

## CASE STUDY

### Intel® Xeon® Processor E3 Family

Storage Performance

Data Center Efficiency



# Enabling high-density, low-power data storage for efficient microblogging

Intel® Xeon® processor E3 family helps Sina develop a cost-effective cold storage solution for its microblogging platform



"The TCO benefits of the Intel® Xeon® processor E3 family helped Sina increase our storage capacity by approximately 70 percent while reducing server power consumption by approximately 40 percent. Choosing Intel® architecture for our cold server storage solution ensures compatibility with existing infrastructure and applications, reduces complexity, and lowers total cost of ownership."

Wang Shuo

Operation Director

Sina Research and Engineering Department



"Utilizing the Intel Xeon processor E3 family, Sina has been able to take advantage of Quanta Cloud Technology's high-density, low-power cold storage servers at low operating temperatures and low failure rates. The solution meets the requirements and applications for scale-out storage in large-scale data centers. Through this project, our storage solution was proven to not only meet Sina's requirements, but also to exceed customers' expectations for price/performance and power consumption. Quanta Cloud Technology will continue optimizing our products and services to provide the best solution to large data center customers."

Mike Yang

General Manager

Quanta Cloud Technology

Sina Weibo\* is the information-sharing and communication platform Sina developed to provide users with an effective and efficient microblogging service, allowing them to post messages, upload photos, share, and communicate with friends and family anytime and anywhere via their laptop, PC, or mobile device. Since its launch, Sina's microblogging service has become a leading communication platform in China, with over 500 million subscribers and more than 300,000 certified users including over 130,000 corporate and institutional accounts.

Sina facilitates its microblogging service through Quanta Cloud Technology (QCT), which is dedicated to providing cloud computing data center clients through a full range of products including solutions for rack-mounted servers, storage devices, network switches, and integrated cabinets. Quanta Cloud Technology also performs system integration, tuning, and optimization according to the needs of its clients, strengthening and enhancing efficiency according to their needs and designing system solutions for large data centers and enterprises. Through this fruitful partnership, Sina helps its users communicate with the rest of the world whenever and wherever they are.

## CHALLENGE

- **Inactive data uses valuable data center resources.** Social media data is created rapidly in large volumes, but also has a short life span as active data. When data becomes inactive, it wastes storage resources designed for frequent access.

## SOLUTION

- **Intel® Xeon® processor E3 family-based cold storage solution.** Deploy Quanta Cloud Technology's STRATOS\* S100-L11SL cold storage servers running on the Intel Xeon processor E3 family, which provides a high-density, low-power cold storage solution for Sina's massive volume of inactive data.

## IMPACT

- **Cost-effective cold storage solution.** Sina increased its storage capacity by approximately 70 percent while reducing server power consumption and lowering unit capacity power consumption by approximately 40 percent.
- **Optimized utilization of storage resources.** Sina's microblogging service can store and serve cold data to users while reducing the overall cost of storing infrequently accessed data.

With the rapid rise of social media, people can now exchange information whenever and wherever they want. Along with this impressive rise of social media comes a rapid and exponential increase in the volume of data stored by social media service providers. A great amount of social data is only viewed by users for a very short time, immediately after it is uploaded (active data). The data is accessed increasingly less over time, becoming inactive data. Processing inactive data the same way as active data reduces the efficiency of the resources dedicated to storing and serving active data. Even so, while this aged data is not accessed frequently, it needs to be available any time a user requests it. The challenge for Sina is how to cost-effectively store this aged, inactive data while maintaining durability and availability.

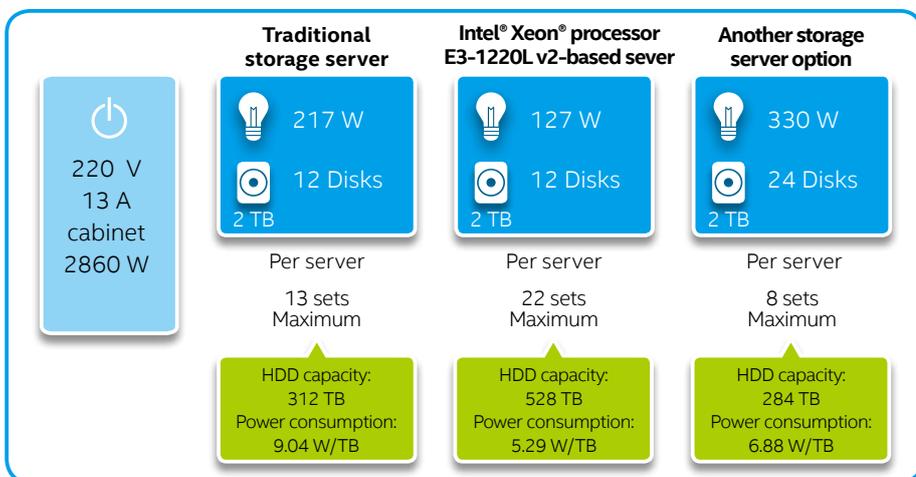
To meet this challenge, Sina sought help from Quanta Cloud Technology to implement a cold storage solution. Cold storage is a way to store rarely accessed data in large volume with low energy consumption.

