




Infrastructure Optimizer Overview

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Infrastructure Optimizer for High-Performance Computing

Do more with less, **zero downtime**

Our Value

- Up to 80% cost reduction for stateful workloads.
- 99.7% reliability on Spot instances.
- Real-time resource allocation without over-provisioning.
- Access to the latest CPUs on demand.

Use Cases



Semiconductor Chip Design,
Electronic Design Automation



Bioinformatics (Genetics, Disease
and Health)



Oil & Gas (Seismic, CFD, Reservoir
Pool)



Computer Aided Design &
Engineering (CAD & CAE)



Meteorological (Climate and
Weather)



University (High-Performance
Computing Data Center)

HOW WE DO IT

AI-Driven Cost Optimization

Infrastructure Optimizer utilizes AI to dynamically adjust cloud resources in real-time, ensuring cost efficiency without sacrificing performance. This integration with AWS allows for predictive scaling and cost management, addressing the challenge of fluctuating cloud pricing models and the need for manual resource optimization. It significantly reduces the effort and expertise required to manage cloud expenses effectively.

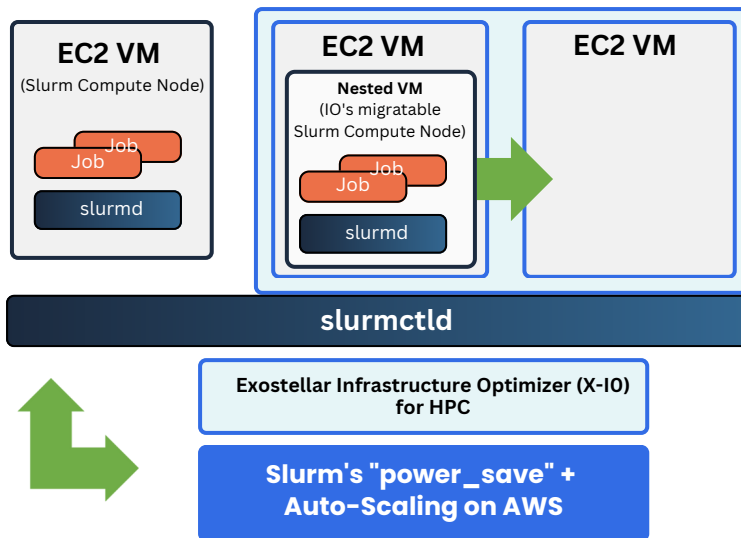
Autonomous Resource Management

The solution offers autonomous management of AWS on-demand, spot instances & savings plan, mitigating the risk of service interruptions and optimizing costs. By intelligently predicting spot market trends and automatically adjusting resource allocation, Infrastructure Optimizer ensures operational stability and leverages cost-saving opportunities without the manual complexity, directly addressing the challenges of using spot instances and maintaining continuous cloud operations.



Infrastructure Optimizer for High-Performance Computing

Enhanced Scheduling under Slurm



1. Integrate custom power_save and Auto-Scaling plugin for the existing slurm headnode.
2. The plugin initiates scaling of migratable compute resources by sending requests to the IO control plane.
3. IO provisions nested VMs that join slurm and run jobs, just like an end-user would expect.
4. These nested VMs are visible in the main job queue transparently.
5. IO employs live migration during job-run, dynamically adjusting the slurm compute nodes to the spot market, optimizing costs without job interruptions.

Success Stories

Workload

Semiconductor



- Synopsys EDA tools
- Stateful and long-running

University



Texas Advanced Computing Center

- PREQX - Seismic research tool
- WRF - Weather research and forecasting tool
- SWIFT - Astrophysics and cosmology tool

Government



- MASTODON: MPI workload for Seismic calculations
- Stateful and long-running

Results

- >50% cost reduction
- Performance boost
- No app interruption
- Improvement in resource scalability & accessibility
- Reduced wait times
- Live hybrid and multi-cloud migration
- No app interruption

