

Service Mesh Meetup #3 深圳站

Kubernetes容器应用基于Istio的灰度发布实践

张超盟 @ Huawei Cloud BU

2018.08.25

Agenda

- **Istio & Kubernetes**
- Istio & Kubernetes上的灰度发布

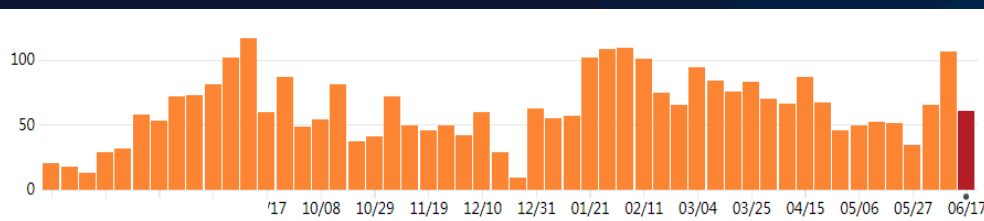
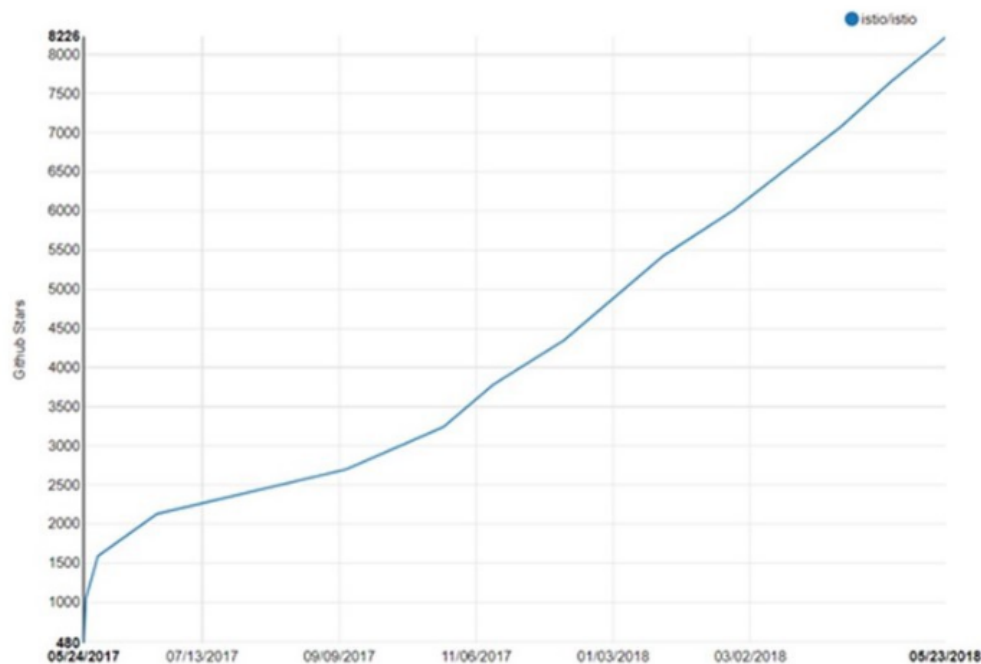


ISTIO

An open platform to connect, manage, and secure microservices.

Istio项目

Istio's Github Star Growth



Schedule Matches

Tuesday, May 1

- 13:00 Hands-on with Istio on Kubernetes
- Kubernetes Workshop with VMware (Description: istio)
- 18:20 Lightning Talk: Extending Istio Service Mesh with Envoy v2 APIs for Stateless and Stateful Services - Dmitri Chetourov & Tim Swanson, Cisco Systems, Inc (Intermediate Skill Level) (Slides Attached)
- 18:25 Lightning Talk: Istio by Example - Josef Adersberger, QAware (Beginner Skill Level) (Slides Attached)

Wednesday, May 2

- 09:50 Keynote: Re-thinking Networking for Microservices - Lew Tucker, VP/CTO Cloud Computing, Cisco Systems, Inc. (Slides Attached) (Description: istio)
- 11:10 Introduction to Istio Configuration - Joy Zhang, Google (Beginner Skill Level) (Slides Attached)
- 11:55 Practical and Useful Latency Analysis using Istio and OpenCensus - Varun Talwar, Stealth Startup & Morgan McLean, Google (Intermediate Skill Level) (Slides Attached)
- 14:45 Cloud Native Identity Management - Andreas Zitzelsberger, QAware GmbH & Andrew Jessup, Scytale Inc. (Intermediate Skill Level) (Slides Attached) (Description: istio)
- Building Hybrid Clouds with Istio - Allan Naim, Google & Rohit Agarwalla, Cisco (Intermediate Skill Level)
- 15:40 Performance and Scale @ Istio Service Mesh - Fawad Khaliq, VMware Inc, Laurent Demailly, Google & Surya V Duggirala, IBM (Intermediate Skill Level) (Slides Attached)
- 16:25 From Data Centers to Cloud Native - Dave Zolotusky & James Wen, Spotify (Intermediate Skill Level) (Slides Attached) (Description: istio)

Thursday, May 3

- 11:55 Pod Anomaly Detection and Eviction using Prometheus Metrics - David Benque & Cedric Lamoriniere, Amadeus (Beginner Skill Level) (Slides Attached) (Description: istio)
- 14:00 GitOps for Istio - Manage Istio Config like Code - Varun Talwar, Stealth Startup & Alexis Richardson, WeaveWorks (Intermediate Skill Level)
- 14:45 OPA: The Cloud Native Policy Engine - Torin Sandall, Styra (Intermediate Skill Level) (Slides Attached) (Description: istio)
- 16:35 Kubernetes Policy WG Deep Dive - Zhipeng Huang, Huawei (Intermediate Skill Level) (Description: istio)

Friday, May 4

- 11:10 Istio - The Weather Company's Journey - Nick Nellis & Fabio Oliveira, IBM (Any Skill Level) (Slides Attached)
- 11:55 From Kubelet to Istio: Kubernetes Network Security Demystified - Andrew Martin, ControlPlane (Intermediate Skill Level) (Slides Attached)
- Canary Deploys with Kubernetes, Istio and Envoy - Jason Yee, Datadog (Beginner Skill Level)
- 14:00 Stretching the Mesh - John Joyce & Robert Li, Cisco Systems (Any Skill Level) (Slides Attached) (Description: istio)
- 14:45 Istio Tells me my Service has Slow Response Time, Now What? - Endre Sara & Enlin Xu, Turbonomic (Any Skill Level) (Slides Attached)
- 16:25 Istio Multi-Cluster Mesh Expansion BOF - Sven Mawson, Google (Any Skill Level)
- Observing and Troubleshooting your Microservices with Istio - Isaiah Snel-feikema, IBM & Douglas Reid, Google (Beginner Skill Level) (Slides Attached)

微服务角度看Istio: 治理形态的演变



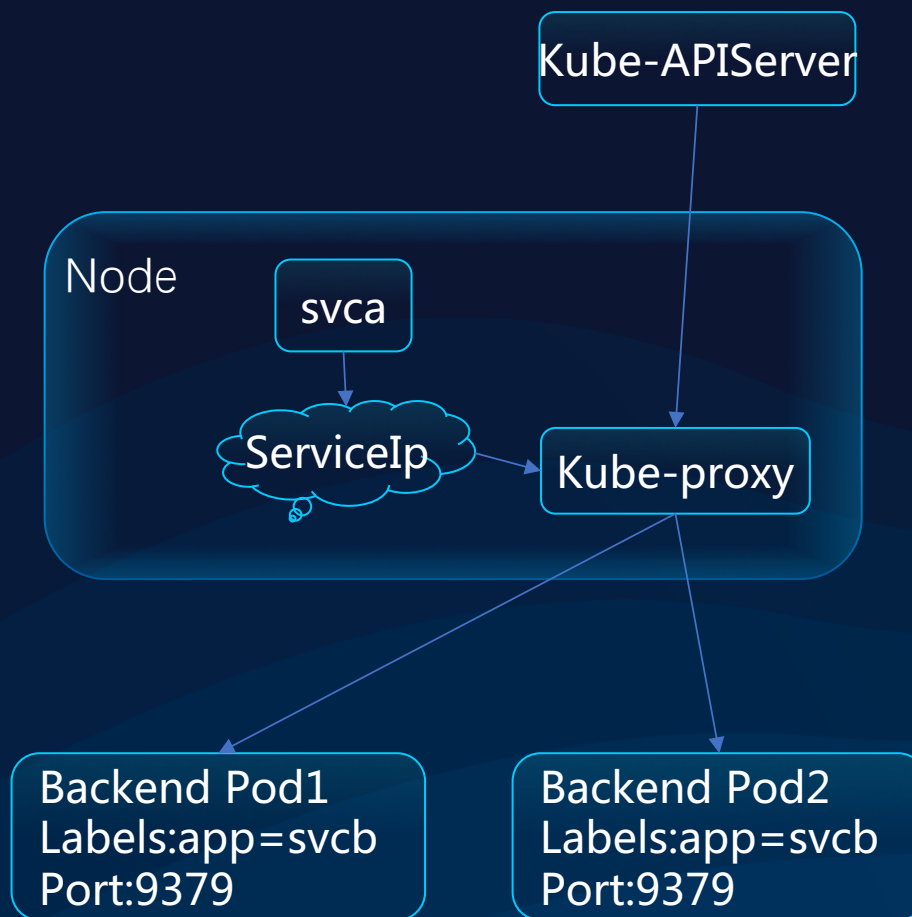
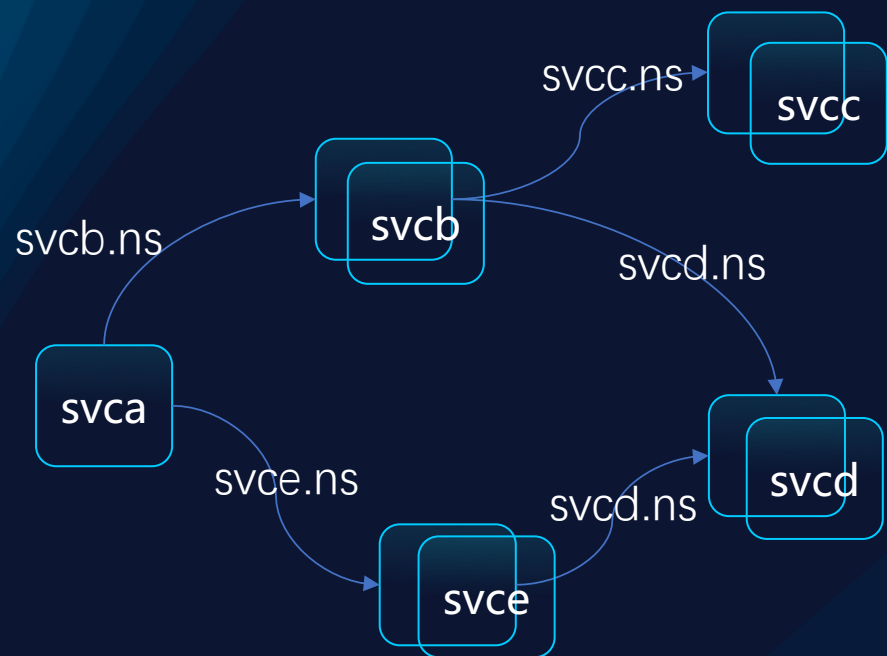
```
for (封装++) {  
    应用侵入-- ;  
    治理位置-- ;  
}
```

