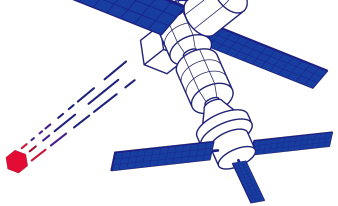
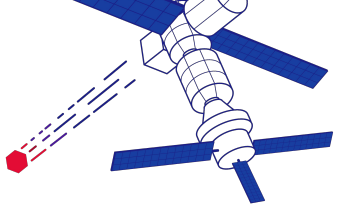
TiDB TechDay 2019

云原生 - TiDB 的最佳使用姿势

Presented by TiDB Cloud Team

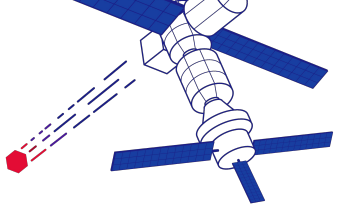


Cloud Native



- Deployment easier and faster
- Flexible scaling based on cost and demand
- Automation Operation
- Self-healing

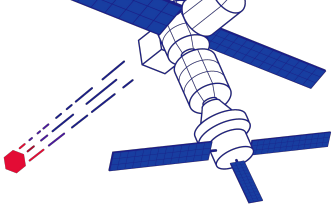
Launch to Multi-Cloud



Google Cloud

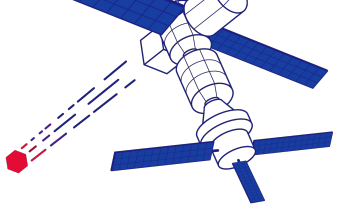
aws

阿里云



Show Time

What is going on?



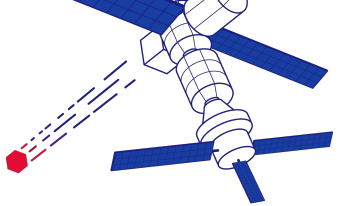
Cloud Access Keys

Managed Kubernetes

TiDB Operator

TiDB Cluster

Infrastructure as Code



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  eks_info = module.eks.eks_info
  subnets = split(
    ",",
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  cluster_name                    = "demo-cluster"
  cluster_version                 = "v3.0.0-rc.2"
  pd_count                        = 3
  pd_instance_type                = "t2.medium"
  tikv_count                      = 20
  tikv_instance_type              = "m5d.xlarge" # instance type with local nvme disk is required
  tidb_count                      = 12
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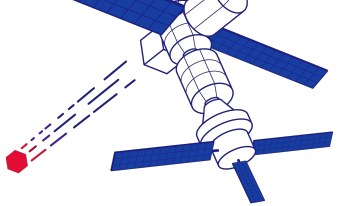

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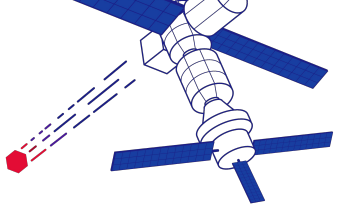

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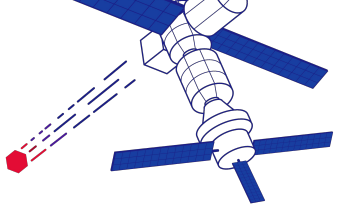

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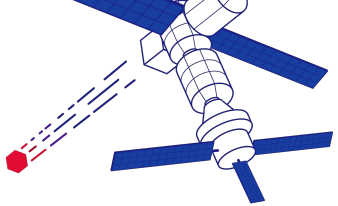

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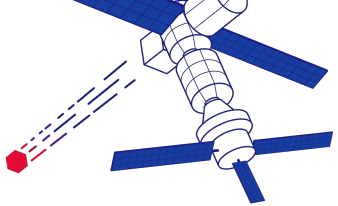

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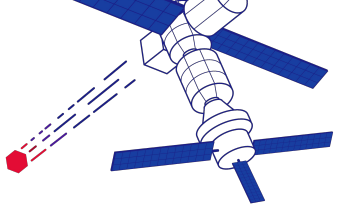


