

Case Study

Quad-Core Intel® Xeon® Processor
5300 Series
Service Provider & Media
Content/Service Delivery
Infrastructure

Gaming Kingdom goes Quad-Core to the Future

Gamania accelerates online gaming with Quad-Core Intel® Xeon processor 5300 series

Gamania is a leading Taiwanese player in the online gaming industry in Asia. Over the past 12 years since it began gaming operations in 1995, the company has developed a strong gaming presence in Taiwan, and a huge market of over 10 million online gaming members throughout Asia. To further develop Gamania's leadership in the gaming world, the company recently invested in Intel® quad-core processor-based servers to power its virtual gaming kingdom.



Challenge

- **Develop world-class digital entertainment brand.** Deliver highly responsive gaming experience to its members, eliminating waiting time for users and providing instantaneous service, thus maximizing Gamania's competitiveness.
- **Enable a cost-effective solution with zero downtime.** Deliver services that will support growing customer base cost-effectively and reliably with zero tolerance for server breakdowns.

Solution

- **Deploy Intel® architecture.** Utilize Quad-Core Intel® Xeon® processor 5300 series platform for back-end operations.
- **Utilize Intel technical expertise.** Enable optimization of game server performance applications for quad-core processors.

Assessing the Situation


Gamania specializes in developing, producing, and managing online interactive content. Its market covers greater China, Japan, Hong Kong and Korea and includes millions of gamers throughout Asia. Gamania's philosophy is to create excitement, develop the gaming lifestyle and encourage a fantasy-like culture.

Gamania's online gaming membership has experienced high growth rates. When Gamania was appointed the first game agent for the Korean online game "Heaven," the company made it a super hit in Taiwan. The game attracted more than 600,000 paying members within months. Such high member growth rates demand core competence in Gamania's online gaming management capability.

To take steps toward becoming a Predictive Enterprise, Gamania is using technology to make its business proactive instead of reactive by reducing the gap between knowledge and execution. As a Predictive Enterprise, Gamania would be more agile, maximizing return on investment (ROI). The key to becoming a Predictive Enterprise is learning how to develop business processes and infrastructure that are connected and adaptive.

"Price is not the only factor in choosing a server; its performance cost ratio is absolutely important... This is the reason why we choose IQuad-Core Intel® Xeon® processor-based servers, because it is much more competitive and robust."

Lin Chunzhong
Chief Technology Officer
Gamania Digital
Entertainment



Intel provided Gamania with results-oriented, predictive strategic gaming server infrastructure, resulting in double the operational efficiency without raising costs.

To create the ideal online gaming environment, the company constructed Asia's largest online game control room. The ability to provide security, performance and reliability are Gamania's greatest strengths, while addressing user and market segment needs, allocating IT resources and reaching maximum system usage rate pose the greatest challenges.

Key Challenges

The key challenges that faced Gamania included improving the response time of its game servers and increasing the number of concurrent users within the virtual game world. These key issues directly affect customers' online gaming experience, the company's growth potential, and ultimately, Gamania's bottom line. Good online games require support from leading-edge technologies, especially when today's popular online games handle over 100,000 concurrent players. Connectivity and response times are crucial in coping with high demand.

"For the business players in the online gaming business, one particular concern is poor connectivity," explains Gamania's Chief

Technology Officer Lin Chunzhong. "That makes the line stability a significant business opportunity for the business player.

In the past, the dual-core processor was the only processor available in the marketplace that could cope with the demand. This has become the past ever since Intel released its first generation of quad-core processors, which promote efficiency on a large scale. The Quad-Core Intel® Xeon® processor is definitely our choice."

Time is money

The adage "Time is money" is particularly true for online gaming companies. Even though the online gaming world is a virtual one, Gamania has to refund playing time to its members whenever its servers are down for a period of time. Gamania therefore has to adopt and maintain very high server availability standards.

"Our members play our online games 24/7, so we have zero tolerance for server break downs," says Lin. "Down time should be kept to a minimum especially during game events."

Lin further explains that "A particular feature of online gaming is that most games require multiple servers to run and manage thousands of players simultaneously. So if one of the servers goes down, all players accounts have to be backdated in order to keep it fair, as in the rules."

Gaming membership is also consistently increasing, and each game achieves different levels of popularity so it is difficult to predict the number of servers a game will require. Gamania wanted a platform that could scale up as the game became more popular and more members joined.

Delivering the Solution

Gamania's data center has thousands of servers and each game has a different server requirement. For example, the most popular game may require 130 servers, while some new games may only require one. The flexibility of Intel® architecture enabled Gamania to deploy servers according to real-time workloads. With Intel architecture, servers can be scaled up or down to accurately match game growth rates. This feature allowed



"Our test results more than sufficiently proved that Intel® quad-core processors deliver a big improvement for our game servers.

Lin Chunzhong
Chief Technology Officer
Gamania Digital Entertainment

Spotlight: Gamania Digital Entertainment Co. Ltd.

- Gamania was established on June 12, 1995 with its headquarters in Taiwan, and branch offices in China, Hong Kong, Japan, and Korea. The company publishes and co-publishes games exclusively in Asia, and services Korean games such as Lineage Online, Maple Story, and Mabinogi in Taiwan.
- Gamania's Chinese name literally means "Gaming Tangerine", and the company's motto is "Have a good GAME!"
- Gamania is also actively developing its own products, and plans to release two games this summer, "Bright Shadow" and "Xian Mo Dao".



