

About DNV GL – Software

DNV GL is the world-leading provider of software for managing risk and improving asset performance in the energy, process and maritime industries. Our solutions support a variety of business critical activities including design and engineering, risk assessment, asset integrity and optimization, QHSE, and ship management. Our worldwide presence facilitates a strong customer focus and efficient sharing of industry best practice and standards.

Nimbix Helps Maritime, Oil and Gas, and Energy Advisor to Focus on Making World, Safer, Smarter and Greener



Snapshot

With a mission of making the world safer, smarter and greener, DNV GL delivers technical assurance and independent expert advisory services to the maritime, oil and gas and energy industries. In addition, the company also provides classification services to customers across a wide range of industries, in more than 100 countries and backed by 16,000 professionals.

Now in its 150th year of business, the company highlights four key priorities to be impactful:

1. Creating a safe and sustainable future
2. Easing the transition from technology to transformation
3. Adapting to a changing climate
4. Defining the future of shipping

The company's technology and broad-ranging services portfolio helps DNV GL empower customers to realize these goals across every priority.

The Challenge

DNV GL is a business based on timely and highly accurate computations. As the leading technical advisor to the global oil and gas industry, the company is tasked with providing consistent and integrated analytic services.

DNV GL's first project was to assess the hydrodynamics of a Blow-out Preventer (BOP). BOPs have traditionally been subject to time-based maintenance, which can create critical challenges, such as unstructured maintenance management, reduced reliability and equipment overhauls, which consequently may lead to increased operational downtime.

Computational Fluid Dynamics (CFD) simulation software helps predict the impact of fluid flows on such structures as off-shore oil rigs and associated products. The software's unparalleled fluid flow analysis capabilities can be used to design and optimize new equipment and to troubleshoot already existing installations.

In order to perform the hydrodynamics assessments, the company needed access to High Performance Computing to run Computational Fluid Dynamics (CFD) on the oil and gas structure. In addition, the company also relied on ANSYS® Fluent® software for broad physical modeling to determine flow, turbulence, heat transfer, and reactions for industrial applications – meshing and preparing simulation parameters. In total, all this data amounts to a massive 40 million cells.

However, access to HPC resources proved challenging as the company had to compete for time with its Oslo and Hamburg offices which owned 2,000 and 7,000 cores of clusters, respectively. Due to the limited core cluster availability from the parent company offices, DNV GL purchased additional machines for its U.S.-based office. But for external flow, deepwater data analysis and applications, this proved to be inadequate to run such big computations.

Products Used:

1. JARVICE HPC Platform from Nimbix
2. ANSYS® Fluent® (as-a-service)

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To address these challenges, DNV GL turned to Nimbix and the company’s cloud-based HPC infrastructure and applications.

The Solution

ANSYS® recommended Nimbix due to its existing integration with the company’s software. Nimbix Hybrid Cloud is powered by the JARVICE Platform – acting as the gateway between public and private workloads for HPC processing. Fully streamlining the data processing lifecycle, the user-friendly API helps companies such as DNV GL create tailored workflows. With minimal effort, the business can construct a work-friendly environment to more effectively manage and accelerate workload processing.

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As a first test, the company attempted submitting jobs on the platform leveraging ANSYS® Fluent®. The combined solution was immediately leveraged to submit and execute jobs with case, data and journal files copied back and forth from local computers via a VPN connection – and then to the Nimbix HPC cloud services.

Continued Kara, “Using Nimbix, we immediately noticed how easy and streamlined the processing was. The service was simple to launch and we found that the powerful HPC cloud is well designed for the volume and data processing speeds we need. It can clearly support the timeline necessary to deliver on jobs, while not exceeding our budget. This ensures we can do computations better and faster.”

The Results

The combined ANSYS® Fluent® and Nimbix JARVICE platform has helped raise DNV GL’s profitability ratio. This has empowered the company to not only create faster computational models – heightening the quality of service for customers – but also build its customer base. Raising the bar for quality and efficiency, it is already serving a larger number of customers across the oil and gas industry.

NIMBIX

Nimbix is about how simple we make it to solve problems that were once impossible to imagine. We strip away the hurdles between your data and its potential.

Faster

Run jobs faster. Crunch more numbers. Test smarter. Nimbix gets the job done quicker. JARVICE makes the process more efficient. And the streamlined, user-friendly API means your team can do more in less time.

Better

Nimbix is a cloud platform for pure High Performance Computing. That means our supercomputers are super smart at running applications and processing your data. Nimbix gives you access to explore the full potential in your data.

Economical

For most workloads, Nimbix is far less expensive than building, running and maintaining your own supercomputer. It's also more efficient at spinning up, executing, completing the job and delivering your results — which saves you time and money. And our user-friendly platform means you invest less in development and infrastructure.

The Nimbix customer support model has helped DNV GL quickly address any integration issues in a rapid response fashion, driven by the company's team of experts: "Nimbix customer support has been nothing short of a 'Perfect 10'. We're operating in a highly complex industry, with a need for quick answers and rapid computations. When we hired Nimbix, the infrastructure was completely new to us. But based on the company's team of experts — who were always there when we needed them — we were able to rollout this project seamlessly and efficiently," noted Kara.

Moving Forward

Based on the initial success, DNV GL now has aggressive plans to expand the ANSYS® — Nimbix combination in the months ahead — fully integrating High Performance Computing into their analysis infrastructure. The joint technology is facilitating DNV GL's Joint Industry Projects (JIPs) program — teaming with market leaders to provide new recommended practices.

Using Nimbix, the company is now confident to perform new projects such as:

- Nuwave: DNV and MARINTEK are in the process of launching a project with the objective of creating guidelines for use of CFD for marine/offshore problems and numerical wave tanks.
- Jumper: Comprised of both analytical calibrations and model tests, the project goal is to develop and recommended a practice for Vortex Induced Vibration (VIV) assessment of Complex Jumper Systems.
- VIV on Scoured Trenches: This project includes advanced analysis and CFD use cases on 3,000 simulations on VIV pipeline.

"When we started out with Nimbix, we knew its hybrid cloud-based HPC was good — but never expected just how efficient and fast it would perform data calculations. It has not only ensured we can over-deliver on current projects — but now helps define a path for leadership with new projects and aspirations for the future," Kara concluded.

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