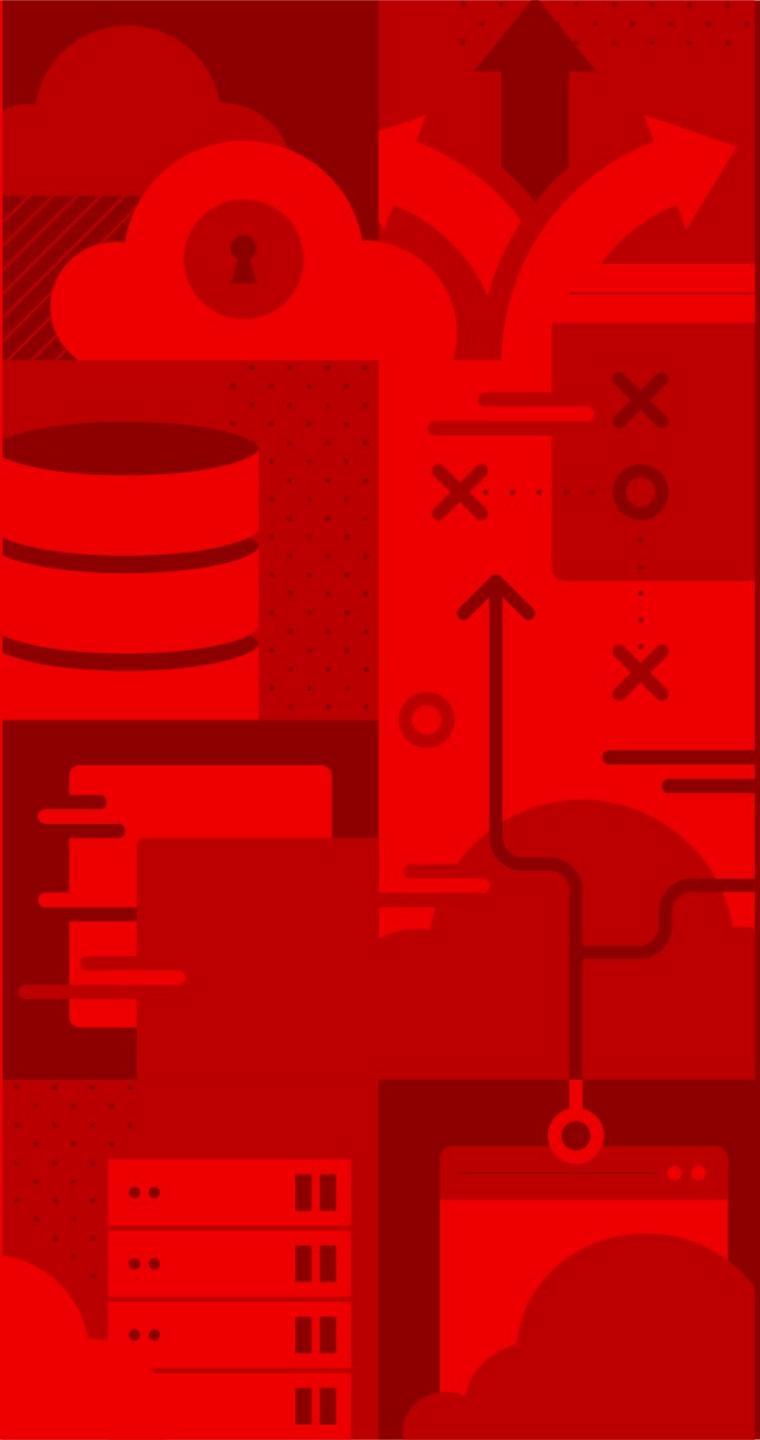


Unleash the Power of Kubernetes and Serverless Apps

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What is Kubernetes?

