Hybrid Cloud Gives RWDI the Elasticity and Capacity to Respond to Revenue-Generating Opportunities

Background and Challenge

RWDI is a multidisciplinary engineering consulting firm specializing in the built and natural environments. They perform a wide range of engineering studies in domains including air quality, climate analytics, energy and water modeling, meteorology, structural dynamics, ventilation, and wind engineering services on some of the world's most notable structures such as the London Millennium Bridge, the Petronas Towers in Malaysia, the Freedom Tower on the World Trade Center site, the second span of the Tacoma Narrows Bridge, the Taipei 101 tower, and the mega-skyscraper, Burj Khalifa, currently the world's tallest building. RWDI is diversified geographically as well, with global operations spanning China, Australia, the Middle East, Europe, the United States, and their corporate headquarters in Canada.

RWDI conducts wind engineering services on some of the world's most notable structures, including New York by Gehry (8 Spruce Street) in lower Manhattan.

RWDI's business is booming, and due to their success they have outgrown their on-premises HPC environment. Recently, they won a large wind speed mapping project across the Middle East. To analyze 30 years of atmospheric data across the entire region in two months, they calculated they would need a million core-hours—significantly more than their on-premises system capacity. Due to the short project timeline, expanding their on-premises HPC was not feasible. Nor was building out their own software and middleware infrastructure to be able to burst to the public cloud on their own. They needed a turnkey hybrid cloud solution to expand their existing capacity, so they compared several managed cloud services including Rescale.

> "Rescale was able to provide a very seamless method for us to cloud burst from our on-premises cluster without changing any behaviors of our user base. That means our user base... has the freedom to submit a job to an on-premises queue or the cloud. Whichever they choose, it's exactly the same process for them and it's seamless. The Rescale integration has a lot of appeal."
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> **Marco Accardo, Principal, Director of Information Technology, RWDI**

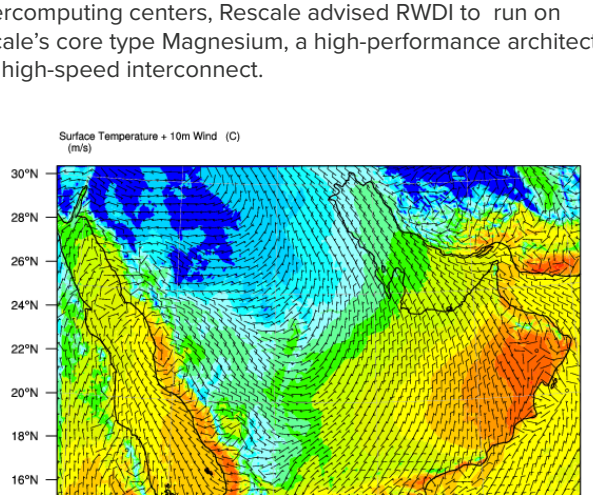
RWDI chose Rescale as it offered the most seamless on-premises/cloud integration that provided the most consistent front-end user experience for their engineers, a wide variety of multi-cloud hardware including the high-performance instance types that RWDI required, and excellent customer service from the Rescale technical team.

The Rescale Solution

RWDI came to Rescale with two requirements: a frictionless user experience and fast hardware performance.

To minimize disruption to RWDI's engineering process, Rescale set up a back-end integration with RWDI's on-premises scheduler. To run on Rescale, engineers simply submit jobs to the cloud by adding a few simple command lines into the submit script. It is a minimal change to their existing workflow that allows engineers to dramatically increase their simulation throughput without disruption.

RWDI had specific speed and performance requirements. Choosing from a wide selection of hardware architectures from a variety of major cloud service providers and specialty supercomputing centers, Rescale advised RWDI to run on Rescale's core type Magnesium, a high-performance architecture with high-speed interconnect.



Rescale set up a hybrid on-premises/cloud HPC environment for RWDI to burst their WRF simulations to the cloud. This WRF map shows surface wind vectors and temperatures over the Arabian Peninsula.

