

# Day15 Istio服务与架构

张超盟 @ Huawei Cloud BU

# Agenda

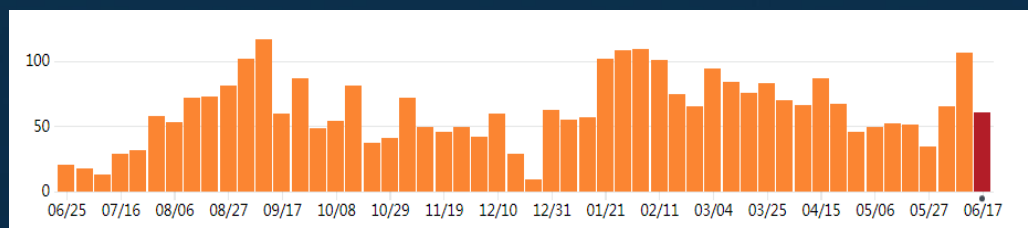
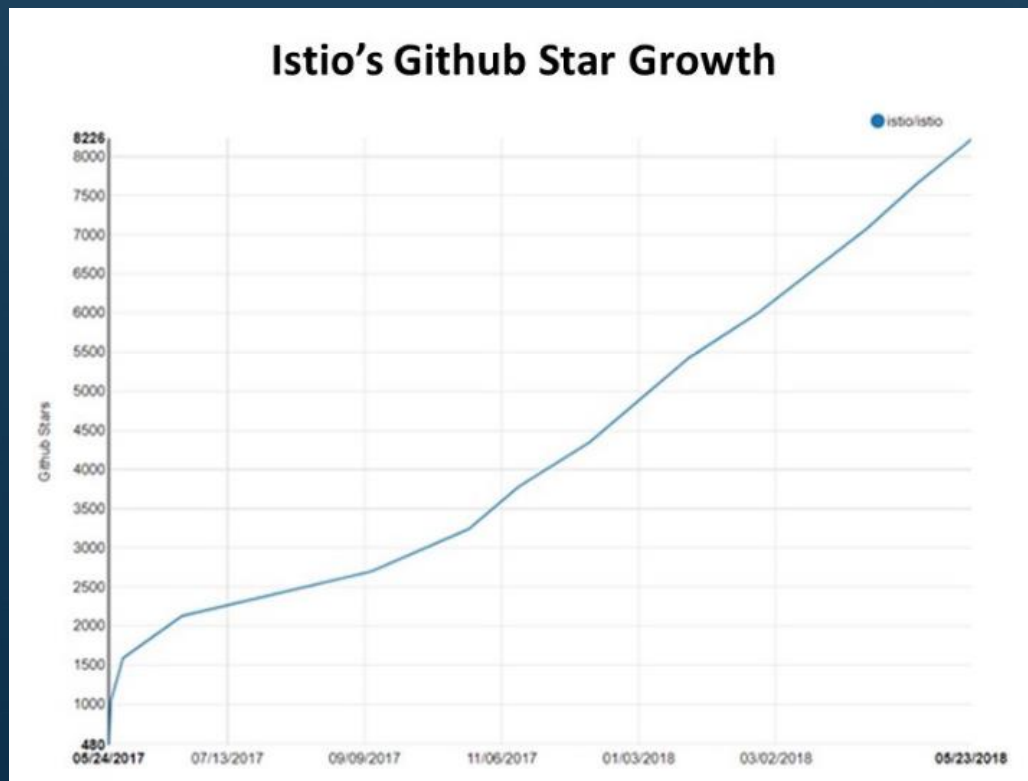
- **Istio**
- Istio & Kubernetes
- Istio & Kubernetes的云原生实践



