

SUCCESS STORY | PGS

EMPOWER EMPLOYEES TO WORK ANYTIME, ANYWHERE WITH GPU-ACCELERATED VIRTUAL WORKSTATIONS



PGS OVERHAULED OPERATIONS WITH THE REMOTE VISUALIZATION SOLUTION FROM LENOVO, NVIDIA, RED HAT, MECHDYNE, LEOSTREAM, AND PCPC DIRECT, ENSURING THAT THE INTERPRETATION TEAM CAN ALWAYS COLLABORATE AND WORK EFFICIENTLY.



SUMMARY

- > The PGS interpretation team leveraged high-performance physical workstations running seismic applications.
- > When Hurricane Harvey hit, the team lost access to their physical workstations and productivity slowed as a result.
- > To weather future storms, the team selected the Lenovo Remote Visualization Solution powered by NVIDIA virtual GPU technology.
- > This solution not only stood up against natural disasters but enabled a seamless transition to remote work when COVID-19 pandemic hit, improving employee productivity and providing increased flexibility.

INTRODUCTION

PGS supports oil companies in the search for oil and gas reserves worldwide by providing seismic imaging and 3D data that describes the subsurface beneath the ocean floor. Headquartered in Oslo, Norway, PGS operates regional hubs in London, UK, and Houston, Texas, with local offices in 13 countries worldwide.

PGS is a data-driven business. The company uses the latest technology to provide a broad range of seismic and reservoir services, including seismic acquisition, data processing and imaging, rock physics, and reservoir characterization. The PGS data library comprises more than 850,000 square kilometers of 3D data and 670,000 line kilometers of 2D seismic data.

Dr. Hermann Lebit, principal geologist at PGS, leads the company's interpretation team in Houston. "We work with huge datasets, consisting of millions of seismic images of the subsurface below the seabed, to get a detailed understanding of the geology of an area. This insight enables the industry to determine the likelihood of finding hydrocarbons there."

