

## CASE STUDY

Intel® Xeon® processor 5600 series

Cloud computing



# Reducing Internet data center costs with the cloud

Shanda deploys a cloud platform for online game operations using Intel's cloud platform reference architecture



"Intel's cloud platform reference architecture provides a reliable technological architecture for us to rapidly deploy a cloud platform for our gaming operations. Today, not only are the computing resources of each of our servers being fully utilized, but our basic infrastructure has been simplified, the quantity of physical servers has been reduced, and our IDC cost has decreased because of the application of Intel virtualization technologies."

Chen Guixin

Director of Technical Support Center

Shanda Games, Ltd.

As a leading Chinese online game developer, operator, and publisher, Shanda Games, Ltd, serves gamers by continuously launching diversified online game products. When Shanda launched new games, its strategy was to purchase new servers to support them. However, with more games coming online, this strategy led to a continuous increase in Internet data center (IDC) expenses and server maintenance costs. Shanda lacked flexibility to allocate its computing resources, which was affecting its business.

## CHALLENGES

- **Adjust the use of computing resources.** Shanda urgently needs to adjust the use of its game operation servers to more efficiently use its computing resources, apply infrastructure in a more intelligent way, and reduce IDC costs.
- **Flexibly distribute and allocate computing resources.** When online games impose new computing requirements on servers, Shanda needs to be able to distribute or allocate its computing resources in a timely and flexible way.
- **Reduce game operating costs.** Optimize basic infrastructure to reduce the system administration and maintenance costs of games.

## SOLUTION

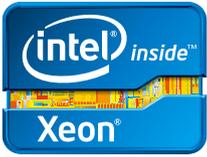
- **Develop cloud products for game operations based on Intel's cloud platform reference architecture.** Deploy virtual server clusters based on the Intel® Xeon® processor 5600 series that can consolidate servers from 6:1 to 8:1 and operate multiple Shanda online games.

## IMPACT

- **Transformed game operation model.** Based on Intel's cloud platform reference architecture, Shanda developed its cloud products for game operations and enhanced the automatic management of its game operation business.
- **Reduced IDC costs.** Adjusting the server use model has substantially increased the utilization ratio of computing resources, enabling Shanda to flexibly distribute and allocate its computing resources, reducing IDC operating costs for two of the new games from RMB480 thousand per month to RMB95 thousand per month, approximately 80 percent less than the original solution's.
- **Reduced operating costs of games.** Integrating resources and simplifying the infrastructure of the game operating system lowered server maintenance and administration costs.

## Optimizing computing resources

Online game operations are essential business for Shanda. The number of online players can fluctuate considerably during a game. In the traditional deployment mode, server performance and capacity are designed to accommodate the highest expected number of online players with a certain redundancy. Fluctuations in the number of online players actually reduce the utilization ratio of computing resources because idle computing resources go to waste. As Chen Guixin of Shanda said, "The number of online players of each game fluctuates continuously, and the peaks and troughs of online player numbers are distributed. If some of our dozens of games can share resources to stagger their respective peaks and troughs in player numbers, it will substantially increase the utilization ratio of servers' computing resources."



## Intel's cloud computing reference architecture meets Shanda's needs by reducing the complexity of cloud computing and offering a solid base on which Shanda can rapidly develop and deploy a cloud-computing-based game operation model.

### Enhancing operational flexibility

When the number of online game players spikes and computing resources are directly bound to a specific physical server, Shanda can't quickly allocate other servers' idle computing resources to adapt. This seriously restricts operating flexibility. "Purchasing new servers and creating new zones can indeed be a solution, but that directly increases our costs and reduces our work efficiency," explained Guixin. "When we spend time and energy on the deployment of new servers, players may have become fed up with the long waiting period and already shifted their attention to other games."

Early in 2011, Shanda, with help from Intel, developed and deployed its cloud platform for online game operations based on Intel's cloud platform reference architecture. It adopted the Intel Xeon processor 5600 series to deploy a virtual cluster to handle the operations of multiple online games.

### Fully utilizing computing resources

Shanda tested the demands games place on servers' computing performance. By installing six to eight virtual servers on each physical server, the new-generation Intel® Virtualization Technology, based on the Intel Xeon processor 5600 series, can reduce the performance losses of virtual software and provide virtual servers with computing performance that is close to that of physical servers. "We are very satisfied with the speed and stability of the virtual servers," said Guixin. "With the help of Intel Virtualization Technology, we have managed to reduce

the quantity of physical servers and the TCO, as well as optimize and fully utilize the computing resources of our game servers."

### Enhancing operating flexibility

With its online game cloud platform based on Intel's cloud platform reference architecture, Shanda has been able to manage configuration and monitor the performance of virtual and physical servers. The system administrator can dynamically adjust the computing capacity of the virtual servers. At the same time, the system administrator can dynamically and securely shift virtual servers onto other servers as needed. As a result, Shanda has substantially enhanced its operational flexibility for its games. "Our virtual servers can acquire the necessary computing resources when a particular game requests new computing resources," explained Guixin. "Computing resources can flow seamlessly among various virtual servers like water. That not only guarantees our uninterrupted operations but, more importantly, it also substantially enhances our system administration capabilities and markedly reduces our server administration and maintenance costs because such seamless flows are conducted automatically. At the same time, the workload on our system administrator is considerably reduced."

### Reducing game operating costs

The dwindling scale of physical servers has simplified the infrastructure of Shanda's game operations and reduced its IDC operating costs. Chen Guixin of Shanda said, "Deployment of

### Spotlight: Shanda Games, Ltd.

- Shanda Games, Ltd. (NASDAQ: GAME), is a leading online game developer, operator, and publisher in China.
- Shanda Games, Ltd., has more than 2,000 research and development personnel and cooperates with more than 20,000 third-party game developers.
- Shanda Games, Ltd., offers highly diversified game products including MMORPG\*, advanced leisure games, webpage games, social games, and mobile Internet games.

the virtualization solution has reduced the IDC operating costs for two of the new games from RMB 480,000 per month to RMB 95,000 per month. "At the same time, the servers consume less energy because the built-in power management, based on Intel® Node Manager, part of the Intel Xeon processor 5600 series, can intelligently adjust power consumption according to the workload. Chen Guixin added, "This year, Shanda launched a new generation of virtualization projects characterized by clusters and an elastic computing resource pool. We are looking forward to further cooperation with Intel to promote application of Intel Virtualization Technology to new heights."

Find a solution that is right for your organization. Contact your Intel representative or visit [www.intel.com/itcasestudies](http://www.intel.com/itcasestudies)

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