

# Case Study

## PTB

### The National Metrology Institute of Germany

The HPC Cloud On-Demand Data Center  
For Intelligent Cloud Management



## PTB – The National Metrology Institute of Germany

*PTB teamed up with Adaptive Computing to implement the HPC Cloud On-Demand Data Center within the PTB environment, enabling PTB to run workloads in the Cloud using a pure cloud solution.*

*PTB is the National Metrology Institute of Germany, advancing scientific and technical services. PTB measures with the highest accuracy and reliability. PTB promotes progress and reliability in metrology for the benefit of society, trade, industry, and science.*

*Based on its research and development work, PTB provides a wide range of metrological services. The central task in this context – laid down by law – is to realize and to disseminate the units as accurately as possible. In this way, PTB ensures that uniform measures are used, not only in Germany, but throughout the world.*



### CHALLENGE

To extend PTB's on-premises hardware installation to the cloud.

- » Running on-premises clusters is expensive. Using the Cloud, PTB can avoid a significant up-front investment in hardware.
- » Requirement to integrate both on-premises resources and cloud resources in the field of scientific computation.
- » Automatically shift additional workload to an external cloud on-demand to serve PTB's increasing workload.
- » Analysis of project costs; comparison of economic feasibility between a conventional bare metal solution in PTB's data center and/or dynamically allocating resources in the Cloud without user interaction.
- » The potential to extend PTB's on-premises hardware cluster is restricted.
- » Not having additional on-premises resources is causing a workload backlog when all on-premises resources are being used to full capacity.

*"We are now able to deploy on-demand complete clusters of compute nodes by using a cloud provider of our choice in a highly customized manner in a programmatic way."*

*Gert Lindner, HPC Engineer  
PTB, Institute Berlin*

### SOLUTION

Adaptive Computing's HPC Cloud On-Demand Data Center enables seamless access to all compute resources, whether on-premises or in the Cloud.

- » Deployment on any of the leading cloud providers becomes easily attainable because the HPC Cloud On-Demand Data Center (ODDC) supports OCI, GCP, AWS, Azure, and OTC out of the box from a common API.
- » Rapid deployment of a whole cluster on-demand, delivering infrastructure as code.
- » Easy adjustment of cluster size to reflect current demand.
- » Fast reaction to new project requirements.
- » Moving on-premises workload backlogs to the Cloud.
- » Bursting workloads to the Cloud saves costs by only using resources when required.
- » Better management of cloud infrastructure and not needing to extend their on-premises hardware.

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## RESULT

The complete solution from Adaptive Computing is highly customizable and has a high degree of freedom in configuration, which allowed for the adoption of PTB's specific requirements.

- » PTB ran multiple applications (including new requirements, like AI requirements) in the Cloud using the On-Demand Data Center.
- » With the use of Adaptive Computing's products Moab and the On-Demand Data Center, PTB was able to extend their on-premises clusters by moving and running applications in the Cloud.
- » PTB extended their end-user capabilities and experience by using Adaptive Computing's product Viewpoint.
- » The solution will assist PTB in saving costs by not needing to extend their on-premises resources and having better management of both their on-premises and cloud resources.
- » Because the HPC Cloud On-Demand Data Center is heterogeneous, it gave PTB the capability to easily and quickly get new scientific projects up and running, while not limiting them to a specific Cloud Service Provider.
- » The HPC Cloud On-Demand Data Center does not require a high level of technical knowledge to use. PTB was able to effectively build a pure cloud solution by leveraging the vast resources available in the Cloud requiring only a small level of additional training and expertise.

Adaptive Computing is a global software company headquartered in Naples, Florida, USA and has provided advanced applications and tools to the High-Performance Computing industry for over two decades with hundreds of deployments on the world's largest computing installations. Adaptive Computing products and services are used by organizations of all sizes across a broad range of industries such as High-Tech Manufacturing, Aerospace Engineering, Defense, Universities and Research Labs, Life Sciences, Oil and Gas Exploration, Financial Services, and Data Analytics. Some of the world's largest clusters, grids, and data centers use Adaptive's Moab HPC Suite and the HPC Cloud On-Demand Data Center to maximize performance and value, simplify management, and create a competitive advantage.

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