Imagine **Kubernetes** as a concierge of a busy hotel with countless rooms



Check-In

When a new guest arrives (**application**)

- Assign them a room (**container**)
- Ensure room is clean
(**container is in the desired state**)



Additional services

Provide additional services promptly (scaling, updates, resource allocation)

- Extra towels
(CPU and memory)
- Room Service
(Data Storage)



Key Management

Handle rooms' keys (**access** and **security**)



Check-Out

When a guest checks-out
(application no longer needed)

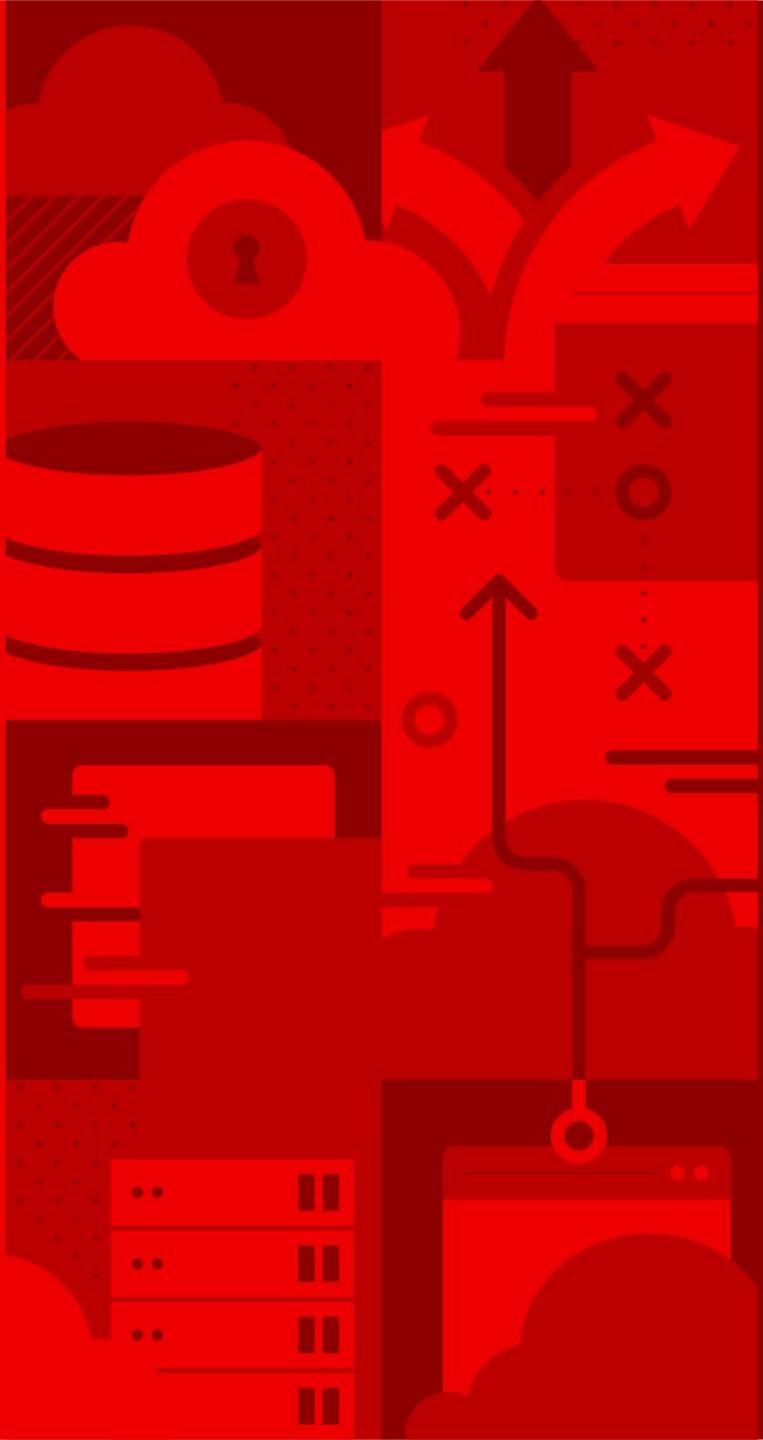
- Clean up the room (container)



Kubernetes is the *ultimate manager* (*orchestrator*)

Always at the service of the guests, guaranteeing their experience is seamless, efficient, and trouble-free





What are Kubernetes components?