# ISTIO

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

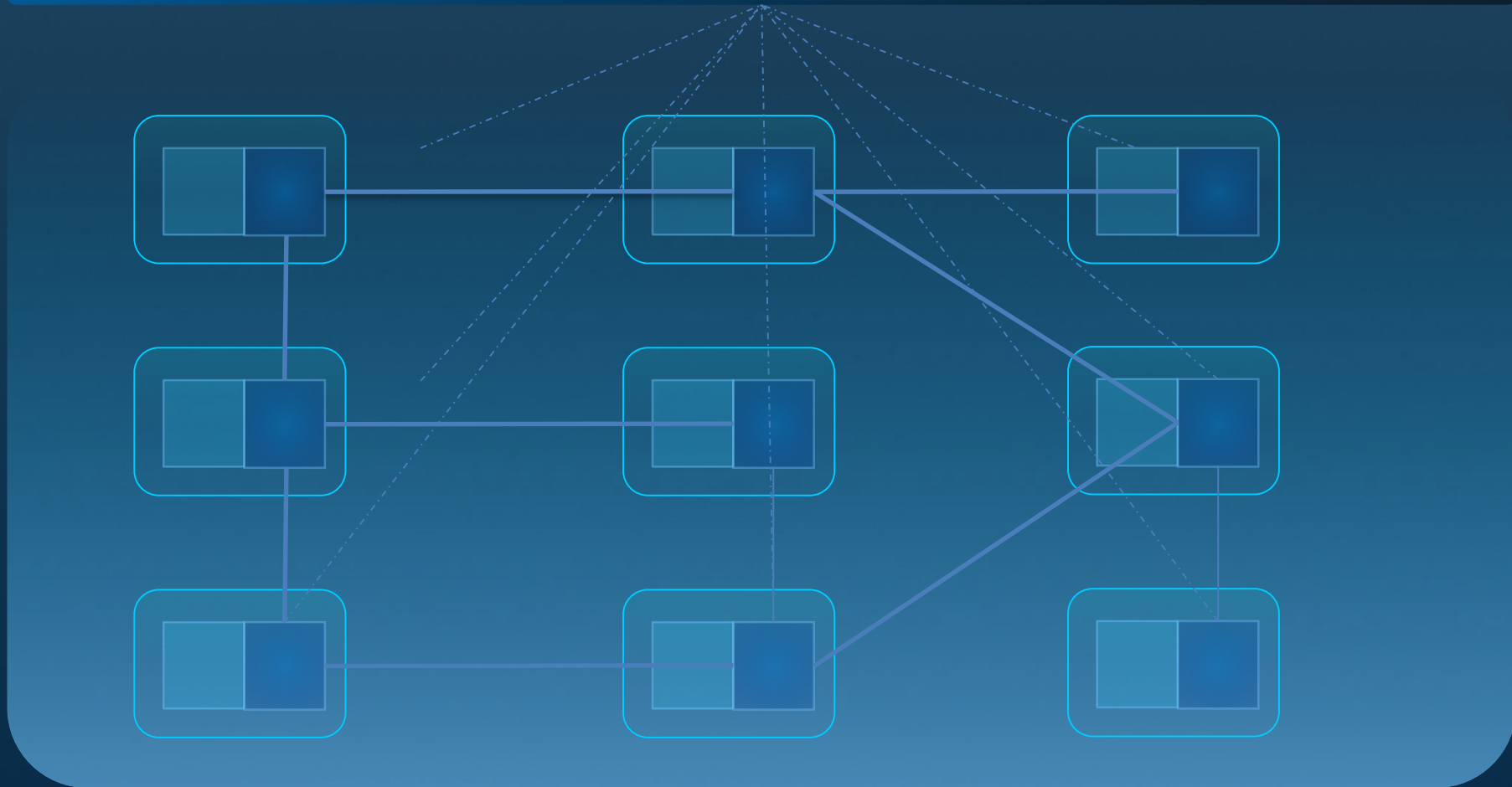
# Istio项目



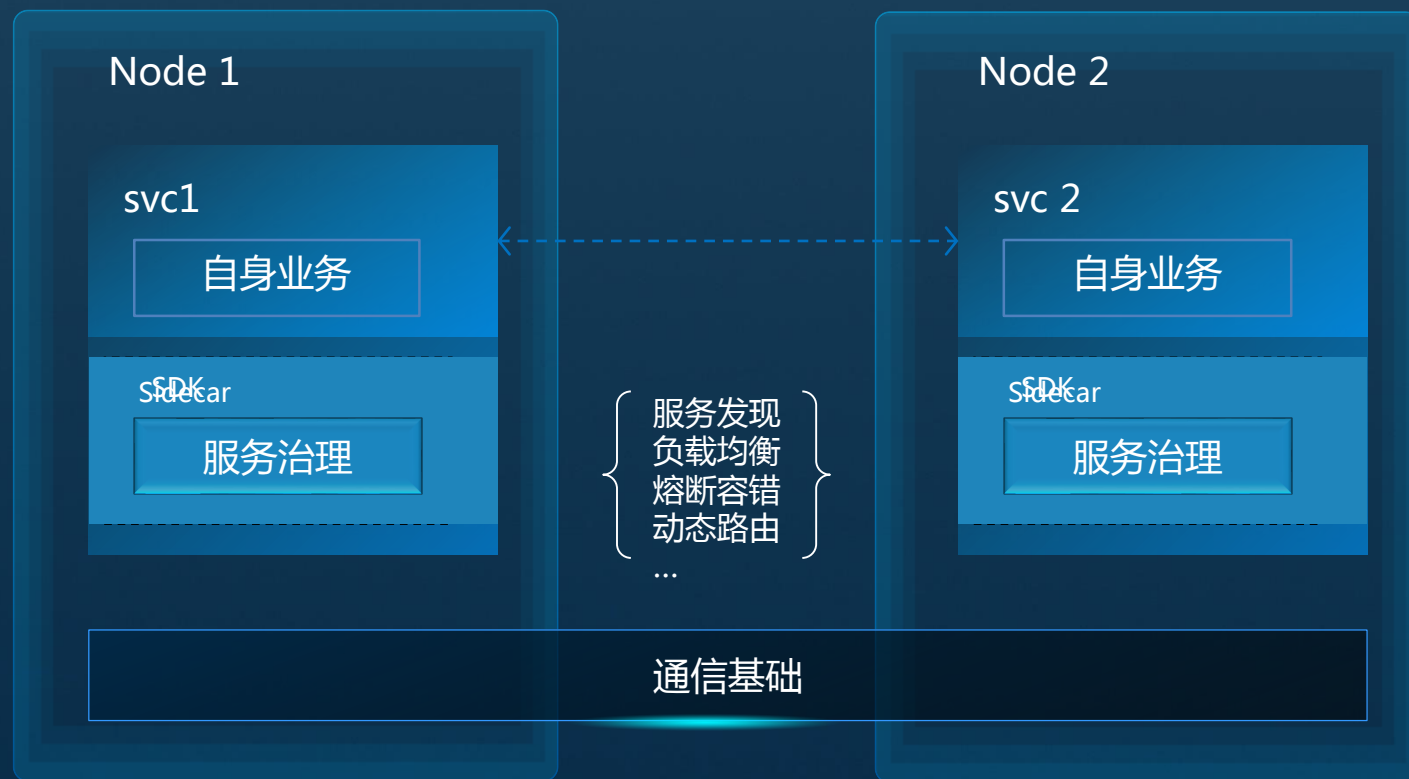
Schedule Matches	
<b>Tuesday, May 1</b>	
13:00	Hands-on with Istio on Kubernetes Kubernetes Workshop with VMware (Description: istio)
18:20	Lightning Talk: Extending Istio Service Mesh with Envoy v2 APIs for Stateless and Stateful Services - Dmitri Chouchourov & Tim Swanson, Cisco Systems, Inc (Intermediate Skill Level) (Slides Attached)
18:25	Lightning Talk: Istio by Example - Josef Adersberger, QAware (Beginner Skill Level) (Slides Attached)
<b>Wednesday, May 2</b>	
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 - Jov 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 Agarwala, Cisco (Intermediate Skill Level)
15:40	Performance and Scale @ Istio Service Mesh - Fawad Khaliq, VMware Inc, Laurent Demallay, 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)
<b>Thursday, May 3</b>	
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)
<b>Friday, May 4</b>	
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)

