

Case Study

Cloud Service Providers
Online Gaming



Support Millions of Online Gamers with Optimized Hardware and Software

Boosteroid, Intel and ASUS team up to build a powerful and scalable online gaming platform, letting anyone play even the most resource-demanding games on any device.

At a Glance

- Intel's experience in the gaming industry and its reputation as a trusted advisor gives Boosteroid confidence in choosing Intel® technology
- Boosteroid appreciates ASUS' popularity in the gaming community
- Working with Intel and ASUS provides Boosteroid with affordable high-performance servers as well as a global presence for speedy technical support and logistics
- With a scalable, high-performance platform, Boosteroid is ready to roll out its cloud gaming service worldwide

Boosteroid is an online gaming company that is seeking to grow its presence globally to meet the demand of the booming online gaming market. Today the most important business challenge for companies like Boosteroid is scaling. Boosteroid launched its online gaming service in 2019, and is already experiencing a 5X growth in customer base. The company focuses on providing an easy-to-use, affordable online gaming platform that lets anyone play any game, no matter which device they are using.

Challenge

Inspired by the success of hyperscale cloud service providers, Boosteroid wanted to build a highly scalable platform. The company looked to Intel and ASUS to help develop and enhance its global solution. The ability to scale with confidence while being able to deliver the low-latency performance and operational efficiencies required by its business was key.

Solution

To address scalability and performance issues, Boosteroid is collaborating with Intel and ASUS. Intel and ASUS helped Boosteroid choose the appropriate server hardware, such as processors and solid state drives (SSDs). A team of Intel experts also helped Boosteroid use [Intel® VTune™ Profiler](#). This enabled Boosteroid to optimize the performance of the hardware and the performance of its specially developed video capturing module providing a great cloud gaming experience.

Results

Boosteroid's hardware platform, combined with the optimized module provides a nearly instant response to gameplay and doesn't require gamers to download any software. Customers can play the most demanding gamers, even without a top-end PC or console. The highly scalable platform will enable Boosteroid to keep up with customer growth and make new game developments available to its customers.



BOOSTEROID



Scaling to Keep Pace with Market Growth

The global online gaming market is expected to grow at a compound annual growth rate (CAGR) of 10 percent through 2025, reaching a value of USD 79 billion¹. To keep pace with that rate of growth and to take advantage of new opportunities and new customers, online gaming companies must choose an infrastructure that provides high performance and that can scale quickly and affordably. When Boosteroid began forming its business model, it was looking for server hardware that met these needs.



With many servers to choose from, ASUS, Intel and Boosteroid spent a year working to pick the right one for the business. By talking with engineers from ASUS and Intel, Boosteroid was able to crystallize its requirements and choose a server that provided high performance and power efficiency at a good price point. Selecting partners with a quality gaming reputation and strong technical support were also important considerations for Boosteroid. These choices were critical in setting the business up for fast and extensive scaling as it expands its services across Europe.

Affordable Online Gaming Server Powered by Intel and ASUS

Boosteroid's cloud gaming platform (see Figure 1) is unique in the industry because all the games are hosted on Boosteroid's high-performance, low-latency servers; users receive an interactive video stream of their gameplay over the internet. The user's device is irrelevant to the gaming experience. What's more, customers don't have to download special browsers or software tools—all updates (both software and hardware) are carried out by the company itself. This means gamers can run high-end games from low-performance, outdated or ultraportable devices, and play wherever there's an internet connection. But providing efficient web-based access to high-end video games requires powerful hardware that can respond instantly to gaming activity.

Boosteroid worked closely with both Intel and ASUS to choose the right server model that provided the necessary online gaming performance. Because ASUS is known worldwide as a gaming brand and has broad adoption in the gaming community, Boosteroid was confident that ASUS could provide a server that met its needs: the ASUS ESC4000-G4S. This server is equipped with Intel® Xeon® Gold 6248 processors and Intel® SSD D3-S4510 Series with a total of 3.84 TB of storage. The server also has 192 GB of memory, a 10 Gbps network connection, and a gaming graphics processing unit (GPU). The company originally considered using a previous-generation Intel® Xeon® Scalable processor but went with 2nd generation because of the impressive performance gains. For example, a 2nd generation Intel® Xeon® Gold processor can provide up to a 1.33X percent performance gain compared to the previous generation².

