



Serverless Computing with OpenNebula

Running containers as Firecracker microVMs at the Edge



About Me



Christian González

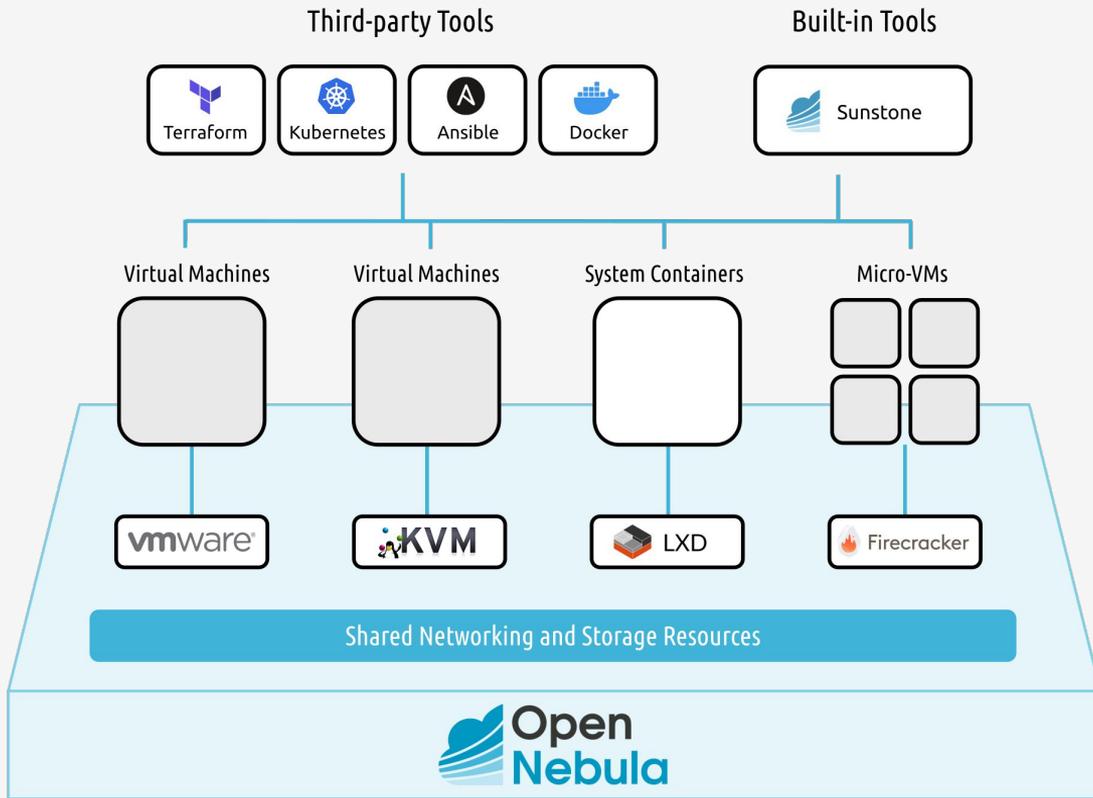
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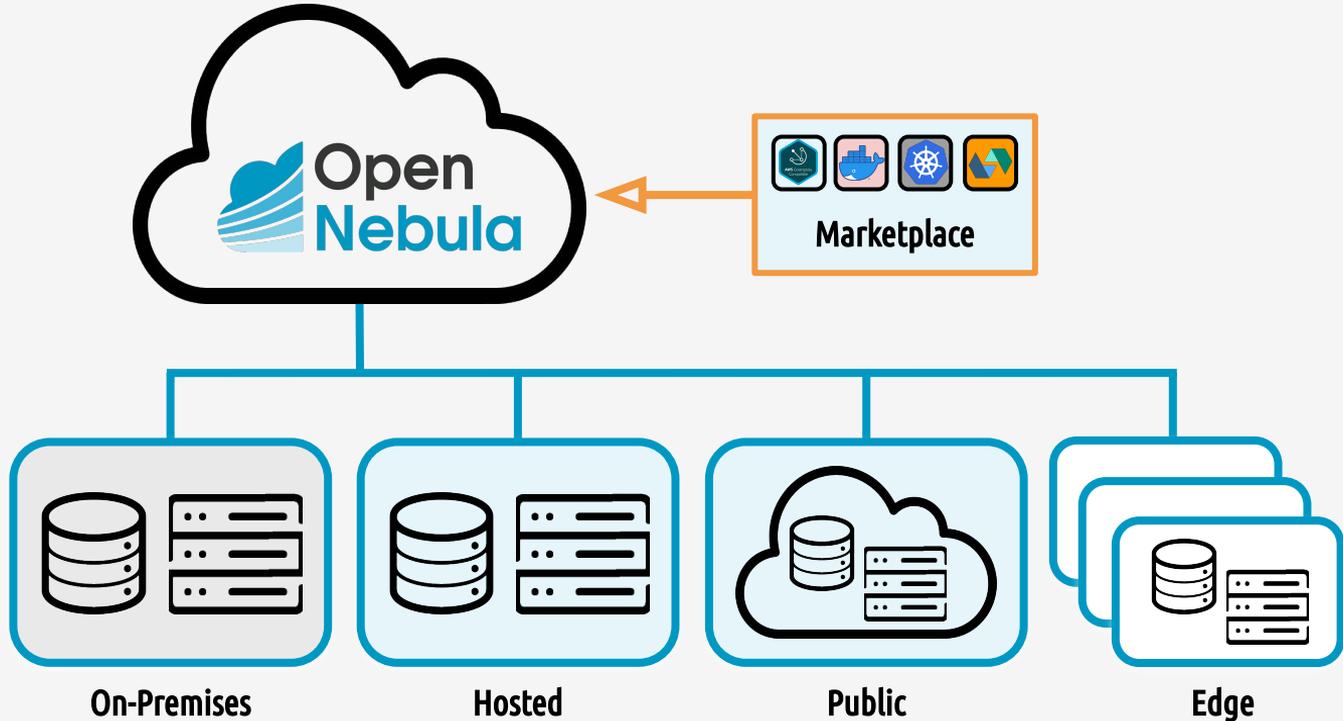
What is OpenNebula?

