Containers & Orchestrators: the Elixir way

Verónica López
Code BEAM SF 2019

whoami

Senior Software Engineer (Red Hat, CoreOS…)

Distributed Systems, both real and Kubernetes

Industry and Academia

Go and Elixir

Before: Big Latin American systems: many constraints

Technology as a means of social progress

Agenda

Approach: insider's point of view.

➔ **What**
What really is going on with K8s (in terms of

➔ **Why**
Why it might make sense for you to use it (or not)

➔ **How**
Different approaches

Building K8s and its tools
vs using K8s and its tools

—

Many demos online

(ping me and I'll show you the way)

Focusing on the state of the tools and why and when it makes sense to add it to your Elixir workflow instead
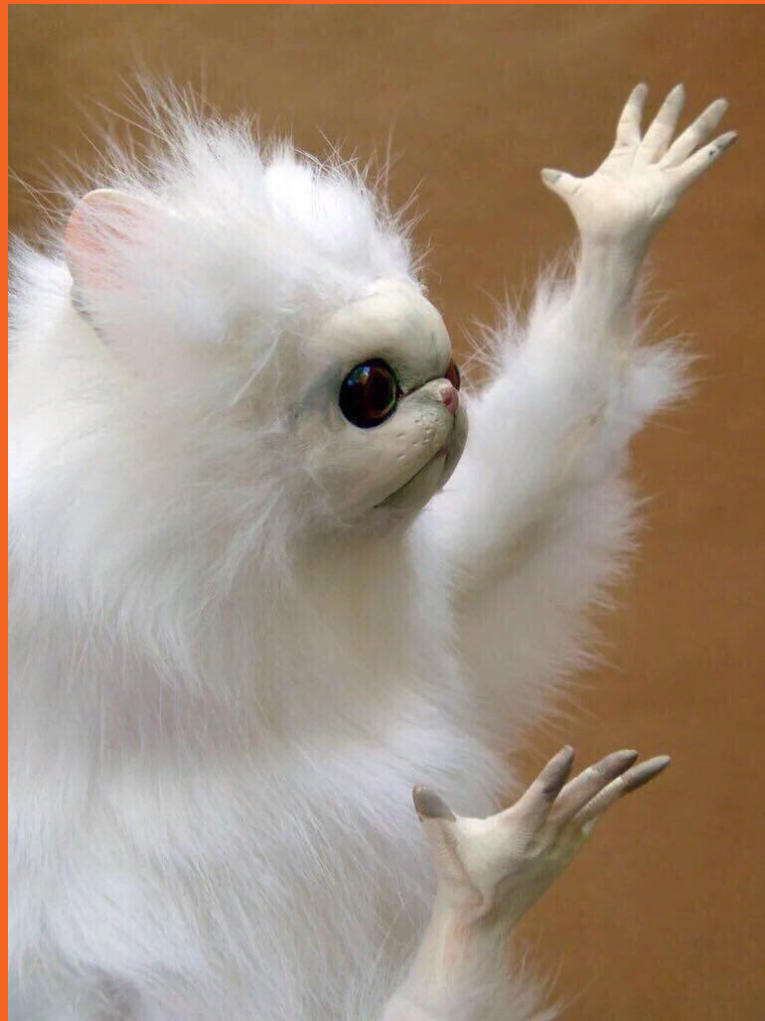
What k8s sells:

- Fault Tolerance

- Resilience

- Consistent upgrades

- High availability

- Isolation

What k8s is:

- Container orchestrator

- Deployment and Delivery tool

- Improves productivity

- huge API that you can use or customize as much as you want

—

Let's remember K8s is a product. People make money out of it.
Marketing strategy meets language deficiencies = side effects.

Concept vs. Reality

- In my experience, Kubernetes is not even heavily used the way it is advertised.

- More resilient and fault tolerant systems come as a consequence, but in practice, everybody uses it only for deployment and developer productivity goals, which even the fancy people of Elixir need.

- Spoiler alert: K8s is not as good as the BEAM to do this, for many reasons. Getting closer tho.

1. Testing

Testing distributed systems is hard.

-Trend: test in production (because testing implies recreating all the nodes AND interconnections)

- CI/CD: Gitlab (for example).

Story for illustration purposes only

2. Tooling

- Much more than systems that don't crash.

   - Operators: Automate anything. Kubernetes Native applications. There's a standard.