“The Intel quad-core processor is our choice for Gamania’s gaming future.”

Lin Chunzhong
Chief Technology Officer
Gamania Digital Entertainment

Gamania to respond quickly and cost effectively to new game requirements. This proved to be central to the viability of Gamania’s business.

Coupled with the need for sustained stability and zero server breakdowns, Gamania also required fast processor speed—as server loads increase with usage time, performance tends to slow down, according to Lin.

“For example, if a server’s concurrent user limit is 3,000 instead of 6,000, our operation cost will be doubled,” explains Lin. “We use more than 100 servers for a major online game. If we can double the server’s concurrent user limit, our efficiency can be doubled at the same cost.”

Performance Tests

Gamania considered cost-performance ratio, not just price, in choosing the Intel quad-core processor for its servers. The Dual-Core Intel Xeon processor 5300 series can deliver up to 150 percent greater performance than the competition in the same power envelope. Translating into greater performance with fewer cooling challenges, deploying these quad-core servers would enable Gamania to run more applications with a smaller footprint, enabling the gaming leader with revolutionary ways to achieve more with less.

Furthermore, with the Quad-Core Intel® Xeon® processor deployment, Gamania has the potential to use the technology behind the Predictive Enterprise computing vision—allowing the system to sense failures before they occur. Gamania is indeed ready for the future.

Gamania performed a simulation test on the response time and processor utilization for the Quad-Core Intel Xeon processor 5300 series against a single-core processor. The results showed that under the same conditions and for the same number of online users, the quad-core processor utilization was one-fifth that of the single-core processor. This effectively enabled Gamania to increase the concurrent number of online users without increasing server footprint. “Our test results more than sufficiently proved that Intel quad-core processors deliver a big improvement for our game servers,” Says Lin.

Intel’s engineers also worked with their Gamania counterparts to optimize applications for the quad-core processors. This enabled Gamania to fully maximize the quad-core processors for their gaming operations and created a very stable Intel Xeon processor-based platform that could withstand the heavy processing loads

Key Technologies

- Game servers based on the Quad-Core Intel® Xeon® processor 5300 series
- One of the technology pillars of Intel quad-core processors is energy-efficient performance, including hardware features that provide unique information sensing and capture. Information can be stored and analyzed, along with associated processing usage and workload consumption, to inform active systems about the run time state of the infrastructure. These unique features can be harnessed to reduce the likelihood of firmware failures and improve the reliability of IT systems. They can also produce savings by allowing unused systems to be switched off, to transfer processing capacity to another service, or to just be closed down.

Integral Answers

- The scalability of Intel architecture and cost-versus-performance ratio of the Quad-Core Intel Xeon processor were integral to Gamania’s need to respond quickly to game growth rates and real-time workloads.
- With advanced sensing capabilities, Gamania was able to predict its needs and act to produce both energy and cost savings. These are the key steps to becoming a Predictive Enterprise.

brought on by several thousands of concurrent online gamers.

Currently, most of Gamania's servers are based on the Intel Xeon processor. Lin has found that the Intel Xeon processor-based platform meets all Gamania's stability and workload requirements. Consequently, Gamania recommends the use of Intel architecture as the standard platform when it works with its other partners in the industry. "Previously, some foreign game companies asked us to use non-Intel processor-based servers. But our choice is servers based on the Intel quad-core processor," says Lin

Service quality is critical for gamers, according to Lin. When online users increase dramatically, adjustments must be made to expansion, to eliminate waiting time, and assure customers of immediate service. By adopting Intel quad-core processor technology, Gamania has this competitive and cost effective advantage.

¹Performance measured using SPECint*_rate_base2000 comparing a Quad-Core Intel® Xeon® processor X5355-based platform to a Dual-Core AMD Opteron® processor Model 2220SE- based platform.

Find a business solution that is right for your company. Contact your Intel representative or visit the Intel Business/Enterprise Web site at www.intel.com/business or visit the industry solutions-specific sites at: www.intel.com/business/bss/industry

Return on Investment

- Gamania can expand on its customer base, increasing the number of concurrent users for its popular games, through more efficient utilization of the Quad-Core Intel® Xeon® processor 5300 series, without a corresponding increase in the number of servers.
- Scalability of the Intel architecture allowed Gamania to be more flexible in its server allocation, enabling its IT investment to be optimally utilized and costs to be easily and accurately estimated.
- By investing in Intel architecture and quad-core processors, Gamania is building the groundwork for the Predictive Enterprise, providing the computational capacity to meet its business demands by collecting customer data, analyzing trends, predicting needs and acting upon them. The solution stack servers as a catalyst for business innovation for Gamania, today and the future.
- Using quad-core technology from Intel allows Gamania to sense key metrics, predict its needs, and act to produce both energy and cost savings. These are the key steps to becoming a Predictive Enterprise.



Copyright © 2007 Intel Corporation. All rights reserved. Intel, the Intel logo, Xeon and Xeon Inside are trademarks or registered trademarks of Intel Corporation and its subsidiaries in the United States and other countries.

This document is for informational purposes only. INTEL MAKES NO WARRANTIES, EXPRESS OR IMPLIED, IN THIS DOCUMENT.

*Other names and brands may be the property of their respective owners.

1007/KEN/XIC/XX/PDF 318573-001US

