

# Improve Performance for Computational Fluid Dynamics Workloads with New Oracle<sup>®</sup> Cloud Infrastructure Bare Metal Instances

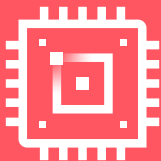


HPC-CFD



Get up to 1.35x the STAR CCM+ performance with BM.Optimized3.36 instances

vs. older BM.HPC2.36 instances



Get better value with the new Oracle Cloud Infrastructure Bare Metal HPC instances featuring 3<sup>rd</sup> Gen Intel Xeon Scalable Processors

## Get Better Value for your High Performance Computing Environment with Oracle BM.Optimized3.36 Instances Featuring 3<sup>rd</sup> Gen Intel<sup>®</sup> Xeon<sup>®</sup> Scalable Processors

Computational Fluid Dynamics (CFD) workloads allow engineers to solve many types of engineering problems by simulating fluid flow around structures. Engineers use CFD, a computer-aided design tool, for crash simulations, to study air flow over vehicles, and even to design HVAC systems. Because this level of analysis and problem solving requires intense computational power, running CFD workloads on high performance computing (HPC) clusters is a good way to get the required resources to run these simulations.

Oracle Cloud Infrastructure (OCI) offers a bare-metal HPC solution enabled by 3<sup>rd</sup> Gen Intel<sup>®</sup> Xeon<sup>®</sup> Scalable processors that can meet the demands of CFD workloads. By selecting new OCI BM.Optimized3.36 instances vs. older BM.HPC2.36 instances, organizations gain the latest in optimized processors, low latency networks, and fast local storage that can speed CFD analysis.

The LeMans model in Simcenter Star-CMM+ Multiphysics CFD software provides a real-world simulation that models the flow in a LeMans-style racecar diffuser. In tests, the OCI BM.Optimized3.36 instances enabled by 3<sup>rd</sup> Gen Intel Xeon Scalable processors reduced the average elapsed time to complete this simulation, improving performance over the older instances by up to 1.35x (see Figure 1).

### STAR-CCM+ LeMans\_100M\_Coupled 3.36 vs 2.36

Lower is better

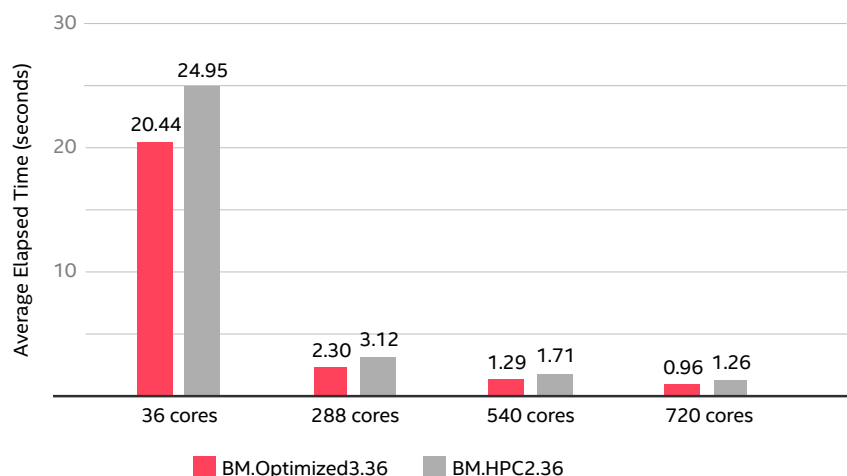


Figure 1. Time to complete the LeMans CFD simulation in STAR-CCM+ for both instance types at various core counts.



## Get More Performance at the Same Price with New OCI BM.Optimized3.36 Instances

Getting increased performance is ideal—but only if it comes at a cost that can fit into your organization's budget for cloud operating expenses. For new OCI BM.Optimized3.36, pricing remains flat from the older instances, meaning they offer new technology and better performance at the same cost as older BM.HPC2.36 instances. Selecting new bare metal OCI instances with 3<sup>rd</sup> Gen Intel® Xeon® Scalable processors give organizations better value, performance, and improved security features inherent in the latest chips.

### Bare Metal Instances from Oracle + Intel

Partnering with Intel, Oracle now offers bare metal 3<sup>rd</sup> Gen Intel Xeon processor-powered instances that feature new flexible Compute capabilities. Flexible Compute capabilities let admins select core and memory requirements to best meet their specific workload needs. By choosing new OCI bare metal instances, organizations get all the benefits of bare metal computing while accessing the flexibility and convenience of the cloud.

### Conclusion

If your organization wants to run complex CFD workloads in HPC cloud instances, choosing new OCI BM.Optimized3.36 instances with 3<sup>rd</sup> Gen Intel Xeon Scalable processors over older BM.HPC2.36 instances can speed up your time to complete complex simulations. The new OCI instances also come at a better overall value, offering up to 1.35x the performance for LeMans CFD simulations at no increase in cost over older instances. These results show that for high-powered CFD HPC clusters, OCI BM.Optimized3.36 instances can offer businesses a chance to solve engineering problems faster than before without having to stretch their operating budgets.

### Learn More

To begin running your computational fluid dynamics simulations on Oracle Cloud Infrastructure Bare Metal HPC Instances with 3<sup>rd</sup> Gen Intel Xeon Scalable processors, visit <https://www.oracle.com/cloud/hpc/>.

To read more about this OCI HPC testing, visit [this Oracle blog](#).




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