CUSTOMER PROFILE

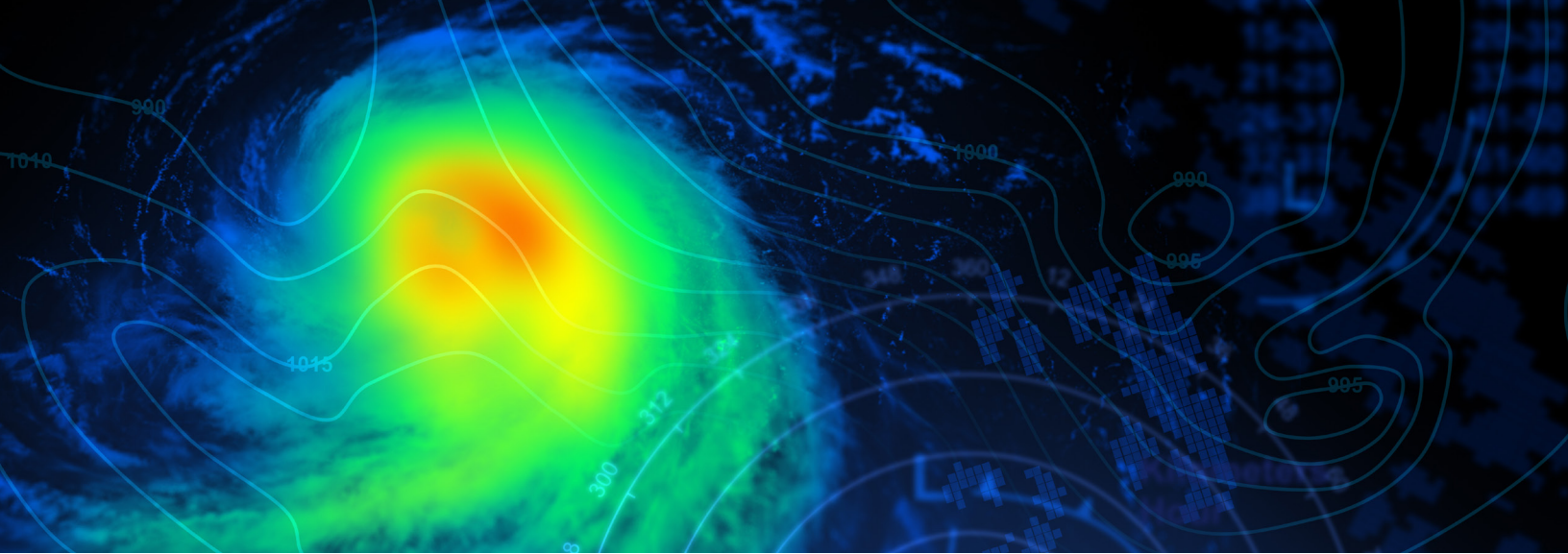


Organization:
PGS

Industry:
Oil and Gas

Location:
Oslo, Norway

Website:
www.pgs.com



SOFTWARE

Hypervisor: Red Hat

Software Client: Mechdyne TGX

Connection Broker: Leostream

Graphics Acceleration: NVIDIA RTX Virtual Workstation

HARDWARE

GPU: NVIDIA T4

Server: Lenovo ThinkSystem SR650

REASONS FOR NVIDIA

- > Provides a smooth user experience for high-performance applications and graphics rendering in resolutions at 4K or higher
- > Empowers teams to work from anywhere, anytime
- > Enables GPUs to be shared across multiple virtual machines
- > Provided a seamless transition to remote work without disruptions
- > Facilitates improved collaboration and security

CHALLENGE STATEMENT

The interpretation team plays a vital role at PGS. Consequently, when Hurricane Harvey flooded Houston and disabled the infrastructure underpinning the team's work, the impact was profound. Previously, the interpretation team had relied on high-performance workstations to run industry-standard software such as Petrel and PaleoScan to model, analyze, and interpret seismic data. The flooding took these workstations out of action.

Dr. Lebit recalls, "We were limited for six weeks. Eventually, we had some workstations flown from the PGS London office; however, there weren't enough to go around and we had to work in shifts. This was a real wake-up call. We had been far too dependent on our distributed workstation infrastructure in the past, and we never wanted to be in that situation again."

WEATHER ANY STORM

As soon as PGS was back on its feet, the interpretation team embarked on a mission to disaster-proof its operations. "We wanted a centralized solution that the team would be able to access remotely anytime, anywhere, no matter what," says Dr. Lebit.

The team evaluated several possible solutions, including traditional desktop virtualization setups, but were unhappy with the level of performance that they offered.

“Our work is extremely data- and graphics-intensive. To work productively, we need our HPC applications to run as smoothly remotely as they do in the office. Latency is a major issue when working with massive datasets like we do and can really dampen productivity.”

Taylor Buckley,
Project Interpreter, PGS

The answer? The Lenovo Remote Visualization Solution (RVIZ), an end-to-end solution from industry leaders Lenovo, NVIDIA, Red Hat, Mechdyne, Leostream, and PCPC Direct. The RVIZ solution connects mobile workstations to a centralized server and secure data store, enabling users to run high-performance applications and render graphics in resolutions at 4K or higher—no matter where they’re located.

PGS advised PCPC Direct, who served as the primary development and deployment partner for the joint solution, of their technical requirements. Over a period of 24 months, PCPC Direct worked with Lenovo, NVIDIA, Red Hat, Mechdyne, and Leostream to architect, test, and certify the RVIZ solution.

SOLUTION

The RVIZ solution consists of Lenovo ThinkSystem SR650 servers equipped with NVIDIA T4 Tensor Core GPUs housed in a high-security Houston data center, which is strategically placed to avoid damage during flooding events and other hazards. The servers are virtualized with Red Hat Virtualization technology and connected to an all-flash Lenovo ThinkSystem DM5000F storage array via ThinkSystem NE10032 / NE 1072T RackSwitch networking. NVIDIA RTX™ Virtual Workstation (vWS) software virtualizes GPUs in the Lenovo servers, so that they can be shared across multiple virtual machines.

