Accelerating Manufacturing Innovation with Rescale

Secure & automated IT operations to empower engineering innovation

Overview

- Who we are
- What we do
- Case Studies
- What else?

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Trends Impacting R&D Computing Across Industries

Accelerated Computing

Performance of domain-specific architectures such as GPU and RISC (Arm), is **growing 2x faster** than traditional architectures such as x86 CPUs.

Data Sharing and Collaboration

Collaborative R&D and data sharing is reported at **70% of organizations** globally, often between academia, suppliers, & engineering services organizations.

AI-driven R&D

AI/ML enhanced R&D can **reduce product development time by 50%** while accelerating time to market and increasing efficiency.

Sustainable Computing

Energy & performance improvements from new architectures in the cloud can be up to **4 times more sustainable** than on-prem.

Challenges and Opportunities Mission Accomplishment

Engineering / R&D challenges

Adopting widening technology stacks

Enabling the latest applications and use cases

Increasing productivity and collaboration

Standardizing best practices and workflows

Accelerating new product innovation

Digital maturity

Managing growth & spikes in workload scale & variety

Ensuring full-stack security & compliance
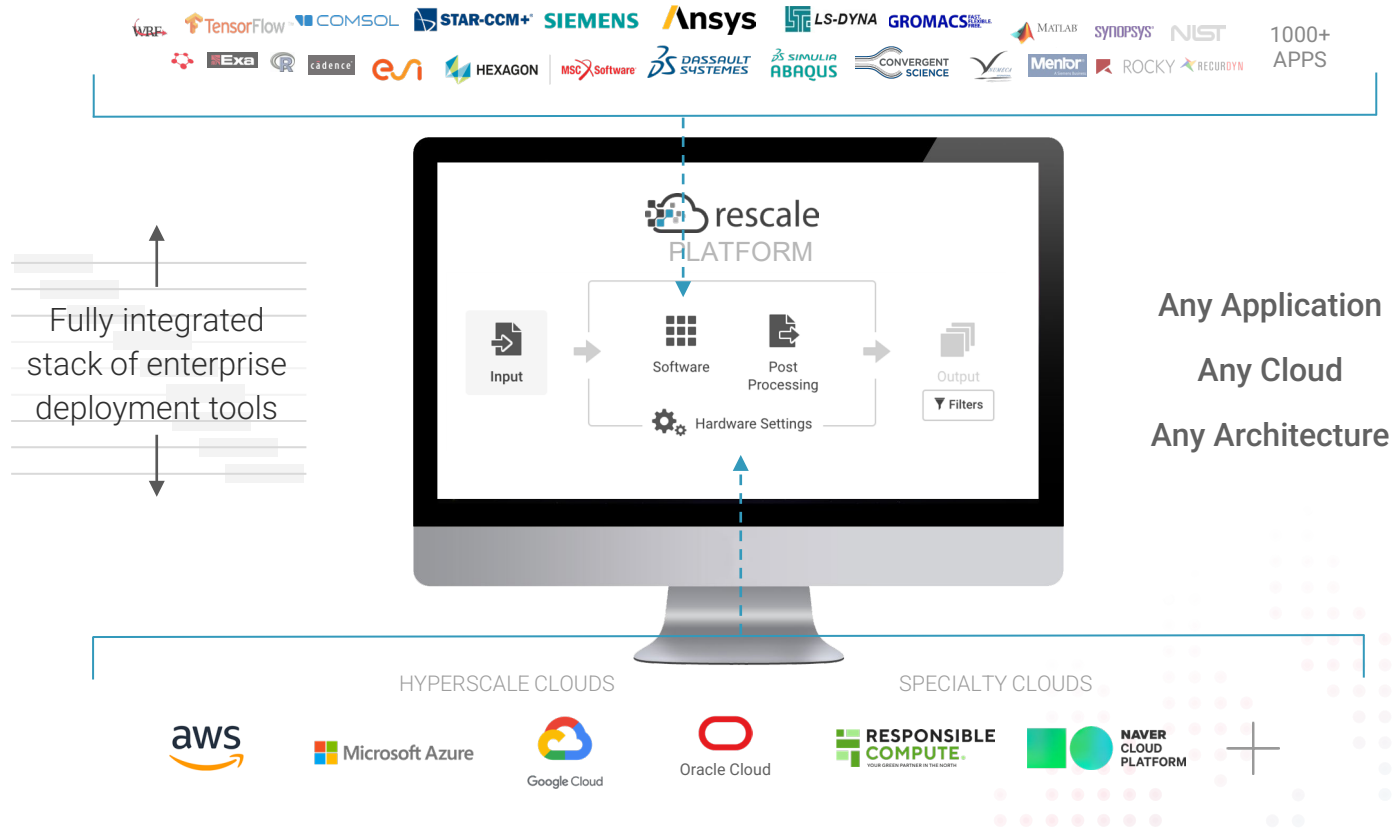
Leveraging the latest computing architectures