Suite (**Pod**)

A group of rooms that are connected together and share some resources, such as a bathroom or a kitchenette



Concierge's directory (**Services**)

Allows guests (applications) to discover and communicate with each other



Ensure room availability (**ReplicaSet**)

If more guests (containers) want to stay in a particular type of suite (Pod), make sure there are identical suites available to accommodate the demand



Hotel's management system (**Deployment**)

Ensures that there is a specified number of suites available all times (**scaling**)



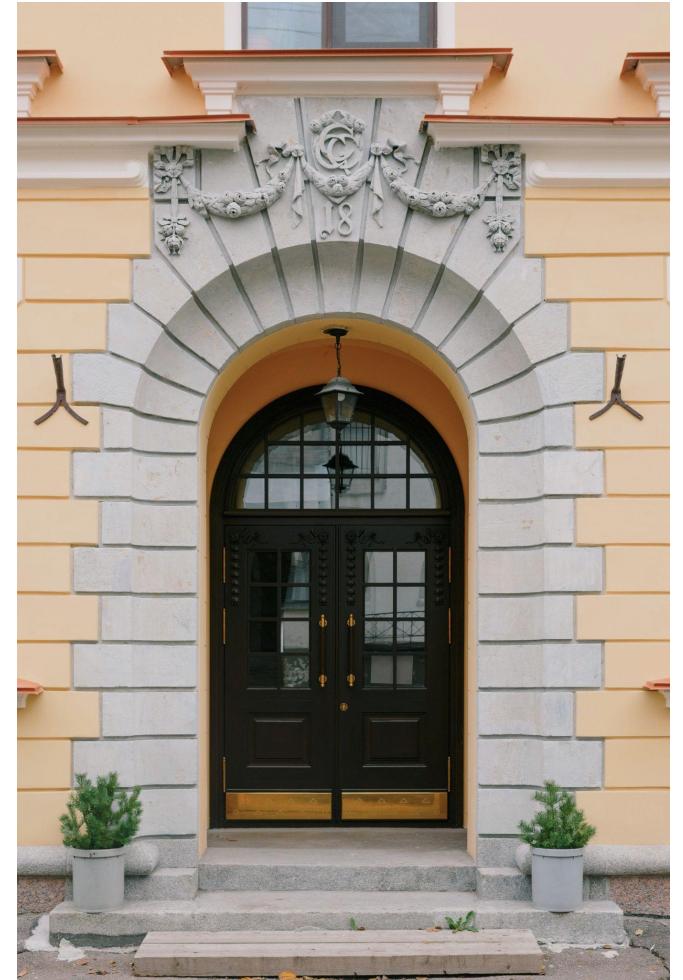
Reception (Load Balancers)

Takes requests from guests and directs them to the appropriate suite



Front door (**Ingress**)

A single point of entry for all guests.
Allows the hotel to track who is coming
and going



What is Kubernetes?

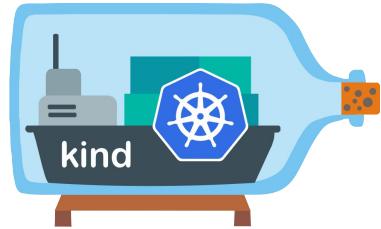


Kubernetes, often abbreviated as k8s, is an open-source container orchestration platform designed to automate deploying, scaling, and operating application containers

Local Kubernetes Development Environments



A single-node Kubernetes cluster that runs on your local machine



A tool for creating and running Kubernetes clusters locally



A lightweight Kubernetes distribution that is optimized for resource-constrained environments



A minimal Kubernetes distribution that is easy to install and manage

What is OpenShift?



OpenShift is built on top of Kubernetes and adds a number of features, making it easier to manage Kubernetes clusters and applications, and providing enterprise features and security

Local OpenShift Development Environments

```
>> crc start  
>> crc stop
```

OpenShift Local is a single-node OpenShift cluster that runs on your local machine