微服务角度看Istio：服务网格

服务网格控制面



从基础设施(Kubernetes)看Istio: 服务访问



基础设施(Kubernetes)看Istio: 能力增强



Istio治理的不只是微服务，只要有访问的服务，都可以被治理。

Istio关键能力

功能

流量管理

负载均衡

动态路由

灰度发布

故障注入

策略执行

限流

ACL

可观察性

调用链

访问日志

监控

服务身份和安全

认证

鉴权

扩展

平台支持

Kubernetes

CloudFoundry

Eureka

Consul

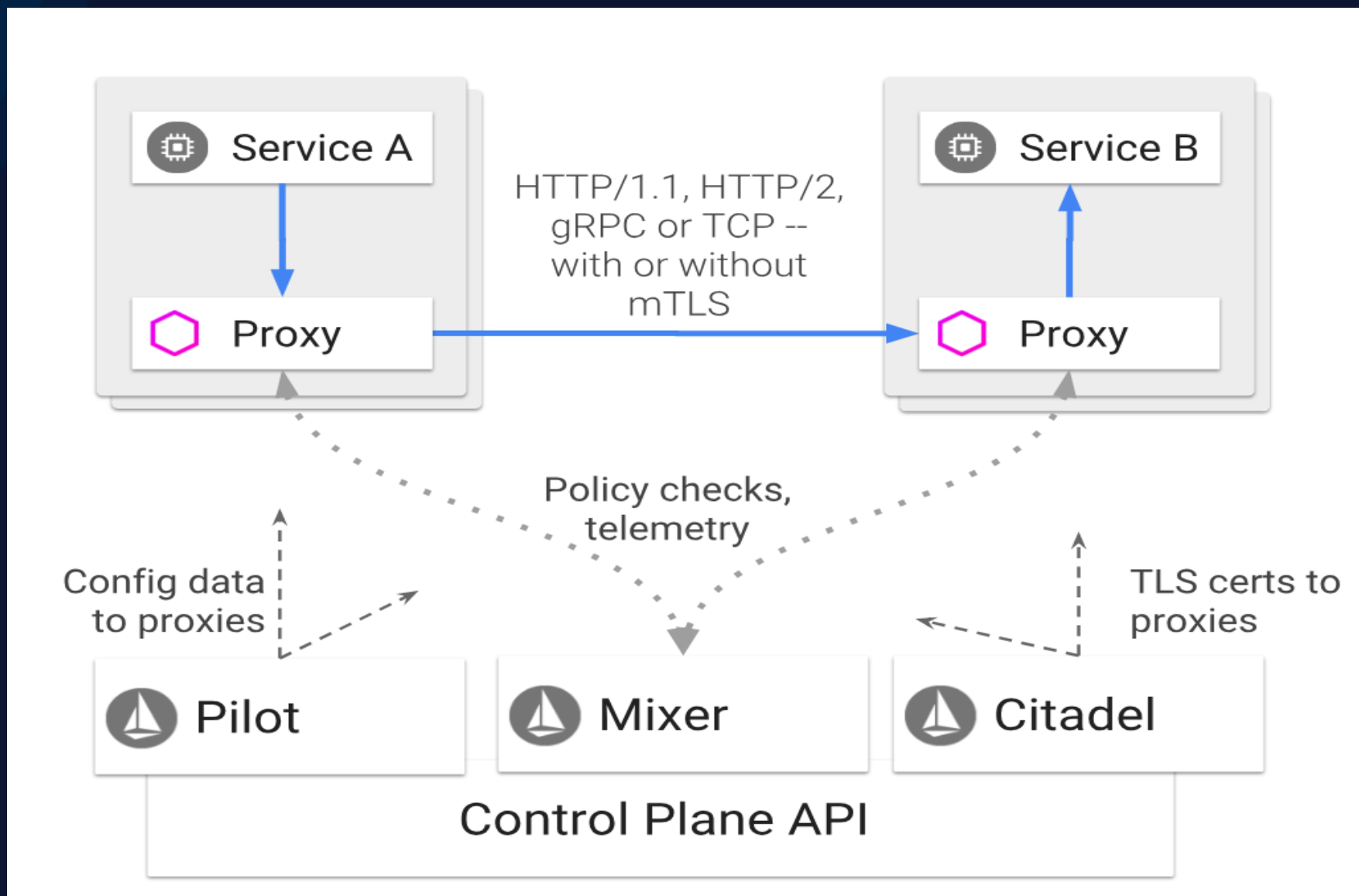
集成和定制

ACL

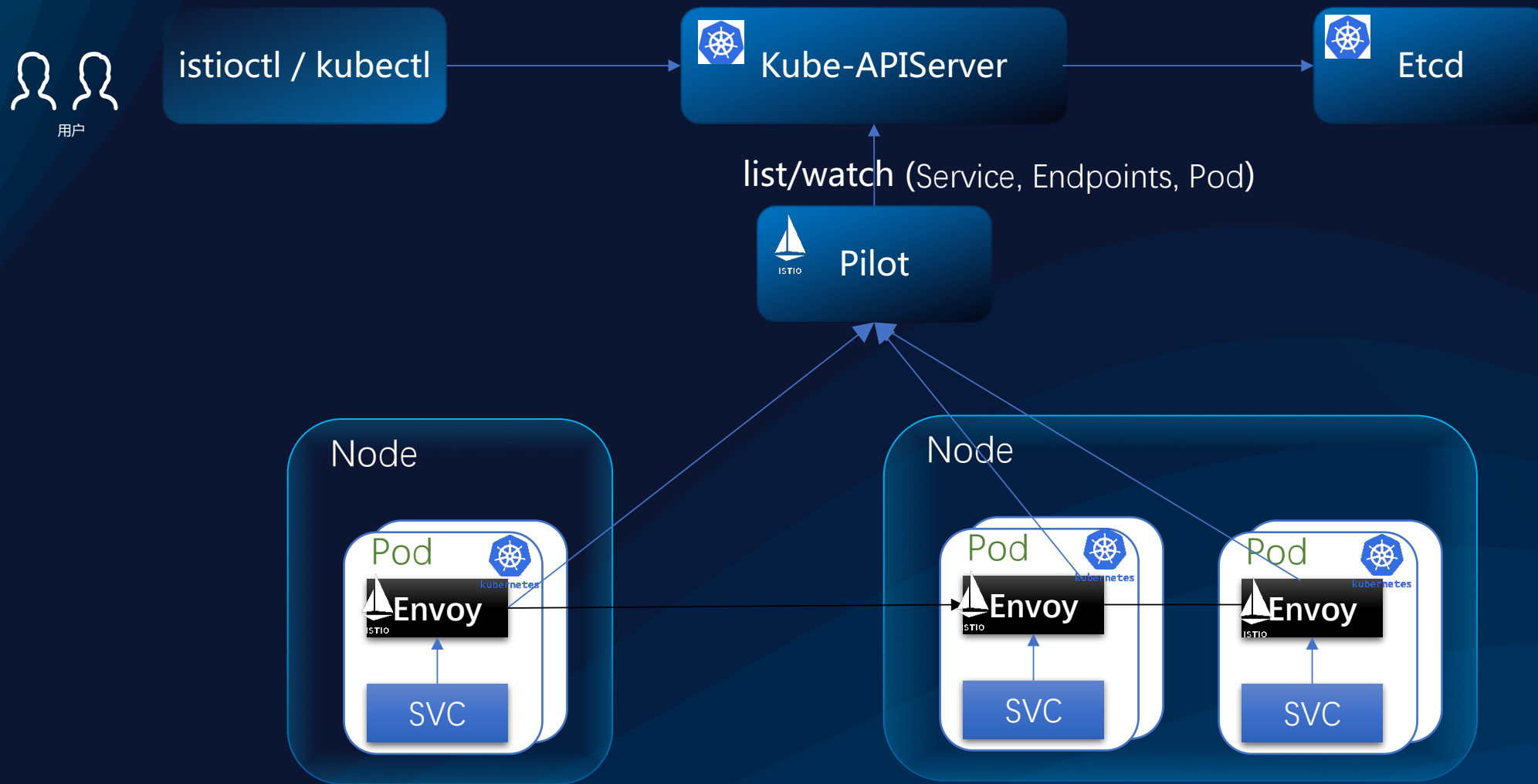
日志

配额

Istio总体架构

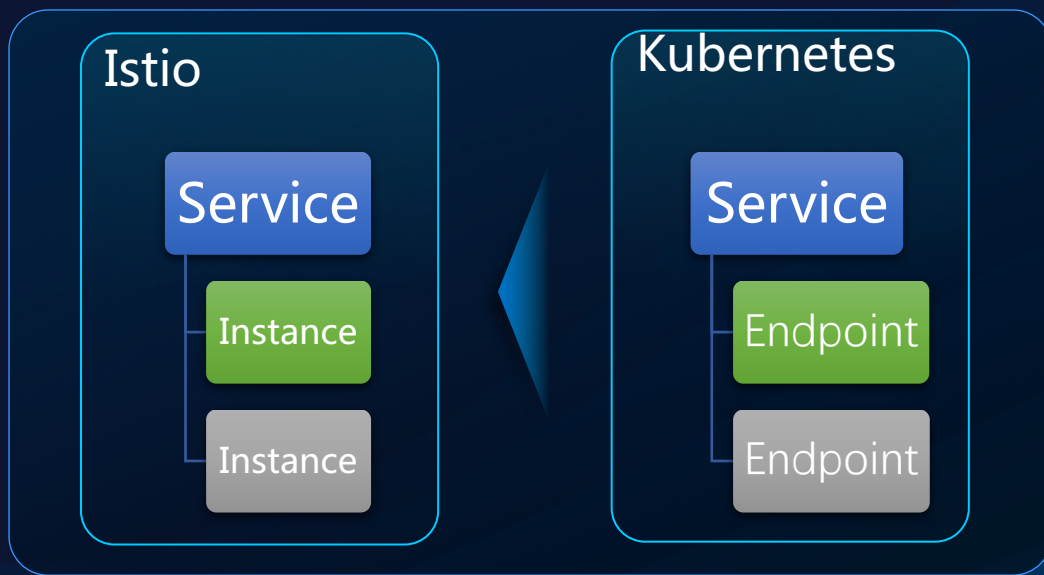
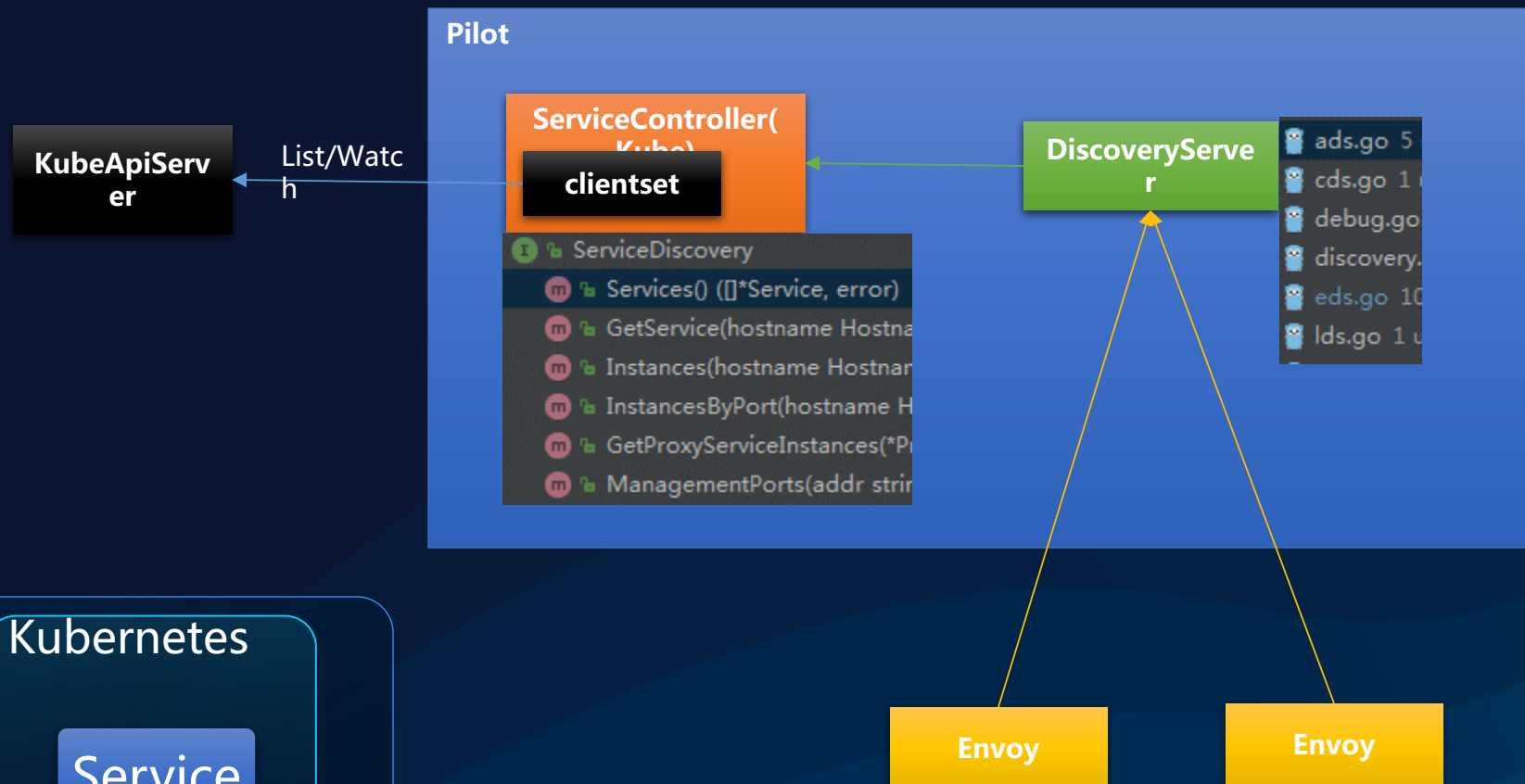


