

# Kubernetes CRD, Controller, Operator

KubernetesCRDOperator

## 1CRD

Kubernetes

资源对象	Pod, ReplicaSet, ReplicationController, Deployment, StatefulSet, DaemonSet, Job, CronJob, HorizontalPodAutoscaling
配置对象	Node, Namespace, Service, Secret, ConfigMap, Ingress, Label, CustomResourceDefinition, ServiceAccount
存储对象	Volume, Persistent Volume
策略对象	SecurityContext, ResourceQuota, LimitRange

Kubernetes Kubernetes CRD (CustomResourceDefinition)

CRD<https://kubernetes.io/zh/docs/tasks/extend-kubernetes/custom-resources/custom-resource-definitions/>

```
apiVersion: apiextensions.k8s.io/v1
kind: CustomResourceDefinition
metadata:
  # spec '<>.<>'
  name: crontabs.stable.example.com
spec:
  # REST API: /apis/<>/<>
  group: stable.example.com
  # CustomResourceDefinition
  versions:
    - name: v1
      # served
      served: true
      #
      storage: true
      schema:
        openAPIV3Schema:
          type: object
          properties:
            spec:
              type: object
              properties:
                cronSpec:
                  type: string
                image:
                  type: string
                replicas:
                  type: integer
  # Namespaced Cluster
  scope: Namespaced
  names:
    # URL/apis/<>/<>/<>
    plural: crontabs
    #
    singular: crontab
    # kind CamelCased
    kind: CronTab
    # shortNames
    shortNames:
      - ct
```

kubernetes KafkaSource kafka-source.yaml

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```

apiVersion: sources.eventing.knative.dev/v1alpha1
kind: KafkaSource
metadata:
  name: kafka-source
spec:
  consumerGroup: knative-group
  bootstrapServers: my-cluster-kafka-bootstrap.kafka:9092
  topics: knative-demo-topic
  sink:
    ref:
      apiVersion: v1
      kind: Service
      name: event-display

```

kubectl create -f kafka-source.yaml kubernetes pod pod

- my-cluster-kafka-bootstrap.kafka:9092topic knative- demo-topic kafka
- kubernetes Service

Kuberentes KafkaSource kubectl create -f kafka-source.yaml kubernetes CRD kubernetes

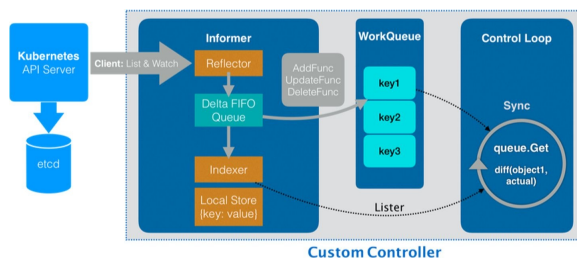
## 2Controller

CRD Kafkasource

1. KafkaSource kubernetes kubernetes
2. controller KafkaSource yaml
3. Controller KafkaSource pod

Kubernetes API schema API

1. Kubernetes etcd
2. Kubernetes controller controller APIServer etcd



client-go AddFuncinformer APIServer Workqueue controller workerWorkqueue InformerKubernetes Informerclient-go

## 3Operator

Operator = CRD + Controller

OperatorKubeBuilder

- <https://github.com/kubernetes-sigs/kubebuilder>
- <https://cloudnative.to/kubebuilder/introduction.html>

- <https://zhuanlan.zhihu.com/p/52367044>
- <https://kubernetes.io/zh/docs/tasks/extend-kubernetes/custom-resources/custom-resource-definitions/>

- <https://zhuanlan.zhihu.com/p/114659529>
- <https://github.com/kubernetes-sigs/kubebuilder>