# Service Mesh

服务网格控制面



# Service Mesh 非侵入的服务治理



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

# 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

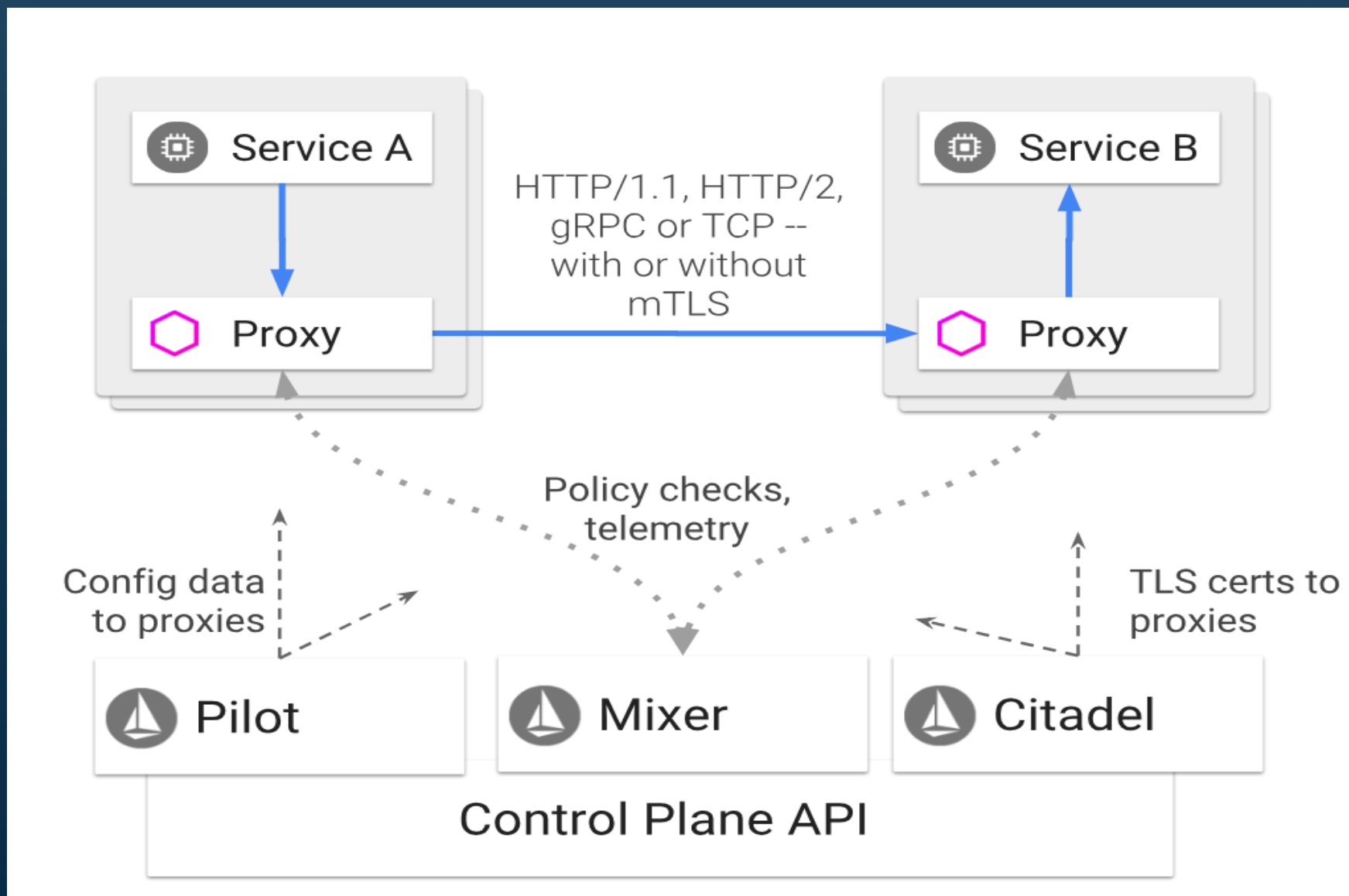
### 集成和定制

ACL

日志

配额

# Istio总体架构

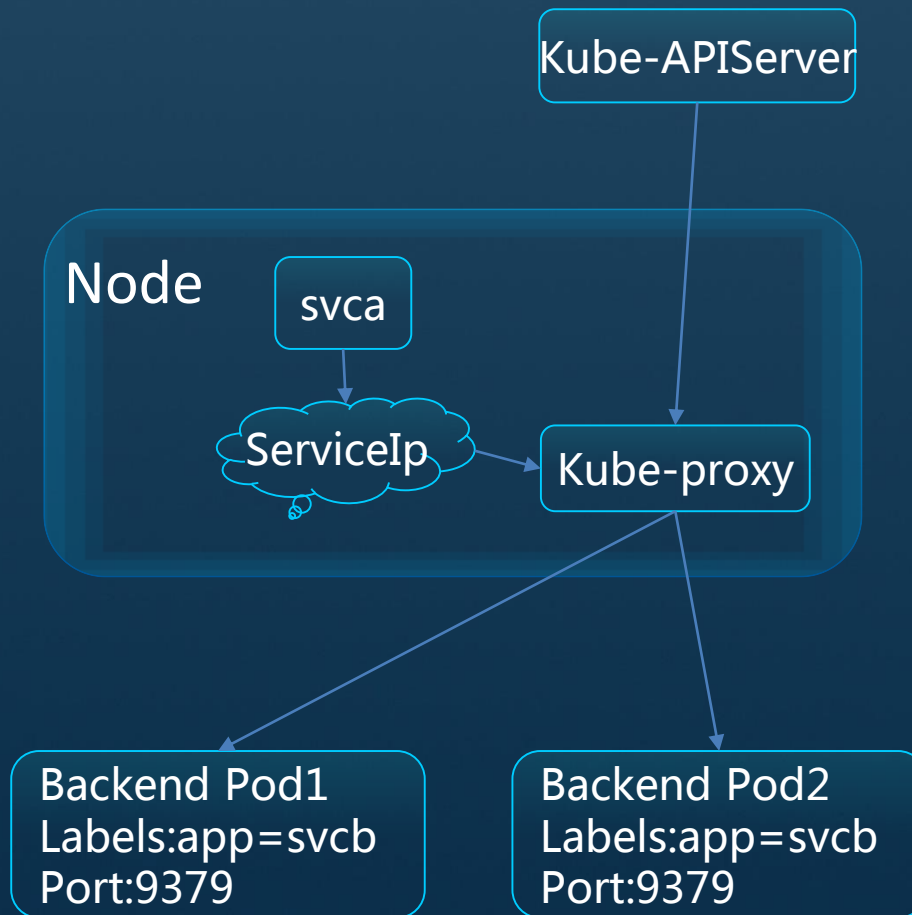
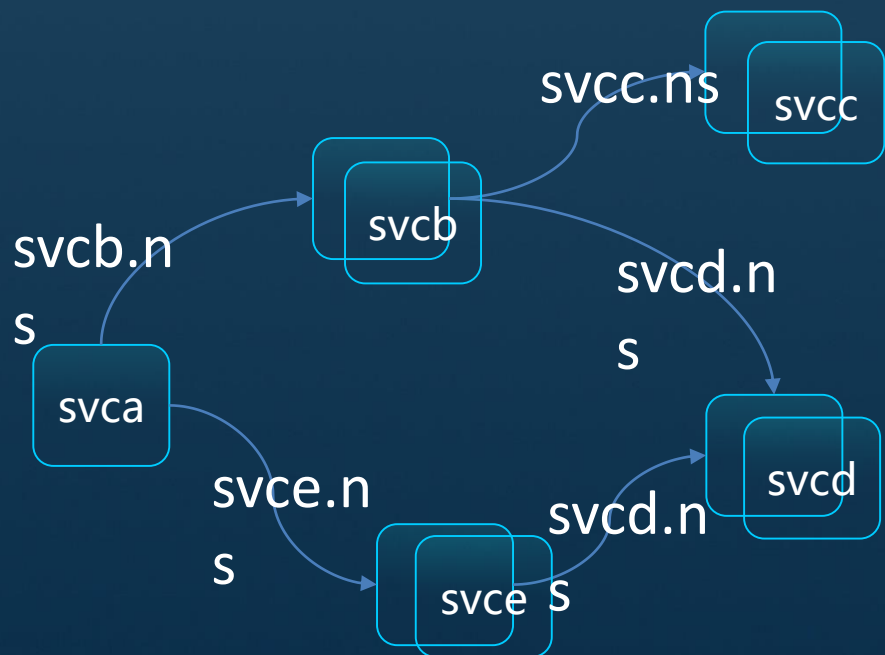