Controlling costs & increasing workload performance

Automating complex hybrid, multi-cloud operations

IT & HPC challenges

A Streamlined User Experience Designed for Accelerated R&D

1000+ APPS

Fully integrated stack of enterprise deployment tools

rescale PLATFORM

Input → Software → Post Processing → Output

Hardware Settings

Filters

Any Application

Any Cloud
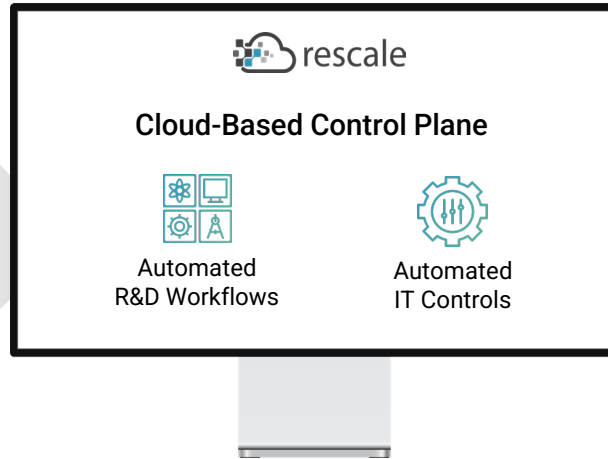
Any Architecture

HYPERSCALE CLOUDS

SPECIALTY CLOUDS

Turnkey HPC-as-a-Service for Any Size Organization

Over a Thousand Applications & Versions

Full-stack Environment for Engineering & Scientific R&D

- Workload Performance Intelligence
- HPC Software and Licensing
- Operating System & File System
- Compilers and Libraries
- R&D Workflows

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Cloud-Based Control Plane

Automated R&D Workflows

Automated IT Controls

Unified Management for IT Business Management

- Leading Security & Compliance
- Financial Controls
- Technical Support
- Resource Optimization
- Multi-Team & Access Controls

Hundreds of the Latest Computing Architectures

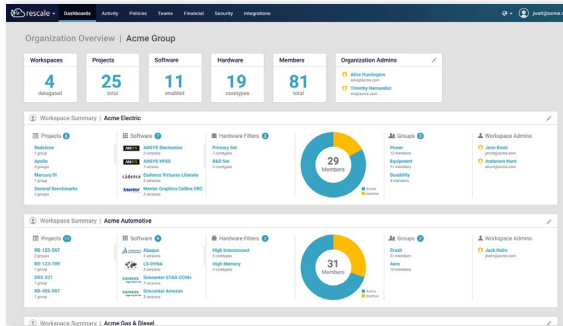# Most Secure & Compliant Full-Stack HPC Platform

Meet industry-leading compliance and easily protect HPC operations from end to end:

- FedRAMP, SOC-2 Type 2, ISO 27001, and ITAR to protect sensitive workloads

- Full administrative management and IT dashboard provide comprehensive controls and visibility

- Policy-defined security implementation tools to enforce IP handling

- Encryption in transfer with high-grade TLS and multi-layered encryption at rest with 256-bit AES