Istio & Kubernetes : 架构结合

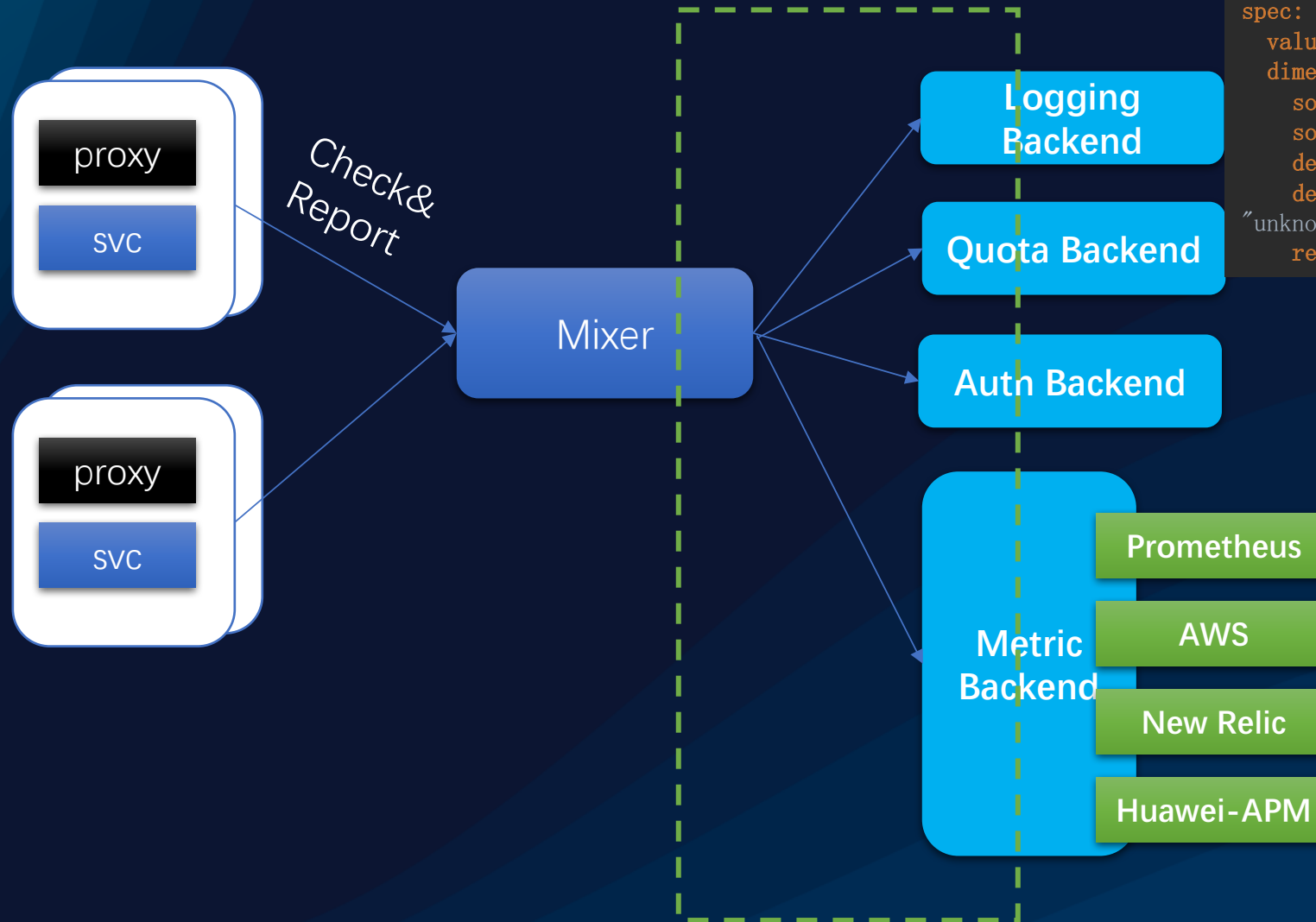


Istio & Kubernetes : 统一服务发现

1. Controller实现ServiceDiscovery
若干服务发现的接口定义
2. Controller List/Watch
KubeAPIServer上service、
endpoint等资源对象
3. DiscoveryServer使用
ServiceDiscovery接口上的服务发
现方法和用户配置的规则构造xDS
4. Envoy从Discovery获取xDS，动态
更新



Istio & Kubernetes : Mixer attribute



```
apiVersion: "config.istio.io/v1alpha2"
kind: metric
metadata:
  name: requestduration
  namespace: istio-system
spec:
  value: response.duration | "0ms"
  dimensions:
    source_service: source.service | "unknown"
    source_version: source.labels["version"] | "unknown"
    destination_service: destination.service | "unknown"
    destination_version: destination.labels["version"] | "unknown"
  response_code: response.code | 200
```

Istio & Kubernetes: 总结



对于云原生应用，采用Kubernetes构建微服务部署和集群管理能力，采用Istio构建服务治理能力，将逐渐成为应用微服务转型的标准配置。



蚂蚁金服
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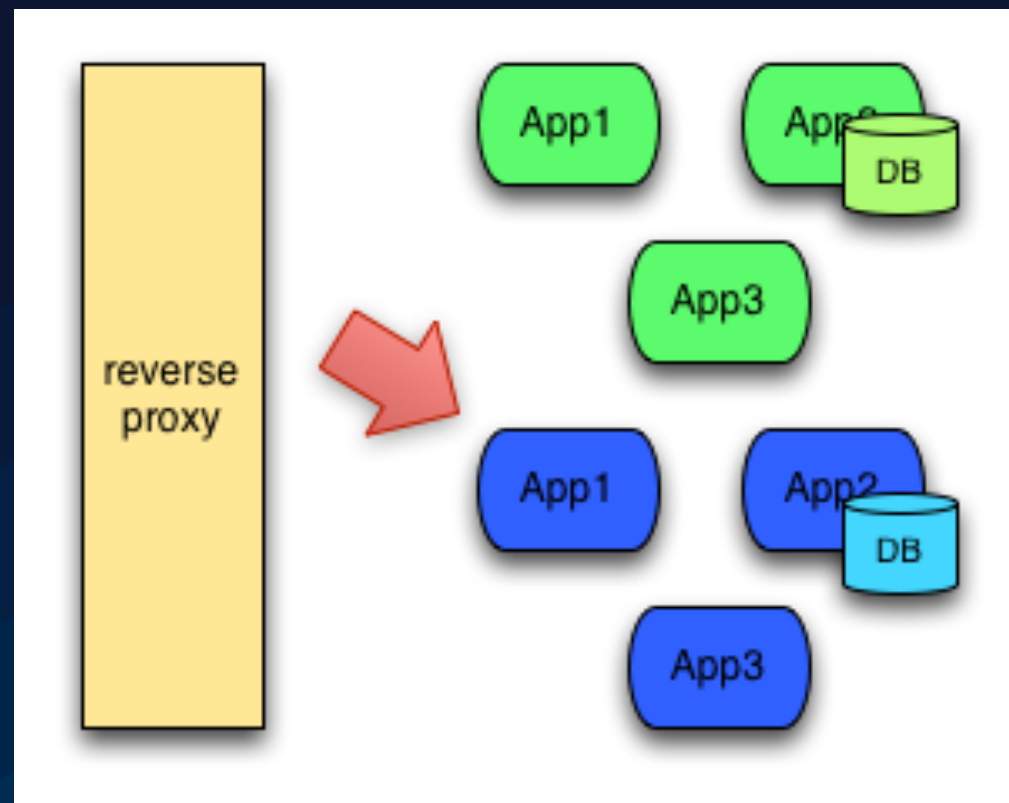
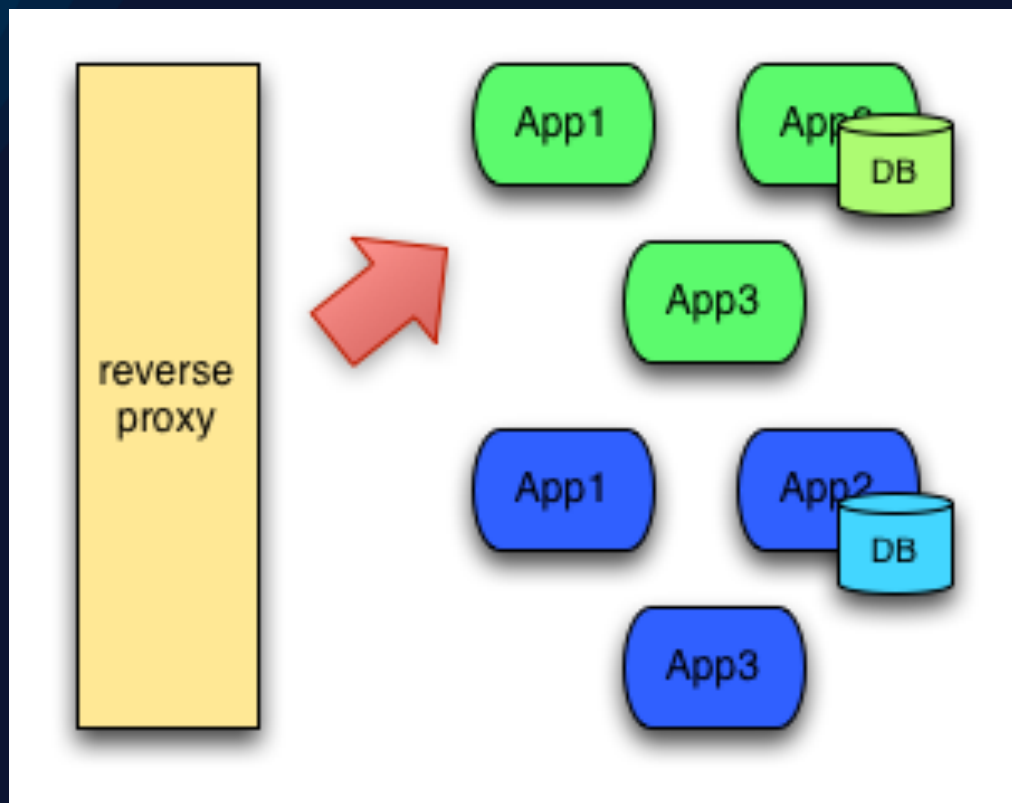