WRITE

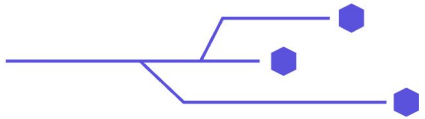
INFRASTRUCTURE AS CODE

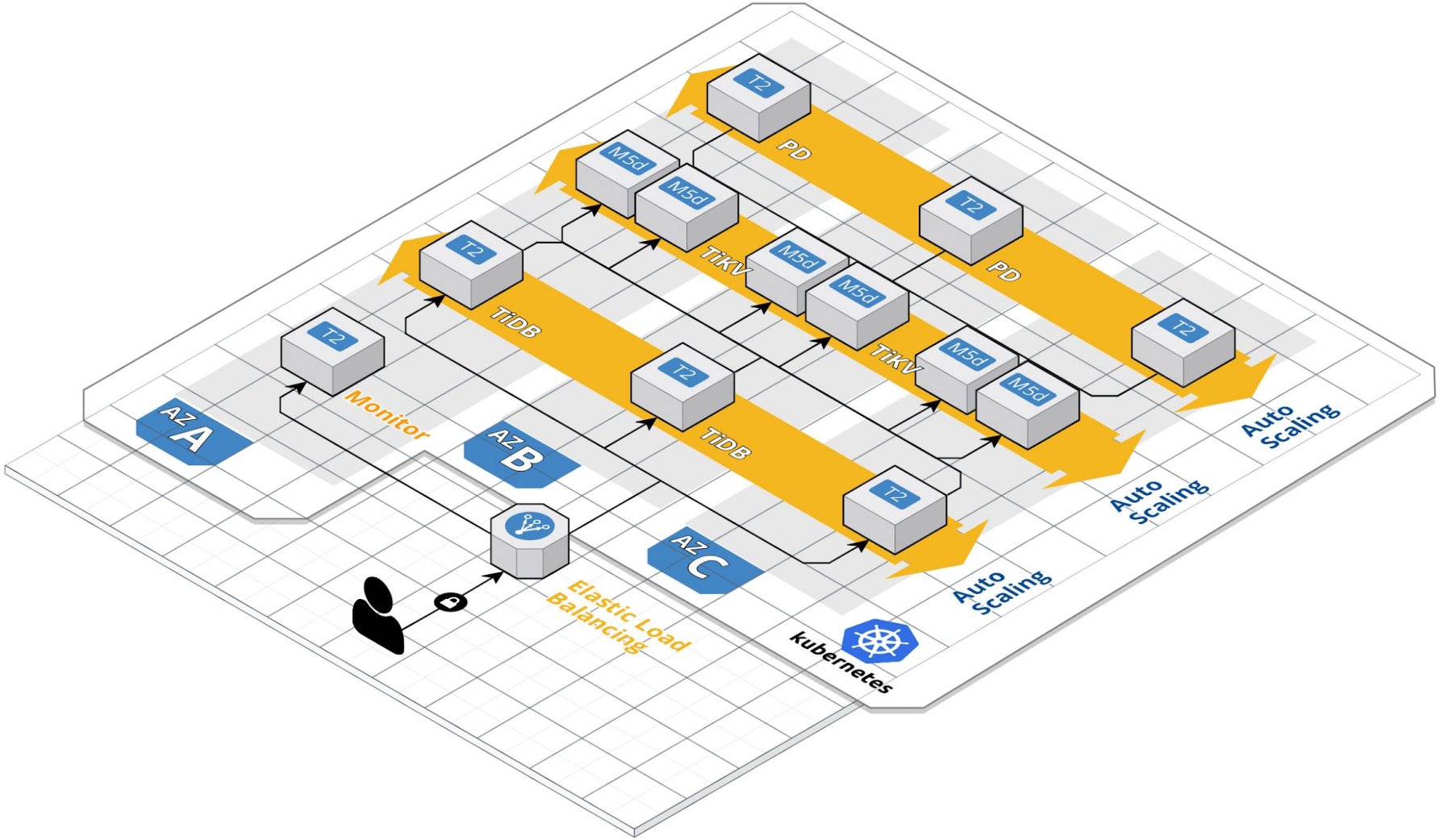
PLAN

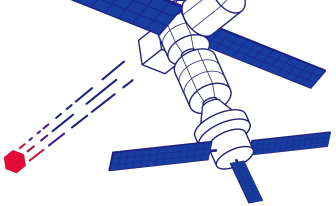
PREVIEW CHANGES BEFORE APPLYING

CREATE

REPRODUCIBLE INFRASTRUCTURE



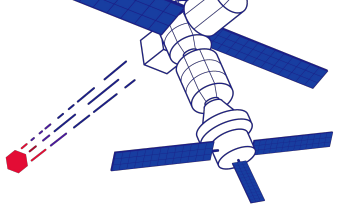

AZ A
AZ B
AZ C
Monitor
Elastic Load Balancing
kubernetes
T2
M5d
TiDB
TiKV
PD
Auto Scaling



