



Intel® Solid-State Drive Improves Video Services

Intel Solid-state Drive 520 series improves video server data read/write performance and enhances data reliability



“The performance of the Intel® Solid-state Drive 520 series has exceeded our expectations. Performance tests and practical applications have shown that one single Intel Solid-State Drive 520 series can meet the concurrent demands of high-speed writing of four high-definition videos. The data is more reliable and the storage device is easier to move.”

Yang Yongyan
Manager

China Digital Video (Beijing) Limited

Founded in 1990, China Digital Video (Beijing) Limited (CDV) is committed to providing leading content production and operation technologies and services in the field of digital media. With the rapid development of digital media technology and increasingly larger video screen sizes, data volume has continued to grow. This creates severe challenges to the performance of the storage devices of video servers that support CDV's digital media operations.

CHALLENGES

- **Improve hard drive performance.** Traditional mechanical hard drive was unable to meet the demands of writing multi-path, high-definition (HD) video data recording.
- **Unreliability of storage device.** High failure rate with hard drives used in mobile applications led to loss of video content, which translated to finance loss for the company and its customers.
- **Poor mobility and portability.** The mechanical hard drive's size, weight and power consumption have been proven to be disadvantages with mobile recording applications.

SOLUTION

- **Deploy Intel® Solid-State Drives.** Use Intel Solid-State Drives 520 series 480GB to replace the original Serial-attached SCSI (SAS) mechanical hard drives in CDV's video servers and mobile applications.

IMPACT

- **Fast data transfer performance.** CDV internal tests have shown that one single Intel Solid-State Drive 520 series allows concurrent write of four-path HD video data.
- **Better data reliability.** The Intel Solid-State Drive 520 series has lowered the potential data safety hazards caused by hot plugging and vibration.
- **Improved work efficiency and morale.** The mobility and high performance of the Intel Solid-State Drive have improved productivity and employee morale.

Mechanical hard drive performance faces challenges

The video server CDV used for digital media production uses the Intel® Xeon® processor 5000 series equipped with six SAS mechanical hard drives with 10,000rpm. To optimize system performance, two of the disks were used in RAID1 configuration for the operating system and CreaStudio* system from CDV, and the remaining four are used for audio and video data storage. In the existing framework, each disk in CDV's video server allowed single path of HD video data to be written concurrently.

CDV was eager to use a new storage solution to fully utilize the capability of their video servers. CDV's manager, Yang Yongyan, said, "In the applications of the radio-TV and media industries, the multi-path concurrent read/write for audio and video is one of the factors that takes up most of the video server resources. In the process of recording programs, although our video servers still have sufficient computing

Using the Intel® Solid-State Drive to replace the mechanical hard drive enables CDV to improve the storage device's data read/write performance. One single video server can now access HD video data paths three times more than that with mechanical hard drive while providing higher reliability.

capacity, servers are unable to support multi-path HD video input due to performance limitation of the mechanical hard drive. Obviously, the video server's operational resource was wasted to some extent. In addition, when the used capacity of a hard drive reaches up to 85 percent, its read/write performance is reduced more than two-third, and the stability of writing video data is affected."

Insufficient Reliability of Hard Drives

CDV also faced the challenge of traditional mechanical hard drive reliability. "We need to go out to make programs from time to time as our business operations require. In this case, we use the vehicle-carried video server for recording. However, there are several problems. The inevitable vehicle movements would cause sudden vibrations and shocks to the storage devices. Moreover, the mechanical hard drive emits substantial heat in operation. Furthermore, when the current hard drive does not have enough storage space available, we need to hot-plug our hard drives to continue our program recording. All these factors seriously affect the life of mechanical hard drives. Statistical results have shown that the annual failure rate of the mechanical hard drive CDV uses as video server stands at about 7 percent. Yang Yongyan continued, "The most important thing is, we have no effective way to monitor the hard drive's life. Video data loss or incompleteness would result in huge losses for us and our customers." CDV was in urgent need of storage devices that can operate more reliably with a lower failure rate.

With help from Intel, CDV tested the performance of the Intel Solid-State Drive

520 series 480GB. It decided to use the Intel Solid-State Drive 520 series as media storage of its mobile recording application and replace the video server's four SAS hard drives with four Intel Solid-State Drives 520 series. The performance and reliability of the Intel Solid-State Drive 520 series have been excellent.

	Old	New
Main board	Intel® 5500 chipset	Intel® 5500 chipset
CPU	Intel Xeon processor X5690 3460MHz X2	Intel Xeon processor X5690 3460MHz X2
Memory	16G	16G
Software system	CDV CreaStudio* system	CDV CreaStudio* system
Storage	Cisco* E1 00D-HDD-SAS900G 10,000 rpm Hard Drive X 4	Intel® Solid-State Drive 520 series 480G X 4
Concurrent HD video recording paths	4	16

Excellent data read/write performance

CDV's tests demonstrated that the Intel Solid-state Drive 520 series can achieve four-path HD video data concurrently write. CDV's Yang Yongyan said, "This is very important to us. The original video server with four SAS hard drives can assume the task of four-path HD video write. It can now offer a sixteen-path HD video write function. This means only one video server is needed for the program recording compared to four in the past. Loading and editing of the video data is also faster. This has enhanced the CreaStudio system's user experience."

LESSONS LEARNED

- Intel Solid-State Drive's outstanding read/write performance makes it an ideal storage device for the HD video computing.
- The Intel Solid-State Drive reduces the risk of mechanical parts and other potential problems caused by the heat, vibration and hot plugs.
- Compared to a traditional mechanical hard drive, the Intel Solid-State Drive is smaller, lighter, and easier to carry, making it suitable for mobile applications.

Better data reliability

Since the Intel Solid-State Drive has no mechanical features, the harm that may be caused by the vibration and the frequent hard drive hot plug in the mobile applications can be reduced to a minimum. "This has proven to be true in our program's practical applications. We have made several large-scale HD video programs with no failure of any our Intel Solid-State Drives," said CDV's Yang Yongyan. "The Intel SSD toolbox also includes solid-state drive health monitoring tools, which allow us to have an intuitive and objective understanding of the operation status of the solid-state drive."

CDV is testing and validating Intel's latest datacenter solid-state drive product, the Intel Solid-State Drive DC S3500 series, which offers better performance, consistency, and reliability features, and which CDV expects to bring better TCO to end customers. CDV will continue to collaborate with Intel to keep its edge in digital media technology and maintain its leading position in the industry.

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All performance tests were performed and are being reported by China Digital Video (Beijing) Limited. Please contact CDV for more information on any performance test reported here.

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