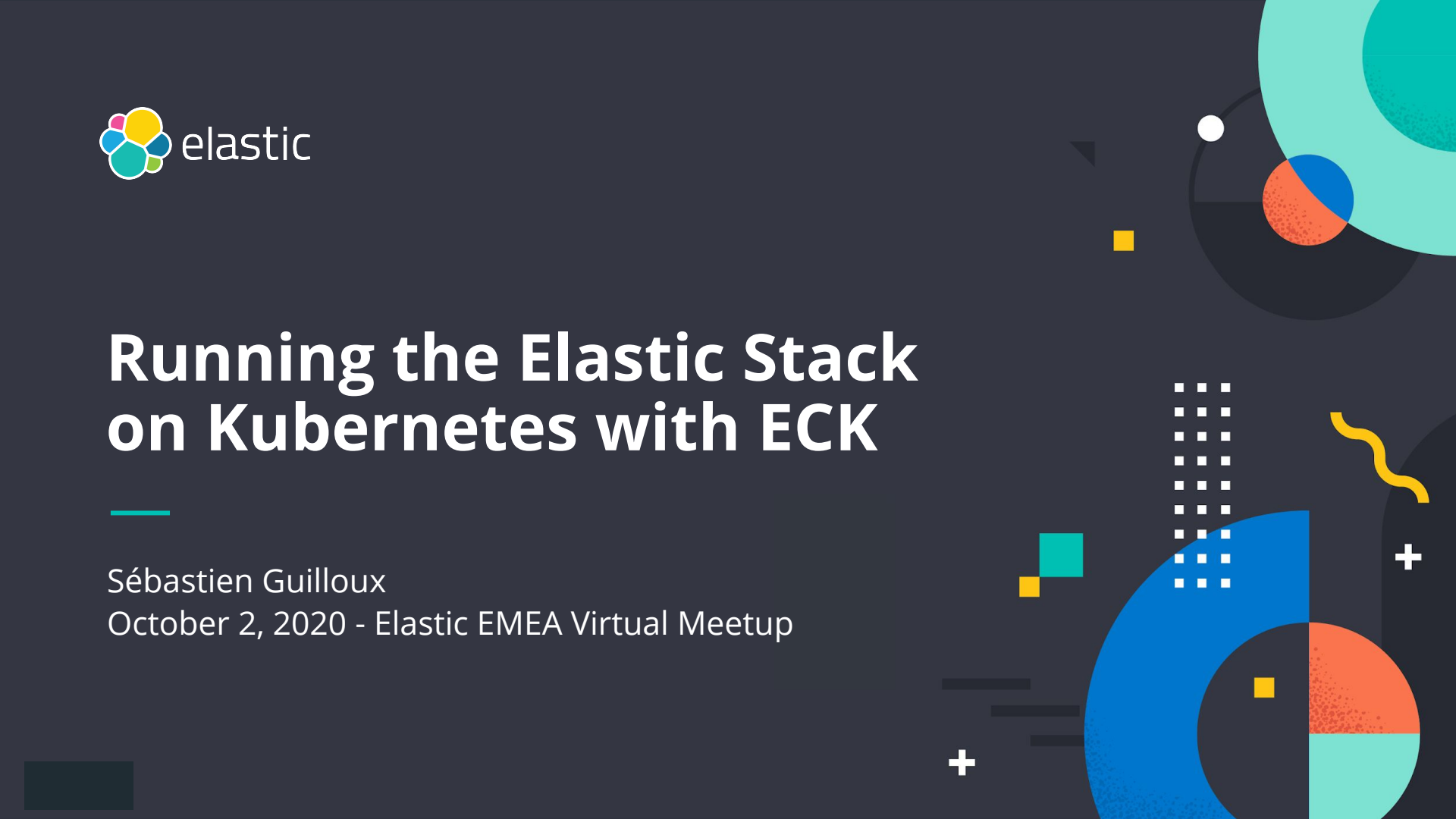


Running the Elastic Stack on Kubernetes with ECK

Sébastien Guilloux

October 2, 2020 - Elastic EMEA Virtual Meetup

elastic Kubernetes

On my Kubernetes cluster,
the Elastic Stack I want to run...