Now we have cloud infrastructure,

But we still need a cluster-based operating system ！

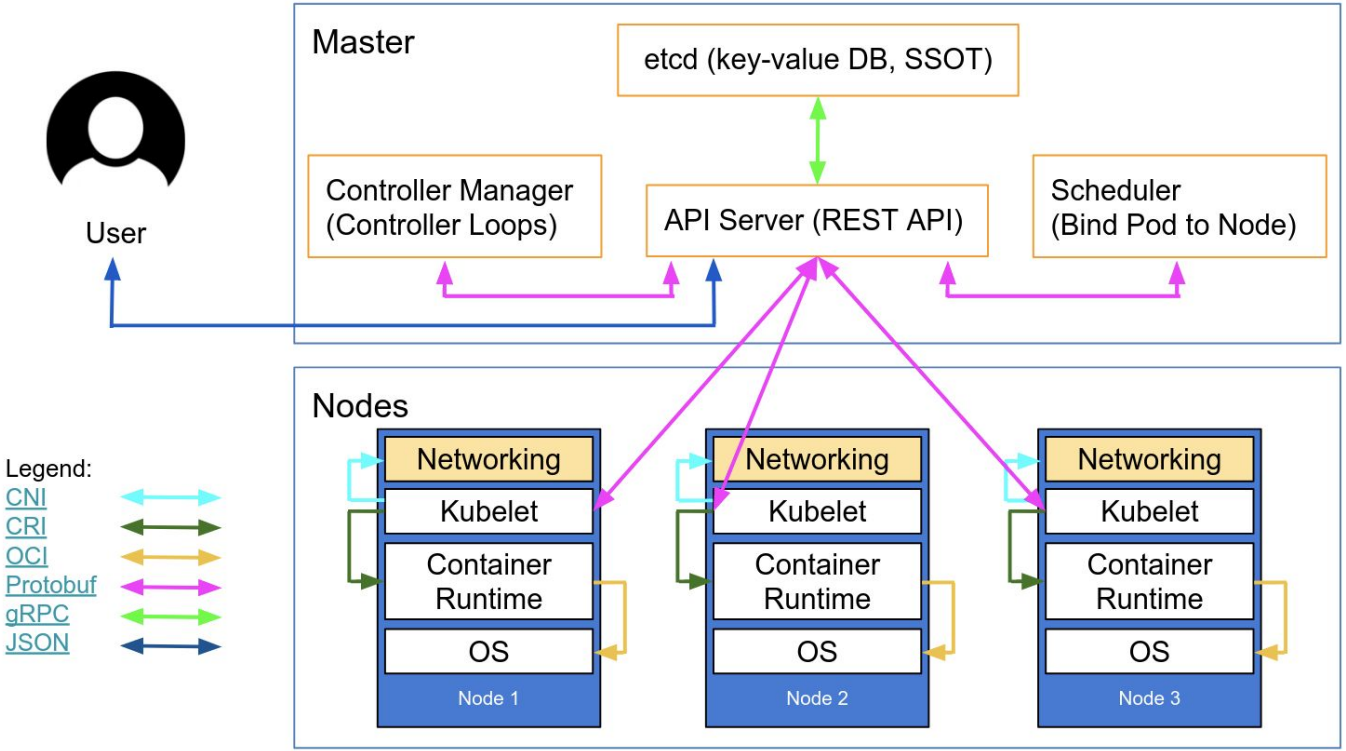
Cluster-based Operating System



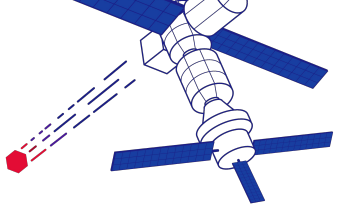
kubernetes

- Deployment of HA services
- Automated management
- Storage orchestration
- Networking
- Flexibility and extensibility