The open source Cloud Management Platform developed for the Enterprise 🚀



How is OpenNebula Being Used?

Say *hello* to our new True Hybrid Cloud Architecture



<https://opennebula.io/true-hybrid>

The OpenNebula Way

Getting the most out of Public Cloud & Bare-Metal Providers at the Edge

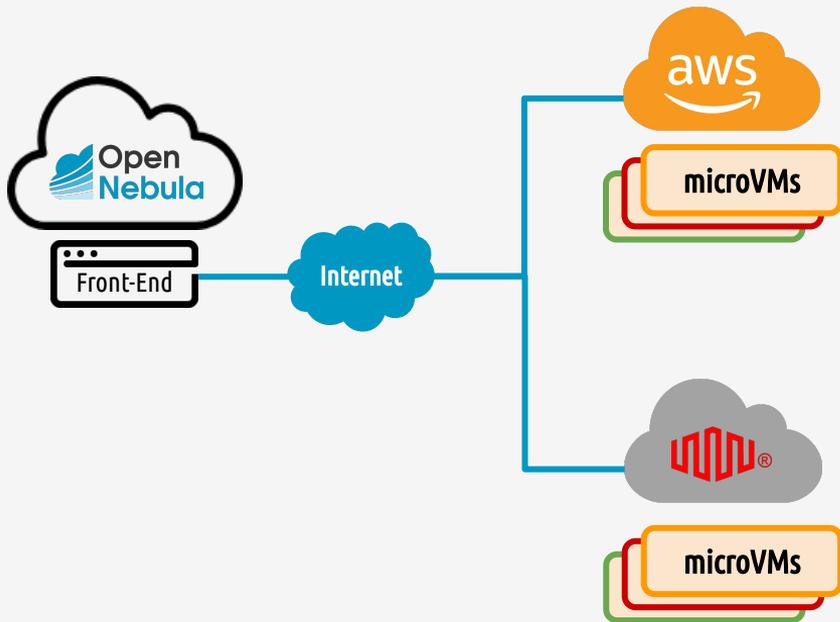
Edge

Easy and quickly cloud provision on the edge with main **bare metal** cloud providers.

