

Improve speed and accuracy in data-intensive HPC workloads powered by 3rd Gen Intel® Xeon® Scalable processors

Design products faster with finite element analysis (FEA). Detect seismic activity more cost-effectively and with greater precision.

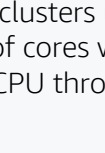
HPC on AWS enables extreme-scale compute to run massively parallel workloads and help solve some of the world's toughest problems. You can gain insights faster and quickly move from idea to market with virtually unlimited compute capacity, a high-performance file system, and high-throughput networking. Turn services on when you need them, and turn them off when you're done, optimizing your HPC costs with pay-as-you-go infrastructure.

Amazon EC2 Hpc6id instances, powered by 3rd Gen Intel® Xeon® Scalable processors, provide attractive price performance, memory, and local NVMe storage capabilities to help researchers and engineers run tightly coupled, data-intensive HPC workloads in a shorter amount of time. Let's explore how EC2 Hpc6id instances help to run your most data-intensive workloads, such as finite element analysis (FEA) and seismic reservoir simulations, even more cost-efficiently on AWS.

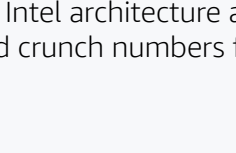
Benefits of EC2 Hpc6id instances

Hpc6id instances are optimized for performance and cost so you can focus on solving the biggest challenges that matter to you most.

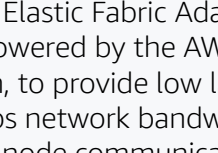
Run your clusters at virtually any scale



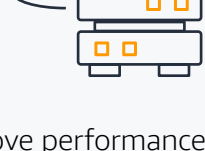
Scale HPC clusters up to tens of thousands of cores with increased per-vCPU throughput.



Run Intel architecture at scale and crunch numbers faster.



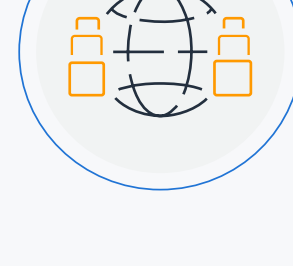
Uses Elastic Fabric Adapter (EFA), powered by the AWS Nitro System, to provide low latency 200 Gbps network bandwidth for inter-node communication.



Improve performance of data-intensive workloads. Speed processing of massive datasets with 1TB DRAM, up to 5GB/s memory capacity per vCPU, and 15.2 TB of fast, local NVMe storage.



Hpc6id instances are available in a single Availability Zone, enabling workloads to achieve the low-latency network performance necessary for tightly coupled node-to-node communication for HPC applications.



Speed results with 3rd Gen Intel® Xeon® Scalable processors

- Increase application performance with an all-core turbo frequency of 3.5 GHz.
- Enhance security with always-on memory encryption using Intel® Total Memory Encryption (TME).
- Execute cryptographic algorithms faster with support for Intel® Advanced Vector Extensions (AVX-512).

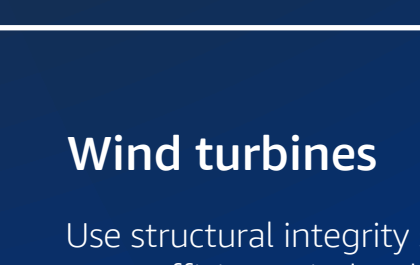
Maximize resource and cost efficiency

- Amazon Elastic Compute Cloud Hpc6id instances deliver the best price performance for data-intensive High Performance Computing workloads in Amazon EC2.
- Amazon EC2 Hpc6id instances deliver up to 2.2X better price-performance over comparable x86-based instances for data-intensive HPC workloads, such as Finite Element Analysis (FEA).
- Simplify application architecture with the AWS Nitro System, a collection of building blocks that offload many of the traditional virtualization functions to dedicated hardware and software to deliver high performance, high availability, and increased security.

Optimize product design with finite element analysis

Design engineers use finite element analysis (FEA) to simulate a range of physical properties – including structural integrity and how an object responds to vibration, heat, and flow – so that products can be optimized in the design stage. This reduces the need for tests of physical prototypes, which are costly and time-consuming to conduct.

With Amazon EC2 Hpc6id instances you can run more FEA simulations in a smaller amount of time and run more complex and detailed simulations that involve larger datasets.



Electric vehicles

Innovate new EV body styles while assuring their ability to absorb crash impact before the physical prototype phase.

Wind turbines

Use structural integrity simulations to create the thinnest, most efficient wind turbine blades.

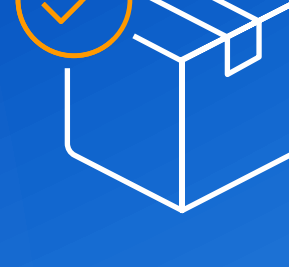


Aerospace

Test the safety and reliability of new air and spacecraft with faster results, fewer safety risks, and reduced costs for labor and materials.

Packaging

Improve the mechanical integrity, strength, and efficiency of packages designed to protect goods against damage.



Watercraft

Use a range of simulations including stress and deformation analysis, thermal expansion analysis, and linear and non-linear analysis to prevent structural fatigue.

Automotive

Optimize component durability with capability to run more detailed acoustics, vibration, and stress analysis simulations.



Healthcare

Design, develop, and test safer and more reliable medical implants and devices.

Improve seismic research speed and accuracy

Energy workloads use finite difference method (FDM) applications for faster and more accurate simulations. FDM workloads process seismic datasets, which are collected by sonar and may include petabytes of data, to build detailed MRI images for analysis by geologists.

Running FDM workloads on EC2 Hpc6id instances can help customers to:

Improve decision accuracy

Gain the performance required to process more-detailed sonar data, which can help to pinpoint resource locations with higher accuracy.

Optimize price performance

Simplify requirements architectures and reduce cloud resource requirements with the flexible building blocks provided by the AWS Nitro System.

Easily work with massive seismic datasets

Store terabytes of temporary data on Hpc6id instance's local NVMe storage, instead of transporting it across the network to a slower file system.



Why run HPC workloads on AWS?

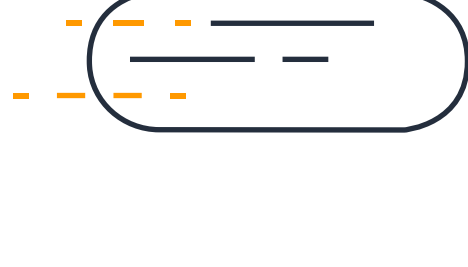
HPC workloads that run on premises are often constrained by infrastructure capacity, large fixed costs, and costly technology refresh cycles. Running HPC in the cloud with AWS unleashes innovation with virtually unlimited infrastructure and provides access to the latest Intel technologies and AWS services and features.

Drive innovation

AWS provides secure, re-sizable capacity in the cloud. You can easily spin up a configuration that fits your workload.

Accelerate time to results

It takes minutes to create and use HPC clusters with the high performance of instances such as EC2 Hpc6id, powered by 3rd Gen Intel® Xeon® Scalable processors.



Minimize spending without compromising research

With AWS you can choose from the broadest range of cloud services, avoid capacity limitations, and pay only for what you use.

Learn more and get started at [High Performance Computing \(HPC\)](#)