Kubernetes Architecture



Managed Kubernetes



aws

Amazon EKS
Amazon EKS makes it easy to run Kubernetes on AWS

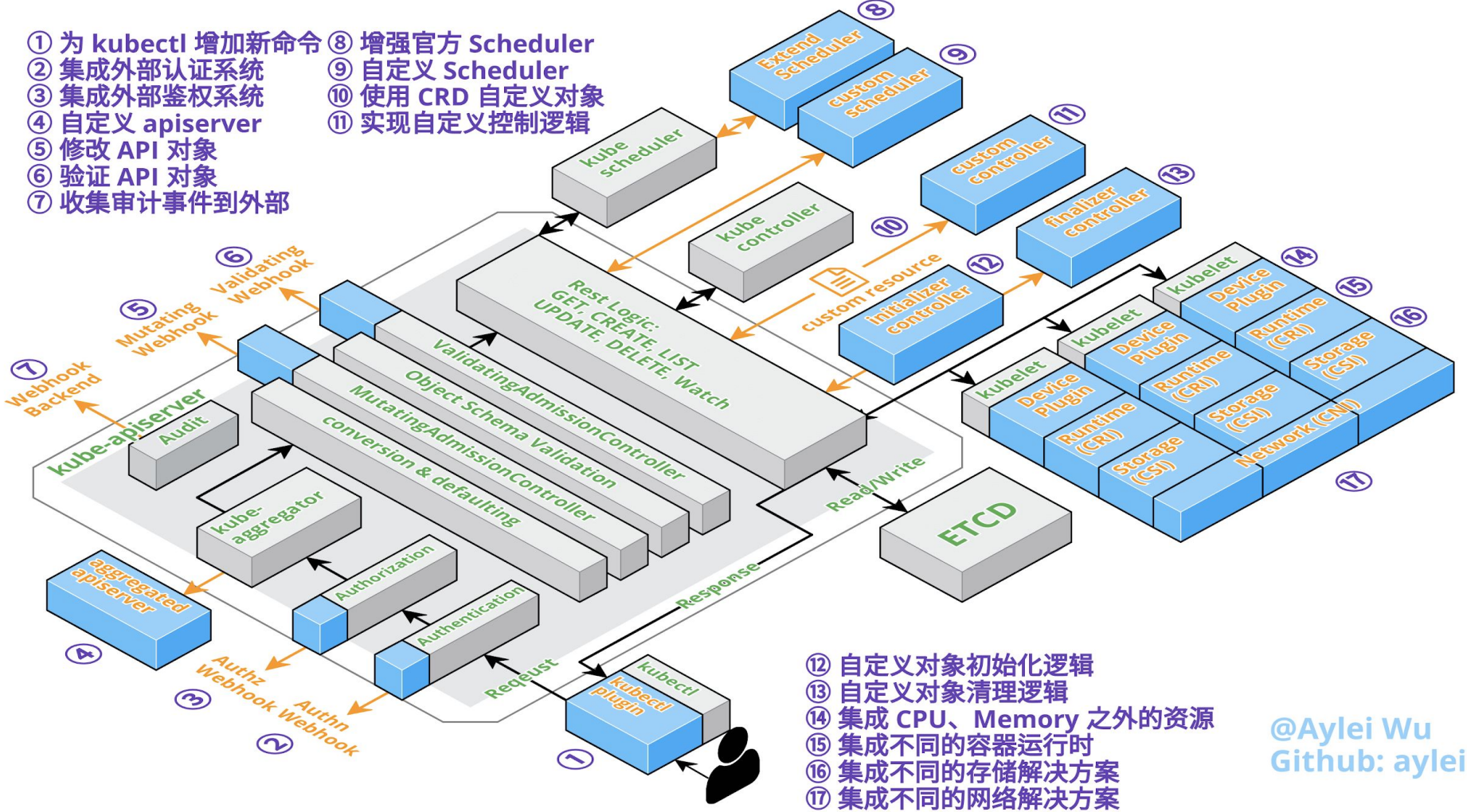
Google Cloud

Google Kubernetes Engine

阿里云

ACK (Container Service for Kubernetes)

