

## Features:

- OCI, AWS, Azure, Google Cloud, and OTC are preconfigured and built in to the GUI (and CLI) with deployment-ready access
- Control cloud costs by automatically shutting down nodes when not in use. (Automated deployment and release of nodes)
- Comprehensive management across the following environments:
  - Public Cloud
  - Private Cloud
  - Corporate Cloud
  - Containers
  - Virtualized
  - Edge
- Spin up an unlimited number of nodes in the same amount of time as it takes to spin up one
- Configure stacks, run test jobs, run custom jobs, run jobs on any major CSP and view job output from a single interface
- Shared Clusters: Collaborate and share clusters across multiple users with only one set of cloud credentials
- Enhanced file management and job output
- Access specialized resources such as GPUs and large instance sizes
- Move across clouds easily and switch between them

## Overview

Adaptive Computing's HPC Cloud On-Demand Data Center™ (ODDC) is a scalable cloud systems management solution that gives organizations the ability to leverage public Cloud Service Provider (CSP) resources, without vendor lock-in to any single CSP.

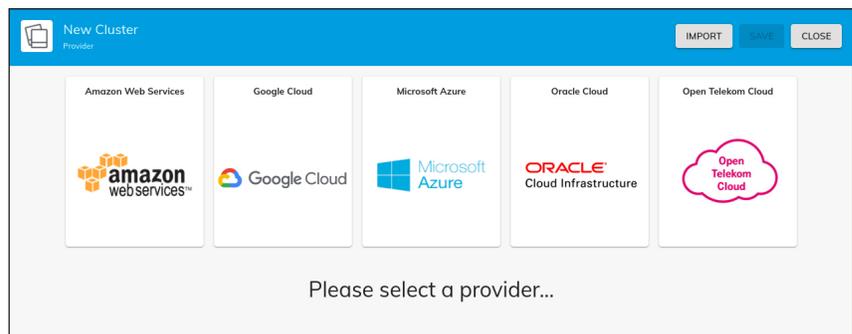
The HPC Cloud On-Demand Data Center is used to spin up temporary or persistent data center infrastructure resources quickly, inexpensively, and on-demand. This enterprise-grade solution can be used to automatically deploy and build clusters in the Cloud, automatically run applications on those clusters, and then terminate the cloud resources, assuring that you only pay for what is being used.

The HPC Cloud On-Demand Data Center provides ways to run HPC workloads in the Cloud as an abstraction layer on top of CSP management consoles. Deploying cloud-hosted resources on any of the major Cloud Service Providers becomes much easier than working directly through a CSP console because cloud access is preconfigured and built into the user-friendly interface GUI (and CLI) of the HPC Cloud On-Demand Data Center.

This preconfigured CSP access eliminates the complexities of running workloads in the Cloud for users without cloud expertise. OCI, AWS, Google Cloud, Azure, and OTC are available through the intuitive interface, making HPC in the Cloud available to non-technical users.

The HPC Cloud On-Demand Data Center acts as an operating system for the Cloud. Just like an operating system is an abstraction layer for a hardware platform, the ODDC is an abstraction layer for cloud platforms. This simple, yet powerful cloud management solution enables seamless access to all compute resources, whether on-premise or in the Cloud.

Organizations developing in-house cloud enablement methods often run into limitations and setbacks. The ODDC is uniquely valuable in that it provides an easy avenue for cloud adoption for users without cloud knowledge. Cloud resources are intelligently managed and automated so that they can be used effectively and efficiently.



*Preconfigured connections to the major CSPs are built into the multi-cloud interface.*

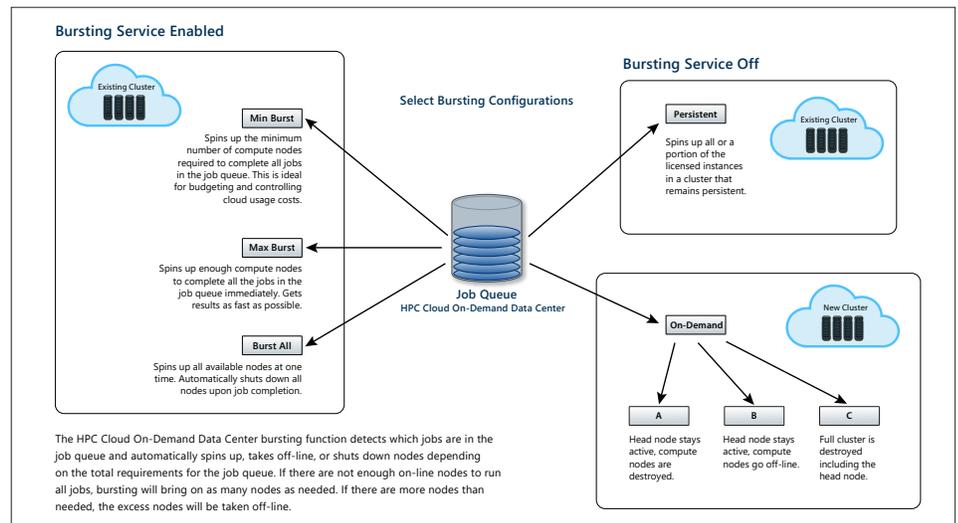
## Features:

- Multi-cloud: dynamically expand your on-premise cluster to any Cloud Service Provider
- Works with any job scheduler or without a workload scheduler
- Manage homogeneous and heterogeneous clusters
- Cloud bursting configurations bring the fastest time to results at the lowest possible cost
- Administrators can set up user accounts allowing for cloud cost control and access control
- Flexible pricing and licensing models
- Using the ODDC destroy cluster command assures there are no orphan artifacts left running on the Cloud Service Provider(s)
- Cloud multi-node jobs are allocated on optimal resources without administrators micromanaging the process
- From a “single pane of glass” (interface) you can deploy and manage clusters in multiple CSPs or multiple regions within a single Cloud Service Provider
- Disaster Recovery: if you have an incident where your on-premise system goes down or a CSP has an outage, new infrastructure can be spun up in another CSP or a different region within the same CSP with scripts and images that were built previously and saved for your workloads

## Cloud Bursting

The HPC Cloud On-Demand Data Center enables on-premise systems to ‘burst’ workload backlog to an external public cloud when resources are not sufficient to accommodate peaks in demand. All required workload resources are automatically deployed as needed. When the workload backlog has completed, the cloud resources are automatically deprovisioned from the Cloud Service Provider.

This added flexibility enables admins to expand their on-premise cluster and dynamically utilize the scalability of the Cloud. The ODDC includes all the necessary tools to facilitate ‘bursting’ workloads and applications to the Cloud to extend on-premise resources. Cloud Bursting can be set up to deploy applications dynamically or on-demand.



*Bursting Configurations that bring the fastest time to results at the lowest possible cost*

## Automated Infrastructure Provisioning

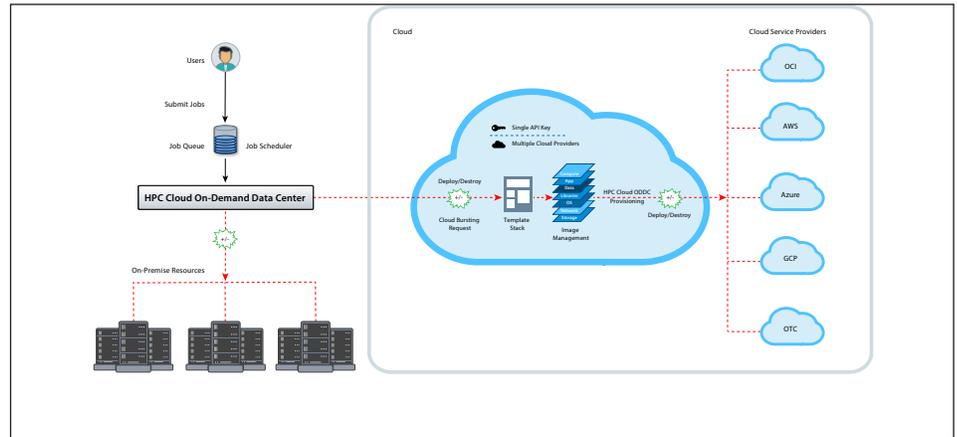
Automatically deploy and build clusters in the Cloud, avoiding an up-front investment in an expensive hardware purchase and installation. Expand your data center without requiring additional floor space, air conditioning, power, or personnel. Use scripted components to automate and reduce manual processes. Automatically take unused capacity offline and save on cloud usage costs.

## Application Deployment and Portability

Deliver your HPC applications to any private or public cloud as well as from one Cloud Service Provider to another. The HPC Cloud On-Demand Data Center solution is ‘application agnostic’ enabling the graceful migration of existing or external applications to cloud-based resources. Or, you can run engineering simulations, physics models, etc., strictly in the Cloud. Gain access to unique resources for specialized workloads or make applications portable using containerization with Docker, Singularity and Kubernetes. Though containers are fully supported in ODDC, it is not required that you use containers.

## Benefits:

- Teams can automatically deploy and build clusters in the Cloud, automatically run applications on those clusters, and then terminate the cloud resources on a daily, weekly, or even hourly basis
- Reduce expenses by spreading your tech infrastructure across multiple CSPs and/or on-premise infrastructure based on cost of delivery
- Optimize productivity by taking advantage of automation
- Improve management by providing controls for one-off projects with contractors
- Provide a single point of control for provisioning and deprovisioning infrastructure resources
- Easy to use, manage, and configure
- Extend your on-premise resources to the Cloud to meet peak demand or eliminate backlog
- Create new HPC clusters on any CSP
- Reduce the costs of allocating temporary resources or making additional hardware purchases
- Get true scalability and elasticity
- Increase the capacity of your on-premise data center, access advanced computing power, and gain virtually unlimited capacity
- Prevent CSP vendor lock-in



The ODDC gives immediate access to all on-premise as well as cloud compute resources.

## Deliver Hybrid IT or A Pure Cloud Solution

Balance workloads between on-premise and cloud infrastructures. Deliver Hybrid IT by spreading your tech infrastructure across different Cloud Service Providers and on-premise infrastructure.