says Baby Yoda

...but many challenges
I have to face.

says Baby Yoda

Challenges of running on Kubernetes

- Managing resources
  - Pods, Secrets, Services, ConfigMaps, Deployments, StatefulSets, etc.
- Day-2 operations
  - Scale up/down
  - Configuration change
  - Version upgrade
- Stateful workloads
  - Availability, consistency
  - Volume management

elastic

ECK

Elastic Cloud on Kubernetes

Deploy

Elasticsearch, Kibana, APM Server, Enterprise Search, Beats

On Kubernetes

Vanilla, Openshift, GKE, EKS, AKS, etc.

Simple integration

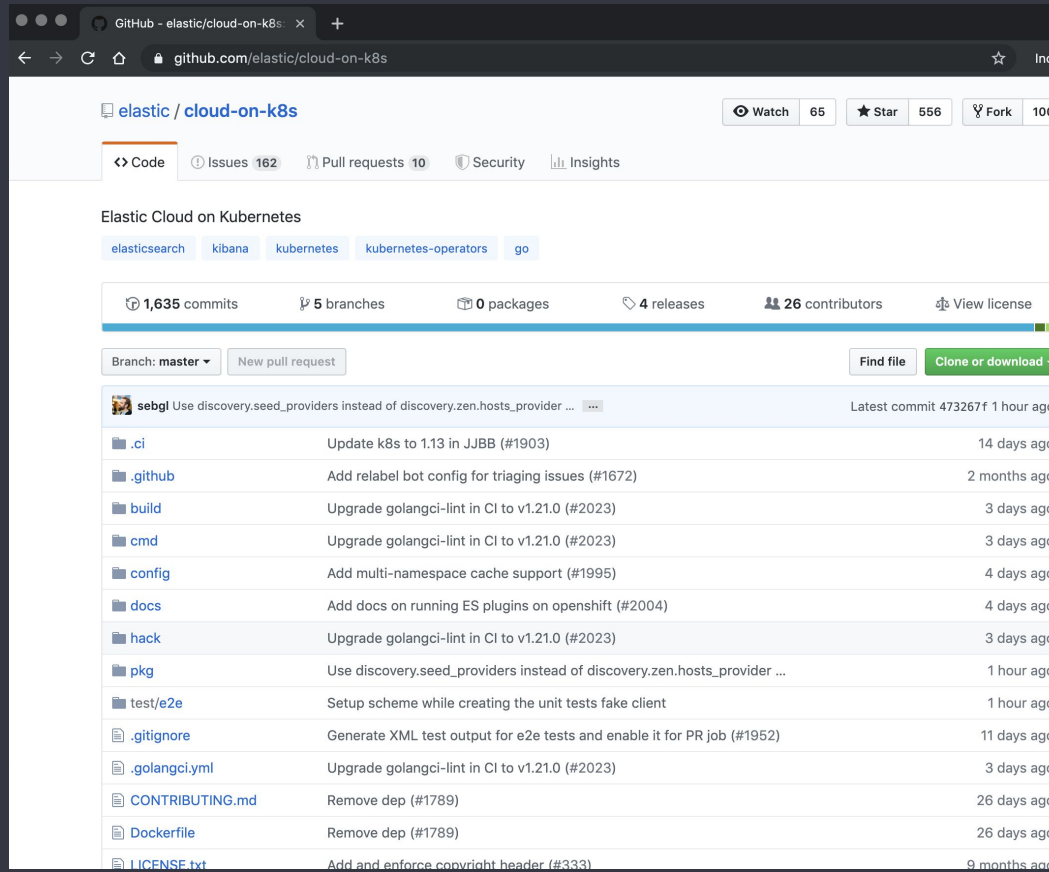
kubectl & usual k8s tooling

Advanced orchestration

Hot/warm/cold, dedicated masters

Smooth operations

Scale up/down, rolling upgrade, version upgrade



elastic

Quickstart (demo)

elastic.co/guide/en/cloud-on-k8s/current/k8s-quickstart.html

elastic

What happened
I want to know

requests Baby Yoda

Operators are clients of the Kubernetes API, that act as **controllers** for a **Custom Resource**.