ServiceMesh

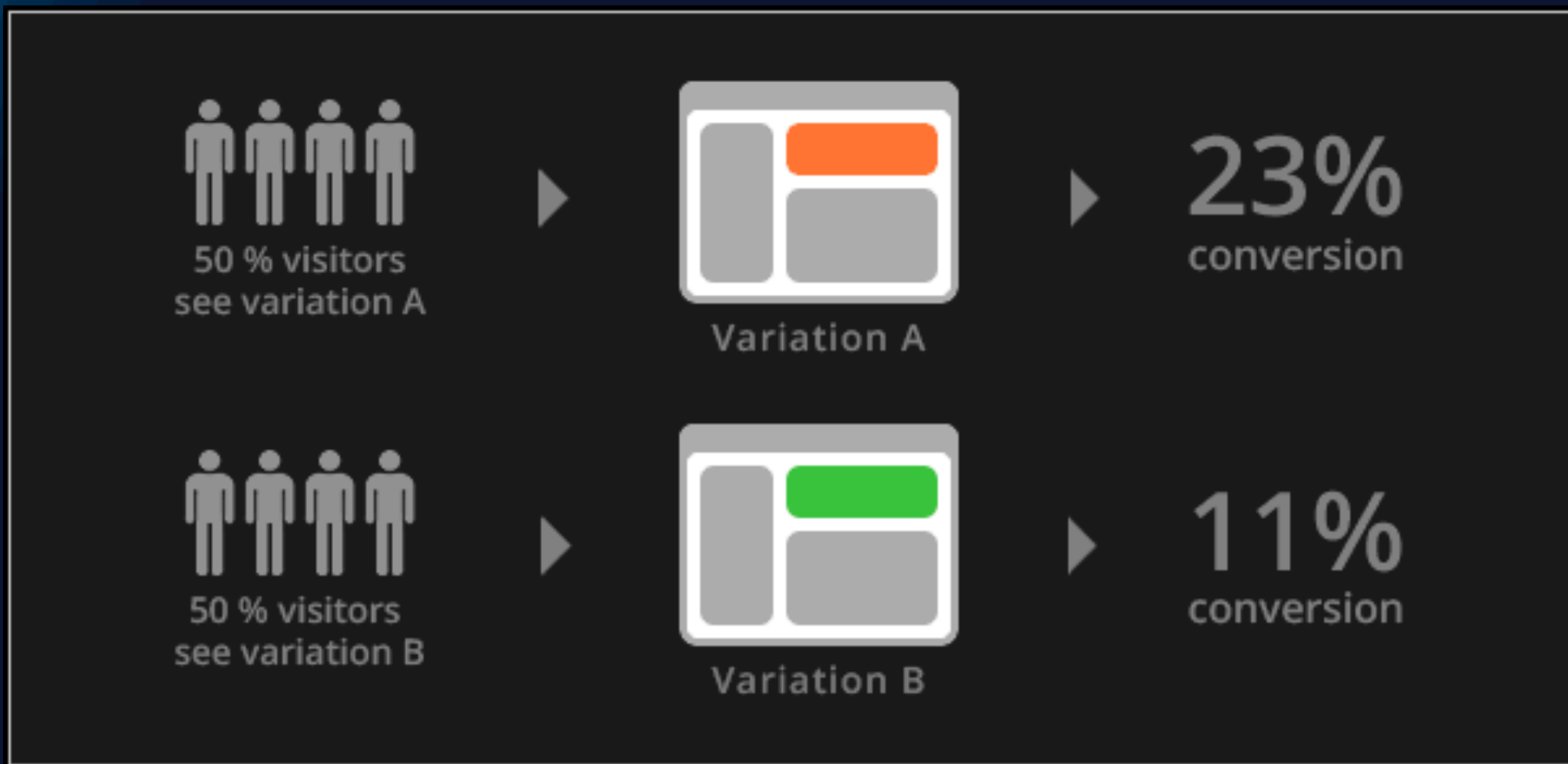
Agenda

- Istio & Kubernetes
- **Istio & Kubernetes上的灰度发布**

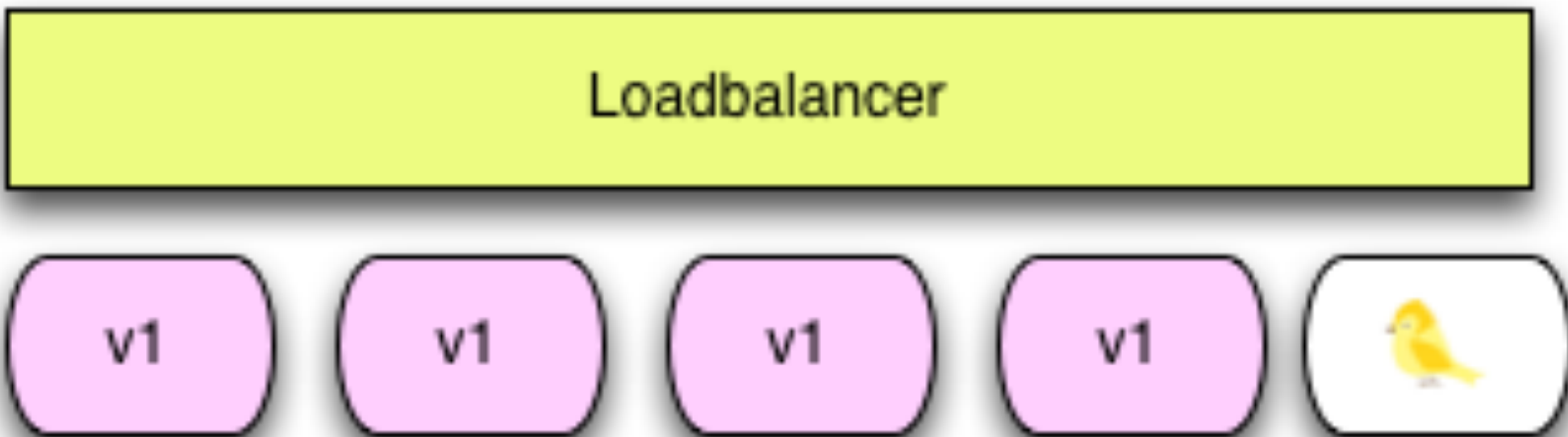
灰度发布：蓝绿



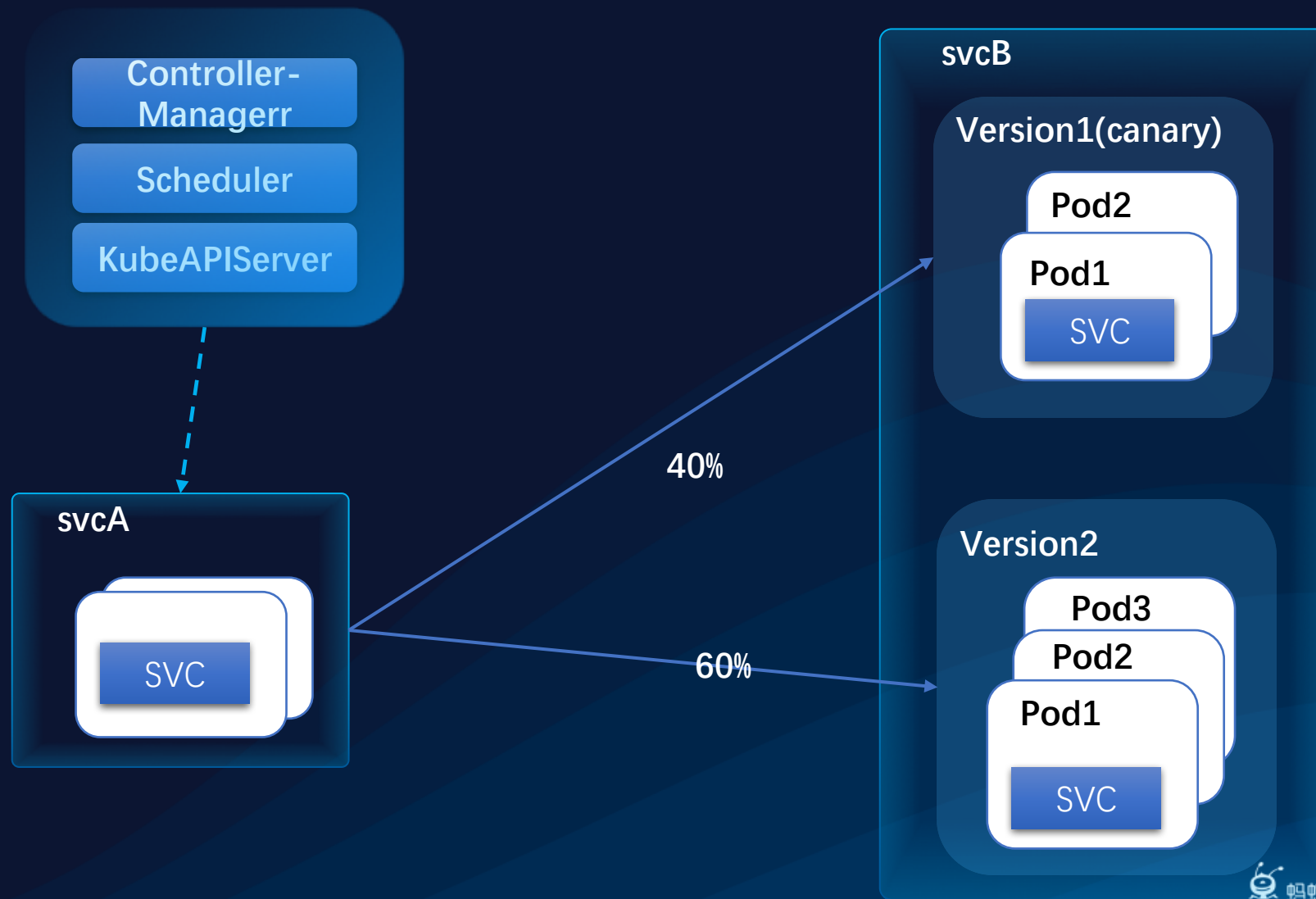
灰度发布：A/B Testing



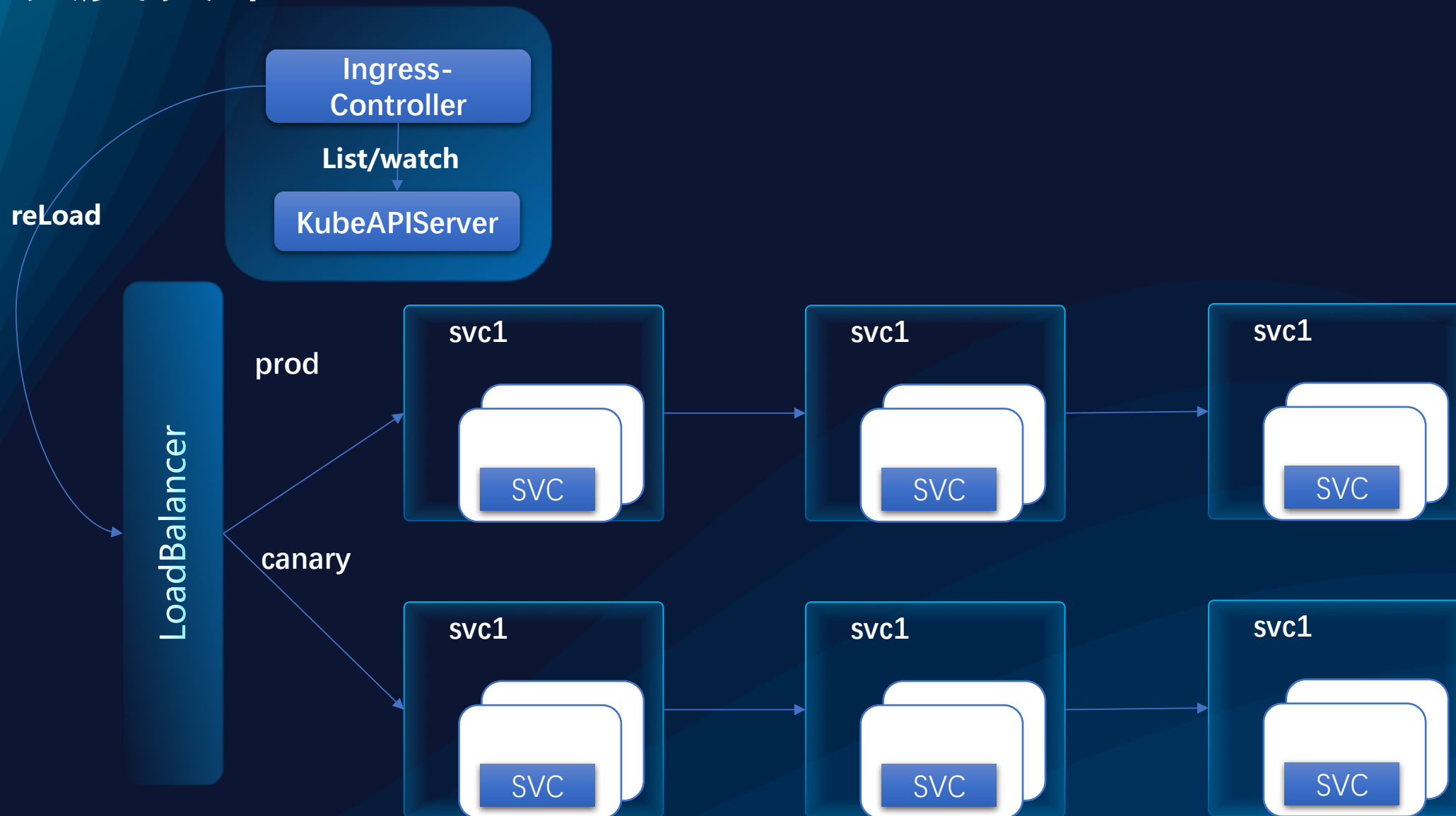
灰度发布：Canary releases



灰度发布：基于Kubernetes RC

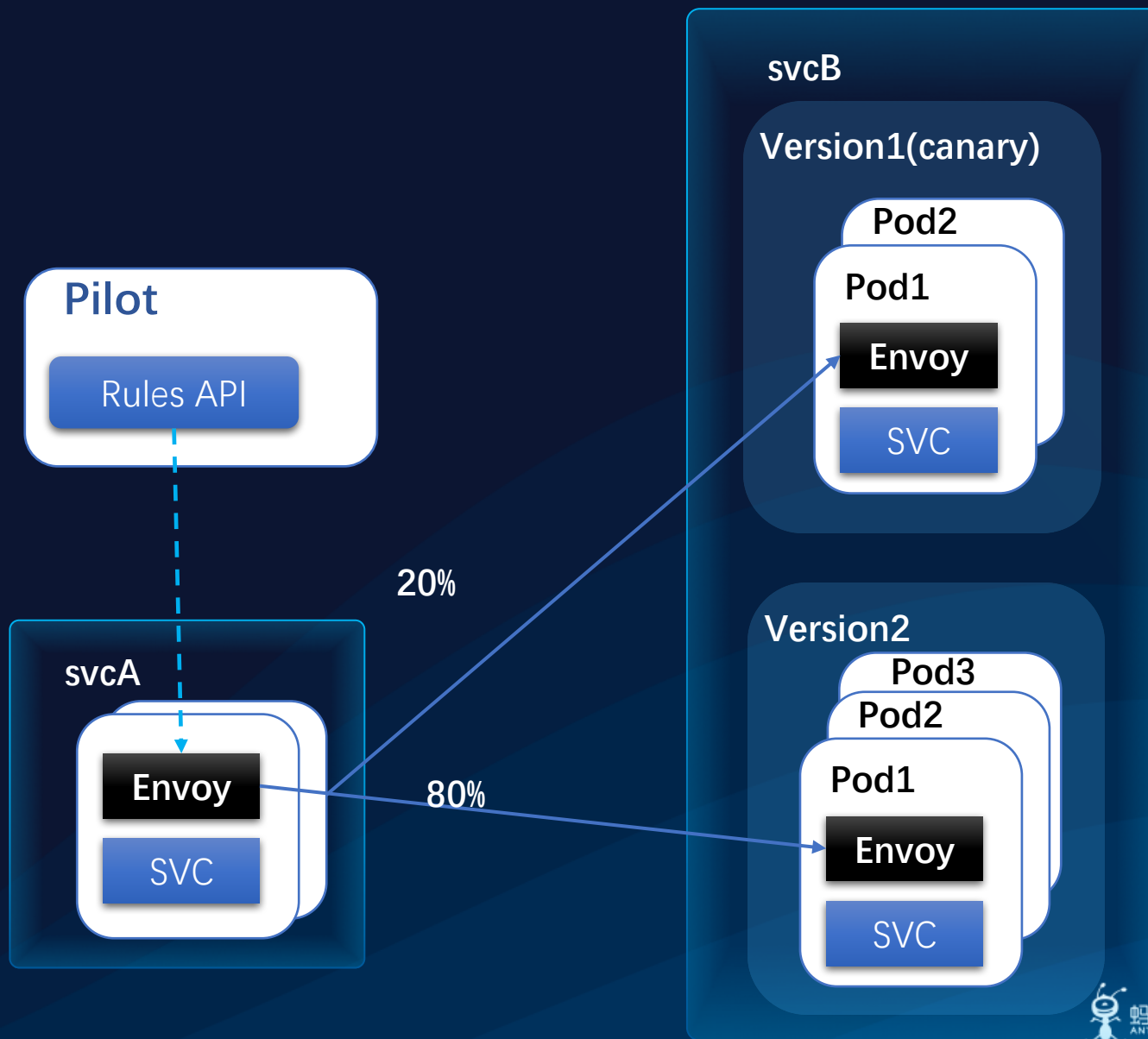


