CASE STUDY

Service Providers
Data Center

Bringing High-Performance Infrastructure to the Public Cloud

G-Core Labs provided an online gaming infrastructure to support Wargaming's millions of players. Now, that same infrastructure underpins G-Core Labs' public cloud

At a Glance:

- Upgrading from the previous generation Intel® Xeon® Scalable processor to the 2nd generation Intel® Xeon® Scalable processor family delivered a noticeable performance increase for G-Core Labs.
- The higher performance and higher core count support server consolidation, reducing total cost of ownership.
- For cache acceleration in the content delivery network (CDN), G-Core Labs uses the Intel® SSD D3-S4610 Series, which increases mixed workload efficiency while maintaining SATA compatibility.
- To achieve 40Gbit connectivity, G-Core Labs uses the Intel® Ethernet Converged Network Adapter XL710.

G·CORE LABS

When online gaming company Wargaming needed to provide a seamless gaming experience for its millions of users, Wargaming asked G-Core Labs to help. G-Core Labs built a world-class content delivery network (CDN) infrastructure for Wargaming, and then offered this CDN infrastructure to a wide range of other companies too. G-Core Labs, together with Intel, has now developed a public cloud service based on Intel® technologies, including the 2nd generation Intel® Xeon® Scalable processor.

Challenge

- Establish a public cloud infrastructure that provides an optimized experience on immersive combat games, as well as other media-rich applications.
- Provide fast storage to accelerate the cache used in the CDN.

Solution

- G-Core Labs upgraded its platform to the 2nd gen Intel Xeon Scalable processor, which provided a significant performance uplift over the previous generation.
- The Intel® SSD D3-S4610 Series helps to accelerate the cache for databases and the CDN.

Results

- The new public cloud service has won customers who provide gaming, media streaming, and other applications.
- The enhanced performance of the latest generation processor has enabled G-Core Labs to consolidate servers and reduce its total cost of ownership (TCO).

Launching Public Cloud

Among the most demanding use cases for a CDN is online gaming. Wargaming is a company that provides immersive, graphically rich combat simulators including World of Tanks. This is a popular game that gives players a choice of over 400 tanks and combat machines, based on real vehicles from the 1930s to 1960s. Wargaming's portfolio also includes World of Warships, World of Warplanes, space strategy game Master of Orion, and mobile versions of the tank and warship games.

To provide a seamless gaming experience for its millions of players, Wargaming turned to cloud service provider G-Core Labs, headquartered in Luxembourg. G-Core Labs built a world-class CDN infrastructure for Wargaming, which helped both companies to win the Guinness World Record for the most players simultaneously on one multiplayer online game server[1].

Having built this highly responsive CDN infrastructure, G-Core Labs saw an opportunity to offer it to other companies across a wide range of industries. G-Core Labs then extended its business by working with Intel to launch a public cloud offering, which Wargaming also uses. While G-Core Labs is well placed to host other rich media experiences, it also aimed to extend its offer to small and medium sized businesses (SMBs) that wanted to deploy virtual machine (VM) instances quickly and easily.

Prospective clients for G-Core Labs include online companies that need to be able to scale up resources as required, to respond to spikes in demand (for example during a retail sale, or after a product launch), or companies that wish to scale up resources so they can launch a new online product, such as a document scanning service.

Solution Details

G-Core Labs launched its public cloud service with an infrastructure-as-a-service (IaaS) offer that provides an environment for hosting VMs.

Customers use a self-service portal to provision the resources and infrastructure they require, and they then have access to it within minutes. The portal includes capabilities to allocate resources to different cost centers or projects, so that clients can understand how the cloud resources they are paying for have been used.

Disaster recovery is available for important business applications, with a contractual recovery time of two minutes.

Customers can choose from VM images provided by G-Core Labs, which include CentOS, Fedora and Ubuntu, or upload their own. The infrastructure layer includes a firewall and a private cloud network service which enables any virtual machines to be patched to each other. There is also an identity and access management tool which customers can use to create new projects and manage user access to them. G-Core Labs is extending its IaaS offering with load balancing, dedicated server, and bare metal services.

The CDN that helped World of Tanks enter the Guinness World Records is available to G-Core Labs customers too. Customers can enable G-Core Lab's CDN resources in the same self-service portal they use to spawn cloud resources. The CDN provides an average cloud response time of less than 30ms. In addition to the CDN, the public cloud is integrated with other G-Core Labs services such as distributed denial of service (DDoS) attack protection, a block data and a cloud object data repository (based on Chef), and a video streaming platform.

Technical Components of Solution

- **2nd generation Intel® Xeon® Scalable processor.** Intel's industry-leading, workload-optimized platform has built-in artificial intelligence (AI) acceleration and provides consistent, pervasive and breakthrough performance.
- **Intel® SSD D3-S4610 Series.** This SSD series helps to accelerate read-intensive workloads with power-efficient performance. G-Core Labs is using capacities of 1.92 TB, 960 GB and 480 GB.
- **Intel® Optane™ persistent memory.** Introducing a new tier in the storage hierarchy, Intel Optane persistent memory provides the scale of a storage device at near-memory speed, and at a lower cost per bit than dynamic random access memory (DRAM).