plz explain

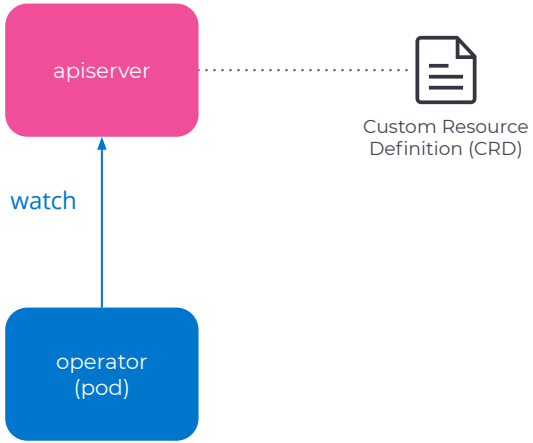
Operators?

CRDs

```yaml
apiVersion:
elasticsearch.k8s.elastic.co/v1
kind: Elasticsearch
metadata:
  name: quickstart
spec:
  version: 7.9.0
  nodeSets:
  - name: master-nodes
    count: 3
    config:
       node.master: true
  - name: data-nodes
    count: 2
    config:
       node.data: true
```

Operators?

Reconciliation loop

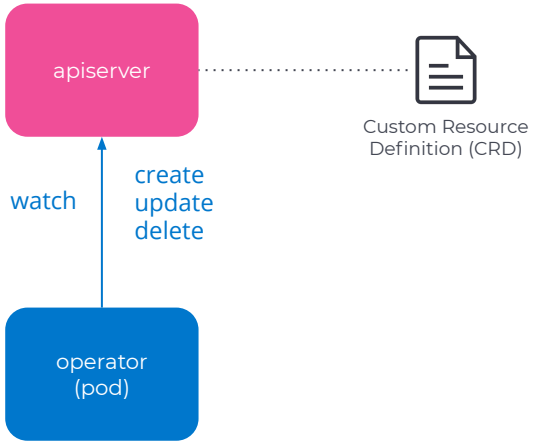


New event

A **watched resource** was created/updated/deleted

Operators?

Reconciliation loop



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Reconcile!

Get resource spec

Create/update **expected** resources

Reconciliation loop

In ECK

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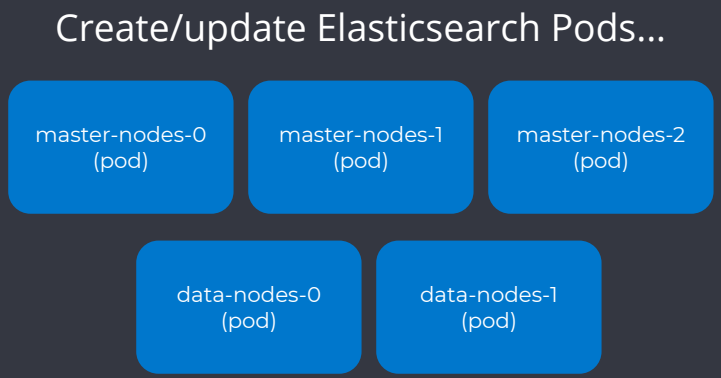

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Reconciliation loop

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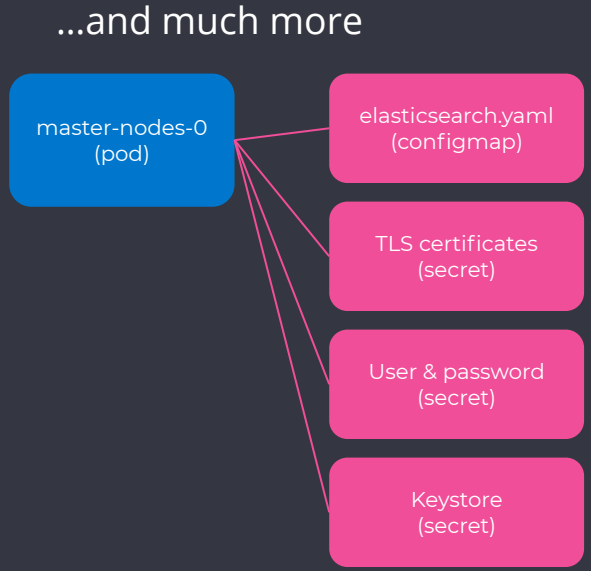

