RESCALE IS HPC IN THE CLOUD

https://youtu.be/gAXtKOTLQnU
Rescale solves mission critical challenges

- 150 lbs weight reduction = $180M in savings
- 3 months development time achieved in under 24 hrs

- Testing reduced from months in wind tunnel to hours of CFD
- Eliminated server capital costs
- Overcome IT market limitations
- Over 6X speedup per job
The Rescale HPC Platform experience

- Fully integrated stack of enterprise deployment tools
- Rescale ScaleX Platform
  - Enterprise big compute
  - Innovation acceleration
  - User-first platform
  - Security and admin controls
Full stack automated and delivered by Rescale

Expensive on-premise stack of 30+ software middleware tools and consulting services…

...transformed into one seamless, automated SaaS enterprise Platform
Fundamental values of the Platform HPC experience
Fundamental values of the Platform HPC experience
Platforms multiply freedom and productivity

Rescale leverages platform philosophy to deliver innovation acceleration, on demand

**Optimized per Job**
A platform provides millions of combinations of workflows

**Limitless Scale**
Grow simulation/job sizes and actual team productivity fast

**Turnkey Administration**
Platform connects applications, data, licenses, MPI, & versioning

Rescale Confidential
Rescale enables transformative benefits

Rescale addresses the challenges of on-premise HPC and the Do-it-yourself approach to cloud HPC

HPC On-Premises
- The Standard
- Inflexible
- Obsolescence
- CAPEX

DIY HPC in the Cloud
- Flexible
- Updated
- OPEX
- Manual configuration
- End-user responsibility
- Learning curve
- SW installation
- Licensing

Rescale Platform
- Automated
- Administered
- Simplified
- 250+ apps ported, tuned
- On-demand licensing
- Enterprise collaboration
- Digital transformation
- Application expertise
- Hybrid capable

Extend on-premise HPC to leverage state-of-the-art cloud technology
Rescale Platform implementation strategies

Choose what is right for you, right now

Cloud Native
- Elastic scaling on demand
- Turnkey
- Zero IT footprint

On-premise HPC
- Submit jobs on-premise
- Administration portal
- Analysis and reporting

Hybrid: Cloud & On-premise
- Extend to cloud on demand
- Seamless transitioning between architectures
- Disaster recovery

Advantages of both
Fundamental values of the Platform HPC experience
Rescale delivers a complete, optimized stack

*Operate consistently on the best workflow-specific infrastructure with no transition loss*

Optimized full stack is deployed instantly and in parallel with other jobs.

ScaleX Platform

DATA
Rescale delivers best practices

Technology Choices

- Simulation Models (10k+)
- Software Applications (10k+)
- Compilers & Libraries (100+)
- Environment & OS (100+)
- Networking & Interconnects (10+)
- Server Architectures (1k+)

= virtually unlimited combinations

Automatic full stack technology selection and tuning for optimal business performance

Business Optimization

- Licensing
- Hardware performance & costs
- Workflows
- Business

ScaleX Platform

PLATFOR M
OPTIMIZED
SCALEABLE
TURNKEY
Fundamental values of the Platform HPC experience
Limited available resources forces queuing
Resources available on demand, and optimized for specific compute task
Scalability: faster results, shorter turnaround time

On-premise HPC

Jobs queued

HPC in the Cloud

Concurrent submission

Optimized compute resources

Rescale Confidential
Tier 1 automotive: HPC usage versus demand

CAPEX replaced with lower monthly OPEX while increasing compute capacity and flexibility

- **$4M CAPEX**
- **$100K/mo OPEX** Average

- **Available resources**
- **Unmet demand (jobs queued)**
- **Met demand**
Fundamental values of the Platform HPC experience

PLATFORM

OPTIMIZED

SCALABLE

TURNKEY
Enterprise administration: broad control sets, management, reporting and integration
Global turnkey IT administration

Key Enterprise Features

**Role-based Access**
- Manage users
- Manage roles
- Manage groups
- Manage projects

**Platform**
- HW access, regions, and pricing
- SW access, licenses, and pricing
- Platform features access
- Data retention and sharing settings

**Security**
- Restricted access by IP address range
- Password complexity rules
- Multi-factor authentication (MFA)
- User audit logs & notification rules

**Cost Management**
- Budget by level
- Reports by application type
- Payment methods and history
- License usage optimizer