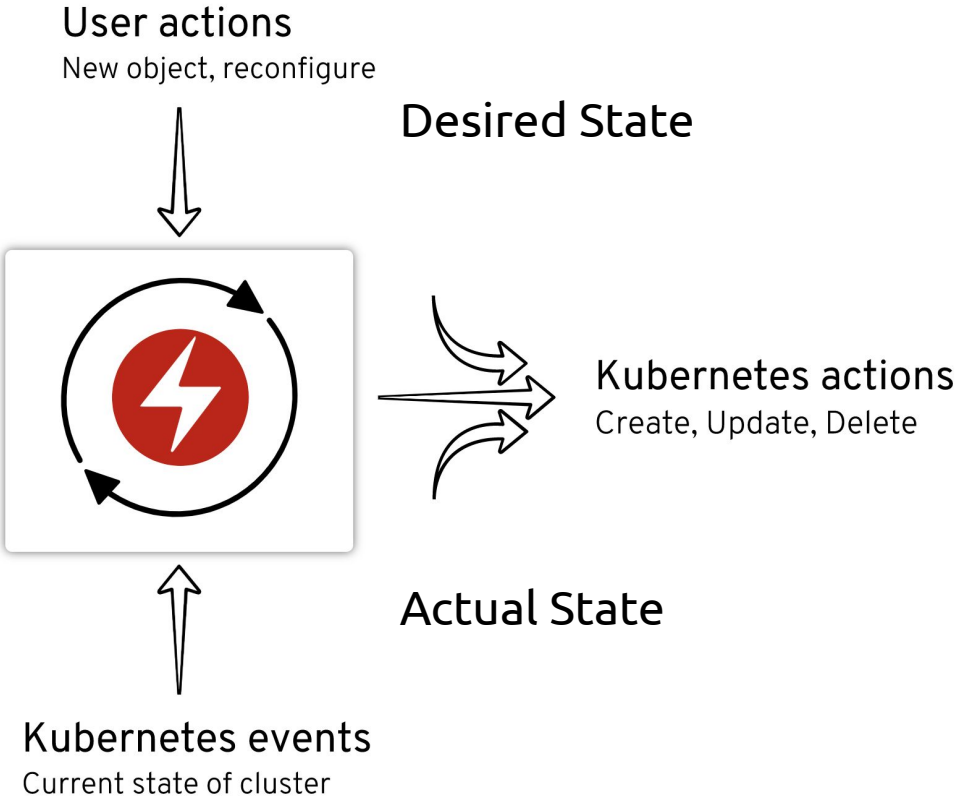
① 为 kubectl 增加新命令
② 集成外部认证系统
③ 集成外部鉴权系统
④ 自定义 apiserver
⑤ 修改 API 对象
⑥ 验证 API 对象
⑦ 收集审计事件到外部
⑧ 增强官方 Scheduler
⑨ 自定义 Scheduler
⑩ 使用 CRD 自定义对象
⑪ 实现自定义控制逻辑



⑫ 自定义对象初始化逻辑
⑬ 自定义对象清理逻辑
⑭ 集成 CPU、Memory 之外的资源
⑮ 集成不同的容器运行时
⑯ 集成不同的存储解决方案
⑰ 集成不同的网络解决方案

