



NVIDIA

Empowering employees to work anytime, anywhere with GPU-accelerated virtual workstations.

How **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.

Lenovo Infrastructure Solutions
for The Data-Centered

Lenovo

1

Background

PGS supports oil companies in the search for oil and gas reserves worldwide by providing seismic imaging and 3D data describing the subsurface beneath the ocean floor. Headquartered in Oslo, Norway, PGS operates regional hubs in London, UK and Houston, US, 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 sub-surface 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."

2

Challenge

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 were not 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."



"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

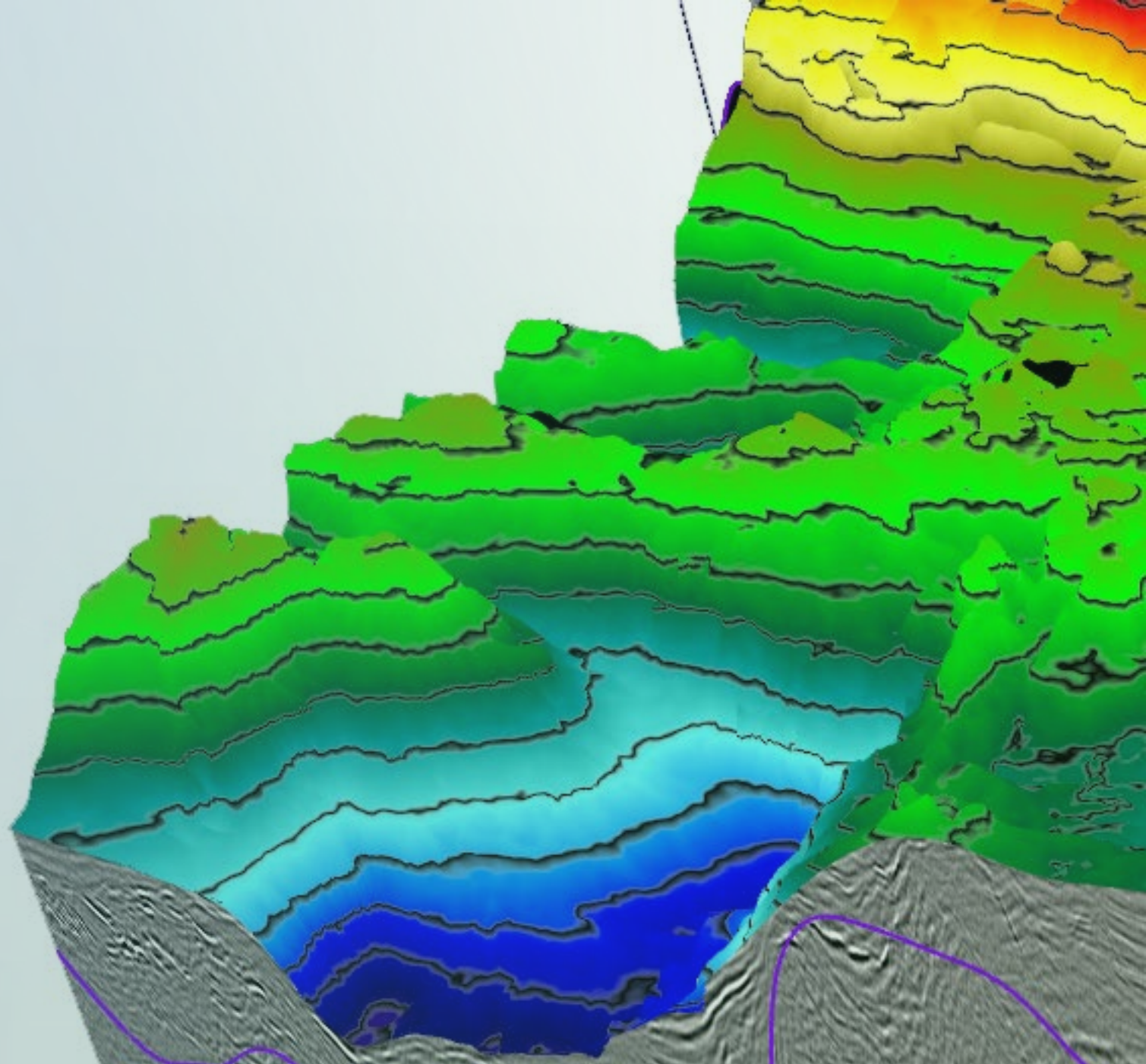
Weather any storm.

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 set-ups, but were unhappy with the level of performance that they offered.

The answer? 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 are located.

PGS advised PCPC Direct, who served as the primary development and deployment partner for the joint solution, of its 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.



Best-in-class, end-to-end 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 not to sustain 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 Quadro Virtual Data Center Workstation (Quadro vDWS) 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 8 GB 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, enabling the interpretation team to access their applications on-demand from any location with an internet connection.

As joint solution developer, PCPC Direct united all the members of the consortium to create an end-to-end solution. RVIZ was 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 comes with PCPC Direct help desk support for three years.



“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.”

