rescale

RESCALE FOR AEROSPACE

High Performance Computing
Built for the Cloud

Industry Solutions Overview

- Accelerate R&D of new technologies
- Increase passenger safety and comfort
- Meet strict security and compliance
- Optimize vehicle and systems performance
- Maximize engineering resources and data insights

> *"Our Investments in digital R&D partners like Rescale ultimately helped us produce an aircraft that is 100x safer, 100x quieter, and at a fifth of the cost from what was previously possible."*
>
> — CIO, Vertical Aerospace

Accelerating the Future of Air and Space Innovation

Rescale powers 7 of the top 10 global aerospace companies from defense contractors to private sector engineering teams developing next generation innovations. From urban mobility and electrified VTOLS to space-faring rockets and low-earth orbit satellites, simulation and modeling plays a vital role in designing safe, reliable, and efficient vehicles. Computational engineers depend on Rescale to access the latest technologies and accelerated workflows to drive new breakthroughs.

VERTICAL · FIREFLY AEROSPACE · AIRBUS · BOOM · EXOSONIC · BENCHMARK space systems

Enable Advanced HPC Applications

Rescale accelerates computation-intensive simulation and modeling techniques like computational fluid dynamics, finite element analysis, and multibody dynamics to address critical engineering and design challenges like:

- External & Internal Aerodynamics
- Interior and Exterior Acoustics
- Avionics & Autonomous Systems
- Lightweighting & Structural
- Electric Powertrain & Batteries
- Propulsion & Propellants
- Ballistics & Launch Trajectories
- Ablation & Heat Transfer

Drive Measurable Business Value

Increased Product Safety and Performance

"Rescale's cloud HPC platform lets us be simulation-driven throughout the product design phase. It lets our team quickly disseminate simulation results to all the stakeholders in the process so that we can make rapid progress. This is a major benefit for a hard-tech startup like Boom as we work with a complex network of partners to launch an advanced, safety-critical product that needs to work the first time exactly as designed and simulated."

– CTO, Boom Supersonic

Impoved Flexibility and Efficiency with Cloud

"With the Rescale platform we have the flexibility to adapt our computational usage to a problem, a wide range of software options, easy licensing and setup, and an easy-to-use platform."

– EVP of Business Development and Strategy, Benchmark Space Systems

Leading HPC Software for Aerospace R&D, Pre-installed and Ready to Deploy Today!

Ansys · SIEMENS · OpenFOAM · HEXAGON · MSC Software · SIMULIA Abaqus

Ansys Fluent, CFD++, LS-DYNA, Simcenter STAR-CCM+, Nastran, Patran, NASA FUN3D & CART3D, Paraview, SOLIDWORKS, Altair, and over 1,000+ various commercial, open-source, and custom codes.

Rescale gives you turnkey access to the latest technologies, on-demand...

Latest HPC applications and versions
1000+ Pre-installed, tuned, and ready to deploy today.

SIEMENS · HEXAGON · MSC Software · Ansys · OpenFOAM · SIMULIA Abaqus · MATLAB

PLUS 1000+ COMMERICAL AND OPEN SOURCE SOFTWARE

Any application
rescale
Any infrastructure

World's largest selection of specialized hardware
Thousands of HPC architecture configurations

Azure + AzureGovernment · aws + GovCloud · Google Cloud · ORACLE CLOUD
AMD · NVIDIA · intel · arm

Intuitive, time-saving user interface

Rescale automates cloud HPC complexity, making job submission as easy as a few clicks

Engineering Tasks · Infrastructure Tasks

Cloud HPC *with* Rescale

Run jobs in minutes, accessible to anyone with a browser

Requirements

A computer with an internet browser (e.g., Chrome) allows ease of access for scientists, researchers and engineers.

Steps

1. Sign into Rescale from any browser
2. Upload software input files
3. Choose your software and use auto-recommended hardware or customize
4. Submit Job and download results

VS.

Cloud HPC *without* Rescale

Requires HPC/IT experties and days of technical work to run a job

Requirements

- A computer with an internet browser (e.g., Chrome)
- An cloud provider account with IAM user with Admin privileges
- Familiarity with cloud provider infrastructure services
- Familiarity with Linux terminal commands
- Access to install files and familiarity with simulation and modeling software

Steps

1. Create a VPC and Subnet on your CSP account
2. Create a storage bucket on your CSP account
3. Create an IAM role for accessing your storage bucket
4. Request increase your service quota
5. Setup a budget in CSP Budget
6. Select optimal VM/Instance types
7. Create machine images and templates for workload
8. Configure cluster networking
9. Configure license servers
10. Create / configure a parallel file system for working directories
11. Launch the cluster
12. Connect to the cluster via command line or interactive session
13. Upload software input files
14. Move files from storage to the parallel file system
15. Create a scheduler job submission script
16. Submit job to the scheduler
17. Wait to see if job completes successfully
18. Copy results to storage bucket once the simulation is complete
19. Shutdown the cluster and cleanup resources
20. Download results from storage bucket

Industry Leading Security and Compliance Standards:

HIPAA · FedRAMP · AICPA SOC · DFARS Compliant

Current standards met include SOC 2, ITAR, HIPAA, CSA Registered, TISAX Level 1, GDPR, CCPA and FedRamp. Rescale follows the NIST 800-53 framework.

Rescale Enables Boom Supersonic Passenger Jet R&D to Take Off

Boom uses Rescale for supersonic jet simulations for example, aerodynamic simulations of the inlets designed to slow incoming air to the optimum temperature, pressure, and velocity for the jet engine. They use two NASA-developed CFD software applications: CART3D and FUN3D. These codes are just two of the 1000+ software applications that are available on Rescale. Rescale offers Boom virtually unlimited compute capacity, while allowing them to bypass investment in internal IT capability—both incredibly valuable to an early stage startup focused on accelerating engineering innovation.

"Rescale's cloud platform is a game-changer for engineering. It gives Boom computing resources comparable to building a large on-premise HPC center. Rescale lets us move fast with minimal capital spending and resources overhead."

– Joshua Krall, Co-founder & CTO at Boom Supersonic

BOOM

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About Rescale

Rescale is high performance computing built for the cloud to empower engineers while giving IT security and control. From supersonic jets to personalized medicine, industry leaders are bringing new product innovations to market with unprecedented speed and efficiency with Rescale, a cloud platform delivering intelligent full-stack automation and performance optimization. IT leaders use Rescale to deliver HPC-as-a-Service with a secure control plane to deliver any application, on any architecture, at any scale on their cloud of choice.