Top Applications for SSDs in Cloud and Hyperscale Environments

Data Storage Solutions
The big data challenge

Everyone in IT knows that big data is a force to be reckoned with. The market is exploding with massive quantities of structured and unstructured data, which must be collected, sorted and stored safely. Trying to process all this data in real time, so it adds value to the organization, is like drinking from a firehose. Then there’s the challenge of mastering the complex tools and technologies used to collect and analyze big data and turn it into workable information and reports. Getting a handle on it all requires efficient storage systems—and that means solid state storage technology.

Compared with traditional hard-disk drives (HDDs), solid state storage systems greatly alleviate I/O bottlenecks and latency. Driven by non-volatile memory technology, advanced solid state drives (SSDs) can deliver faster response times and greater capacity without sacrificing reliability or accuracy. Across an array of application workloads, solid state storage (or a hybrid solution) provides the efficiency and uptime that businesses need to:

• Ensure that service level agreements (SLAs) are met for Tier-1 business-critical applications and increase application performance across the board.
• Scale applications up and out without compromising end-user response times—while using less hardware, power, cooling and data center space.
• Improve response time and throughput by caching the “hot,” most frequently requested data.

The enterprise SSD opportunity at a glance

Businesses that deliver cloud and hyperscale solutions are particularly reliant on efficiency and performance in their data centers. When your bottom line depends on dynamic information provided in real time, a split-second delay can be very costly. As more and more business functions move into virtualized environments or cloud-delivery platforms, any bottleneck in storage becomes a mission-critical concern.

When performance and microseconds count, the I/O improvements of solid state storage technology are especially valuable.
Top applications for enterprise SSDs

The following real-world examples illustrate how solid state storage technology solves key customer challenges across cloud and hyperscale data center environments.

### Cloud and Hyperscale Solutions

1. **Web Databases/Business Intelligence (BI)**
   Businesses are turning to cloud services for access to data and analytics that help them make smarter business decisions. Because users don’t want to wait for anything, solid state storage technology can improve their experience by accelerating web application response times. It allows BI SaaS companies to deliver complex, real-time analytics and data visualizations without slowing page load time. Best of all, it allows SaaS providers to scale to meet demand quickly and cost-effectively without sacrificing performance.

2. **Data Mining and Analytics**
   Like SaaS providers, online data-mining services need to be responsive. Solid state storage technology helps increase application performance so providers can process more jobs and more complex queries in less time. I/O-intensive log files and frequently accessed tables can bog down an analytics engine. But PCIe-based flash storage puts that data closer to the processor, ensuring a fast response time. It also allows for complex queries at massive scale, while remaining cost-effective and easy to install.

3. **Social Media**
   Social media creates a growing data challenge because of the vast amount of unstructured and structured data sets. Social media sites have to provide access to videos, photos, audio files, status updates, tweets and other online transactions that people want, quickly and accurately. Solid state storage technology provides the low latency, scalable, high-performance storage platform that allows social media companies to deliver the experience their users demand. At the same time, it reduces infrastructure capital expenditures (Capex)—including hardware, data center footprint, and power and cooling—while shrinking operational expenses (Opex) year after year.

4. **Server Virtualization**
   Organizations have turned to virtualization to maximize server utilization, reduce hardware expenses, and improve the responsiveness and resiliency of application delivery. Solid state storage technology can improve the performance of virtualized environments by combining hardware with software caching to reduce latency. This allows more data to quickly get to the CPU, increasing overall throughput and utilization. The result? IT can run more virtual machines (VMs), while improving the performance across all VMs.

5. **The Cloud**
   The next logical step for virtualization is the cloud, which extends the virtual environment online to provide organizations and consumers with self-service access to managed solutions. But in order to do so effectively, IT needs to ensure persistent performance, high availability, high capacity and low latency. Solid state storage technology can help by delivering predictable, sustained response times, even on data-intensive workloads. And because SSDs can work with existing hot-swappable storage system designs, no “forklift” upgrades are required. With solid state storage technology, IT can deliver higher performance with less SAN infrastructure—reducing power consumption and cooling costs, as well as Capex and Opex.

6. **Software as a Service (SaaS)**
   For many businesses, the ultimate expression of the “cloudification” of service delivery is to provide SaaS. Delivering this model effectively can be difficult, as organizations must find ways to deploy hardware that ensures an optimal user experience without sacrificing profitability. Not easy if their system is bogged down by I/O constraints driven by simultaneous queries by multiple users. Solid state storage technology can help by lowering latency so that requests can be quickly fulfilled, providing an improved customer experience. It also allows SaaS providers to support a greater number of databases while allowing them to run more VMs on each server.
Why SanDisk for your enterprise storage solutions?
A leader in solid state storage innovation, SanDisk offers a broad portfolio of flash-optimized hardware and software solutions, so you can select what works best for you. Our cutting-edge hardware includes workload-optimized SAS SSDs and PCIe Solid State Accelerators (SSAs). SanDisk solutions can be used on their own for efficient storage scaling, with FlashSoft™ software for server-tier caching performance optimization, or with Membrain software for an in-memory database speed boost.

At SanDisk, we have a singular focus: to expand the possibilities of data storage technology. And enterprises all over the world are putting us to work.

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