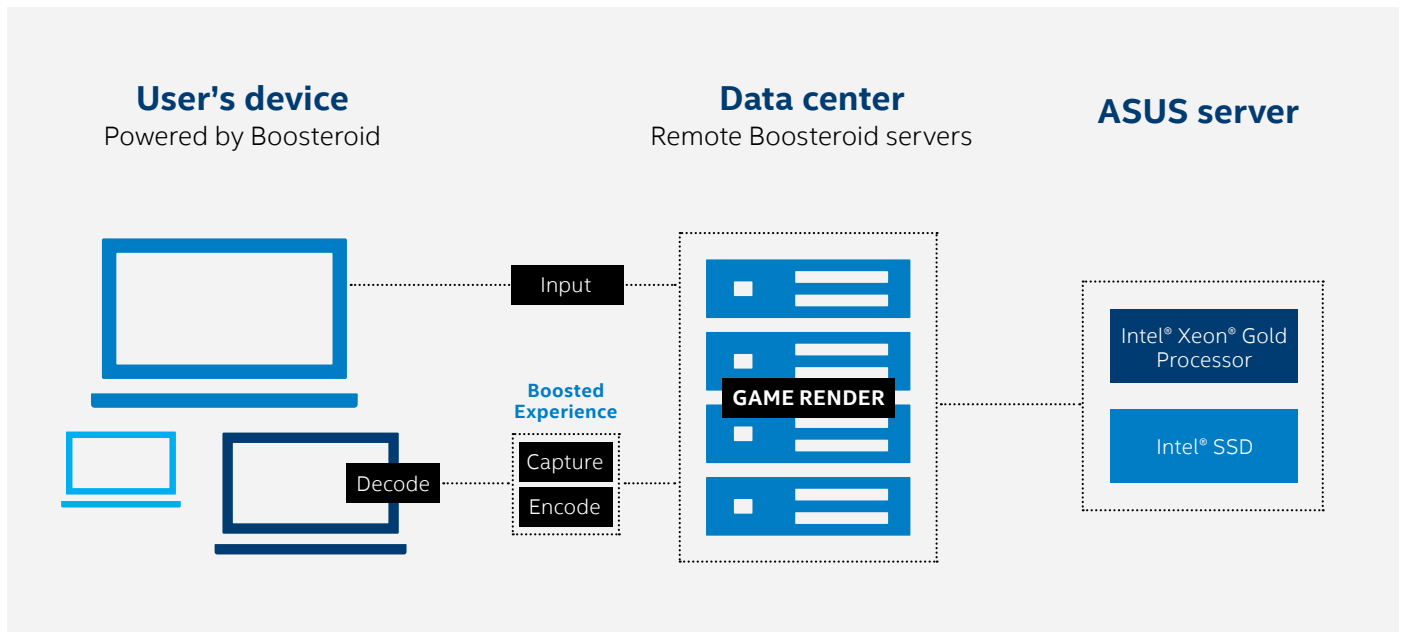


Figure 1. Boosteroid uses high-performance technology from ASUS and Intel to implement its high-performance, scalable online gaming platform.

“Boosteroid uses Intel® processors based on their high performance. A sufficient margin of performance of these processors allows us to withstand an ever-growing load. And these processors are not a bottleneck in the performance of the host as a whole.”

— **Ivan Ostretsov**
Chief Technical Officer, Boosteroid

Technical Components of Solution

- **ASUS ESC4000-G4S.** Delivers incredible 2U server performance with best-in-class memory capacity and bandwidth.
- **Intel® Xeon® Gold 6248 processor.** Provides the necessary high performance for a desktop-as-a-service offering.
- **Intel® SSD D3-S4510 Series.** Large-capacity drives have excellent power consumption and reliability.
- **Intel® VTune™ Profiler.** Platform performance is enhanced through optimizations for Intel® hardware.

Optimized Software Complements High-Performance Hardware

Boosteroid used Intel VTune Profiler to customize its module for video capturing. The custom code enables full high-definition (60 frames per second / 1080 pixel) gaming even when the internet connection is only 14 Mbps. By reducing the internet connection quality requirements, Boosteroid makes its gaming platform available to a larger number of users. The company also uses other advanced software tools to reduce latency and jitter and provide dynamic bitrate adjustment. The latter capability means Boosteroid's network can adjust the content quality or size on-the-fly in response to varying internet connection quality.

Boosteroid, Intel and ASUS Collaborate to Improve Platform Performance

Knowledge sharing and collaboration between Boosteroid, Intel and ASUS helped Boosteroid find the right solution for its needs. As mentioned earlier, ASUS engineers advised Boosteroid about what sort of hardware it needed to accomplish its scalability and performance goals. Intel engineers in collaboration with Boosteroid optimized the performance of the online gaming platform. Through the use of Intel VTune Profiler, Boosteroid gained insight into various

aspects of hardware and software performance and was able to tune and improve it. For example, based on information gathered from Intel VTune Profiler, Intel engineers suggested increasing the amount of memory to improve CPU utilization. Intel VTune Profiler also helped optimize performance.

