-nanometer (nm), single-level cell (SLC) NAND flash memory and advanced SSD technology. The new Ultrastar SSD400S family delivers 100GB, 200GB and 400GB capacities, featuring both 2.5-inch 6Gb/s SAS and 3.5-inch 4Gb/s FC solutions.

Q10: What type of Flash memory will be used in the SSD?

A10:.Ultra performance (Tier-0) and high performance (Tier-1) storage applications demand high performance, endurance and reliability. Hitachi addresses these requirements in its first-generation products using Intel's high endurance, SLC NAND flash memory combined with advanced SSD technology, including proprietary endurance, firmware and power-loss data management technologies.

Q11: How do you measure SSD endurance and reliability?

A11: Enterprise SSD reliability includes the media bit error rate (BER), Mean Time Between Failure[3] (MTBF) and write endurance. SSD endurance is defined as the total amount of random host data that can be written within the life of the drive. A number of factors affect SSD endurance, including NAND technology, write workload, reserve capacity and SSD controller firmware. Hitachi SSDs use advanced error detection and correction, as well as highly efficient firmware algorithms designed to provide data integrity and extended product life.

Q12: When will Hitachi GST SSDs be available?

A12: Hitachi GST has already shipped and is currently qualifying Ultrastar SSD drives with select OEMs. Broader qualification samples are now available with product ramp scheduled in 2011.

Q13: Who are your SSD customers?

A13: At this point we are not at liberty to disclose our customers. However, we have a strong track record of working with global enterprise customers and are proud to report favorable responses to the Ultrastar SSD family. With qualifications now underway, we anticipate volume shipments to commence in the first half of 2011.

Q14: When should we expect to see enterprise-class solutions on the market with Hitachi SSDs?

A14: We cannot speak on behalf of our customers, but we anticipate that products from those OEMs are likely to be available in the first half of 2011.

Q15: Is Hitachi developing MLC-based SSDs?

A15: Leveraging the strength of Intel and Hitachi, we continue to explore all options for delivering world-class storage solutions to the enterprise market. We see applications for both SLC- and MLC-based enterprise SSDs going forward. SLC will be used for write intensive applications; MLC will be used primarily for read intensive applications. We anticipate that by the second half of next year, MLC technology will be matured to meet our stringent quality standards. At this point, we cannot comment on specific product details or timelines.