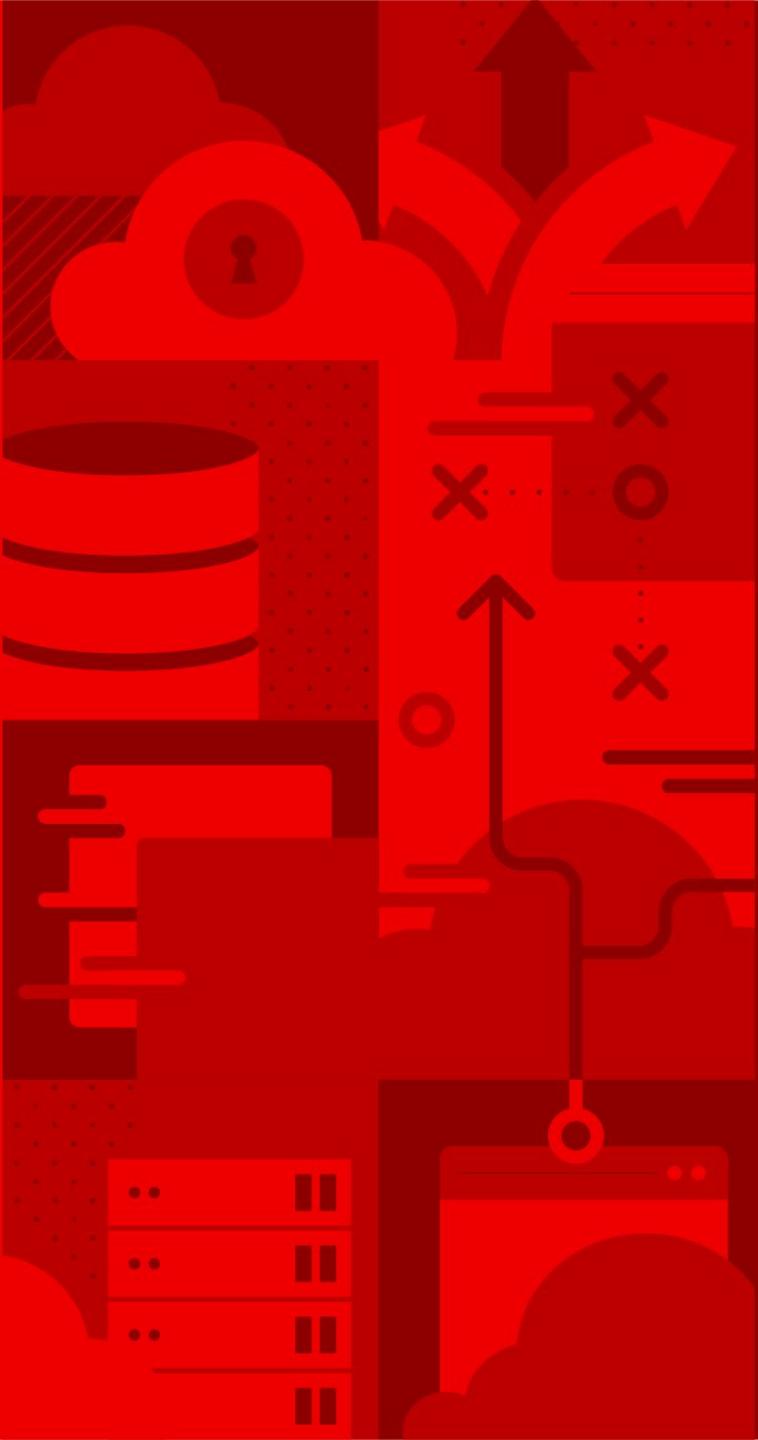
Developer Sandbox is a cloud-based OpenShift cluster that is provided by Red Hat



Demo time!

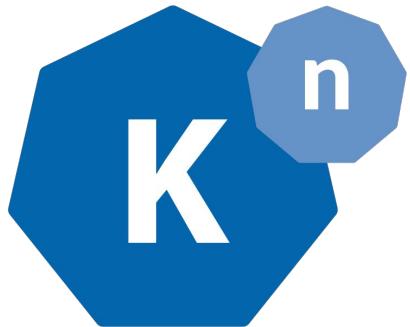


<https://github.com/gciavarrini/linuxday-2023>



Knative functions

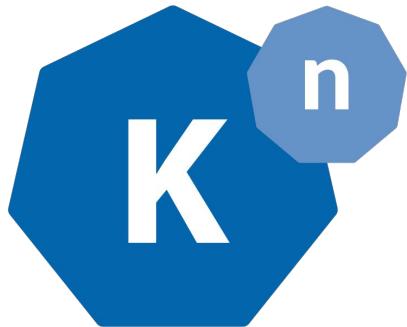
What is Knative?



