
o-scar Documentation

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OSCAR-logo

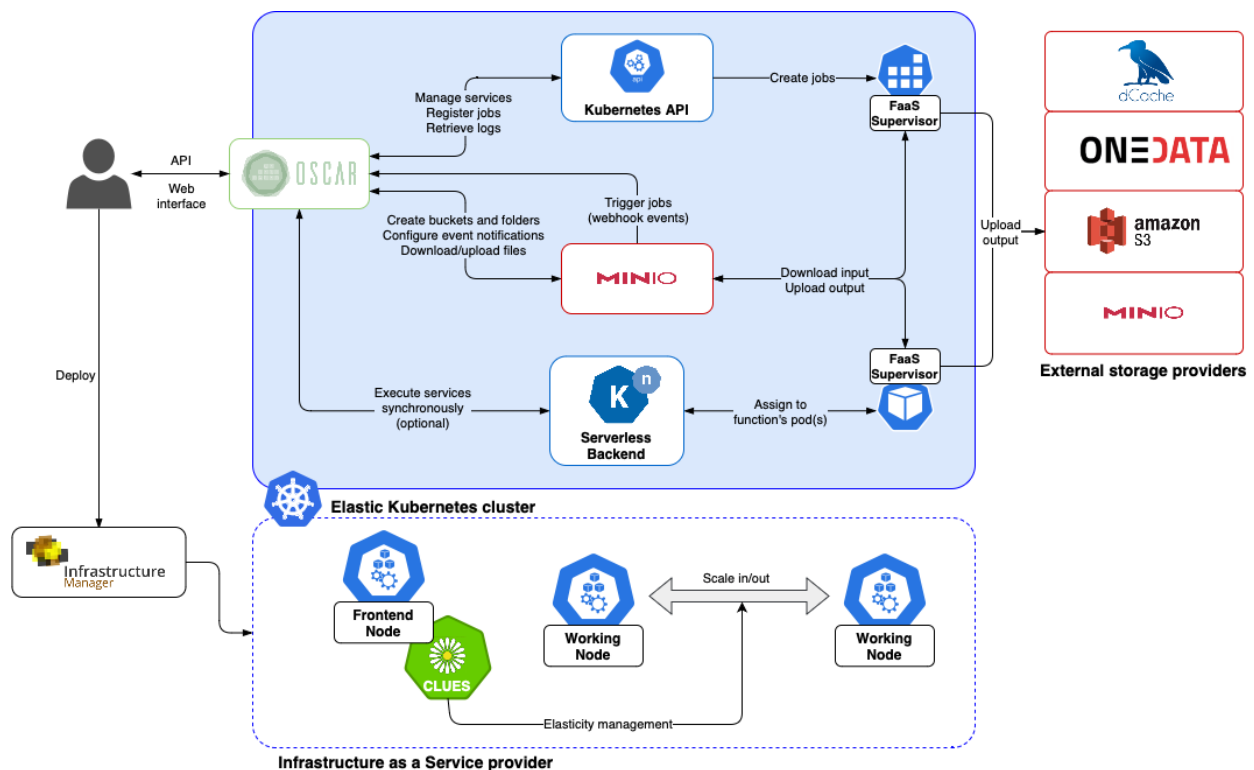
OSCAR is an open-source platform to support the event-driven serverless computing model for data-processing applications. It can be automatically deployed on multi-Clouds, and even on low-powered devices. It represents the porting to an on-premises scenario of the [SCAR framework](#), which supports a [High Throughput Computing Programming Model](#) to create highly-parallel event-driven data-processing serverless applications that execute on customized runtime environments provided by Docker containers run on AWS Lambda.

CHAPTER 1

Goal

Users upload files to a bucket and this automatically triggers the execution of parallel invocations to a function responsible for processing each file. Output files are delivered into an output bucket for the convenience of the user. Highly scalable HTTP-based endpoints can also be offered to expose a generic application. A user-provided shell script is executed inside the container run from the user-defined Docker image to achieve the right execution environment for the application.

Components



oscar

arch

OSCAR runs on an elastic **Kubernetes** cluster that is deployed using:

- **IM**, an open-source virtual infrastructure provisioning tool for multi-Clouds.

The following components are deployed inside the Kubernetes cluster in order to support the OSCAR platform:

- **CLUES**, an elasticity manager that horizontally scales in and out the number of nodes of the Kubernetes cluster according to the workload.

- [MinIO](#), a high-performance distributed object storage server that provides an API compatible with S3.
- [Knative](#), a serverless framework to serve container-based applications for synchronous invocations (default Serverless Backend).
- [OSCAR Manager](#), the main API, responsible for the management of the services and the integration of the different components.
- [OSCAR UI](#), an easy-to-use web-based graphical user interface aimed at end users.

As external storage providers, the following services can be used:

- External [MinIO](#) servers, which may be in clusters other than the platform.
- Amazon [S3](#), AWS's object storage service that offers industry-leading scalability, data availability, security, and performance in the public Cloud.
- [Onedata](#), the global data access solution for science used in the [EGI Federated Cloud](#).
- Any storage provider that can be accessible through [WebDAV](#) protocol. An example of a storage provider supporting this protocol is [dCache](#), a storage middleware system capable of managing the storage and exchange of large data quantities.

***Note:** All of the mentioned storage providers can be used as output, but only MinIO can be used as input.*

An OSCAR cluster can be easily deployed via the [IM Dashboard](#) on any major public and on-premises Cloud provider, including the EGI Federated Cloud.

An OSCAR cluster can be accessed via its [REST API](#), the [web-based [UI](#) and the command-line interface provided by [oscar-cli](#).