Boosteroid Poised for Significant Growth

The close collaboration between Boosteroid, Intel and ASUS has set the online gaming company up for success in a fast-growing market. Boosteroid's technical solution is ready to provide cloud gaming services worldwide, because it was tested on ASUS' distributed global technology hubs. The company now plans to scale rapidly, adding several hundred servers to its data centers in Europe and elsewhere. With high-performance hardware at an affordable price point, Boosteroid can attract new customers. It will soon offer a free-to-play model in addition to its affordable gaming subscriptions. Other future plans include offering loyalty programs and gaming championships, as well as virtual reality gaming. Outside of the gaming industry, the company plans to explore providing virtual desktop infrastructure (VDI) services to businesses, taking advantage of underutilized compute resources outside of peak gaming periods. The three companies are looking forward to a long-standing successful relationship that will help Boosteroid bring online gaming to the masses.

“Intel engineers always help us solve issues related to the optimization of the host virtual machine settings, and share their valuable experience and knowledge. Their support helps us solve the most complicated technical challenges.”

— **Maksym Maksymov**
Head of DevOps, Boosteroid

Spotlight on Boosteroid

Boosteroid is an international online gaming company with offices in Ukraine, Romania, Serbia, the United Arab Emirates, and other countries. The co-founders conceived the business in 2017, and launched initially in Eastern Europe in 2019. The company's customer base has been expanding quickly; the company expects to launch services all around Europe in September 2020. The company's game catalog includes more than 200 games, and they have more than one million user registrations with approximately 100,000 active players. Currently Boosteroid employs more than 80 people, with expectations to grow the team over time.

Spotlight on ASUS

Established in 1989 and headquartered in Taipei, ASUS is a multinational company known for creating some of the world's best motherboards and high-quality personal computers, monitors, graphics cards, routers and other technology solutions. ASUS has long-lasting relationships with other leading industry players, including Intel. As the company expanded various product lines, it developed a unique sub-brand called Republic of Gamers (ROG), a division dedicated to creating outstanding gaming gear with high performance and quality. Inspired by the In Search of Incredible brand spirit, ASUS won more than 11 awards every day in 2019 and ranks as one of Forbes' World's Best Regarded Companies and Fortune's World's Most Admired Companies. Today, ASUS employs more than 15,000 people.

Learn More

You may find the following resources helpful:

- [Boosteroid home page](#)
- [Intel® Xeon® Scalable processors](#)
- [Intel® SSD Data Center Family](#)
- [ASUS commercial workstations and servers](#)

Find the solution that is right for your organization. Contact your Intel representative or visit [intel.com/csp](https://www.intel.com/csp)



¹ <https://www.globenewswire.com/news-release/2020/02/14/1985063/0/en/Online-Gaming-Market-to-grow-at-10-CAGR-to-hit-79-billion-by-2025-Global-Insights-on-Share-Size-Growth-Drivers-Value-Chain-Analysis-Investments-Plans-Key-Stakeholders-and-Business-.html>

Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors.

Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more complete information visit www.intel.com/benchmarks.

² Geomean of est SPECrate®2017_int_base, est SPECrate®2017_fp_base, STREAM-Triad, Intel® Distribution of LINPACK, server-side Java*. Gold 5218 vs Gold 5118. Baseline configuration, testing by Intel on 11 December 2018: 1-node, 2x Intel® Xeon® Gold 5118 processor on Wolf Pass with 384 GB (12 X 32GB 2666 (2400)) total memory, ucode 0x200004D on RHEL7.6, 3.10.0-957.el7.x86_64, IC18u2, AVX2, HT on all (off Stream, LINPACK), Turbo on, result: est int throughput=119, est fp throughput=134, STREAM-Triad=148.6, LINPACK=822, server-side Java=67434. New configuration, testing by Intel on 7 December 2018: 1-node, 2x Intel® Xeon® Gold 5218 processor on Wolf Pass with 384 GB (12 X 32GB 2933 (2666)) total memory, ucode 0x4000013 on RHEL7.6, 3.10.0-957.el7.x86_64, IC18u2, AVX2, HT on all (off Stream, LINPACK), Turbo on, result: est int throughput=162, est fp throughput=172, STREAM-Triad=185, LINPACK=1088, server-side java=98333.

Performance results are based on testing as of dates shown in configurations and may not reflect all publicly available updates. See backup for configuration details. No product or component can be absolutely secure.

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