rescale aws

NOV Unlocks Engineering Productivity with HPC Delivered by Rescale on AWS

NOV

Headquarters: Houston, TX
Industry: Energy, Oil & Gas, Renewables
Founded: 1841

Challenge & Solution

NOV faced increasing engineering delays from HPC resource queuing and backlogs of IT support caused by business growth and new R&D initiatives. Engineering and IT teams decided to pursue a global cloud HPC strategy managed on Rescale that alleviated resource constraints and unlocked new capabilities in oil and gas and renewables R&D to bring new products to market faster.

Outcomes Achieved

» 100% software license utilization and optimization of licensing costs

» 95% reduction in cloud HPC deployment time

» **80%+ decrease in upfront HPC costs and reduced overall operational costs**

Software Deployed on Rescale:

ABAQUS   **STAR-CCM+**

Ansys

Leading the Future of Energy by Reimagining Computing

Global leader in oil and gas and renewable energy, NOV uses advanced computer-aided engineering (CAE) simulation to design and test new technology pumps, regulators, and drill heads. NOV operates in 600+ locations across six continents, operating across multiple business units that serve a range of equipment, manufacturing, and services - from oil and gas to renewable energy. NOV relies on high performance computing (HPC) resources to get accurate predictions on safety, durability, and economic viability of new products before they reach production operations. As the company expanded, so did the demands on their fixed on-premises infrastructure. This led NOV to evaluate cloud as a flexible solution to their growing and varying workload needs and maintain their competitive advantage in R&D.

Betting on Cloud to Optimize and Accelerate Engineering

NOV's computational needs quickly outpaced the capacity of their rapidly aging on-prem clusters, at times leading to a simulation job backlog of 300+ days. The cost of purchasing physical hardware to handle their design optimization workloads would have taken months to implement. Beyond growing capacity and performance requirements, NOV's expanding portfolio of R&D software led to increased complexity and cost.

NOV's engineering systems team in charge of enabling R&D engineers with hardware and software, explored Rescale on AWS as a potential cloud HPC solution. During their evaluation, the NOV engineering and IT leaders discovered that Rescale on AWS could help them increase their overall computing capabilities and productivity. Prompted by urgent project needs and a growing backlog, NOV decided to deploy some test workloads on Rescale platform. Within 7 days, NOV's scientists and engineers had access to AWS HPC resources like Hpc6a EC2 instances on-demand and ensured each team had the optimal hardware across AWS for the best cost-performance. For example, their computational fluid dynamics workloads (STAR-CCM+) performed well on instances with high interconnect like AWS Hpc6a while finite element analysis (Abaqus) performed well hardware with high memory like AWS Hpc6id. By optimizing their software workloads, NOV can simulate products faster and to a higher fidelity resulting in increased safety and reliability. As they brought on more engineers, projects, and software, Rescale's application management capabilities improved existing licenses utilization and ensured all applications were installed and up-to-date automatically.

"Being cloud-native gives NOV the advantage of improved agility and efficiency across our many areas of R&D from offshore to renewables. Rescale streamlined our cloud transformation and continues to help us find new ways to improve our engineers' productivity and develop new products faster."

