CASE STUDY
Intel® Xeon® processor 5600 series
Enterprise Server
Performance: Data-Intensive Computing

Responding to the *Call of Duty*

GameServers expands data center capacity with Intel® Xeon® processor–based servers, delivering outstanding performance to millions of new gamers worldwide

To support the much-anticipated multiplayer launch of Activision's *Call of Duty: Black Ops** game, hosting provider GameServers needed to substantially expand its data center capacity, delivering outstanding performance for millions of new players while controlling power, cooling, and real estate costs. The company decided to build a cloud environment stretching across 25 data centers with new servers based on the Intel® Xeon® processor 5600 series. The new servers increased processing density by 150 percent, enabling GameServers to provide an exceptional gaming experience while keeping customer pricing low.

GAMESERVERS
FRAG NOT LAG

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– Anthony Quon
Chief Operating Officer
GameServers

CHALLENGES

- **Increase capacity.** Provide the server capacity to support millions of new gamers around the world for the multiplayer version of *Call of Duty: Black Ops*.
- **Control costs.** Minimize hardware acquisition, power, cooling, and real estate costs to sustain profitability and maintain low pricing for customers.
- **Deliver outstanding performance.** Build an infrastructure that can deliver an exceptional game experience even with thousands of players online simultaneously.

SOLUTION

- **New servers with Intel® Xeon® processors.** The GameServers team used Supermicro SuperServers* based on the Intel Xeon processor 5600 series to refresh its existing 14 worldwide data centers and add 11 more, building a cloud environment for the new game.

IMPACT

- **Expanded capacity.** GameServers expanded its data center capacity by 75 percent, accommodating the launch of a tremendously popular game while helping to prepare for future releases.
- **Increased density, lower costs.** With 150 percent greater processing density than previous-generation servers, the new servers enable GameServers to control operating expenses and keep customer pricing low.
- **Improved performance.** The new Intel processor–based servers help deliver an outstanding gaming experience even with thousands of simultaneous players.

When online game hosting provider GameServers secured the exclusive rights to host the multiplayer version of Activision's *Call of Duty: Black Ops*, the company's executives knew they would have to expand server capacity significantly to accommodate millions of new players worldwide. New servers had to deliver excellent performance. "Hosting *Black Ops* provided a tremendous opportunity to deploy the best server technology available and show customers that they could enjoy an outstanding gaming experience with GameServers," says Anthony Quon, chief operating officer of GameServers. "We needed servers that could deliver strong performance above all else."

At the same time, the company wanted to control costs. "We were making a significant investment in new servers, but we had to be sure that we could keep acquisition and operating costs under control to keep customer pricing low," says Quon. "We wanted dense, energy-efficient servers that would help us minimize power, cooling, and real estate expenses in all of our data centers."

Intel® Xeon® Processors Deliver Performance and Density

GameServers expands data centers with Intel® Xeon® processors

To find the right processing platform for the game, the GameServers team compared multiple generations of Intel® processors as well as competing processors. "We completed a data center refresh with Intel Xeon processors the previous year, so we were well aware of the performance the latest Intel processors could offer," says Quon. "For this project, it was clear that Intel Xeon processor 5600 series could deliver the best performance and greatest density of all the processors we tested."

A team from Intel helped GameServers plan for the move to the new processors. "The assistance provided by the Intel team is always immensely valuable for our new deployments," says Quon. "They present us technology roadmaps to assist with planning, facilitate evaluations of the latest processors, and provide technical assistance to answer any questions that come up during the deployment."

The GameServers team decided to build a multi-data-center cloud environment using Supermicro SuperServers* based on the Intel Xeon processor 5600 series. Each server runs an instance of the game on the Microsoft Windows Server* 2008 R2 operating system. GameServers refreshed the company's existing 14 data centers and deployed new servers in 11 additional facilities. The cloud, which stretches across all 25 data centers, is administered with an enterprise management system that GameServers developed in-house. IT staff start and stop systems, track performance, and address potential issues from a centralized location. "The cloud environment gives us the flexibility to optimize resources within and between data centers so we can deliver high availability and meet changing demand," says Quon.

Intel processors help GameServers increase processing density by 150 percent

Using Intel® Hyper-Threading Technology in conjunction with the Intel Xeon processor 5600 series, GameServers has improved the processing density in its data centers. "Intel Hyper-Threading Technology significantly increases the amount of work we can do on each server," says Quon. "With two processors from the Intel Xeon processor 5600 series and Intel Hyper-Threading Technology, we can run 24 threads on a single server. We increased processor density by approximately 150 percent compared with previous-generation Intel processors, and that has helped us reduce our physical footprint considerably."

By enhancing processor density and providing intelligent capabilities that automatically regulate power consumption, the new Intel processors are also helping GameServers minimize energy use. "Performance per watt was a key factor in choosing the Intel Xeon processor 5600 series," says Quon. "And because we use fewer cabinets per data center than with previous deployments, we have dramatically decreased the amount of data center power we need."

Cost savings help keep pricing low

The density and energy-efficiency of the Intel processors enable GameServers to control costs and achieve a rapid return on investment. The cost savings help the business stay profitable and have a direct impact on customers. "By controlling operating expenses, we can maintain our competitive edge by keeping pricing low for the latest and most popular games," says Quon. "At the same time, we can deepen our infrastructure investments. In the future, we plan to expand our capacity further and purchase more standby servers to help maintain high availability for our customers. At the end of the day, these savings will help improve the end-user experience."

SPOTLIGHT ON GAMESERVERS

By combining a wide selection of games with outstanding performance, competitive pricing, and robust technical support, GameServers has established itself as a premier game hosting company. The company has served more than 200,000 customers and is frequently the choice of major game studios when they need hosting services.

Intel processors help deliver a superior gaming experience

Perhaps most importantly, the Intel processors help provide the performance that gamers demand, even when thousands of gamers are online at the same time. "At one point, we successfully supported approximately 130,000 simultaneous players on *Black Ops* servers without any performance issues," says Quon.

The new Intel processors help sustain that high performance, overcoming potential problems. "In the past, a malfunctioning process could slow performance or produce lag for a gamer. But with the additional cores, increased memory capacity, and architectural improvements provided by the latest generation of Intel Xeon processors, we have the headroom and process isolation to ensure that players do not feel the impact of problems elsewhere in the system," says Quon. "Overall, moving to the latest Intel Xeon processors helps deliver the best possible gaming experience—that's good for our customers and for our business."

Performance: Data-Intensive Computing. Support the most demanding business data processing, and computationally intense graphics.

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