Case Study
Intel® Solid-State Drive DC S3500 Series
Data Center Efficiency
Entertainment/Media

High-performance video solution for interactive media platforms

Shanghai Sihua Technologies Co., Ltd. utilizes Intel® Solid-State Drive DC S3500 series to increase storage capacity and provide high-performance video servers for its interactive media solutions

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"Adopting Intel® SSD DC S3500 series for our interactive media platforms provided high-performance concurrent stream output capabilities and increased the storage capacity of our video servers. The new video solution now provides high-bandwidth streaming output on a single video server, improving the performance of our solutions and reducing cost per video stream."

Jody Zhu
Production Director
Shanghai Sihua Technologies Co., Ltd.

Founded in 2000, Shanghai Sihua Technologies Co., Ltd. (Sihua Tech) provides design, development, implementation and technical services for interactive media platform solutions. Its solutions have become the essential business operating software of broadcasting and telecommunications operators and users in other industries for conducting interactive media services such as interactive TV, Internet TV, IPTV, and mobile TV. Through its innovative software products and comprehensive platform solutions, Sihua Tech has established long-term relationships with many of the industry's leading broadcasting operators and top telecommunications operators such as China Telecom, China Unicom, and China Mobile. As it continues to improve its services, Sihua Tech aims to enhance its interactive media platform solutions to provide an enhanced user experience for its customers.

CHALLENGE

- **Improve video server performance.** Increase the capacity of storage servers and enhance throughput performance to improve interactive media platform solutions.

SOLUTION

- **Utilize Intel® Solid-State Drive (Intel® SSD) DC S3500 series.** Deploy servers with Intel SSD DC S3500 series to improve performance and increase storage capacity.

IMPACT

- **Reduce cost per video stream.** With improved performance, the new video solution provides higher bandwidth streaming output on a single video server with larger storage capacity, reducing cost per video stream.

- **Improve quality of online video service.** Enhanced interactive media platform solutions allowed Sihua Tech to deliver high-performance and high-quality online video service.

With the continuous development of the Internet, especially the advent of widely used high-speed broadband and 4G, online video services have gained significant attention from ordinary users. Sihua Tech answers this demand by providing high-quality online video solutions for operators across the broadcasting and telecommunications industries.

To provide better interactive media platforms, Sihua Tech needed to improve its system. In terms of storage capacity, although the traditional enterprise mechanical hard disks, with either a serial ATA (SATA) or serial attached SCSI (SAS) interface, have some advantages in storage size. Their inadequate I/O capability has severely limited the video servers' output capacity, so its traditional disk was no longer able to meet the needs of Sihua Tech's new technology. Sihua Tech needed new storage technology to support its services.

"Our previous solution used the SATA/SAS mechanical hard disks as the storage medium. And our video servers' output capacity stands at about 10G. it was unable to support the video servers' high concurrent streaming output. We expect an output capacity of about 15G to handle 100 concurrent recordings," explained Jody Zhu, production director of Sihua Tech.

Apart from storage capacity, Sihua Tech also needed to improve the concurrency capacity of the servers, as well as providing security and stability

With Intel® SSD DC S3500 series, Sihua Tech has improved its video servers' performance for online video solutions, enhancing concurrency, security and stability

for users of its solutions. Thus, the new solution had to be powerful enough to help Sihua Tech deliver high-quality interactive media platforms for its users, primarily broadcasting and telecommunications operators.

High-quality online video services through a powerful storage solution

To improve the performance of its video servers, Sihua Tech enhanced its servers with Intel SSD DC S3500 series to increase storage capacity and improve concurrency performance of its video servers.

Sihua Tech employed a variety of online video optimization techniques utilizing the Intel SSD DC S3500 series. In the partial caching, the server's video included three parts: segment information, file fragments, and the full file. Through strategy setting, the server would have to determine first whether caching into multiple file fragments was needed. These file fragments then formed a full file. As a result, the users' consumption quality was improved.

The new solution also supported downloading-caching technology. When users are provided download service, if the cache (high-speed caching) is locally missed, and the channel happens to support downloading-caching services, the video streaming service (VSS) will directly provide services for the users at the same time as the content sources are cached locally. Video service providers utilizing Sihua Tech's new solution use these new technologies to offer a large amount of small files, such as cache files, for users to download.

The primary factor affecting the read/write capabilities of the small files exists in the control chip and firmware algorithm of Intel SSD. The Intel SSD DC S3500 series has a sequential read speed of up to 500 MB/s, sequential write speed of up to 450 MB/s, and random read performance of up to 75,000 I/O operations per second (IOPS). Moreover the exceptional performance stability of the Intel SSD DC S3500 series met the stability requirements when the video server serves offers large concurrent output, giving customers a better user experience. Although the storage capacity was relatively smaller than that of the SATA mechanical hard disk, the Intel SSD DC S3500 series still provided sufficient large storage capacity up to 600GB, meeting the need of Sihua Tech.

In addition, as an enterprise mainstream product, the Intel SSD DC S3500 series offered excellent reliability and safety. It has added a tantalum film capacitor, so that the data stored in the RAM can be transferred to the NAND flash in case of unexpected power failure, ensuring data read/write integrity. The Intel SSD DC S3500 series also employed the XOR (built-in RAID) technology, which further improved the SSD's reliability while reducing failure rate. Plus, it has provided satisfactory SMART detection ability to help customers detect and manage the application of SSDs in the data center.

With such positive results, Sihua Tech aims to continue working closely with Intel to deploy video solutions with more enterprise SSDs for better performance, such as the Intel SSD DC S3700 series. This ensures that Sihua Tech gives its customers quality, reliable online video solutions.

LESSONS LEARNED

- Intel has been dedicated to the research and development of SSDs for a long time. A high-performance alternative to mechanical drives, Intel SSDs take storage performance and reliability to a new level, with breakthrough storage performance and reliable quality.
- Compared with the traditional mechanical hard disk, the Intel SSD DC S3500 series features low power consumption, quiet operation, vibration resistance, and low heat output. These features not only allow the data to be saved in a safer manner, but also prolong the continuous operation time of the battery powered equipment.
- Intel SSD DC S3500 series combines rapid and consistent read/write performance with powerful data protection and low energy consumption, providing high-quality services for video conferences, mass data analysis, and virtual clients.

Find a solution that's right for your organization. Contact your Intel representative, visit Intel's Business Success Stories for IT Managers (**www.intel.com/itcasestudies**) or explore the Intel.com IT Center (**www.intel.com/itcenter**).

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