Each server was installed with four T4 GPUs to allow 16 users to be supported across two servers with 8GB user profile sizes. Mechdyne TGX high-performance remote desktop software leverages the NVIDIA T4 GPUs to both encode and decode the desktop experience, enabling GPU acceleration on remote devices—in this case, second-generation Lenovo ThinkPad P1 mobile workstations—for high-performance, low-latency, and low-bandwidth streaming. The Leostream Platform acts as an intermediary between remote users and the data center server resources, so the interpretation team can access their applications on demand from any location with an internet connection.

As the joint solution developer, PCPC Direct united all the members of the consortium to create an end-to-end solution for PGS. RVIZ was



“PCPC Direct brought together all the right players to develop a solution that perfectly fit our needs. We were deeply impressed by both the technical expertise and the willingness to collaborate that we saw from the consortium. The result is a truly best-in-class solution.”

Dr. Hermann Lebit,
Principal Geologist, PGS

delivered as a turnkey offering by PCPC Direct with built-in service-level agreements around capacity planning, proof of concept, deployment, and performance. RVIZ also came with PCPC Direct’s help desk support for three years.

REACTING FAST TO CHANGING CIRCUMSTANCES

PGS had only been using the RVIZ solution for a few months when another disaster hit. This time, it was the COVID-19 pandemic that prevented the interpretation team from working at the office. “Really, we were still only testing out the RVIZ solution when lockdown measures were imposed,” recalls Buckley. “We were very fortunate to have the RVIZ solution in place, as it enabled a seamless transition to remote work. We didn’t suffer a single minute of downtime.”

Dr. Lebit confirms, “Thanks to the RVIZ solution, there was zero disruption due to COVID. We were all able to work from home without skipping a beat. All data is stored centrally, so everybody can access what they need via any internet connection. And the GPU-accelerated remote experience means that even the most demanding HPC applications run smoothly.”

“Far from taking us out of action, the lockdown measures have actually improved productivity. My team is very happy working from home, because they have the freedom and flexibility to work to their own schedule. Personally, I save an hour a day commuting to the office—time that I can now spend more productively. The RVIZ solution put us ahead of the game, enabling us to adapt to the change in working patterns without any issues.” — Dr. Hermann Lebit, Principal Geologist, PGS

“Data retrievability is another important consideration. Now, all data is safely stored in one central location where we can always access it.”

“The RVIZ solution gives us the flexibility to adapt to unexpected circumstances rapidly and overcome disaster situations that would have been devastating in the past. RVIZ is a stellar solution and has garnered a lot of interest from other teams. We see potential to expand the solution in other areas across the company in the future.”

Dr. Hermann Lebit,
Principal Geologist, PGS

RESULTS

As well as enhancing flexibility and productivity, the RVIZ solution has significantly improved collaboration and security.

Previously, datasets had to be loaded onto individual deskside workstations. This meant that, if a team member wanted to share data or results with colleagues, they had to employ a copying process to load it onto another workstation. “When you consider the size of the datasets we work with, this copying method was a highly inefficient way of working,” says Buckley. “Today, the centralized all-flash Lenovo storage enables us to access data extremely quickly. The RVIZ solution has completely changed the way we set up projects. Before, each workstation was an island. Now that we can drag and drop data, we’re much better able to collaborate. We have been able to optimize workflows as a result, further boosting productivity.”

With the RVIZ solution, PGS was also able to optimize backups. In the past, the interpretation team’s workstations were all backed up individually, on a somewhat ad hoc basis. Today, all data is stored centrally and is backed up on a regular schedule, protecting against data loss.

With remote work now the new norm, at least for the foreseeable future, the PGS interpretation team is well-equipped with the RVIZ solution—delivering powerful virtual workstations from the data center to employee remote laptops.

For more information about NVIDIA virtual GPU technology, visit www.nvidia.com/virtualgpu



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