Plus many more leading security and compliance standards

Visibility and Control for HPC Operations

IT Visibility & Control

- Full-Stack Spend
- Security & Access
- Software & License
- Infrastructure & Architecture
- Multi-Project, Team, and BU

Comprehensive Control

Manage collaboration, data sharing, and hardware & software filters for specific teams and projects. Designate admin and user rights to boost productivity and efficiency for engineering teams.
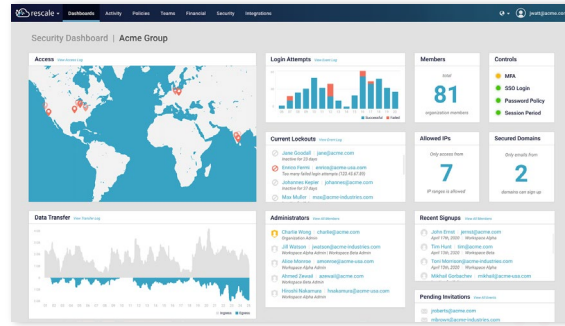
Global Governance

Ensure global security & compliance across all your HPC endpoints. Harden the public cloud with industry-leading standards like ITAR, FedRAMP, HIPAA, and advanced security settings like SSO, MFA, and more.

Rescale Intelligent Computing: Always Optimized Performance

Rescale Platform Intelligence

A workload where an AWS coretype provides competitive per-core performance and value, with unmatched capacity

Performance

CSP 1
CSP 2
CSP 3
AWS

Maturity & Scale

Value
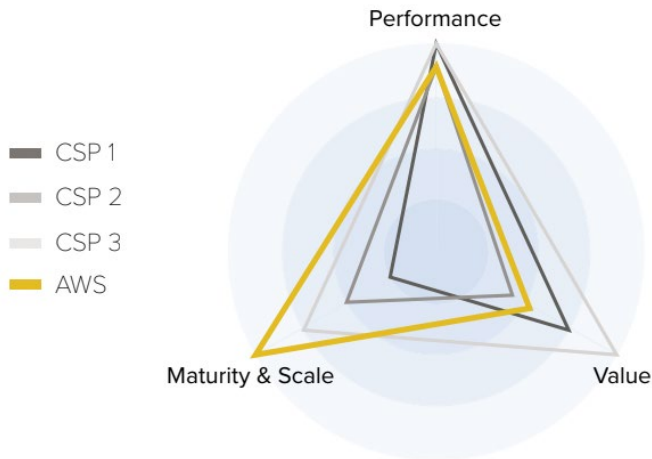
Intelligent Computing Capabilities:

- **Compute recommendation engine** -
- **Continuous full stack optimization**
- **Performance profiling**
- **Advanced diagnostics**

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EAT•N

Eaton Enables Digital Transformation of Engineering Capabilities Through Cloud-First HPC on Rescale

Industry: Industrial Manufacturing, Power Management, Energy
Use Cases: Digital Transformation, Industry 4.0, Computational Fluid Dynamics, Finite Element Analysis

"Eaton is focused on optimizing digital solution development and delivery for our customers, and we invest in Rescale to accelerate these capabilities and accelerate the R&D of new industry 4.0 technologies. Rescale enables our cloud-first strategy to flexibly equip our engineering teams with intelligent computing solutions they need while IT can easily govern a secure, compliant, and policy-driven environment across all of our regions and divisions."