- Matthew Robinson
Engineering Systems Administrator

From Unblocking Bottlenecks to Unlocking Business Growth

NOV's cloud migration of their HPC operations transformed their simulation and analysis practice from a bottleneck of engineering productivity to an accelerator of R&D projects across the company. With Rescale, they were able to quickly process their backlog and move onto new initiatives like artificial intelligence for predictive maintenance and digital twin. On top of new innovation, as sources and best-practices for energy production continue to evolve, organizations like NOV that have computational flexibility and agility will stay one step ahead.
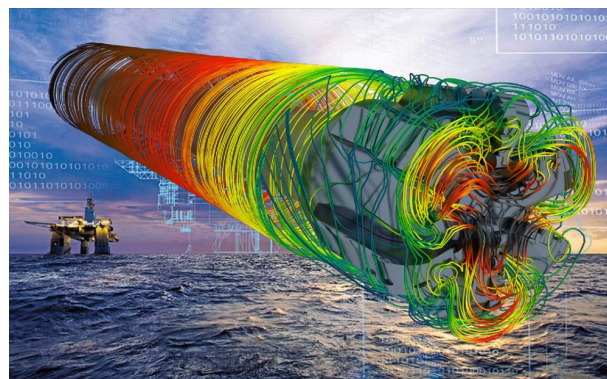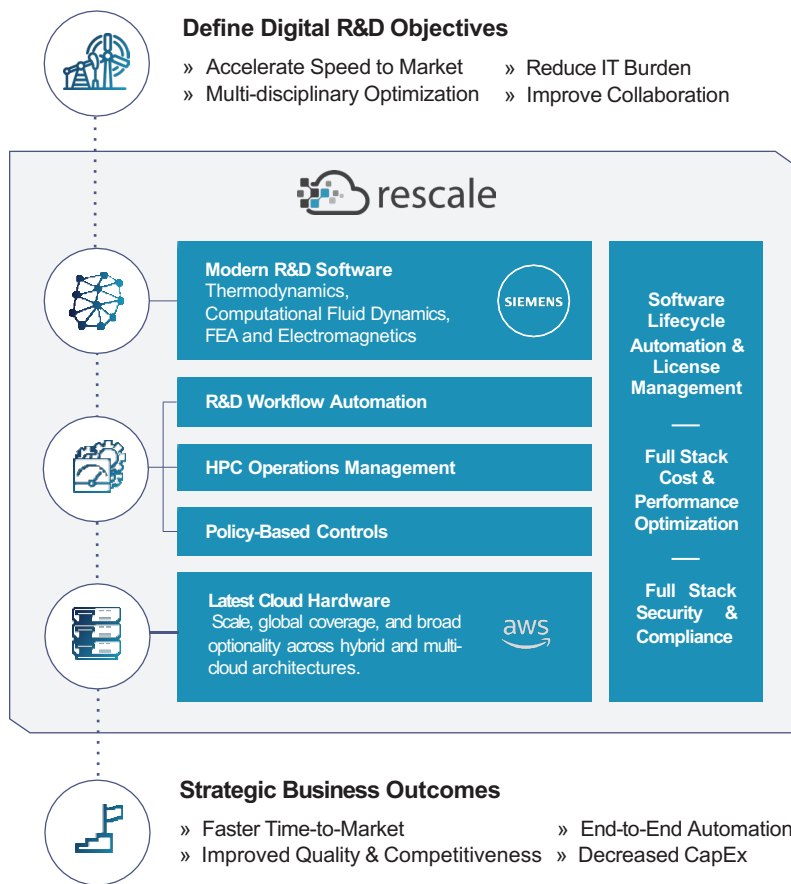
Rescale optimizes 800+ HPC applications on the latest AWS EC2 instances

Rescale Integrates Best-in-Class Tools For Digital R&D

Define Digital R&D Objectives

» Accelerate Speed to Market
» Multi-disciplinary Optimization
» Reduce IT Burden
» Improve Collaboration

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Modern R&D Software
Thermodynamics, Computational Fluid Dynamics, FEA and Electromagnetics

SIEMENS

R&D Workflow Automation

HPC Operations Management

Policy-Based Controls

Latest Cloud Hardware
Scale, global coverage, and broad optionality across hybrid and multi-cloud architectures.

aws

Software Lifecycle Automation & License Management

—

Full Stack Cost & Performance Optimization

—

Full Stack Security & Compliance

Strategic Business Outcomes

» Faster Time-to-Market
» Improved Quality & Competitiveness
» End-to-End Automation
» Decreased CapEx

Featured Platform Software:
Simcenter STAR-CCM+ by Siemens

STAR-CCM+ is a complete CFD multiphysics solution for the simulation of products and designs operating under real-world conditions. Simcenter STAR-CCM+ brings automated design exploration and optimization to the simulation toolkit of every engineer, allowing efficient exploration of the entire design space, instead of focusing on single point design scenarios.

For more information visit:
www.plm.automation.siemens.com

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About Rescale
Rescale helps organizations accelerate science and engineering breakthroughs by eliminating complexity. From supersonic jets to personalized medicine, industry leaders accelerate new product innovations with unprecedented speed and efficiency with the Rescale Platform - a solution for intelligent full-stack automation for big compute and R&D collaboration on hybrid cloud. Rescale enables IT leaders to deliver high performance computing as a service, with software automation on a hybrid cloud control plane with security, architecture, and financial controls. Learn how you can modernize high performance computing at Rescale.com

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