elastic

Reconciliation loop

In ECK

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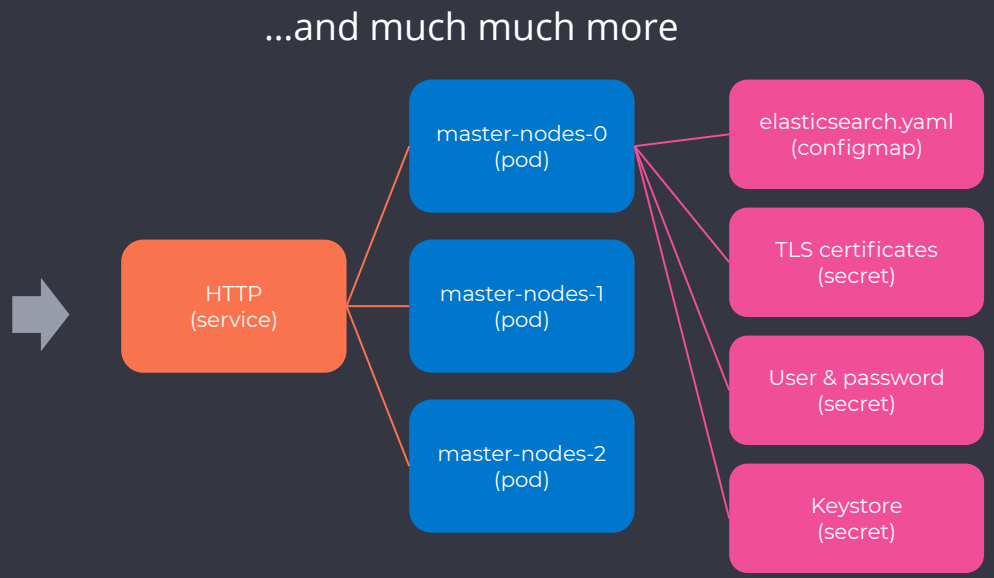
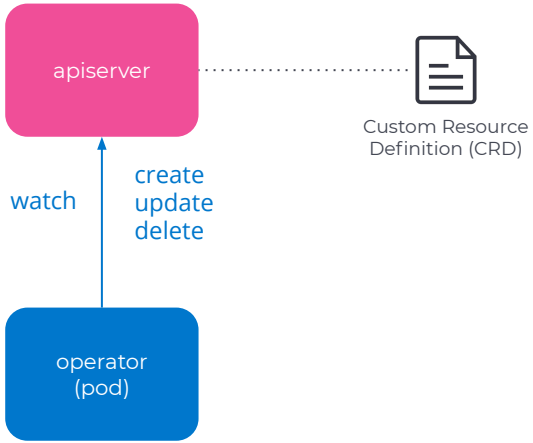


elastic

Operators?

Reconciliation loop



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Reconcile!

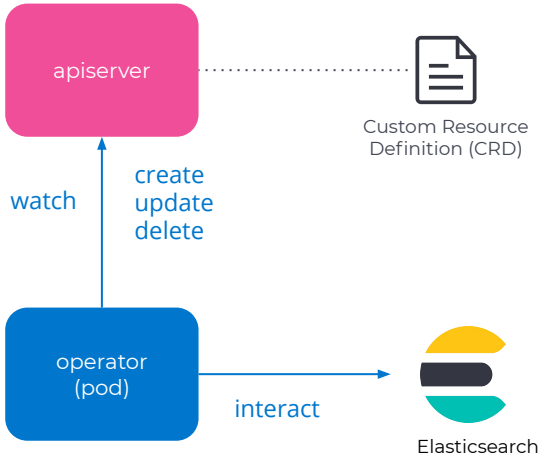
Get resource spec

Create/update **expected** resources

- HTTP service
- TLS certificates (secret)
- Users (secret)
- Keystore (secret)
- ES configuration (configmap)
- ES Nodes StatefulSets (Pod + PersistentVolume)

Operators?