@Aylei Wu
Github: aylei

TiDB Operator

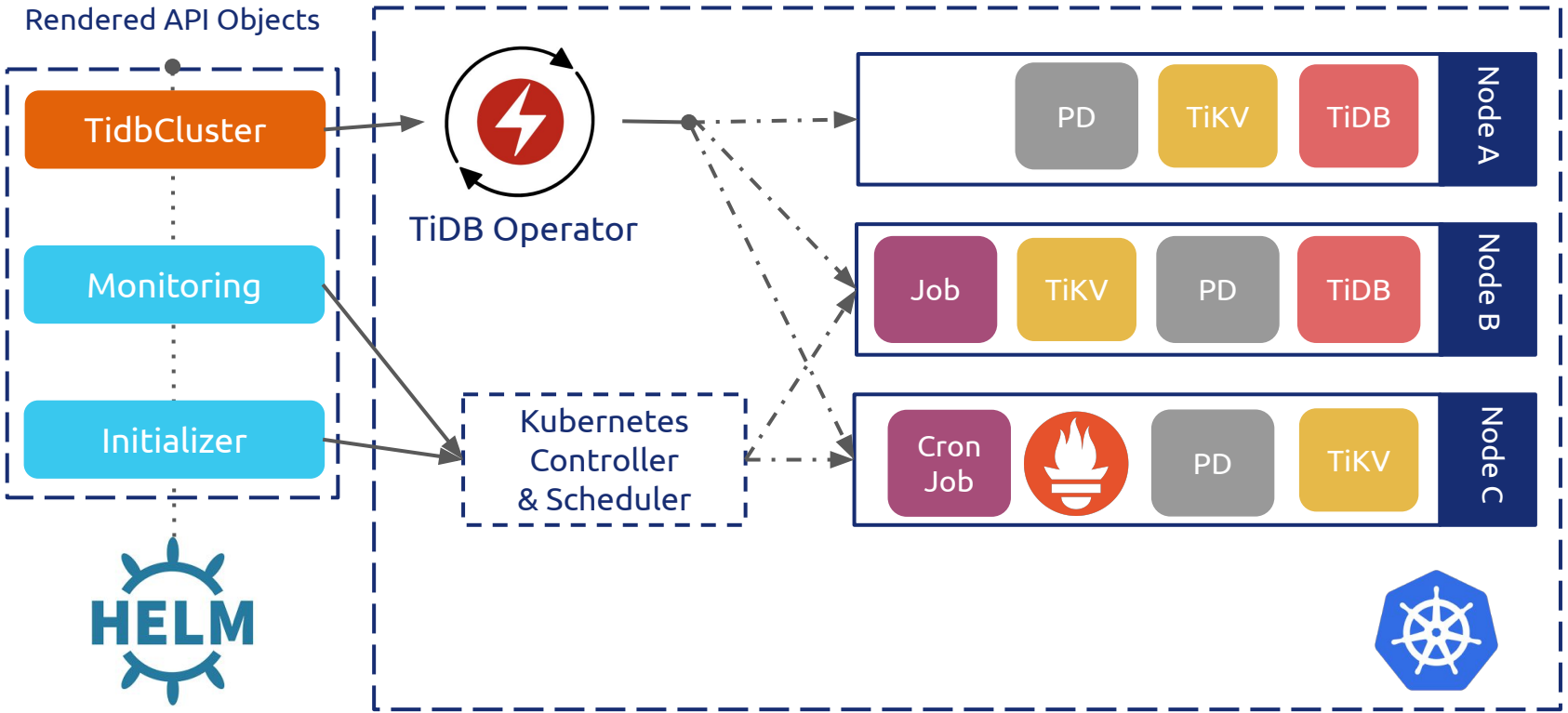


tidb-controller-manager continuously diffs the desired state and actual state. If not match, trigger actions to converge to the desired state.

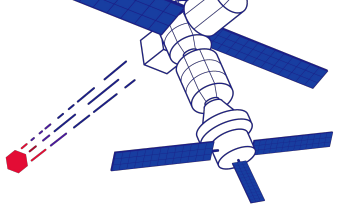
This process is also known as **reconcile**.

PingCAP

TiDB Operator

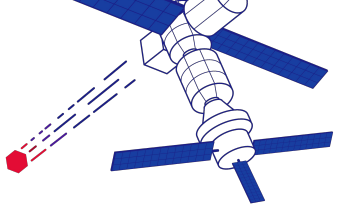


TiDB Operator

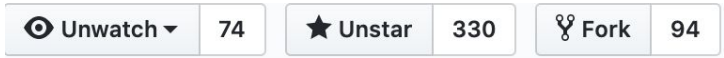


- Kubernetes as the orchestration platform
- TiDB Operator injects TiDB's domain-specific orchestration logic into Kubernetes:
  - **TidbCluster**: the custom resource to declare user's intention
  - **tidb-controller-manager**: a set of custom controllers that implements the user' intention declared in **TidbCluster**
  - **tidb-scheduler**: custom scheduling policy, e.g. PD and TiKV HA scheduling

TiDB Operator is 100% Open Source

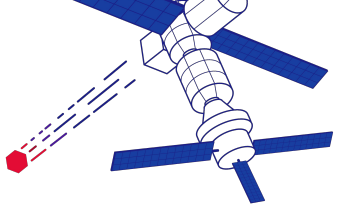


https://github.com/pingcap/tidb-operator



Tutorials on clouds

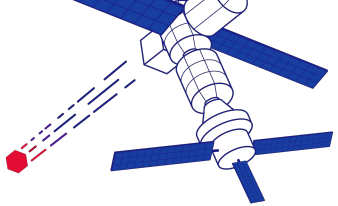
- tidb-operator/deploy/aws/
- tidb-operator/deploy/gcp/
- tidb-operator/deploy/aliyun/



TiDB Operator

General Availability In July 2019

Cloud TiDB Next



- Auto scaling
- PD drives scheduling for cloud resources
- Integrating with more TiDB tools
- Managed database service

Thank You !