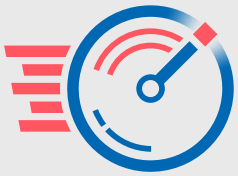
Scale Performance Without CapEx Costs by Running Ansys Fluent Workloads on Oracle® Cloud Infrastructure Featuring Intel® Xeon® Processors

HPC-CFD



Oracle BM.HPC2.36 instances provide comparable or improved Ansys Fluent simulation performance

vs. comparable on-premises clusters

Save on CapEx and maintenance time and costs by moving your HPC workloads to Oracle Cloud

Choose Oracle Cloud Infrastructure to Scale Performance While Avoiding Maintenance Costs of Similarly Configured On-Premises Hardware

Tough computational problems require additional resources to complete workloads in a timely manner. That's where high-performance computing (HPC) solutions come in. Computational fluid dynamics (CFD), which can involve millions of hexahedral cells, is one such workload that HPC clusters run. Because CFD workloads like Ansys Fluent simulations are so dependent on optimizing resources, organizations typically run them in clusters that reside on premises. Oracle Cloud Infrastructure (OCI) offers instances that can power these workloads in the cloud with performance similar to on-premises clusters, without the hardware and maintenance costs.

Oracle Cloud Infrastructure with Intel Xeon processors offers the flexibility and agility of the cloud while performing as well or better than expensive on-premises hardware. Tests show that OCI HPC bare-metal cloud instances featuring Intel® Xeon® Gold 6154 processors achieved similar or slightly better relative scaling and performance for Ansys Fluent workloads compared to a similar on-premises HPC environment.

Ansys Fluent CFD Performance in the Cloud

Partnering with Intel for top processing power, Oracle Cloud Infrastructure offers BM.HPC2.36, instances to run computer aided engineering workloads. One of the most powerful OCI configurations, BM.HPC2.36 instances are one of the lowest priced, costing just $2.70 per instance per hour. To show the performance capabilities of BM.HPC2.36 instances, OCI compared the Ansys Fluent performance of 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 the 14M aircraft wing workload, simulating the external aerodynamics of an aircraft wing, to emulate a CFD workload across both clusters using Ansys Fluent as the CFD solver. As Figure 1 shows, performance was slightly better on the Oracle bare-metal instances with Intel Xeon Scalable processors, compared to a similarly configured on-premises cluster. These results show that Oracle Cloud Infrastructure instances can offer the performance your HPC workloads need with the flexibility and convenience of the cloud.

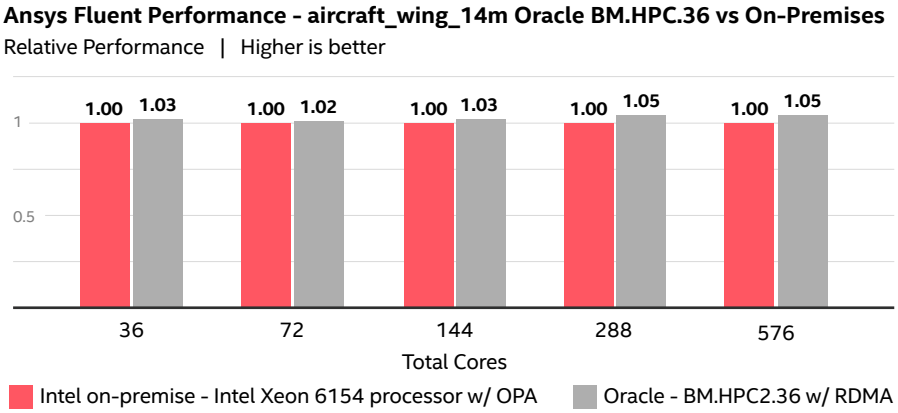


Figure 1. Relative performance results comparing Ansys Fluent workload performance with scaling core counts of the Oracle BM.HPC2.36 instance and on-premises clusters.

Ansys Fluent Workloads Scale with Ease

Figure 1 also demonstrates how the Oracle BM.HPC2.36 cluster with Intel® Xeon® Scalable processors improves upon the on-premises solution at scale. As your CFD workload needs to grow, you can easily add OCI instances. The RDMA networking that OCI offers can handle the increased throughput as cores increase. In fact, at the highest core count, the Oracle solution slightly outperforms the on-premises solution. This allows you to host your CFD workloads in Oracle Cloud and scale up without fear of bottlenecks.

Gain Performance Without the Headache

While on-premises clusters offer the performance HPC workloads require, they also mean investing in hardware (CapEx) and continuing operating expenses (OpEx) for maintenance. By moving your HPC workloads to the cloud, your organization can forgo the added investments and maintenance hassles inherent in hosting your own HPC cluster on site. Saving money on hardware costs, while also solving computation workloads faster, means your business can doubly benefit from moving HPC workloads to Oracle Cloud Instances featuring Intel Xeon Scalable processors.

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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