



Accelerating Video Game Development

Hidden Path Entertainment produces better games faster than before, while conserving data center space with the Intel® Xeon® processor E5 family



"Ultimately, the Intel® Xeon® processors helped us create a better, more exciting game while adhering to an aggressive development schedule."

—Jeff Pobst,
Chief Executive Officer,
Hidden Path Entertainment

Independent video game developer Hidden Path Entertainment has produced a range of captivating original titles, such as the *Defense Grid** franchise, and collaborated with Valve on the immensely popular *Counter-Strike** online action game. To help produce *Counter-Strike: Global Offensive**, Hidden Path needed a new infrastructure that could rapidly compile code for multiple platforms so the developers could implement new features and optimize game performance while adhering to a tight development schedule. Hidden Path deployed systems based on the Intel® Xeon® processor E5-2670, which helped accelerate development while conserving data center space.

Challenges

- **Enhance game features and enable rapid iterations.** Gain the performance for implementing new data-intensive models for game behaviors and allow developers to iterate changes rapidly to enhance the game-playing experience.
- **Control data center space.** Deploy a powerful new infrastructure for game development without exceeding existing data center space.

Solution

- **Servers based on Intel Xeon processors.** Hidden Path deployed new systems based on the Intel Xeon processor E5-2670 to gain the needed performance while conserving space. The systems are virtualized with VMware vSphere* software.

Technology Results

- **Enhanced performance.** The new environment supported numerous simultaneous tasks and reduced build time by 33 percent so developers can go through multiple iterations to fine-tune the playing experience.
- **Reduced footprint.** Hidden Path replaced eight PCs with two rack-mountable servers running a total of 10 virtual machines. The reduced footprint helps keep costs under control.

Business Value

- **Better games delivered on tight schedules.** By handling several concurrent tasks and delivering results rapidly, the servers helped developers fine-tune features and identify potential problems. The result was an exciting game, delivered on time.

Following Hidden Path's successful release of *Defense Grid* on Valve's *Steam** online gaming platform, Hidden Path and Valve forged a relationship to collaborate on future game development. One of the first projects was to produce a new version of Valve's popular *Counter-Strike* game, *Counter-Strike: Global Offensive*. "Our goal was to help enhance the original game experience, incorporating new models for movement, targeting, and gun behavior," says Jeff Pobst, CEO of Hidden Path. "It required rebuilding several parts of the original game."

Hidden Path needed a powerful new build infrastructure that could complete builds fast. "The build systems had to deliver results

quickly so our developers could rapidly create new iterations as they fine-tuned the game-playing experience," says Pobst.

The new infrastructure also had to provide the flexibility for running many tasks at once. "Because the game was being developed for multiple platforms, including the PC, Mac*, Linux*, Xbox 360*, and PlayStation 3*, the infrastructure had to deliver the performance for producing multiple builds continuously," says Pobst. "It also had to enable our 15 programmers and 15 artists to contribute assets to builds and access the results simultaneously. At the same time, we wanted to be sure that we didn't exceed our existing data center space."



Intel Xeon processors deliver strong performance and enable efficient use of data center space

Creating a New Build Infrastructure with Intel Xeon Processors

The Hidden Path team deployed a new, virtualized build infrastructure with servers based on the Intel Xeon processor E5-2670. "The Intel Xeon processor E5 family combines the performance, memory capacity, and I/O throughput we need for supporting numerous simultaneous workloads and delivering fast results while also providing a strong foundation for virtualization," says Pobst.

Hidden Path deployed two servers, each running five virtual machines created with VMware vSphere virtualization software. The long-standing collaboration between VMware and Intel has helped organizations create robust, high-performance virtualized and cloud-based environments running on Intel processors. "Virtualization helps us optimize utilization of the systems and lets us quickly adjust the resources allocated for each part of the build system," says Pobst. "In addition, it enables us to improve availability: if a hardware failure occurs, we can move computing to another server in just a few minutes so our developers can keep working."

For this project, the build infrastructure was connected to a high-speed storage area network (SAN) using a high-speed Internet SCSI (iSCSI) interface. The build servers drew source code and assets from a separate source control server and then compiled, linked, and built asset packs. The build servers then copied or checked in the resulting builds so that all development team members could access them.

Conserving Data Center Space

The new build infrastructure delivered an impressive level of performance in a small footprint. "We were able to add a surprising amount of computing power and throughput while reducing the number of systems used," says Pobst. "Many game development environments use arrays of desktop computers to perform similar tasks. We replaced eight PCs with just two rack-mounted servers running 10 virtual machines. Creating a compact, consolidated environment helps us keep costs under control."

Speeding Game Development and Improving Results

With the new build environment, Hidden Path gained the computing performance to handle numerous concurrent tasks and deliver results rapidly. "We were extremely happy with the performance we achieved with the Intel Xeon processors," says Pobst. "We were able to accommodate a large number of simultaneous tasks."

Importantly, developers can now generate builds faster than before. "The new environment helped decrease build times by 33 percent compared with dedicated PCs," says Pobst. "As a result, our developers could go through more iterations as they fine-tuned the playing experience. Ultimately, the Intel Xeon processors helped us create a better, more exciting game while adhering to an aggressive development schedule."

Lessons Learned

Through their work on *Counter-Strike: Global Offensive*^{*}, the Hidden Path team realized the value of using virtualization for its build environment. "Virtualizing the build environment has helped us optimize productivity for developers," says Jeff Pobst, CEO of Hidden Path. "From creating assets to compiling multiple builds, the environment lets us accomplish multiple tasks simultaneously and quickly so we can meet deadlines."

Going forward, Hidden Path is repurposing the build environment for new projects. "We continue to use this build infrastructure, and similar environments, on new games we are developing," says Pobst. "The Intel Xeon processor-based servers are helping us bring our new, exciting entertainment experiences to players much sooner than we would be able to otherwise."

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