灰度发布：基于Kubernetes + Loadbalancer



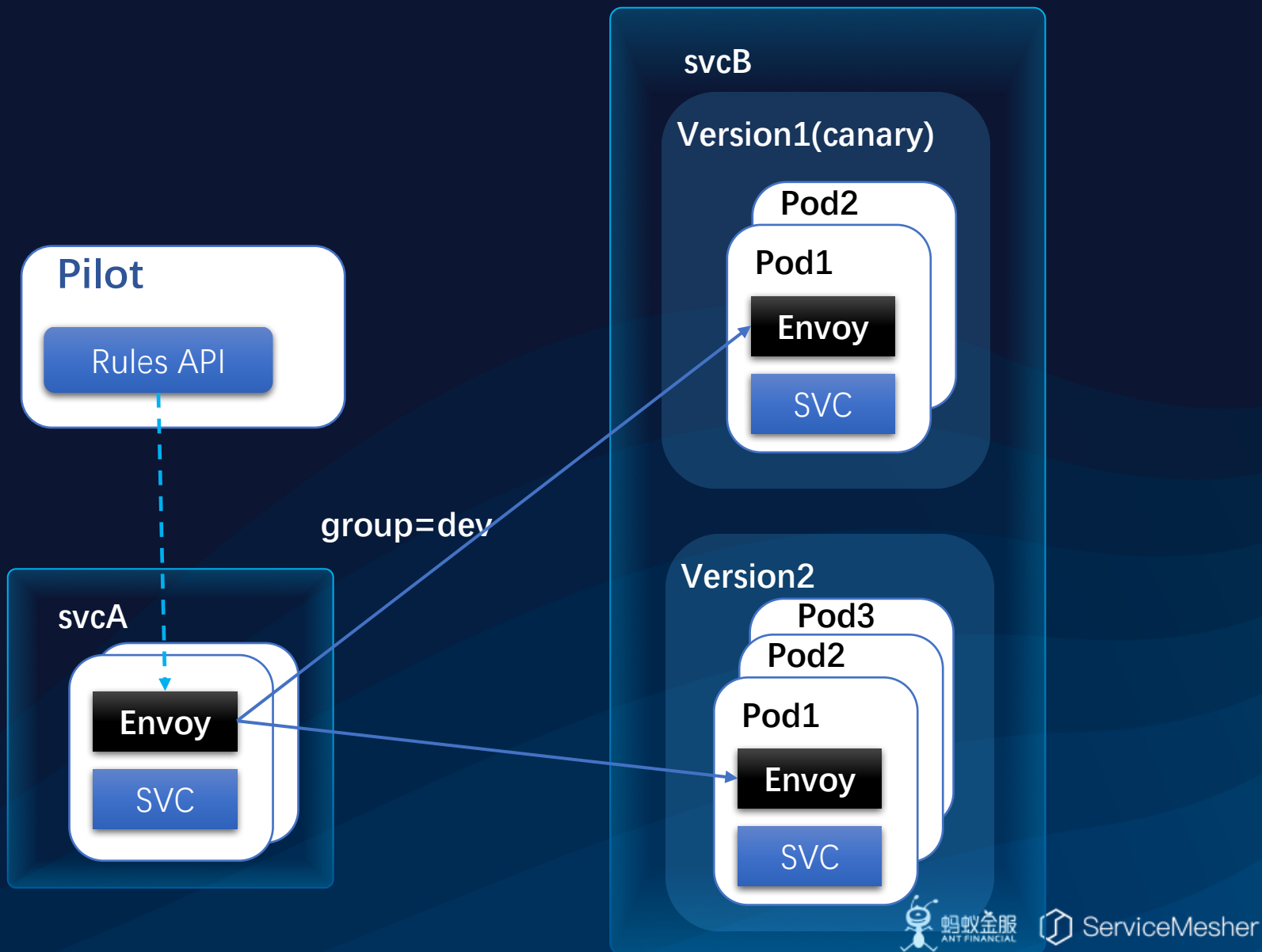
Istio灰度发布：基于权重

```
apiVersion: ...  
kind: VirtualService  
metadata:  
  name: vs-svcb  
spec:  
  hosts:  
  - svcb  
  http:  
    route:  
    - destination:  
      name: v1  
      weight: 20  
    - destination:  
      name: v2  
      weight: 80
```