There are also plans to extend beyond IaaS and offer platform as a service (PaaS), which will include managed Kubernetes and artificial intelligence (AI) instances such as TensorFlow and the Intel® Distribution of OpenVINO™ toolkit, as well as Hadoop for working with big data. The vision is to create a marketplace for applications on top of the platform, so that software-as-a-service (SaaS) providers can sell their applications through G-Core Labs, and the company's hosting customers can install the software easily through the self-service portal.

G-Core Labs' cloud management tool can manage public cloud, private cloud or cloud instances in the customer data center, so it can be used to set up a hybrid cloud environment, with the customer able to choose where each instance is hosted. In the future, customers will also be able to choose to have their instances hosted on dedicated servers.

For the IaaS service, G-Core Labs is using OpenStack and Kubernetes as the platform to deploy virtual machines and containers in the cloud.

Figure 1. G-Core Labs' branded server, incorporating the 2nd generation Intel® Xeon® Scalable processor.

To increase the performance of its architecture, G-Core Labs upgraded from the previous generation Intel® Xeon® Scalable processor family to the 2nd gen Intel Xeon Scalable processor family (Figure 1). The company uses four different Intel® Xeon® Gold processors, and the Intel® Xeon® Silver 4214 processor. "When we upgraded our infrastructure to the latest generation Intel Xeon Scalable processor, we saw a noticeable increase in performance," said Vsevolod Vayner, G-Core Labs Cloud Platform Department Head. "We tested the performance of the new processors by putting real customer workloads on servers based on the previous generation processor and the latest generation, and comparing the results. The 2nd gen Intel Xeon Scalable processor gives us the performance we need for mission critical workloads."

The Intel SSD D3-S4610 helps to increase mixed workload efficiency while maintaining infrastructure compatibility with SATA, and G-Core Labs is using it for cache acceleration on databases and other workloads, especially in the CDN. The Intel® Ethernet Converged Network Adapter XL710 gives G-Core Labs 40Gbit connectivity.

G-Core Labs is undertaking a proof of concept with Intel® Optane™ persistent memory to accelerate AI workloads and in-memory databases, which are essential for online gaming. The company also plans to add function as a service (FaaS), which enables developers to add functions to their applications without needing to manage the resources to run them. The resources are spun up automatically when the function is required.

A Close Relationship with Intel

G-Core Labs has a close cooperation with Intel. Among other things, Intel has helped with reference architectures, storage optimization, and high-performance workloads.

"The best thing about working with Intel is the expertise the team brings. They help us to understand how we can optimize our infrastructure and workloads to take advantage of the hardware and software available," said Vayner. "We have an extensive research and development team, and they are in touch with Intel's software and engineering teams who can help them with additional insights."

He adds: "Intel also helped us to create a proof of concept so we can test the latest solutions in our data centers to see how our products perform with them."

Vayner says: "Thanks to our collaboration with Intel, G-Core Labs is able to deliver public cloud services that meet the requirements of highly demanding workloads, including real-time gaming and rich media streaming."

Business Results

The new IaaS service has already won new customers across workloads including online gaming, high-definition video streaming, and high-definition radio streaming.

"Using the 2nd generation Intel Xeon Scalable processor family gives us a performance boost that helps with our total cost of ownership," said Vayner. "We can have more cores now, with the Intel Xeon Gold 6252 processor, for example, having 24 cores and supporting 48 threads. The higher performance helps us with server consolidation, and as server numbers are reduced, the costs associated with those servers also fall."

Spotlight on G-Core Labs

G-Core Labs is an international cloud and edge leader in content delivery and broadcasting, hosting, security solutions and public cloud services. The company is headquartered in Luxembourg, and its global infrastructure is included in the Guinness Book of Records.

G-Core Labs provides a wide range of services for customers of all industries that develop their business online. The company's services include managed hosting, public cloud, content delivery network (CDN), advanced media platform for professional broadcasts and streaming of any complexity, protection against distributed denial of service (DDoS) attacks of any level, and cloud content storage. G-Core Labs has built its own global infrastructure on all continents (over 60+ points of presence in reliable Tier 4 and Tier 3 data centers).

For more information visit **www.gcorelabs.com**

Learn More

- 2nd generation Intel® Xeon® Scalable Processors
- Intel® Distribution of OpenVINO™ toolkit
- Intel® Ethernet 10/25/40GbE Network Adapters
- Intel® Optane™ persistent memory
- Intel® SSDs

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[1] https://www.guinnessworldrecords.com/world-records/most-players-online-simultaneously-on-one-mog-server

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