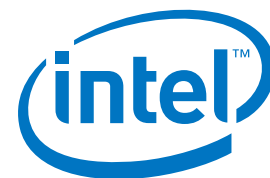


Case Study

Intel® Solid-State Drives (Intel® SSDs)
Content Distribution Network Server



Cutting Costs and Saving Power

Intel® Solid-State Drives and microservers help Taobao.com build a more cost-effective and energy-efficient content distribution network



淘宝网
Taobao.com

"This is an innovative effort to use Intel® SSDs and microservers as the operating platform for a content distribution network service. It is more cost-effective and energy-efficient and meets our demands for content distribution network servers."

He Yanfeng
Product manager
Taobao.com

Challenge

- **Reduce costs:** Taobao.com wants to minimize operating costs, such as purchasing and maintenance, while accelerating the expansion of its content distribution network.
- **Reduce energy consumption:** Use less power while building an energy-efficient content distribution network.
- **Improve the user experience:** Expand the geographic coverage of the content distribution network and increase users' access speeds to improve the user experience.

Solution

Deploy Intel® SSD and microservers as the operating platform for the company's content distribution network. The content distribution network consists of eight 2U microservers with eight blades, each configured with one microserver using Intel® processors and one 160GB Intel® X25-M High-Performance SATA Solid-State Drive.

Impact

- **Reduce the purchase cost of computing infrastructure by 50 percent:** Taobao.com obtained the same content distribution network server performance at a lower cost.
- **Reduce power consumption by 20 to 60 percent:** Intel SSDs and microservers using Intel processors consume less power than the other content distribution network solutions Taobao considered.
- **Save rack space:** Taobao.com can house more content distribution network servers in the same space as the previous configuration.

Taobao.com is the world's largest online shopping platform. To give its customers quick access, the company relies on its own independently-developed content distribution network service to deliver information to the network edge nearest to the customer. The more microservers Taobao.com uses for its content distribution networks, the faster the user can access its platform. As part of its ongoing efforts to increase business efficiency, Taobao.com researched ways to make its content distribution network infrastructure more cost-effective and energy-efficient.

Reduce the cost of content distribution network infrastructure

There are 50 content distribution network nodes in Taobao.com that provide service to four major communications carriers: China Telecom, China Unicom, China Mobile, and China Education Network.

"Currently, we have more than 2,000 content distribution network servers, but they are mainly located in medium and large cities which have advanced networking," explained He Yanfeng, product manager at Taobao.com. "We need to increase the number of microservers continually to expand the geographic coverage of our content distribution network."

"We want to push our website content as close to our users as possible to reduce delays in online access. However, most large servers available in the marketplace are not designed for a content distribution network, although they have supercomputing performance. These servers are expensive,

Content distribution network server solution based on microservers using Intel® processors and Intel® SSDs delivers better price/performance and lower energy-consumption

which will increase our costs. However, content distribution network servers don't require supercomputing performance, but demand more data storage and reading/writing ability. Therefore, we are in need of a better solution."

Reduce energy consumption

"Large servers not only have high power consumption, but also occupy precious rack space," continued He Yanfeng. "We wanted a new solution with a smaller server footprint and lower power consumption that would also meet our demands for computing performance. This would enable us to deploy more content distribution network servers with the same power consumption and footprint.

"Traditional mechanical hard disks can hardly satisfy the performance required by the highly concurrent reading and writing of small files. Besides, frequent reading and writing will raise the temperature of the hard disks, thus raising the overall power consumption of the system," explained He Yanfeng. "If we could store these images on a non-mechanical storage device, this could improve access capability with lower heat generation, thus improving the overall performance of our content distribution network service."

Solution

Taobao.com, with assistance from Intel, analyzed the loading demands of the company's content distribution network servers. This included running performance tests, working with system's OEM

manufacturer, and optimizing the system based on the test results. Finally, after stringent testing of various options, Taobao.com developed a new content distribution network server solution based on the Intel® SSDs and microservers using Intel processors.

The company deployed this solution on one of its content distribution network nodes, which consisted of one microserver using Intel® processors, one 80G Intel® X25-M High-Performance Solid-State Drive and two SATA mechanical hard drives, which were used to enhance the storage capacity of the server and for "cold visits" with few visits but wide distribution of content.

Higher price/performance ratio

The Intel SSDs replaced the system's previous mechanical hard drives. By replacing physical rotating discs with flash memory chips, Taobao.com was able to achieve high-performance data reading and writing. "We compared the test data from several companies before deployment, and chose the solution based on microservers using Intel processors," said He Yanfeng. "On the same performance level as our previous system, the solution can help save about 50 percent on the cost of purchasing content distribution network servers. This means with the same amount of investment, we can build more of our content distribution network. The added advantage is that we can also deploy more servers using the same amount of rack space as before. One single node can provide content distribution network with a bandwidth of over 1.5Gbps."

Spotlight: Taobao.com

- Established in 2003, Taobao.com was financed by Alibaba Group.
- Taobao.com is the largest online shopping platform and the first choice of Internet users worldwide, with a market segment share of over 80 percent of the e-business in China.
- Taobao.com has more than 800 million pieces of product information and over 370 million registered users. It is one of the top 20 websites by number of page views worldwide, with over 60 million visits every day.

Lower energy consumption

Each microserver also uses one Intel X25-M High-Performance SATA Solid-State Drive to store often-accessed content. Without the accompanying heat and wear and tear of the previous hard drives, this meant lower energy consumption and a longer device lifecycle.

"Compared with the previous solution, the new solution can save us 20 to 60 percent on power consumption. This is one of the important reasons for choosing an Intel® architecture-based solution," explains He Yanfeng. "We were pleasantly surprised to see the outstanding performance of the microservers using Intel processors with their higher price/performance ratio and lower power consumption, and will continue to deploy it in the storage backup system in Taobao.com."

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