

Breaking Barriers to Innovation with HPC on AWS

Amazon Web Services (AWS) provides on-demand scalability and elasticity for a wide variety of computational and data-intensive workloads, including workloads that represent many of the world's most challenging computational problems: engineering simulations, financial risk analyses, molecular dynamics, weather prediction, and many more. Using the AWS Cloud for high performance computing enables public and private organizations to make new discoveries, create more reliable and efficient products, and gain new insights in an increasingly data-intensive world.



A Wide Spectrum of HPC Applications in the Cloud

Demand for HPC continues to grow, driven in large part by ever-increasing demands for more accurate and faster simulations, for greater insights into ever larger datasets, and to meet new regulatory requirements, whether for increased safety or for reduced financial risk.

The growing demand for HPC, and the time and expense required to deploy and manage physical HPC infrastructures, has led many HPC users to consider using AWS, either to augment their existing HPC infrastructure, or to entirely replace it. There is growing awareness among HPC support organizations – public and private – that cloud provides near-instant access to computing resources for a new and broader community of HPC users, and for entirely new types of grid and cluster applications.

How is Cloud Helping Enterprise HPC?



Faster Time to Results

Access computing infrastructure in minutes



Lower Total Cost

Pay-as-you-go pricing



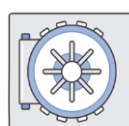
Elastic and Powerful

Easily add or remove capacity



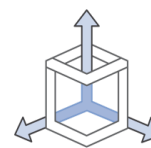
Globally Accessible

Easily collaborate with teams around the world



Secure

A collection of tools to protect data and privacy



Scalable

Access to effectively limitless capacity

Locuz – The Recognized Leader in HPC!

We at Locuz, understand that in today's global environment, organizations need to be highly competitive to strive for better outcomes. Whether it is improved financial performance, shorter product development cycles, better understanding of molecular level interactions, or more efficient ways to simulate the behaviour of materials at Nano-scale, High Performance computing is used to resolve these complicated computing problems.

Therefore, we offer comprehensive solutions for High Performance Computing based on loosely coupled clusters, SMP, accelerator based systems, High Performance storage, and application parallelization. We have designed domain specific solutions considering the challenges and business requirements of respective industry verticals. In addition, our services can help organizations to optimize and overcome obstacles to parallelism by adopting revolutionary approaches to High Performance Computing.

HPC Capabilities



IP & Innovation Led: Ganana Cluster Manager & Ganana Job Submission Portal shortens end users learning curve to run HPC jobs on cloud or On-Prem.

Unique Methodology: Provision a complete HPC environment (On-Prem or Cloud) for the entire lifecycle of HPC Infra and application.



Containers: Use container technology for faster and agile application provisioning.

Recognized Leaders: Recognized by Global Corporations in HPC with more than 200 Deployments.



Across Verticals & Workloads: Acknowledged strengths in Defence, Life-Science, Energy (O&G), Scientific Research, Auto & Engineering, Pharma & BFSI.

Automation: Effectively use Cloud and Automation to speed up HPC clusters (CPU/GPU), Storage & Network provisioning.



HPC Outcomes



One Click workflow Automation of WRF processing system (WPS), freeing up Adv Admin resources



10x Performance improvement post migration and optimization of GROMACS App from an 8-nodes CPU to 2-nodes GPU cluster, reduction of job time from 3509sec to whopping 277sec



25% Efficiency gain in optimization of Quantum Espresso (EQ) Run time reduction from 24hrs to 18hrs

HPC Skills

- OS - Redhat, CentOS, Ubuntu, Windows
- CM - Ganana, CMU, HCS, BCM, xCAT, Rocks
- Virtualization - Docker, Kubernetes, VMware, Citrix, Hyper-V
- Language - PHP, Shell Script, Jenkins, Ansible
- Monitoring & Logs - Splunk, ELK, MRTG, ManageEngine, Grafana, Ganglia, NagiOS
- File System - Lustre, GPFS, BeeGFS
- Schedulers - SLURM, LSF, PBS Pro, Grid Engine
- Applications - Open Source, Commercial, and GPU Based
- Data Base - RDS, Redshift, MariaDB
- Private Cloud - OpenStack, CloudStack, AzureStack
- Public Cloud - AWS, Azure

Service Offerings



HPC Assessment & Consulting services

- HPC capacity planning
- HPC requirement analysis with detail roadmap of migration
- HPC consulting services for Hybrid and Cloud only models



HPC Deployment & Managed services

- HPC Infra Deployment & On boarding Services
- HPC Application Workflow optimization
- 24/7 Remote Management services with uptime commitments at middleware level through Global NOC
- GUI Job submission portal
- Check pointing at scheduler level
- Big data / Hadoop / DASK Analytic Cluster infra deployment services



HPC Application services

- Application benchmarking
- Application porting to multi OS & Cloud platforms (Linux, Windows, GPUs, Accelerators etc.) using Docker Container
- Application optimization for performance
- Application migration to accelerator technologies - GPU/Intel Phi
- Deployment and optimization services of CUDA/MIC enabled applications on certified platforms

Customer Win Story: For a premium neuro research institute in India, we helped them build a high performance computing system on AWS for Surface based Masometric Analysis. It helps them with Structural Brain MRI for a Healthy Brain Development Research. Post migration to AWS, it resulted in reduction of job run time by 14x; due to latest Intel V3 Processor architecture, High I/O storage and 10G network running on AWS.