+

Serverless

Fast and secure serverless load execution with Firecracker **microVMs** based on **Docker images**.





ONEedge.io

This work has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement ONEedge 880412

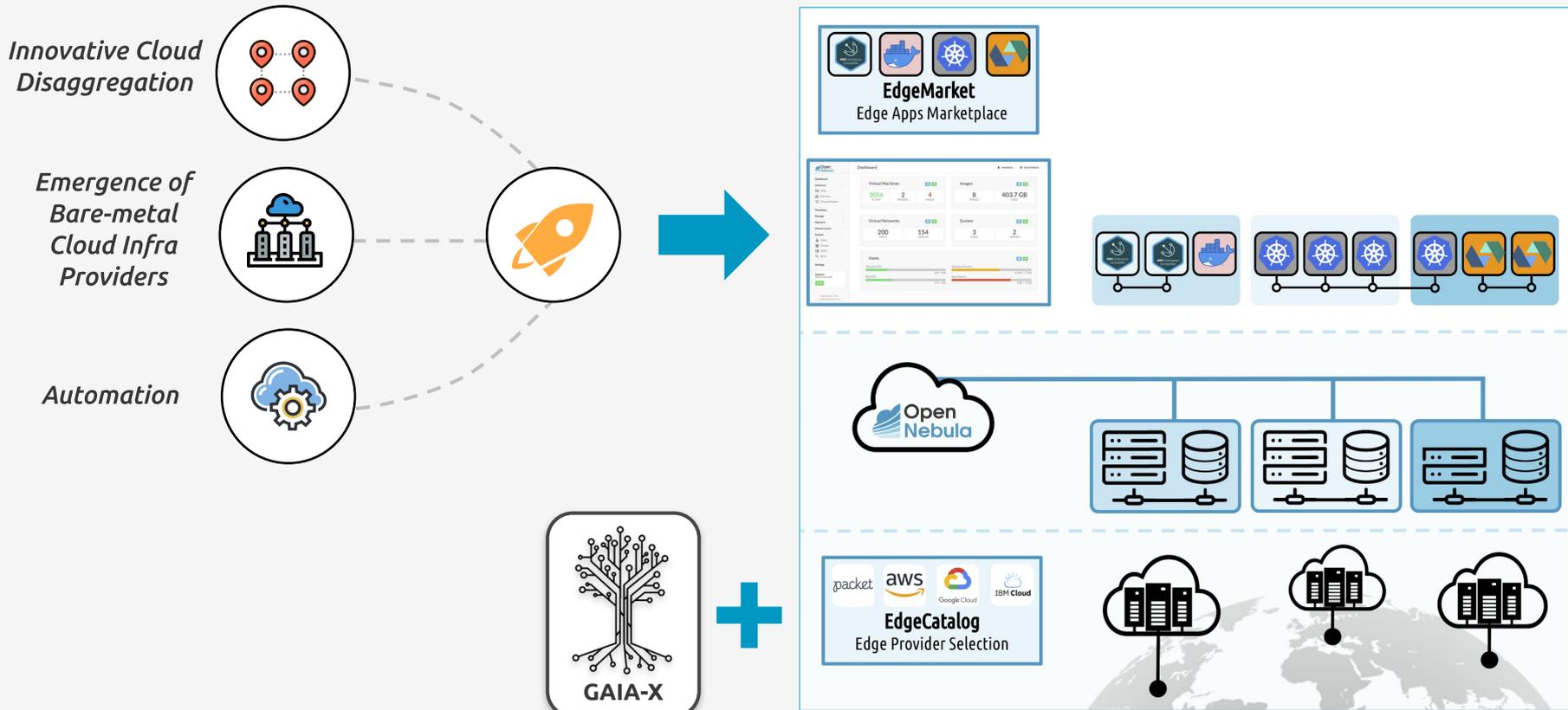
