



# Oracle Cloud Platform: Built for Enterprise

## Zenotech

### High Performance Computing specialist company adds Oracle Cloud Infrastructure options for customers

Zenotech delivers innovative, High Performance Computing (HPC) cloud-based solutions for computational fluid dynamics, such as the simulation of air flow over airplane wings and water flow around bridge structures. Zenotech provides the software and a cloud brokerage service, enabling their clients – from aerospace giants to small engineering firms – to react quickly to the ever-changing computational engineering market place.

Their platform - Elastic Private Interactive Cloud (EPIC) – provides easy and secure access to a global range of cloud HPC providers. Customers can initiate and scale jobs anywhere in minutes. Zenotech has integrated Oracle Cloud Infrastructure as a preferred partner, and are making use of Oracle Cloud as part of their internal software development process.

### Seeking predictable performance and total control – in the cloud

The EPIC comparator matches requirements to available options, enabling side-by-side comparisons of public clouds and supercomputing providers, including Amazon Web Services, University of Cambridge, Center for Modeling and Simulation (CFMS), and other supercomputing centers. These options are particularly helpful for smaller customers, who need the best tools available, but lack a large computational infrastructure of their own.

Zenotech is always on the look out for new computing resources that offer more performance, flexibility or security. Running on shared infrastructure raises issues such as data security and ensuring that “noisy neighbors” don’t impact performance and cost. Zenotech deploys HPC infrastructures in several environments to match customer requirements and to help minimize these problems.

Some customers require special platform characteristics that can be difficult or impossible to achieve in a shared environment – limited access, higher security, root access to operating systems and hypervisors, and hardware-level access. These workloads were more difficult for Zenotech to place. Oracle Cloud Infrastructure virtual machine and bare metal compute instances provide Zenotech with very large-memory nodes, suitable for the generation of CFD meshes, connected on a predictable low latency network.

“For HPC workloads, predictable high performance is key. Oracle Cloud Infrastructure provides us with that, as well as full control of the physical server for bare metal instances and a fast network. Combined with the console and APIs, this gives us the flexibility of cloud with the performance of bare metal,” said Jamil Appa, Co-founder and Director.



“For our customer workloads, scalable performance in the cloud is driven by the network and storage architecture. In both those areas Oracle Cloud Infrastructure is delivering a significant step change in the price-performance available to our HPC Cloud customers.”

- **Jamil Appa,**  
**Co-Founder and Director**

#### WHY ORACLE?

- HPC performance in the cloud comparable to specialized HPC hardware
- End customers can have hardware-level access and complete control over the compute environment
- Low cost on-demand public cloud solution for HPC computing
- Simple, clear pricing compared to other clouds

## Performance comparable to specialized HPC systems

During the proof-of-concept phase, Zenotech ran their zCFD benchmark with NASA Common Research Model (CRM) data to test performance against other dedicated HPC systems they use, including and the University of Cambridge Darwin HPC Cluster. At 1296 cores, across three availability domains, they achieved 76% of the theoretical maximum efficiency which ranked similarly to dedicated HPC systems such as the Darwin cluster.

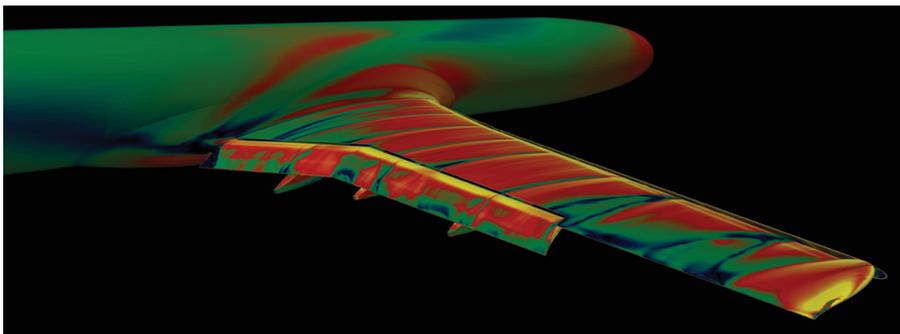
Zenotech is currently scaling up to 30 Oracle Cloud Infrastructure bare metal compute instances, each with 36 cores, 256 GB of RAM.

“Performance has been fantastic,” said Mike Turner, Product Lead, “Our benchmarks illustrate the cloud solution can perform as well as specialized HPC systems. Oracle is investing in some of the latest hardware available anywhere in the world. By working with Oracle, the tools we offer our customers run with performance that rivals specialist HPC clusters.”

During simulations, being only 2 hops away from any other compute node, with guaranteed latency and dedicated bandwidth on Oracle’s 25 Gbps network fabric meant predictable performance. Connecting availability domains (ADs) within a region has also enabled Zenotech to scale compute across the whole region.

“We tested scaling compute across all three availability domains with a parallelized workload,” said Jamil Appa, Director, “and it scaled with the same performance as when we ran the test within a single AD. The network performance between the data centers of ADs is similar to the performance within them. This enables us to easily scale across ADs to create very large clusters.”

In the future Zenotech is exploring moving product development and more internal HPC projects to OCI which will make use of upcoming OCI enhancements such as P100 GPUs and Kubernetes support.



## About Zenotech

Zenotech delivers innovative, HPC cloud-based solutions that enable clients to be more agile, flexible and react quickly to the ever changing computational engineering market place. Zenotech provides zCFD - a cost effective, efficient, scalable computational fluid dynamics (CFD) solver – and EPIC.

## SOLUTION

- Oracle Cloud Infrastructure Compute
- Oracle Cloud Infrastructure Block Storage
- Oracle Cloud Infrastructure Object Storage

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Integrated Cloud Applications & Platform Services

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