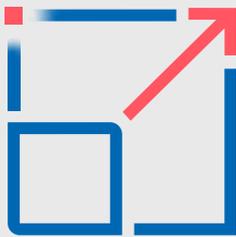


# Eliminate Hardware and Maintenance Costs Without Sacrificing Performance by Running OpenFOAM Workloads on Oracle® Cloud Infrastructure Featuring Intel® Xeon® Processors

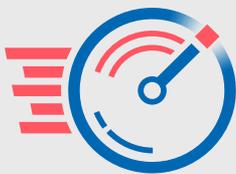


HPC-CFD



**Oracle BM.HPC2.36 Instances Provide Equal or Better Relative OpenFOAM Scaling**

*vs. comparable on-premises clusters*



**Oracle BM.HPC2.36 Provides Comparative Relative OpenFOAM Performance**

*vs. comparable on-premises clusters*

## Choose Oracle Cloud Infrastructure to Lower Costs While Maintaining Performance of Similarly Configured On-Premises Hardware

Around the globe, customers across a wide range of industries depend on high-performance computing (HPC) environments. Two common workloads for HPC clusters are computational fluid dynamics (CFD) and crash simulation applications, both of which are extremely resource dependent. Oracle Cloud Infrastructure (OCI) is challenging the outdated belief that only on-premises equipment can handle an OpenFoam CFD workload.

Oracle Cloud Infrastructure with Intel Xeon processors can provide the performance of on-premises hardware while eliminating the need to purchase or maintain an on-site HPC environment for CFD and crash simulation workloads. In testing, OCI HPC bare-metal cloud instances supported by Intel® Xeon® Gold 6154 processors provided equivalent or better relative scaling and performance compared to a similar on-premises HPC environment.

## Demonstrating OpenFOAM Performance in the Cloud

Oracle Cloud Infrastructure partnered with Intel to run a series of computer-aided engineering (CAE) workloads using one of their top performing instances, BM.HPC2.36. One of the more powerful possible configurations on OCI, BM.HPC2.36 is also one of the lowest priced at \$2.70 per instance per hour. The testing compared a 16-node BM.HPC2.36 cluster to a 16-node on-premises server cluster with similar CPU and memory capacities.

These tests used a 42M motorbike model simulating an external aerodynamics study of a motorcycle to emulate a CFD workload across a both clusters using OpenFOAM as the CFD solver. As Figure 1 below shows, performance was comparable for this workload between an on-premises solution and an Oracle bare-metal instance featuring Intel® Xeon® Scalable processors. These results show that Oracle Cloud Infrastructure instances for HPC workloads don't force you to trade performance for convenience: they provide both.

### OpenFOAM Performance - 42M Motorbike Oracle BM.HPC.36 vs On-Premises

Relative Performance | Higher is better

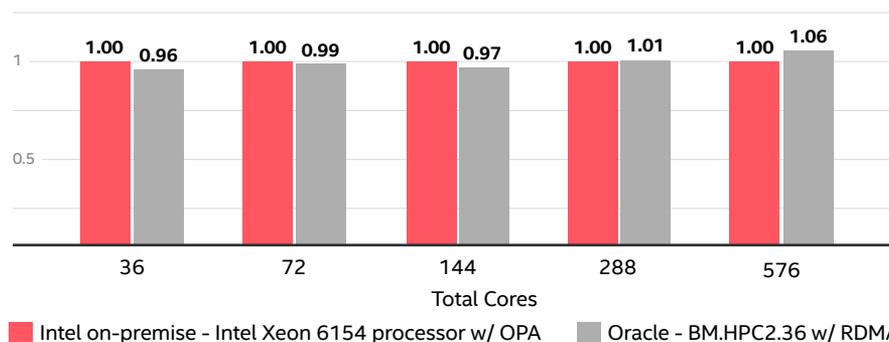


Figure 1. Relative performance results comparing OpenFOAM workload performance with scaling core counts of the Oracle BM.HPC2.36 instance and on-premises clusters.

### Scale your OpenFOAM Workload with Ease

Figure 1 also demonstrates how well the Oracle BM.HPC2.36 cluster scales relative to the on-premises cluster. If your CFD workload needs grow, you can add cores to the environment and realize at least near-equal performance compared to the on-premises environment. In fact, at the highest core count, the Oracle solution slightly outperforms the on-premises solution. Host your CFD workloads in Oracle Cloud and rest easy knowing that your performance won't suffer as your workload needs grow.

### Save Money Without Sacrificing Performance

When you move your workloads from a traditional on-premises computing environment to an Oracle Cloud Infrastructure instance, you avoid the CapEx of populating a hardware environment and the OpEx of maintaining it. As testing showed, you can achieve these savings while still getting the performance your HPC workloads demand. Spending less time and money on buying and maintaining equipment to execute your workloads means more resources are available to leverage your data and build your business.

### Learn More

To begin running your HPC workloads on Oracle Cloud Instances with Intel Xeon processors, visit <https://www.oracle.com/cloud/hpc/>.

To read more about this testing, read the [Oracle blog post](#).



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