    - Make lives easier. Delivery and managing all the dependencies

     - Workflow: Build a release with Distillery, then send it to K8s

Welcome to OperatorHub.io

OperatorHub.io is a new home for the Kubernetes community to share Operators. Find an existing Operator or list your own today.

PROVIDER

- ☐ Amazon Web Services (1)
- ☐ CNCF (1)
- ☐ Couchbase (1)
- ☐ Crunchy Data Solutions (1)
- ☐ Jaeger (1)

Show 5 more

CAPABILITY LEVEL

- ☐ Basic Install (4)
- ☐ Seamless Upgrades (2)
- ☐ Full Lifecycle (6)

12 ITEMS

VIEW ▦ ⌄   SORT A-Z ⌄

AWS Service Operator
provided by Amazon Web Services, Inc.

The AWS Service Operator allows you to manage AWS

Couchbase Operator
provided by Couchbase

The Couchbase Autonomous Operator allows users to easily deploy, manage, and maint

etcd
provided by CNCF

Creates and maintain highly-available etcd clusters on Kubernetes

Jaeger Tracing
provided by Jaeger

Provides tracing, monitoring and troubleshooting microservices-based

Kubernetes Federation
provided by Red Hat, Inc

Gain Hybrid Cloud capabilities between your clusters with Kubernetes Federation.

MongoDB
provided by MongoDB, Inc

The MongoDB Enterprise Kubernetes Operator enables

Percona Xtradb Cluster Operator
provided by Percona

Percona MySQL Operator

PlanetScale Operator
provided by PlanetScale

The Vitess Operator deploys and manages instances of

PostgreSQL Enterprise
provided by Crunchy Data Solutions, Inc.

PostgreSQL is a powerful, open

Prometheus Operator
provided by Red Hat

The Prometheus Operator for Kubernetes provides easy

Thank you!

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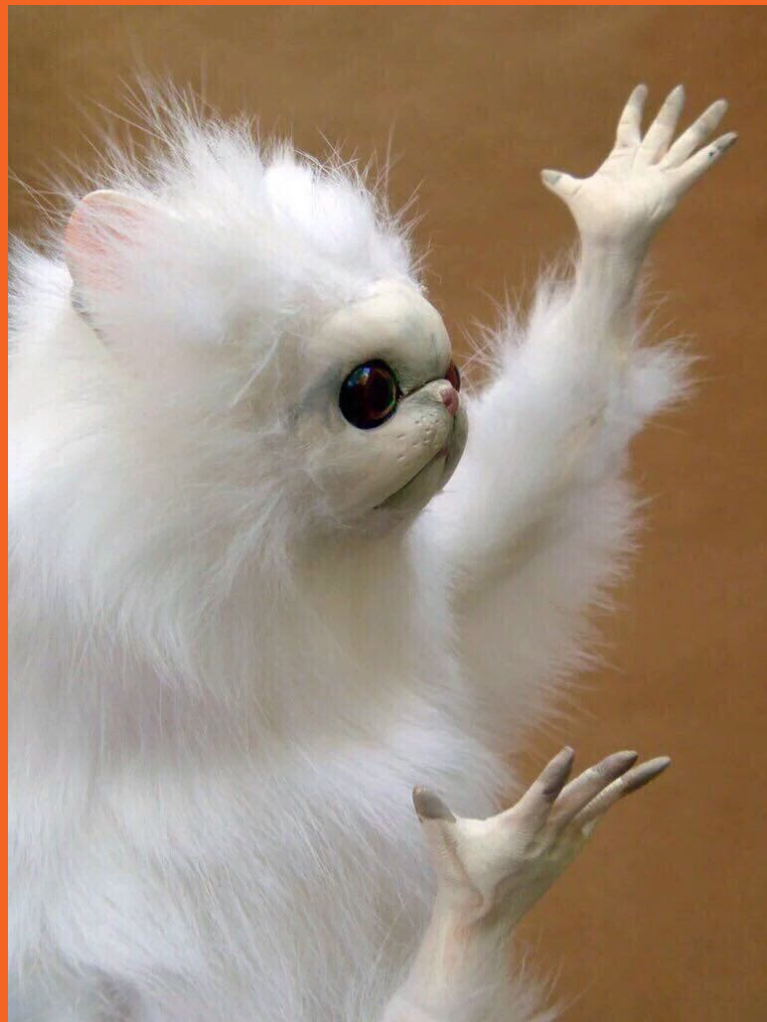
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