Next Generation Edge Cloud Platform

Build & Manage an On-Demand Edge Cloud
Using Resources from Bare-Metal Providers



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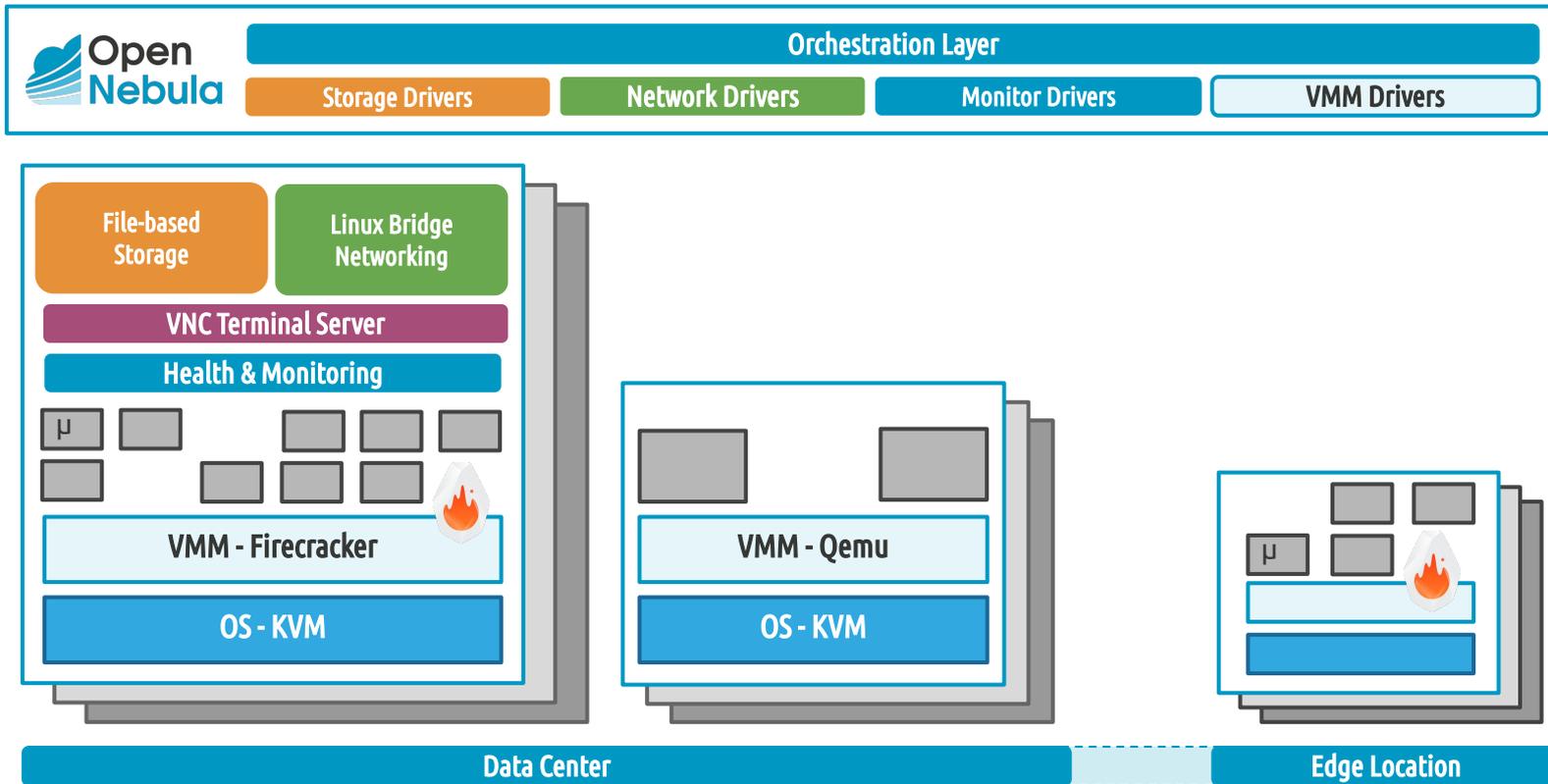
Expanding Open Source Cloud Computing to the Edge





