SOLID STATE STORAGE TECHNOLOGY CORPORATION

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Why SATA SSDs Are Still Viable for Enterprise and Data Center

Trends in Data Center Storage

Perhaps the largest trend in enterprise and data center storage is the move away from mechanical hard drives (HDDs) to solid state drives (SSDs) and devices. One primary advantage is form factor, as dealing with 3.5" HDDs is a cumbersome affair. However, it's also easier to deal with SSDs in terms of cooling and overall

maintenance as there are no moving parts. Additionally, the higher and more consistent performance of flash means greater levels of efficacy and relative performance for the space utilized. This helps reduce the total cost of ownership (TCO), or actual cost of the product through its lifespan.

This is especially true with the advent and expansion of quad-level cell (QLC) NAND which allows for high-capacity solutions. Intelligent flash management at the controller level helps get the most out of this denser flash, as well, which means the reliance on specialized enterprise-grade MLC is no longer a requirement. These facts have led most businesses to consider an all-flash array (AFA) approach, doing away with HDDs and building their architecture entirely around flash solutions as it is no longer cost-prohibitive. This provides a streamlined system without obvious bottlenecks while also creating an upgrade path moving forward.

Trends in Data Center SSDs

As companies have begun to move towards SSDs they have also been transitioning from traditional SATA and SAS solutions towards PCIe™ in the form of NVMe™ drives. Flash-based PCIe™drives offer a lot of the same benefits as SATA SSDs: wider environmental tolerance, scalability, etc. The ability to predictably scale capacity with environmental reliability – that is, fewer operating failures from environmental factors, including thermals and interference – is a key consideration, especially in the data center. However, the form factor standards for PCIe™ drives are still evolving, keeping SATA solutions attractive. In fact, according to estimates, by 2024 SATA SSDs will still make up 30% of units sold.

SATA SSDs offer redundancy while being incredibly compatible with existing and older systems. They also offer basic functionality such as hot-swapping, all in commonly-employed form factors. Although some applications require or can benefit from the use of cutting-edge PCIe™ SSD technologies, many traditional enterprise and data center roles can be handled effectively by SATA SSDs. This is because many applications have very specific workloads, for example being read-heavy or capacity-focused, which still scale well with SATA bandwidth limitations. The move from HDD to flash tends to be the largest step for many implementations and the raw density allowed, with for example QLC-based SSDs, retains SATA as a potentially strong investment.

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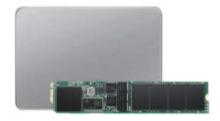
Summary

As enterprises and data centers migrate away from older HDD implementations towards all flash arrays, the question arises: SATA or PCIe™? Over time, PCIe™ will offer all the conveniences of SATA along with other advantages, but many companies can still benefit from traditional SATA configurations. The increasing presence of cheaper flash and better controllers in the market have enabled flash, with its reliability and tolerance, to be cost-effective while SATA offers a predictable form factor – for scalability, hot-swapping, compatibility, redundancy, etc. As applications in the cloud and on the edge call for higher capacities with a focus on read-heavy workloads, emerging flash such as QLC can be implemented and scaled effectively through cheaper SATA solutions for years to come.

Our SSD Solution

Our ER2 SATA SSD Series delivers affordability and performance with superior random read/write speeds of up to 90,000/45,000 IOPS. It comes in M.2 and 2.5" form factors.

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A subsidiary of KIOXIA Corporation, **Solid State Storage Technology Corporation** is a global leader in the design, development, and manufacturing of digital storage solutions. We offer a comprehensive lineup of high-performance customizable SSDs for the Enterprise, Industrial, and Business Client markets. With various form factors and interfaces, our SSD solutions help businesses simplify their storage infrastructures accelerating variable workloads, improving efficiency, and reducing total cost of ownership.

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