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CSCALE OpenEO Deployment

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The Openeo project, is a free and opensource tool to analyze and process satellite imagery. Openeo provides an API that can be used by the likes of R, python and JavaScript for interaction with the backend. To support this software the INCD infrastructure was prepared to both store and compute the data it will be fed in the context of the C-Scale project.
INCD has deployed a Kubernetes cluster on top of an OpenStack cluster to support the project use cases. The Kubernetes cluster is composed of 5 nodes with 16 cores and 32 GB of RAM. In the first approach a PVC of 12TB was created for the storage of data from the Aqua Monitor use case, this was later changed to a S3 bucket mounted on every single compute node, allowing for the sharing of data both within the cluster and the outside world. A STAC Server was also deployed allowing the download of satellite imagery products directly to a S3 Bucket which is used by the openEO pod that runs in the cluster. Code in Python was developed to register the metadata of the downloaded products into the resto catalog stored at CESNET. In this way all the data that is stored in the S3 bucket at INCD can be accessible, findable and reusable by searching on the resto catalog at CESNET. The users that interact with this deployment at INCD do so by using a jupyter notebook that connects to the endpoint, collects all the data needed for the computation and submits a job to a spark endpoint that is available within our infrastructure. With this presentation, we aim to show the INCD OpenEO backend architecture, implementation and potential for the development of further EO products.

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