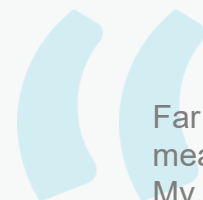
Dr. Hermann Lebit
Principal Geologist, PGS

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

3

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 desktside 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 are much better able to collaborate. We have been able to optimize workflows as a result, further boosting productivity.”

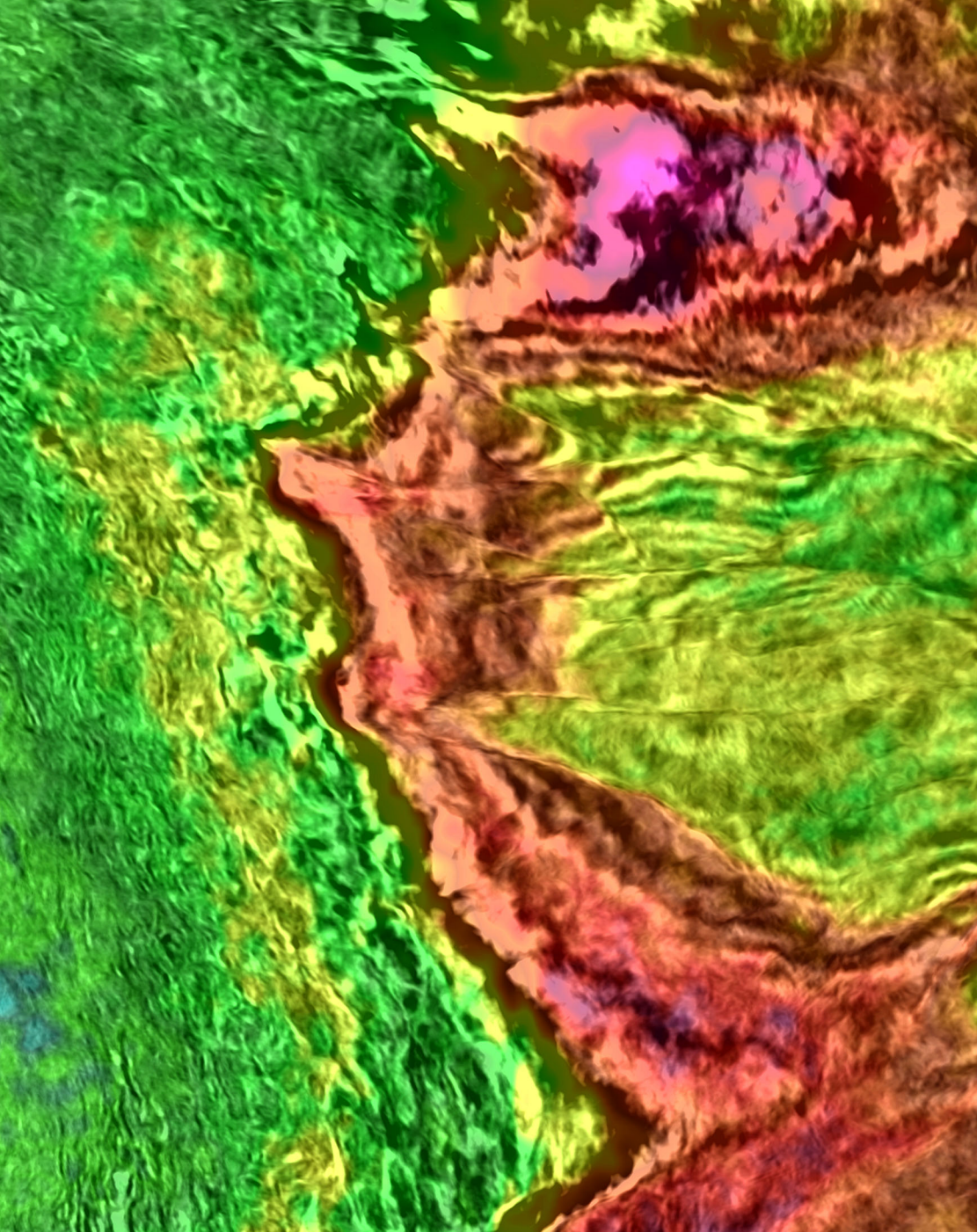
With the RVIZ solution, PGS was also able to optimize backups. In the past, the interpretation team’s workstations were all backed up individually, on a somewhat ad hoc basis. Today, all data is stored centrally and is backed up on a regular schedule, protecting against data loss.

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.



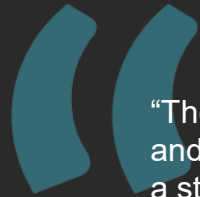
✓ Anytime, anywhere remote access to applications and data

✓ 4K resolution or higher for graphics rendering



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

Dr. Hermann Lebit
Principal Geologist, PGS



“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

What will you do with Remote Visualization solutions?

The Data-Centered enable collaboration inside and outside the office with Lenovo Remote Visualization solutions, powered by NVIDIA.

[Explore Remote Visualization Solutions](#)

Lenovo and the Lenovo logo are trademarks or registered trademarks of Lenovo.

NVIDIA and the NVIDIA logo are trademarks and/or registered trademarks of NVIDIA Corporation in the U.S. and/or other countries. Other company, product and service names may be trademarks or service marks of others.

© Lenovo 2020. All rights reserved.