AWS Firecracker

Secure and Fast MicroVMs for Container Orchestration



Docker Hub

Secure and Fast MicroVMs for Container Orchestration





Apps

oneadmin OpenNebula

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233 TOTAL

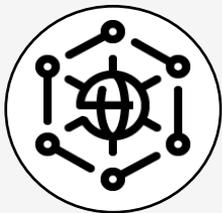
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Sign in

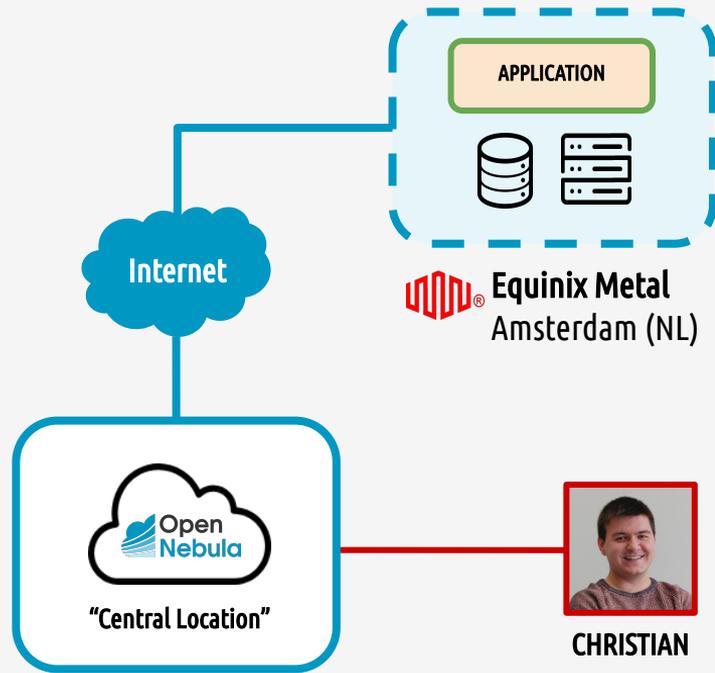
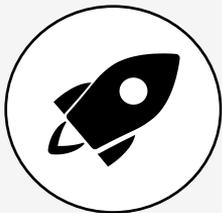
Today's Demo

A View From the Eagle's Eye

Provision Edge Resources



Deploy Serverless Load



Provisioning Edge Resources

At the Edge

01

YAML

Define provision

Define the infrastructure to be allocated and the virtual resources

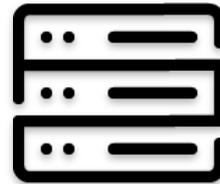
02



Validate provision

Validate YAML file

03



Provision resources

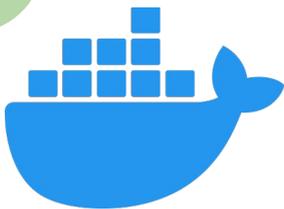
Run the provision to allocate every resource defined in the YAML file

Deploying Serverless Loads

Run Any Application, Anywhere

Provision
YAML

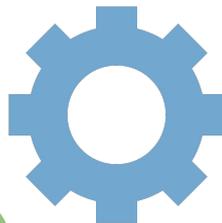
01



Step1

Import an official image
from Docker Hub

02



Step2

Customize your
microVM template

03



Step3

Run it wherever and
whenever you need!