— *Katrina R. Redmond, Senior Vice President & CIO, Eaton*

Strategic Business Outcomes:

- Turnkey HPC for R&D Acceleration

- Seamless Engineering Collaboration

- Intelligent Optimization for Best Cost-Performance

- Automated IT Management, Security, and Compliance

30-60%

Increased speed of engineering simulations

brother
at your side

Rescale
Customer Spotlight

Industry: Commercial and Consumer Manufacturing

Brother Industries manufactures innovative consumer and commercial electronics, from office printers to industrial machining equipment. When their on-premises infrastructure came up for renewal, the IT organization determined that cloud would increase the agility and cost efficiency of HPC for R&D. Brother selected Rescale as their cloud simulation platform to deliver an intuitive interface and automated workflows for running their preferred commercial software in the cloud. Since adopting Rescale, engineers have increased their productivity by automating manual steps and leveraging the latest computing architectures on demand.
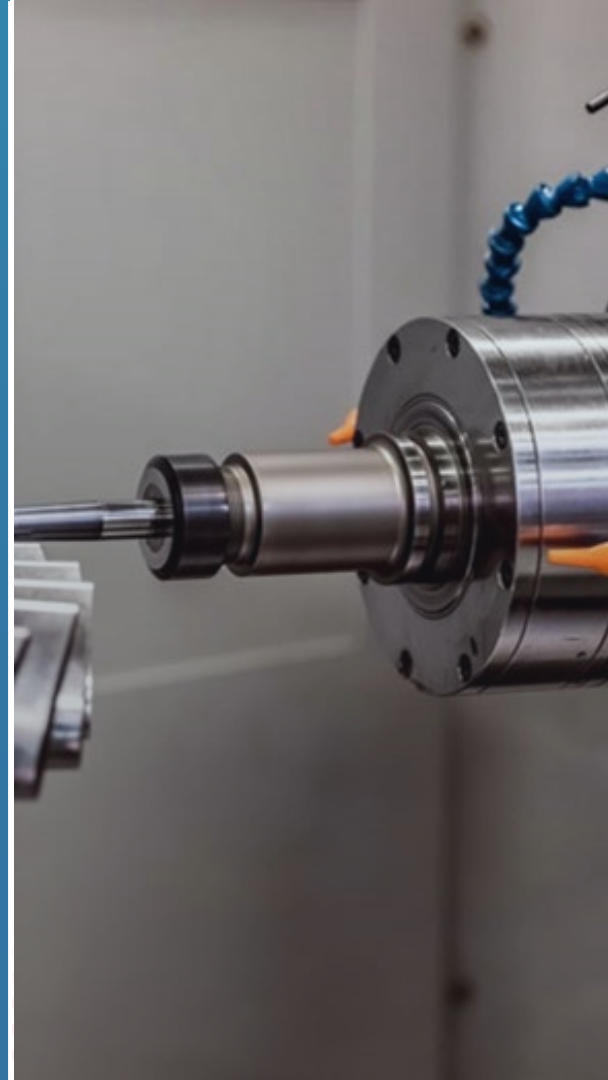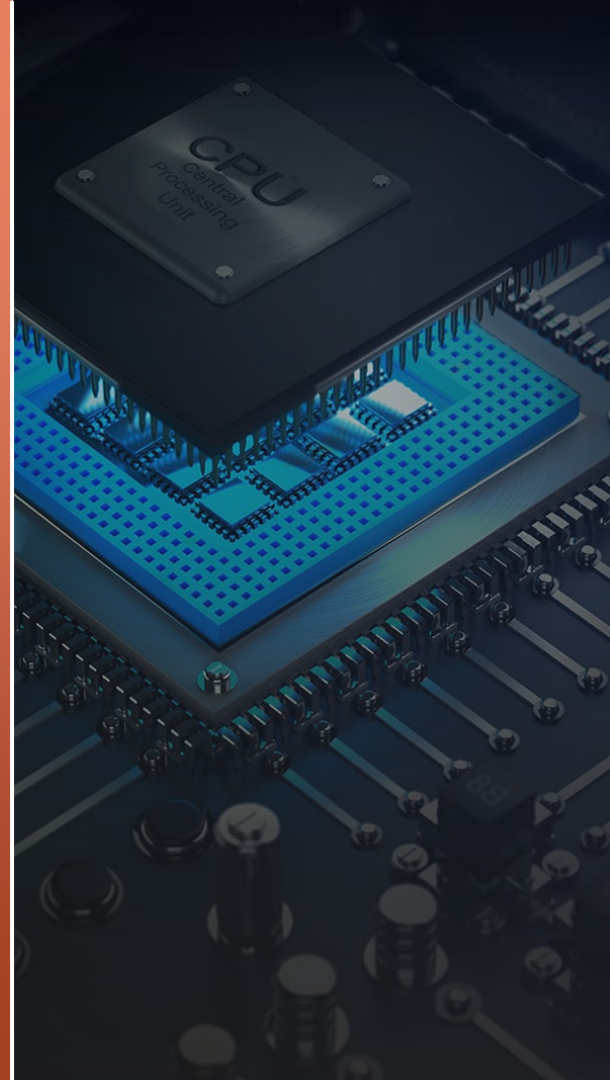
![SAMSUNG](rescale logo)

