How UberCloud Helped a Top 5 Consumer Electronics Company Boost Productivity 20x with a Standardized Framework for Simulations in the Cloud

The Challenge: Disparate, Aging Hardware Pools

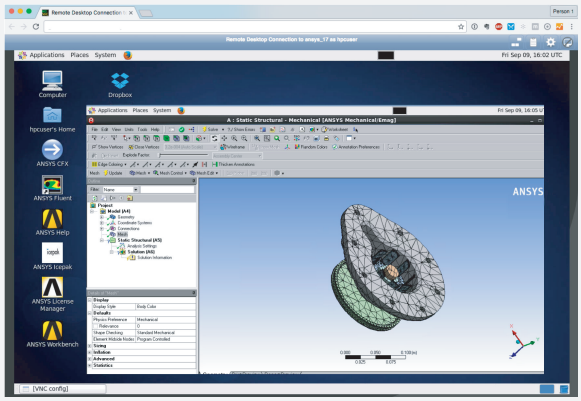
The engineering teams at a leading consumer electronics company ran simulations 24/7. However, they didn't have a consistent method for running simulations on scalable hardware pools. Different product groups each maintained an assortment of hardware, varying from workstations to five-year-old clusters, all of which were managed by the engineers themselves. The teams faced multiple challenges:

- Having inadequate hardware tools, caused bottlenecks for the product groups.
- Engineers spent their valuable time installing applications, managing hardware, and creating support tickets to external vendors.
- Adoption of in-house Linux clusters was low, because engineers were not able to work remotely with their application GUI.
- Every CAE application had unique settings and assumed a fixed network. This did not work in a dynamic cloud context and caused connectivity issues.

The Approach: A Central, Standardized Private Cloud for Simulations

Productivity was improved step by step, gradually increasing the sophistication of the solution.

As a first step, UberCloud identified simple workloads (single node deployments on CPUs) and successfully executed these on an internal private cloud within days.



Engineers can now access cloud CAE software on demand and handle multiple concurrent projects.

This approach helped the implementation team to identify issues and fix them before taking on larger challenges, such as multi-node distributed computing and GPU computing.

Once the system architecture was finalized, it was converted into a self-service framework, enabling different product teams to launch software applications, such as COMSOL, ANSYS, CST and more, on hardware clusters of various sizes, on-demand.

The Outcome: 20x Productivity Boost through Self-Service On-Demand Resources

UberCloud helped develop a standardized framework across various CAE applications, enabling different product groups to leverage the customer's private cloud infrastructure.

- The Customer now has a consistent framework across multiple product teams for requesting the hardware and software required for simulations, giving them the ability to deploy the right level of resources based on urgency.
- The Customer also scaled up to over 150 Nvidia P100 GPU's and over 500 CPU cores for each engineer. The engineering team now has the ability to handle multiple concurrent projects without sharing the compute nodes between projects.
- Dynamic detection of nodes within a cluster and handling of networking was achieved through the development and implementation of a "Cluster Discovery Service". An arbitrary number of solvers and servers can be added as needed.
- Engineers no longer waste time on IT-related activities, so they can focus on high-value activities that contribute to faster product cycles.

> ***"With UberCloud's Self-Service framework, engineers no longer waste time on IT-related activities, so they can focus on high-value activities that contribute to faster product cycles."***
>
> **- Thomas Francis,** Head of Products, UberCloud

About UberCloud

UberCloud's mission is to make high performance computing (HPC) a reality for every engineer. UberCloud's HPC software containers enable companies of all sizes to quickly adopt the cloud for a high performance cloud computing solution, making it easy for engineers to access and use the cloud so they can benefit from HPC without any of the shortcomings.