Reconciliation loop



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Reconcile!

Get resource spec

Create/update **expected** resources

- HTTP service
- TLS certificates (secret)
- Users (secret)
- Keystore (secret)
- ES configuration (configmap)
- ES Nodes StatefulSets (Pod + PersistentVolume)

Interact with the **Elasticsearch API**

- Change cluster settings
- Migrate data
- Prepare for rolling upgrade

```yaml
apiVersion: elasticsearch.k8s.elastic.co/v1beta1
kind: Elasticsearch
metadata:
  name: elasticsearch-sample
spec:
  version: 7.9.0
  nodeSets:
  - name: default
    count: 1
    podTemplate:
      metadata:
        labels: {“foo”: “bar”}
      spec:
        affinity:
          nodeAffinity:
            requiredDuringSchedulingIgnoredDuringExecution:
              nodeSelectorTerms:
              - matchExpressions:
                - key: environment
                  operator: In
                  values: [“e2e”, “production”]
        containers:
        - name: elasticsearch
          env:
          - name: ES_JAVA_OPTS
            value: “-Xms2g -Xmx4g”
```

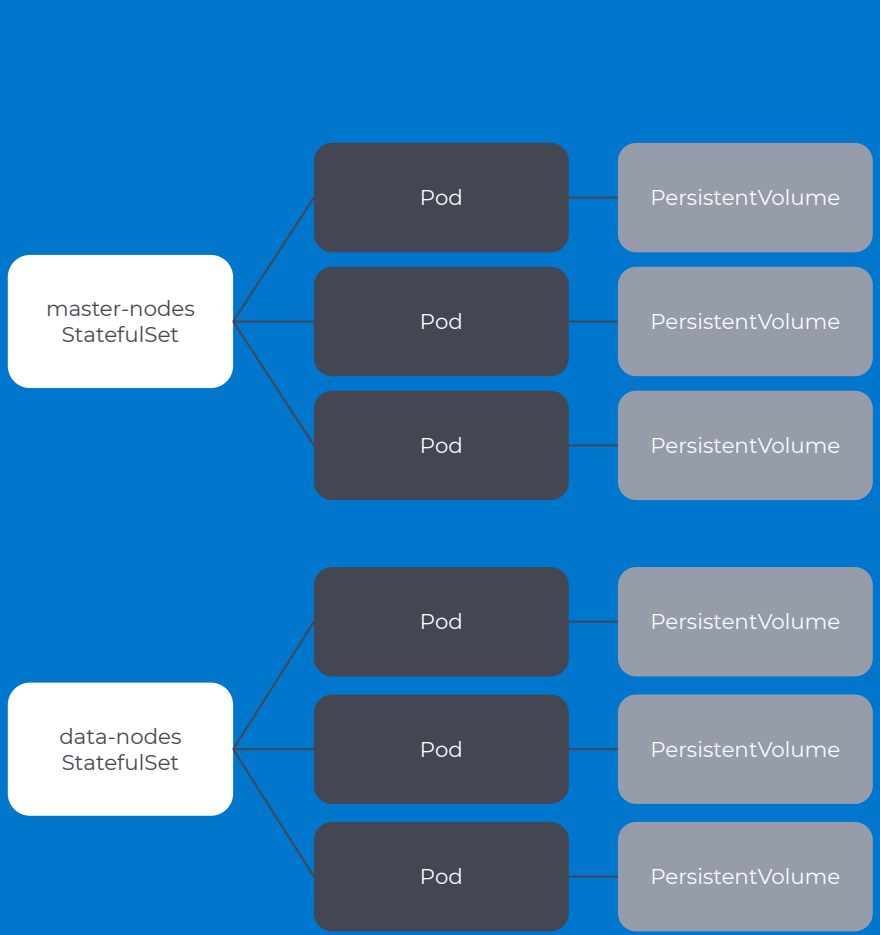
Empower users

But provide good defaults

optional podTemplate

elastic

```yaml
apiVersion: elasticsearch.k8s.elastic.co/v1
kind: Elasticsearch
metadata:
  name: elasticsearch-sample
spec:
  version: 7.9.0
  nodeSets:
  - name: master-nodes
    count: 3
    config:
      node.master: true
      node.data: false
  - name: data-nodes
    count: 3
    config:
      node.master: false
      node.data: true
    volumeClaimTemplates:
    - metadata:
        name: elasticsearch-data
      spec:
        resource:
          requests:
            storage: 100Gi
        storageClassName: <name>
                          (gce-pd)
                          (aws-ebs)
                          (local-storage)
                          (your-own)
```