Knative is an **open-source platform** for building, deploying, and managing serverless and event-driven workloads on Kubernetes

It provides a set of building blocks that make it easy to create and manage serverless functions, event-driven applications, and microservices

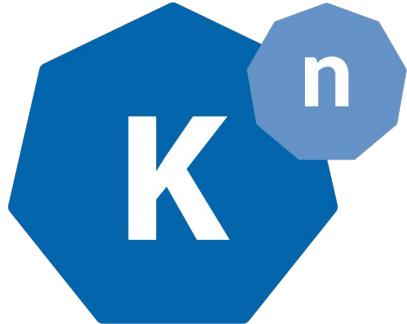
What are Knative components?



Knative Serving

Responsible for deploying and serving serverless applications

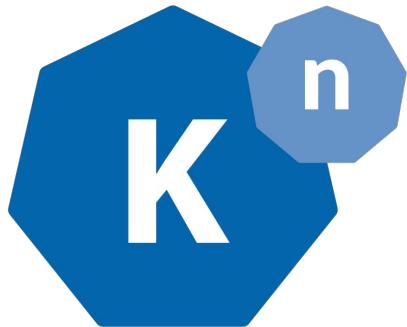
What are Knative components?



Knative Eventing

Provides a set of services that make it easy to produce, consume, and route events between different components of an application

What are Knative Functions?



Knative functions are **stateless** functions executed **on demand** in response to events.

Typically used to implement **small** and focused tasks:

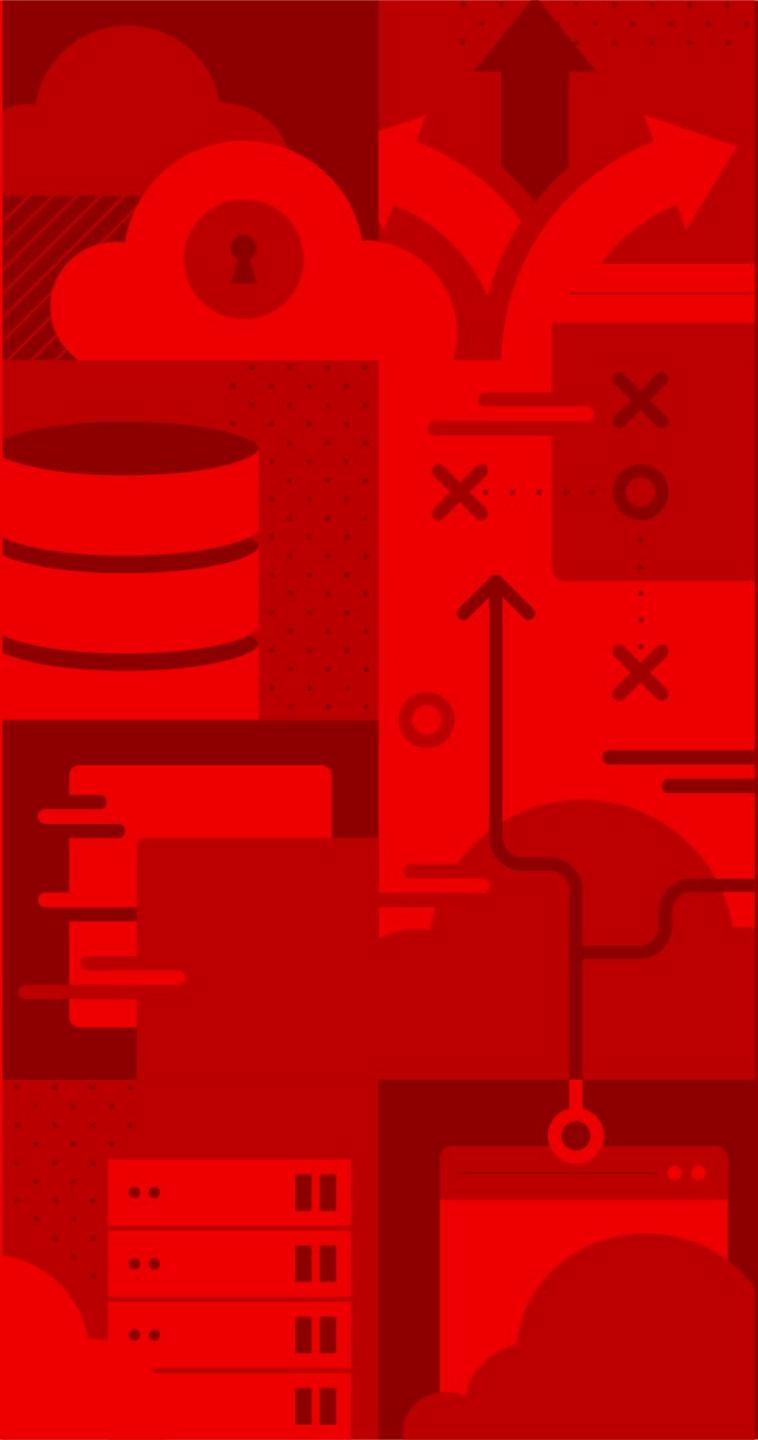
- ▶ processing data
- ▶ sending emails
- ▶ transforming images