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Future Improvements in OpenNebula 6.0

-  **Improve UX** for application deployment.
-  **Make it easier to incorporate new infrastructure providers.**
-  **Add user-friendly WebUI** for provisioning tool.
-  **Quick deployment of lightweight K8s clusters at the Edge.**



K3S

MicroK8s

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Use Cases

Low-latency Gaming

Fully automated deployment of gaming servers on
17 edge locations in 25 minutes



<https://opennebula.org/opennebula-a-lightning-fast-video-gaming-edge-use-case-2/>

OTT & Live Broadcasting

Build live and on-demand video workflows on a
geo-distributed cloud to meet latency,
bandwidth and regulatory requirements



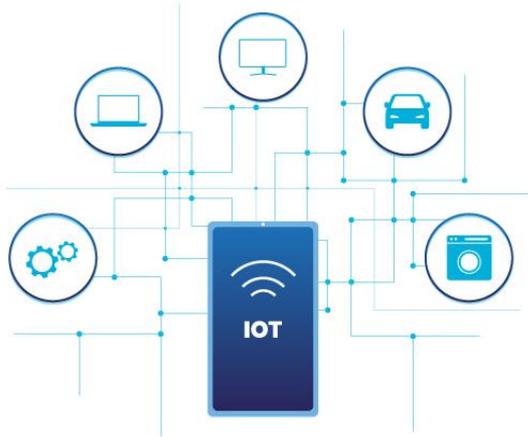
<https://opennebula.io/an-elastic-private-cloud-open-nebulas-solution-for-media-services/>

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Use Cases

Internet of Things

Leverage the IoT features of “AWS IoT Greengrass” to create a distributed Greengrass Edge Cloud



<https://opennebula.io/automatic-deployment-of-aws-iot-greengrass-at-the-edge/>

Telecom Edge Cloud

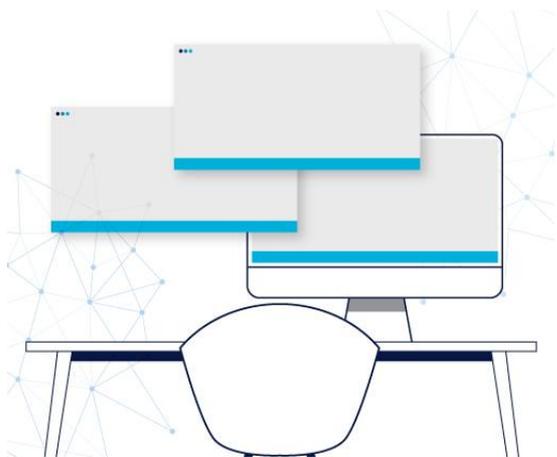
OneEdge as a core component of edge computing
CORD (Central Office Re-architected as a Data center)



<https://www.telefonica.com/documents/737979/144981357/whitepaper-telefonica-opa-mec-feb-2019.pdf>

Desktop Virtualization

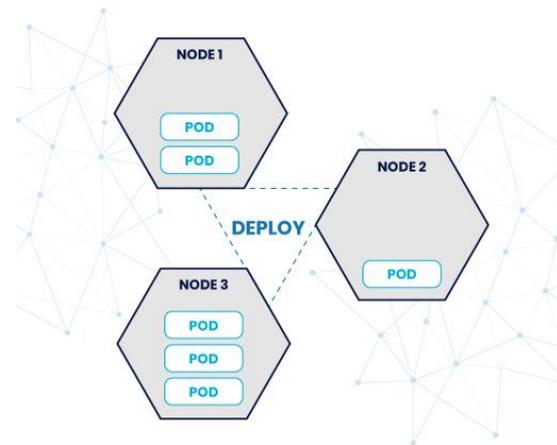
Deploy a pay-as-you-go VDI solution that is compliant with local data protection regulations



<https://opennebula.io/opennebula-for-vdi-at-the-edge/>

Kubernetes Deployment

Configure and manage multiple Kubernetes clusters on the edge for the orchestration of containers



<https://opennebula.io/using-opennebula-and-kubernetes-to-deploy-multiplayer-game-servers-on-the-edge/>

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Give it a try!



Get Started with OpenNebula
for Edge Computing with miniONE

SCREENCAST



A Practical Introduction to
OpenNebula on the Edge with Docker

ARTICLE



Accelerate Edge Cloud Computing
with OpenNebula

WHITE PAPER



miniONE

Install a single-node LXD/KVM/FC Cloud

minione.opennebula.io



OpenNebula 5.12

Try “Firework”, our latest release!

opennebula.io/firework



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