Safe is my data,
available is my cluster

realizes Baby Yoda

***TLS** by default*

***Simplified** configuration*

*No **downtime**, no **data loss***

- *Safe data migration*
- *Rolling configuration changes*
- *Rolling version upgrades*

***Hot/warm/cold** deployments*

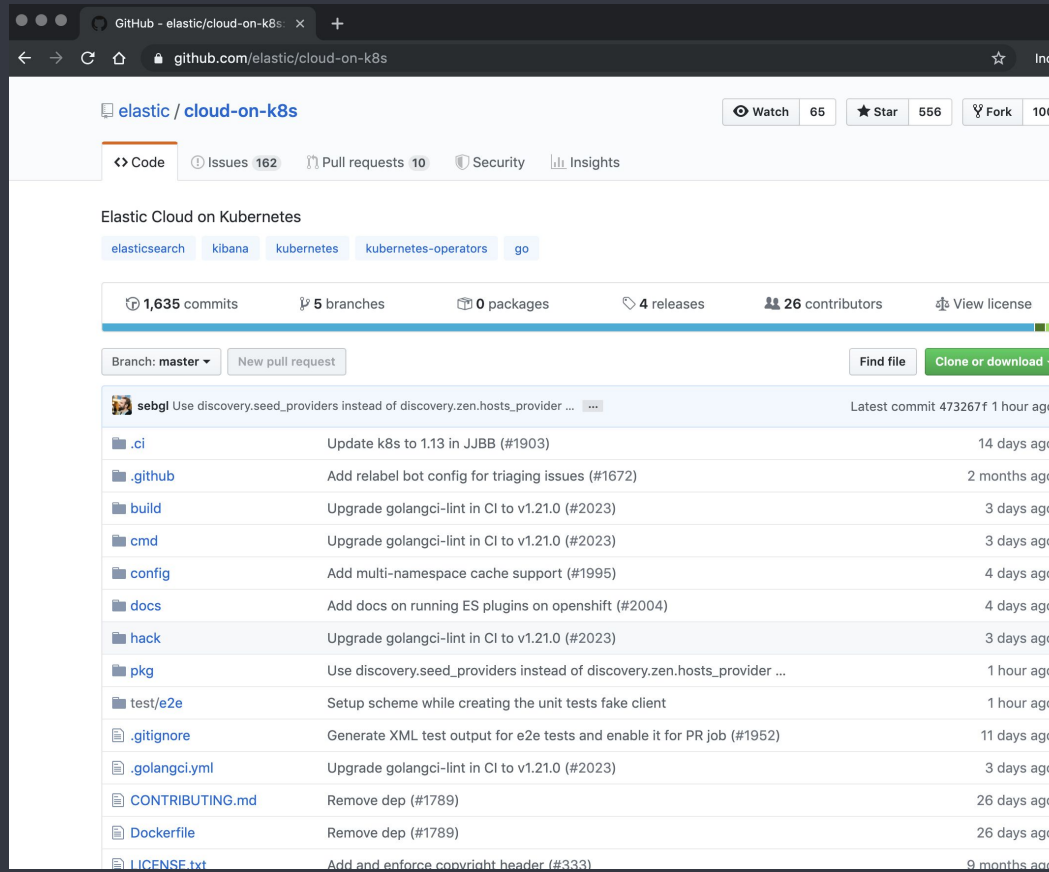
***Availability zone** awareness*

***Cross-cluster** search and replication*

Learn more

Give it a try!