Magnesium is specifically designed to handle high performance computing workloads such as financial risk modeling, seismic and reservoir simulation, molecular modeling, and genomic research.

It is based on the Intel Xeon E5-2667 v3 Haswell 3.2 GHz (3.6 GHz with turbo) with DDR 4 memory networked by 56 Gb/s interconnect. RWDI now runs a constant load of up to fifty-two 32-core jobs in parallel for their wind speed mapping project, for a total of more than 300,000 core-hours to date. On the back-end, RWDI's pre-processing and post-processing are done locally, while the heavy compute step runs on Rescale.

The Benefits

With RWDI's hybrid cloud solution built on Rescale cloud infrastructure, RWDI has transformed their fixed, static on-premises system into an agile, elastic system that allows them to quickly respond to client opportunities and deadlines. Namely, the hybrid cloud gives them:

- The ability to take on large revenue-generating projects and meet all deadlines, regardless of project size.
- A seamless integration with their on-premises system that does not disrupt their existing engineering process.
- A wide selection of multi-cloud hardware architectures and the flexibility to tailor them to changing project needs.
- Excellent customer service from Rescale's technical support team.

> "Rescale is a top-notch organization; they listen to our needs and work with us as partners to help us meet our project deadline."
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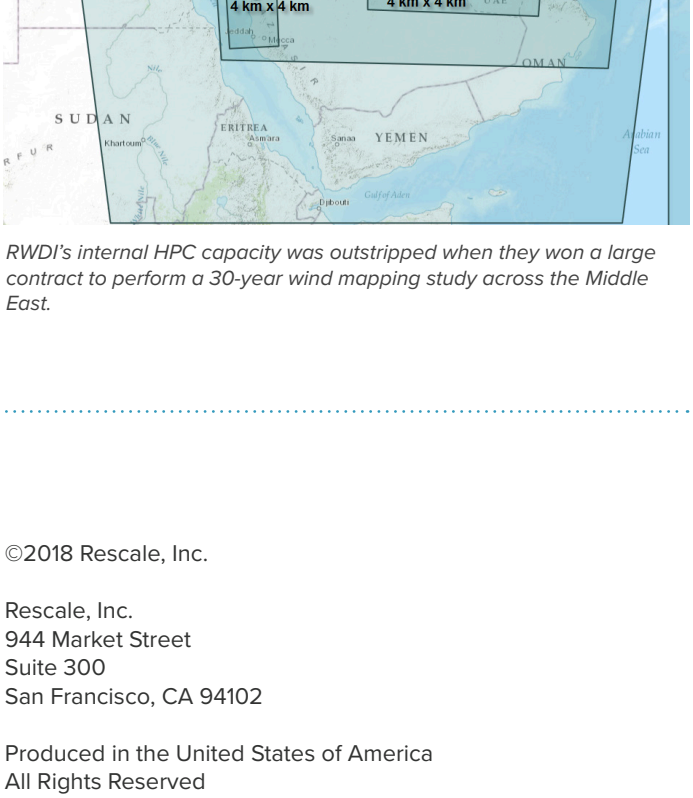
> **Marco Accardo, Principal, Director of Information Technology, RWDI**



RWDI's internal HPC capacity was outstripped when they won a large contract to perform a 30-year wind mapping study across the Middle East.

About Rescale

Rescale™ is the global leader for enterprise big compute. Trusted by the Global Fortune 500, Rescale empowers the world's top executives, IT leaders, engineers and scientists to securely manage product innovation and perform groundbreaking research and development faster at a lower cost. Rescale's ScaleX platform solutions transform traditional fixed IT resources into flexible hybrid, private, and public cloud resources—built on the largest and most powerful high-performance computing infrastructure network in the world. Rescale offers hundreds of turnkey software applications on the platform which are instantly cloud-enabled for the enterprise. For more information on Rescale, visit www.rescale.com.

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