**Connect**
- On-premise compute and storage
- PDM/SLM integration
- VPN
- Single sign-on (SSO)

Easy-to-use SaaS interface for IT & engineering managers
Rescale’s global HPC infrastructure network

*Over 100 data centers worldwide*

Turnkey deployment to the fastest local HPC infrastructure
Absolute enterprise security, delivered end-to-end

*Rescale delivers best-in-class security layer across entire platform*

Rescale is compliant with the strictest industry security standards

- Full administrative management and IT dashboard provide comprehensive controls and visibility
- Software defined security policy implementation tools to enforce proper IP handling
- Encryption in transfer with high-grade TLS and multi-layered encryption at rest with 256-bit AES

SOC 2 Type 2 Attested  CSA Registered  ITAR Compliant *  HIPAA Certified *  FedRAMP (pending)

* Not available in all geographical regions.
Advanced Rocket Design & Development

- Product development speedup of over 24X
- Instant 1,000+ CPU clusters simulating design performance

Real-time Formula 1 Simulations

- 3,000+ simulations in under 45s / lap
- Real-time sensor data inform strategy and performance
Vahana’s autonomous vehicle design & simulation

- Product development speedup of over 3X
- Faster time to market

Scalability keeps American Axle on schedule

- On-demand licensing and instant scaling for Star-CCM CFD analyses
- Flexible compute resources enable tight deadlines to be consistently met
The Rescale HPC Platform experience

- **PLATFORM**
  - OPTIMIZED
  - SCALABLE
  - TURNKEY

- **Global access**
- **Strict security**
  - SOC 2 Type 2 Attested
  - CSA Registered
  - ITAR Compliant *
  - HIPAA Certified *
Rescale at a Glance

**FOUNDED**: 2011

**LOCATED**: SAN FRANCISCO (+ LONDON, MUNICH, TOKYO, SEOUL, SINGAPORE)

**DELIVERS**: ENTERPRISE BIG COMPUTE PLATFORM

**FUNDED**
- Sam Altman
- Jeff Bezos
- Richard Branson
- Paul Graham
- Peter Thiel

**ENDORSED**:
- Gartner
- Goldman Sachs
- IDC
- McKinsey & Company
- Jump Capital
- FFV
- Two Roads
- TRANSLINK CAPITAL
- Microsoft
- Data Collective

**ADDRESSES**: Aerospace, Automotive, Industrials, Life Sciences, Universities, Oil & Gas, Semiconductor, Financial Services
Getting Started: Technical alignment workshop

*Review architecture, identify needs and platform opportunities with Rescale*

1. Needs assessment review
2. Technical opportunity plan
3. Begin
One Platform, All Codes

1. Licenses
On-demand licensing in the cloud or use your existing license.

2. Software
Wide package selection with new versions added regularly.

3. Workflow
Easy workflow for pre- & post-processing. View results online with the GUI app.

4. Support
Best-in-class support from experts through instant chat, email, phone.

*NOT EXHAUSTIVE
Enterprise-level Policy Enforcement

**BUILD TEAMS**
Member & Group Management, Project Management, Invitations

**ENFORCE SECURITY**
Audit Logs, IP Access Rules, MFA, SSO, Password Policies

**MANAGE JOBS**
Approve HW & SW Options, Link Jobs to Projects, Review Jobs

**CONTROL COSTS**
Billing Summaries, Company-wide Budgets, Invoices, POs, Deposits
Total cost of ownership: the true on-premise vs cloud view

Cost savings of HPC in the cloud in improve over the amortization period of on-premise CAPEX

Initial on-premise cost appeal

Normalized Total Cost of Ownership $TCO/simulation job

5 year constant amortization of capital expenditure of an on-premise HPC installation

Cloud HPC cost with a fixed compute architecture (ex Intel Haswell v3)

Total cloud HPC savings from continuously refreshed compute architecture (time to market or licensing costs included)
Hybrid HPC with Rescale

Access cloud and on premise from the Rescale portal

Rescale portal GUI and API

In-house HPC systems

Rescale cloud

Start

Job Scheduler

Selected jobs can be moved to the cloud

Rescale portal submits jobs on premises and to the cloud

Multiple in house HPC systems are pooled behind the Rescale interface

Jobs may be submitted with no change

Status