## Five reasons to run your HPC applications in the cloud.

High Performance Computing (HPC) has always been about solving the world's most complex problems. For too long, however, HPC applications and workloads have been constrained by limited on-premises infrastructure capacity, high capital expenditures, and the constant need for technology refreshes.

unlimited HPC infrastructure and instant access to the latest technologies.

Not anymore. Run your HPC workloads in the cloud. Unleash innovation with virtually

The total worldwide HPC market reached

in 2019, **up 8.2%** from 2018.1



grew by 59%

In 2019, the market for cloud HPC solutions

from 2018.<sup>2</sup>



## with Flexible Architectures • Let your research dictate the architecture, not the other way around

**Drive Innovation** 

- Access virtually unlimited cloud resources, available with the latest Intel® technologies, without the overhead of
- procuring, deploying, and managing infrastructure • Unlock research teams to freely imagine and innovate
- **Challenge:** Encourage and facilitate experimentation

**Solution:** Enable researchers and scientists to access

capacity when they need it by moving to AWS

See the complete case study here

and innovation

**Results:** 



## to less than one day

to try out fringe use cases with trivial investments

to run informatics jobs

from weeks or months **Empower researchers** 





**FABRIC** 

### HPC clusters in minutes • Develop HPC apps faster, and scale capacity quickly to avoid performance degradation caused by

Accelerate Time to Results

• Create, operate, and tear down secure, well-optimized

- resource limitations
- Gain faster, more insightful results using analytics **Results:**

Facilitate more accurate

and timely diagnoses

## **Solution:**

Challenge:

Run computational workloads in parallel using up to 200 gigabytes of RAM

Rapidly pinpoint the genetic causes

of diseases in very ill children

Comply with strict patient

health information (PHI)

data-protection requirements

See the complete case study **here** 



### Around the World • Share massive data volumes securely with teams of scientists and researchers anywhere · Comply fully with HIPAA, FISMA, GDPR, FedRAMP, PCI,

**Collaborate Securely** 



Upload biophysical models and design

Allow global researchers to access

• Protect sensitive intellectual property with encryption

## See the complete case study here

and other regulations

biotech research tools

methods to the cloud

**Solution:** 

## **Results:**



Facilitate design of more than



Free artists to create stunning visual effects without worrying about rendering time

Burst rendering applications to the cloud

to circumvent internal capacity constraints



PennState.

### · Spin up new configurations to match the specific requirements of each job • Gain immediate access to the latest Intel technology upgrades without stalling research

**Unleash Creativity** 

• Start resource-intensive jobs as soon as they

and Productivity

are ready, avoiding the queue

- rendering jobs a month Avoid schedule overruns

**Solution:** 

Challenge:

Take on new business

with confidence in the ability to deliver

See the complete case study here



Process

**Compromising Research** 



**Results:** 

by adding capacity as deadlines approach



and reduce costly rework

## **Check job status** from anywhere

to catch problems early

1,000-node limit imposed by previous service provider

Remove

### Amazon EC2 instances and pay only for what you use TLG AEROSPACE • Take advantage of spot pricing to further reduce cost for time-flexible workloads • Avoid the capacity limitations of many other cloud providers

### **Solution:** Migrate computational fluid dynamics (CFD) simulation application from existing provider to AWS

Cut simulation costs and accept projects

that exceed on-premise capacity

See the complete case study here

• Choose from a range of AWS services and Intel powered

## HPC on Amazon Web Services

**Challenge:** 

# Unchain your research with

There are significant advantages to running your HPC applications in the cloud—but which cloud?

Amazon Web Services provides secure, resizable capacity in the cloud and offers a wide range of Intel® Xeon®

AWS' large partner network provides professional services and software solutions to enhance HPC workloads running on AWS. The AWS cloud is compliant with the latest revisions of GDPR, HIPAA, FISMA, FedRAMP, PCI, and other regulations.

Preferred by Industry Leaders

technology-powered instance types, so you can easily and quickly spin up a configuration that fits your workload. By migrating some or all of your HPC applications to AWS, you can increase the speed of research, and reduce time to results.

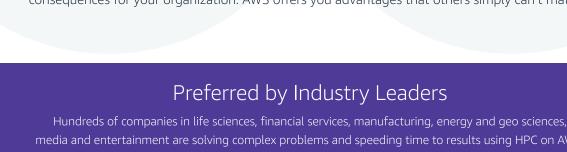
For a full list of AWS compliances, please visit https://aws.amazon.com/compliance/ Choosing the right cloud provider for HPC goes beyond feeds and speeds; it's also a business decision with significant consequences for your organization. AWS offers you advantages that others simply can't match.



Life Sciences &

Healthcare





Financial

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**☎**DBS

bankinter.

2 Data cited from Hyperion Research | Inquire with Hyperion Research, info@hyperionres.com

1 Data cited from mu tiple forecast and survey reports. Inquire with Intersect360 Research, info@intersect360.com









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& Research





Selected AWS HPC customers. See AWS customer stories here.

https://aws.amazon.com/hpc