Compared to general storage solutions, cold storage primarily focuses on delivering cost-optimized data storage. "Within the Sina microblog's 20,000 servers, a great amount of data is rarely accessed, with a processor utilization rate of less than 15 percent. However, this kind of data increases by 30 percent every year," explained Mike Yang, general manager at Quanta Cloud Technology.

According to Yang, although Sina's microblog has been in service for only a few years, the amount of data it possesses has been increasing at an exponential rate.



# The new cold storage solution increases storage capacity by up to 70 percent while reducing power consumption per unit storage by approximately 40 percent



Comparison of cold storage solution servers done by Sina using Intel® Xeon® processor E3 family, a traditional storage server and another type of storage server

Without effective cold storage solutions, rising business costs can result in an unsustainable business model.

## Meeting the demands of massive data

To help Sina solve this problem, Quanta Cloud Technology proposed cold storage servers running on the Intel Xeon processor E3 family.

When selecting its cold storage solution, engineers from the Sina microblog team needed to ensure they were getting the most cost-effective solution for their business model while maintaining the same user experience. The Intel Xeon processor E3 family can drive data stored on 12 disks, while the processor of a non-Intel® architecture-based solution accommodates fewer disks, resulting in a greater number of processors per rack. Utilizing the Intel Xeon processor E3 family-based cold storage platform meant higher density and simpler architecture solution. Moreover, the energy-efficient Intel Xeon processor E3 family-based servers contribute to reducing energy consumption and operating costs for the data center.

By using Intel Xeon processor E3 family-based servers, Sina microblog can ensure application compatibility and greatly reduce the labor, testing, and validation required to

support their current applications, resulting in a higher overall total cost of ownership (TCO) for the cold storage solutions from Quanta Cloud Technology. The improved efficiency of Sina's microblog service is also enabling the company to develop new business platforms such as emails and videos and pursue further business expansion opportunities.

## Improving microblogging performance

Considering the advantages of using Intel architecture, Sina went for the Intel Xeon processor E3 family-based STRATOS S100-L11SL 1U cold storage server offered by Quanta Cloud Technology. The server was installed with up to 14 SATA hard disks. As a high-density storage server, the STRATOS S100-L11SL 1U cold storage server is suitable for large data centers with a demand for storage software, allowing for horizontal expansion.

Test data from Sina showed that compared with traditional storage servers, the Intel Xeon processor E3 family-based cold storage servers have increased storage capacity by approximately 70 percent while reducing server power consumption and lowering unit capacity power consumption by approximately 40 percent.

## LESSONS LEARNED

- Although cold storage techniques are still in their initial development stages, Intel has released a series of processors optimized for the cold storage sector and is committed to developing a wide range of solutions that meet the demands for cost-effective cold storage solutions.
- Intel® technology-based cold storage servers can provide users:
  - Superb performance by driving a higher number of data disks per processor
  - Excellent energy efficiency, since they can achieve higher cabinet server density and reduced operating cost
  - Compatibility with broad range of industry standard applications, substantially decreasing investment in data migration, testing, and maintenance
  - Proven maturity. Intel technology-based platforms have a long history of reliability in the enterprise data center, with a continuing roadmap of innovations.

## A brighter future

In the future, Sina's microblog team aims to deploy more cold storage systems and to continue utilizing servers based on the Intel Xeon processor E3 family. It is also evaluating the new Intel® Atom® processor C2750. Intel is also working with the Sina microblog team to apply erasure coding and other techniques to the cold storage system to save storage space, using the processing capabilities of Intel® processors.

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All performance tests were performed and are being reported by Sina Weibo. Please contact Sina Weibo for more information on any performance test reported here.

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