What are Knative Functions?

Knative functions are:



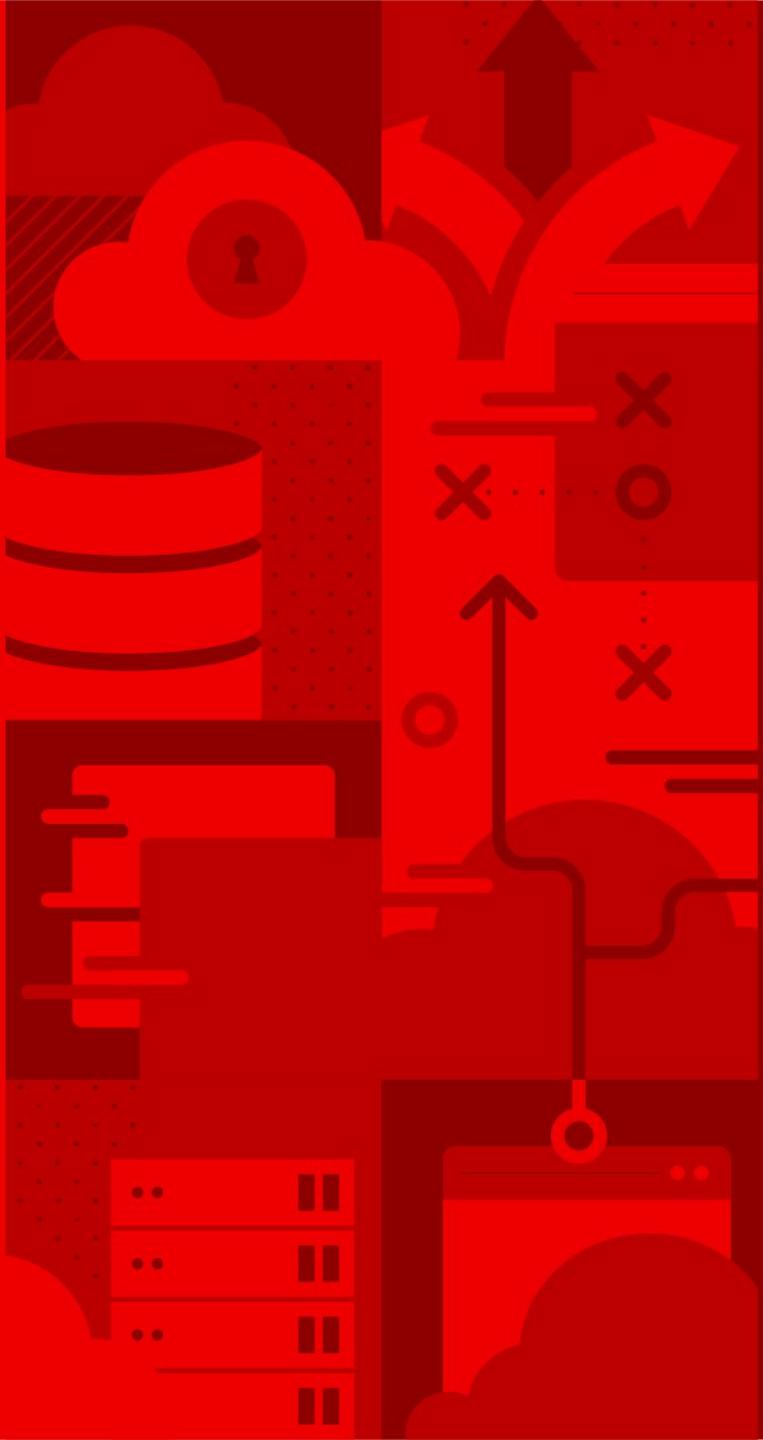
- ▶ **Scaled automatically based on demand**
You don't have to worry about managing capacity or scaling your functions
- ▶ **Highly reliable**
Knative retries failed functions and recovers from errors gracefully