**Rescale
Customer Spotlight**

Industry: Engineering Consulting
Use Cases: Computational Fluid Dynamics, Fluid Dynamics

"Our innovative design platform co-developed in partnership with Rescale will play a crucial role for the fabless industry as it evolves into efficient cloud-based design environment. We remain committed to our efforts to bolster the SAFE™ ecosystem and will continue to collaborate with our SAFE™ partners on developing innovative programs that will help deliver ease of use and greater design efficiency for customers."

— Jae-hong Park, Executive Vice President of Foundry Design Platform Development at Samsung Electronics

COMPUTATIONAL SCIENCE & ENGINEERING
Building Blocks

Aerospace
- Propulsion
- Aerodynamics
- Acoustics

Semiconductor & EDA
- Design Verification
- Chip Layout
- Classification

Automotive
- Crash Safety
- Advanced Driver Assistance Systems
- Combustion

Earth Science & Energy
- Climate & Weather Modeling
- Drill & Pipeline Safety
- Seismic & Reservoir

Life Sciences
- Medical Devices
- Metabolomics
- Drug Discovery

Manufacturing
- Materials Testing
- Waste Reduction
- Factory Optimization

Use Cases
- Fluid Dynamics
- Structural Analysis
- Molecular Dynamics
- Multibody Dynamics
- AI, ML, & DL
- Electro Magnetics
- Pharmaco Kinetics
- Hydro Dynamics
- Particle Fluidics
- Thermo Dynamics
- Computational Chemistry

Design Cycle
- Final Optimization
- Preliminary Exploration
- Validation & Testing

Core Elements
- Advanced Analytics (Math/theory)
- Physics-Based Simulation (Software)
- High Performance Computing (Infrastructure)

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Rescale Enables Customer Innovation Across Industries

Examples of Rescale Business Impact By Industry

Aerospace
- Decreased vehicle weight
- Reduced vehicle noise
- Battery density and performance
- Reduced emissions
- Lower cost per seat/flight
- Increased range

Automotive
- Decreased vehicle weight
- Reduced vehicle noise
- Improved crash safety
- New ADAS & Autonomous capabilities
- Improved fuel economy
- Reduced vehicle and production emissions

Manufacturing
- Reduced cost per unit
- Increased production output / reduced bottlenecks
- Decreased material usage/waste
- Reduced product failure rate
- Reduced machinery failure

Higher Education
- Access to the latest resources to attract students
- Increased research capabilities for more research publications
- Fast and flexible utilization of grant funding
- Reduced IT support burden

Semiconductor / EDA
- Decreased time-to-market through faster design and verification closure.
- Decreased risk through increased functional and physical verification coverage
- Increased R&D productivity with lowered job turnaround-time

Energy
- Reduced environmental impact
- Increased energy intensity
- Reduced cost of energy to consumers
- Reduced operations incidents
- Reduced regulatory violations

Life Science
- Decreased time to drug / device approvals
- Accelerated genomics analysis
- Decreased cost to develop / cost for consumers
- Accelerated candidate discovery / lead identification

Government
- Ensured security and compliance to Gov-specific standards
- Fast and flexible utilization of grant funding
- HPC-aaS offers accelerated adoption of modernized cloud services