Istio 灰度发布：基于请求内容

```
apiVersion: ...  
kind: VirtualService  
metadata:  
  name: ratings-route  
spec:  
  hosts:  
  - svcb  
  http:  
  - match:  
    - headers:  
      cookie:  
        exact: "group=dev"  
    route:  
    - destination:  
      name: v1  
  - route:  
    - destination:  
      name: v2
```

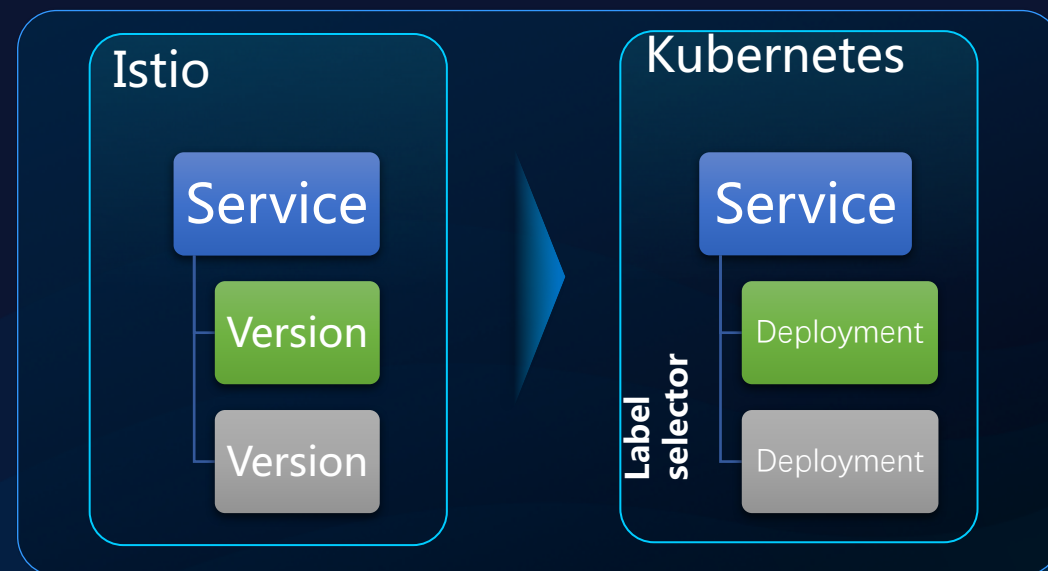


灰度发布：灰度版本存在形式

```
kind: Deployment
metadata:
  name: rating-v1
spec:
  replicas: 2
  template:
    metadata:
      labels:
        app: rating
        version: v1
    spec:
      containers:
        - image: rating-v1
```

```
kind: Deployment
metadata:
  name: rating-v2
spec:
  replicas: 3
  template:
    metadata:
      labels:
        app: rating
        version: v2
    spec:
      containers:
        - image: rating-v2
```

...



Istio几种重要资源对象

- 入口资源对象
 - [VirtualService](#)
 - [DestinationRule](#)
- 重要属性
- [HTTPRoute](#)
- [HTTPMatchRequest](#)
- [TCPRoute](#)
- [DestinationWeight](#)

一个典型的VirtualService

```
{
  "apiVersion": "networking.istio.io/v1alpha3",
  "kind": "VirtualService",
  "metadata": {
    "name": "reviews-route"
  },
  "spec": {
    "hosts": [
      "reviews"
    ],
    "gateways": [
      "bookinfo",
      "mesh"
    ],
    "http": [
      {
        "match": [
          {
            "headers": {
              "cookie": {
                "regex": "^(.*?;)?(user=jason)(.*?)"
              }
            },
            "uri": {
              "prefix": "/catalog1"
            }
          }
        ],
```

```
        {
          "uri": {
            "prefix": "/catalog2"
          }
        }
      ],
      "rewrite": {
        "uri": "/newcatalog"
      },
      "route": [
        {
          "destination": {
            "name": "reviews",
            "subset": "v2"
          },
          "weight": 25
        },
        {
          "destination": {
            "name": "reviews",
            "subset": "v3"
          },
          "weight": 75
        }
      ]
    },
    {
      "route": [
        {
          "destination": {
            "name": "reviews",
            "subset": "v1"
          }
        }
      ]
    }
  ]
}
```

Istio在华为云：Kubernetes全栈容器服务



Istio在华为云：华为云容器应用



Istio在华为云：服务网格

创建虚拟机集群 [返回集群管理](#)

1 填写基本信息

2 创建节点

3 订单确认

付费类型

* 计费模式 按需计费

集群设置

* 集群名称
以小写字母开头，由小写字母、数字、中划线(-)组成，不能超过24位，且不能以中划线(-)结尾。

* 版本 v1.9.2 v1.7.3 Kubernetes社区基线版本，建议选择最新版本。

* 集群管理规模 50节点 200节点 1,000节点

* 高可用 是 否 集群创建完成后，高可用模式及普通模式之间不可变更，请按实际使用场景选择。

* 虚拟私有云 myvpc-7c9a9bec 新建虚拟私有云，完成后点击刷新按钮。
[了解虚拟私有云、子网和集群的关系](#)

* 所在子网 mysubnet-7c9a9bec 新建子网，完成后点击刷新按钮。

* 网络模型 容器隧道网络 VPC网络
温馨提示：容器隧道网络模型当前支持纳管EulerOS 2.2、CentOS 7.4操作系统。

* 容器网段 /
建议使用网段：10.0.0.0/8~19, 172.16.0.0/16~19, 192.168.0.0/16~19

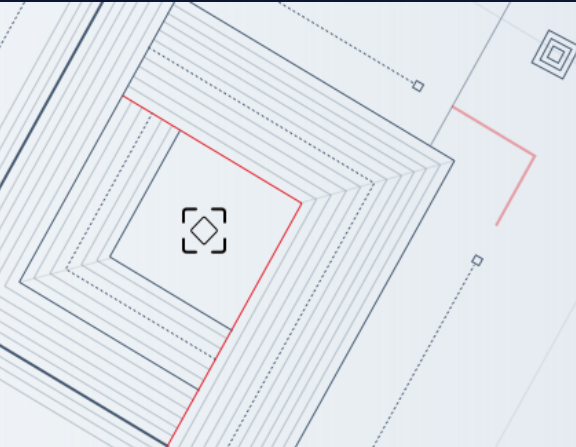
* 服务转发模式 iptables ipvs

NEW!

服务网格 启用 不启用 服务网格特性正在火热公测中，选择启用即可试用

集群描述

0/200



裸金属容器集群服务云硬盘

助力游戏、AI等行业轻松应对高性能计算业务场景的挑战

只需在创建集群时选择“启用服务网格”即可使用Istio服务治理功能

级

高可用，容器应下线，保障业务不

开放兼容

兼容Kubernetes/Docker社区原生版本，CNCF认证的Kubernetes服务提供商，社区的主要贡献者

Istio在华为云：灰度发布流程



Istio在华为云：灰度发布

应用管理 > 应用详情 > 组件详情

组件名称	graph-engine	协议	TCP
组件类型	deployments	所属应用	ei-service
创建时间	2018/06/29 11:31:07 GMT+08:00	Istio命令行工具	查看详情
描述	graph engine api-server.		