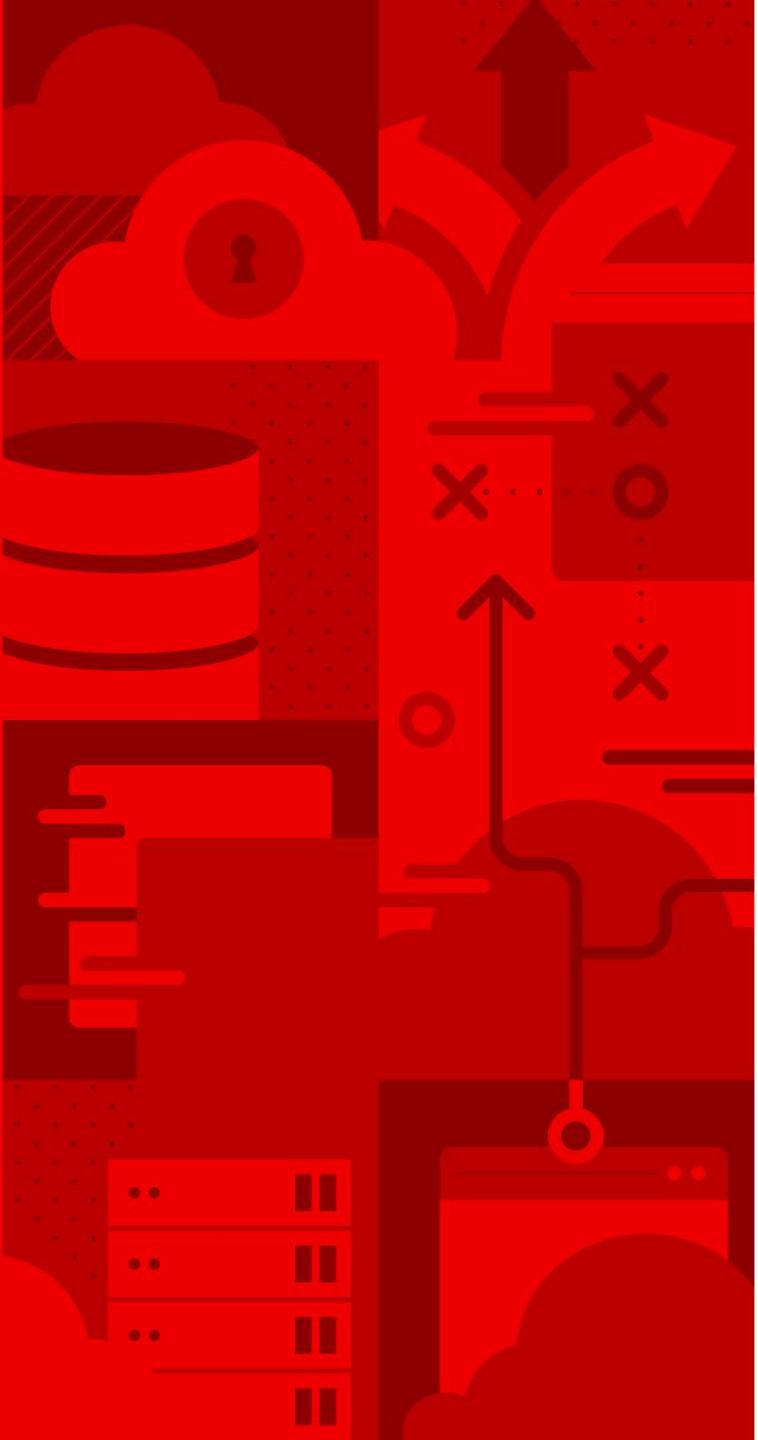
Demo time!



<https://github.com/gciavarrini/linuxday-2023>



Questions?



Thank you!

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