github.com/elastic/cloud-on-k8s
elastic.co/guide/en/cloud-on-k8s/current



elastic

Survey

https://elastic.eu.qualtrics.com/jfe/form/SV_djqQKy4bIF2fGWF?&Event=Running%20the%20Elastic%20stack%20on%20Kubernetes%20with%20ECK%20&Region=EMEA&Subregion=EMEA-S&country=Virtual

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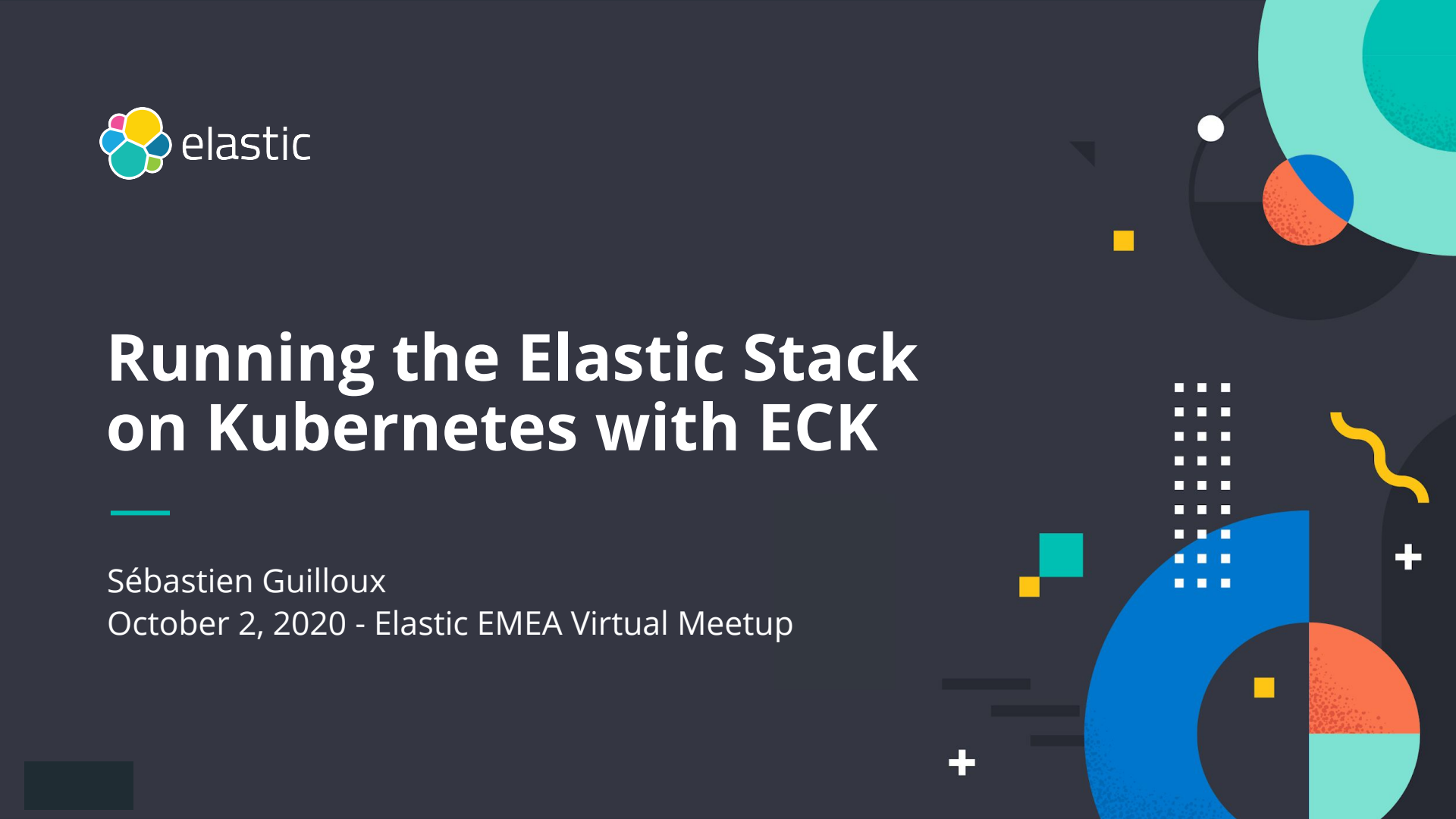

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