- **As a Hybrid Solution:** Run your on-premise workload backlog in the Cloud using the ODDC. Organizations can achieve a true 'hybrid cloud' experience and expand their on-premise resources by 'bursting' their workload backlog to the Cloud, eliminating long wait times in job queues and providing a better end-user experience.
- **As a Pure Cloud Solution:** Run multiple application types (including new requirements, such as for AI, ML, etc.) in the Cloud using the HPC Cloud On-Demand Data Center.

## Data Anywhere

The ODDC utilizes a strategy called "Data Anywhere". This means your input and/or output data can be located anywhere; either on-premise, in one or more Cloud Service Providers, or in a structured or unstructured file system. It does not matter where your data or file systems reside. Your data can be easily managed by using the ODDC scripting language. VPN protocols are common for data transfer, however, a leased line or a high-speed data connection can be used to increase data transfer throughput.

## Auto-Deploy CI/CD Pipelines

The HPC Cloud On-Demand Data Center improves CI/CD by enabling automation at any part of the pipeline and can be enabled quickly to handle a new pipeline with ease. This is especially useful for automation testing. Developers can deploy different SDLC toolchain combinations using the ODDC solution.

## Cost-Effective Automation Testing

The ODDC solution allows developers to test on a large variety of high-performance machines and specific environments, saving organizations time and money by not using expensive resources in-house for testing. The ODDC shuts down active cloud resources when not in use, preventing escalating and unnecessary cloud costs. When large teams of developers are using cloud resources for testing, this can add up to a significant cost savings.

### Benefits:

- Solve cloud migration challenges
- Intelligently manage cloud resources so that they can be used cost-effectively and efficiently
- Increase productivity and accelerate time to results while reducing Cap Ex costs
- Scalability and the immediate availability of resources; instantly launch or scale up infrastructure
- Highly flexible and customizable
- Users without technical knowledge can set up temporary or persistent cloud resources quickly
- Schedule and orchestrate both HPC and Enterprise workloads
- Embedded Application: The solution can be embedded into an existing application interface to run the application in the Cloud
- Studies have shown that by matching the instance type to the workload requirements, there is a 65% reduction in workload time to-complete using the ODDC
- Save frequently used job scripts to quickly reuse when needed

### Composable Infrastructure

With the HPC Cloud On-Demand Data Center, users can select infrastructure resources in the Cloud on a case-by-case basis to meet specific workload requirements. As long as they are offered as stand alone components within the Cloud Service Provider, custom infrastructure elements such as CPUs, GPUs, size of memory, storage and type of network can be selected individually. Choosing these items separately allows for unlimited infrastructure configuration options. This is ideal for matching cloud resources to specific requirements of certain workloads.

### Stacks and Deployment Images

The HPC Cloud On-Demand Data Center permits users to define stack components that allow applications to be run in the Cloud. The ODDC takes those definitions and automatically builds the deployment image needed to run the workload in the Cloud. The same job script can be used on premise and in the Cloud. Using scripted components to automate manual processes enables HPC capabilities that rapidly scale up (and down) without the need for a lot of IT intervention.

### 5 Key Components of the HPC Cloud On-Demand Data Center

- **Application:** Deliver your applications to any private or public cloud. Make applications completely portable between on premise and cloud infrastructures as well as from one Cloud to another. Gracefully migrate HPC applications and models to cloud-based resources. Or, run engineering simulations, physics models, etc., strictly in the Cloud.
- **Data:** The 'data anywhere' function pulls data from external sources or includes it in the deployment stack. Share data between compute nodes via NFS, BeeGFS, or other file systems.
- **Compute and Memory:** Match compute to specific workload requirements and select instance types, memory size, operating systems, network, storage, etc., prior to running your workloads. Accelerate visualization of complex data models and structures using specialized resources such as NVIDIA GPUs.
- **Network:** InfiniBand connectivity is supported between all nodes to minimize latency. Fast interconnection network configurations include High Bandwidth, Low Latency Cluster Networking for the highest level of performance for HPC workloads in the Cloud.
- **Storage:** Scalable and independent storage is available through the Cloud Service Providers. Gain accessibility to high-speed cloud storage and fast parallel file system performance. Share data between compute nodes.

### Cost Control

Automatically deprovisioning cloud resources when no longer needed reduces public cloud usage hours by 40-50%, therefore saving cloud costs. Use the Cost Comparison Guide below to calculate your own potential savings.

- **Cost Comparison Guide:** <https://adaptivecomputing.com/cherry-services/cost-comparison-persistent-vs-on-demand-data-center/>

#### About Adaptive Computing

Adaptive Computing is a trusted leader in High-Performance Computing and Enterprise Software, providing advanced applications and tools to some of the world's largest computing installations. Our experience is earned from more than a decade of solving IT management challenges in the most scale-intensive and complex environments in the world and as pioneers in the high-performance computing (HPC) and cloud computing revolutions. Our mission is to help organizations to enhance performance, improve efficiency and reduce costs.

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