版本管理 访问方式

增加灰度版本

暂时只支持添加1个灰度版本

请输入版本号或描述

版本号	实例数	描述	创建时间	灰度策略（基于请求内容）	操作
v1	2	生产版本1.0	2018/06/29 11:31:07 GMT+0...	不符合其他版本匹配策略的流量均会转发到版本v1	管理负载 删除版本 接管所有流量
v1.1 (灰度版本)	2	灰度版本1.1	2018/06/29 11:34:46 GMT+0...	Cookie完全匹配group=dev的请求流量会转发到...	  管理负载 删除版本 接管所有流量

默认版本

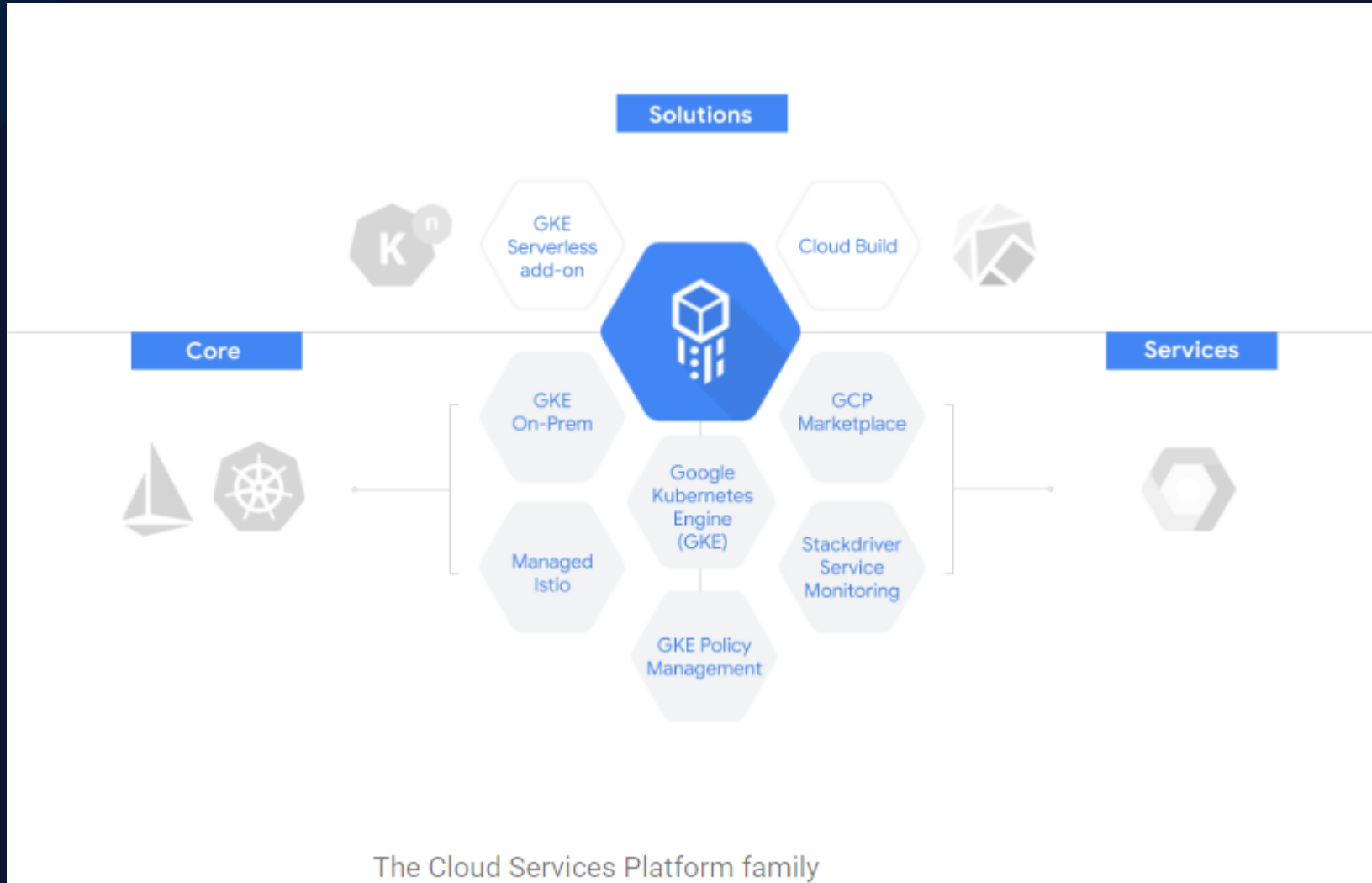
灰度版本

取消

提交策略

Mesh

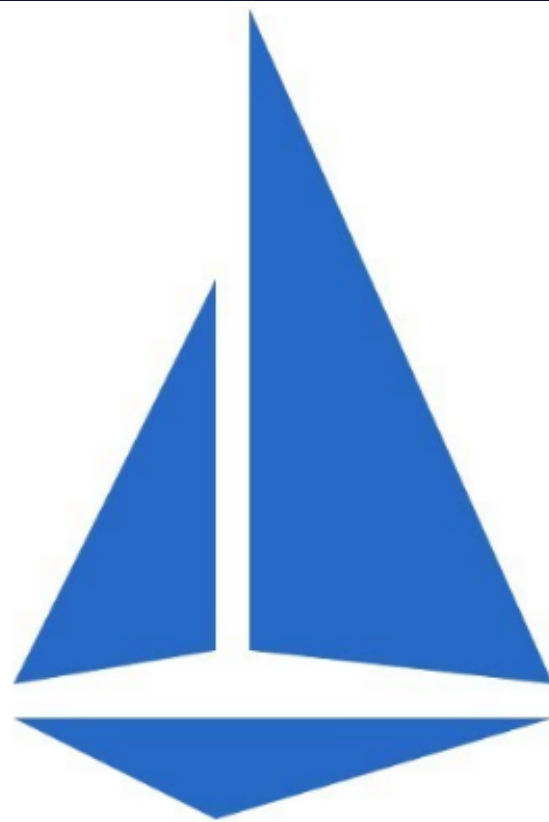
Istio & Kubernetes 在Google



[Cloud Services Platform: bringing the best of the cloud to you](#)



kubernetes



ISTIO

Thank You.

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Istio & Kubernetes 在Google : Managed Istio

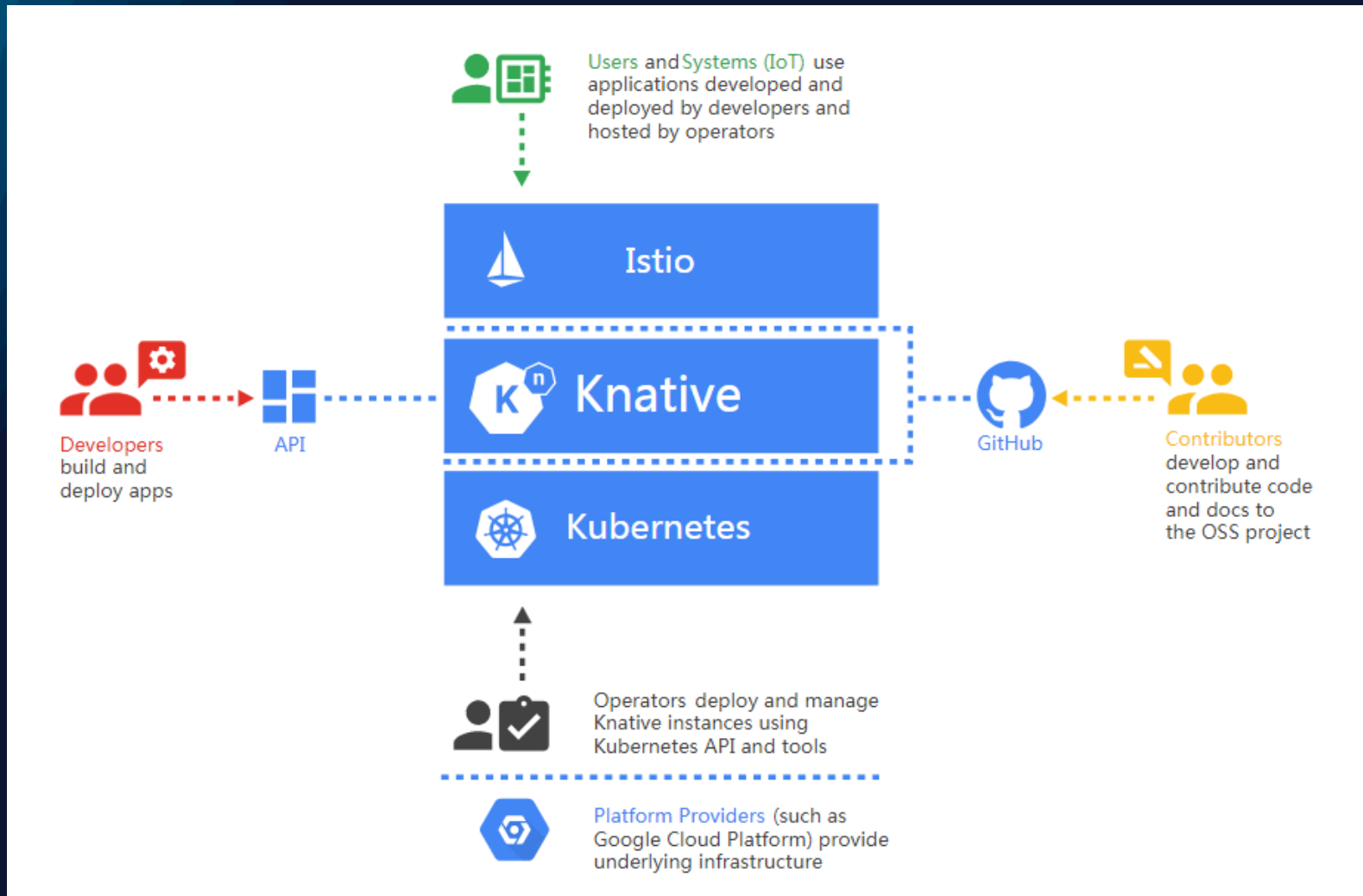


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ServiceMesh

Istio & Kubernetes 在Google : Knative



[Knative](#) Serving builds on Kubernetes and Istio to support deploying and serving of serverless applications and functions.





金融级分布式架构



ServiceMesh

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