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- Istio
- **Istio & Kubernetes**
- Istio & Kubernetes的云原生实践

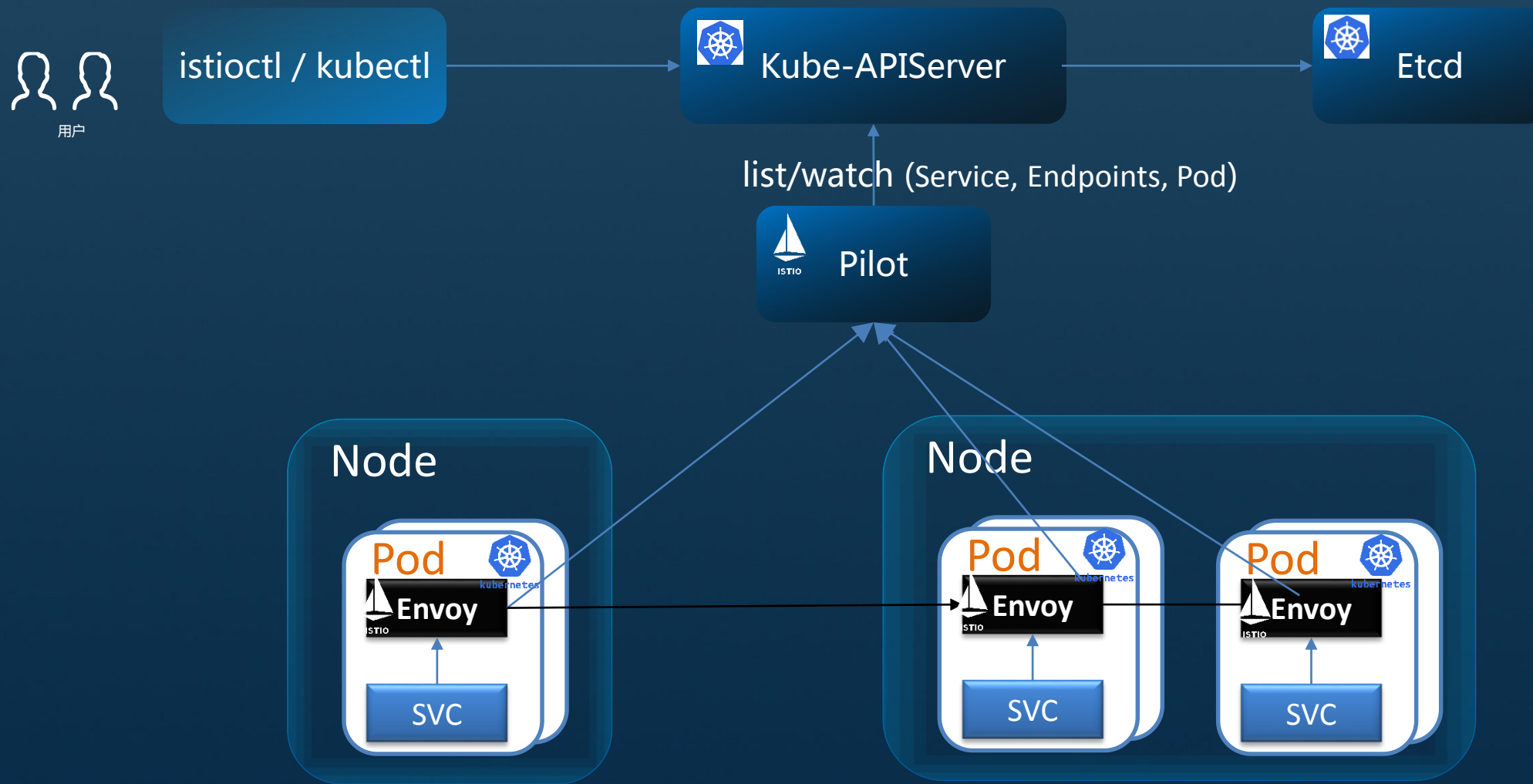
# 看法服务访问



# 基础设施(Kubernetes)看Istio: 能力增强

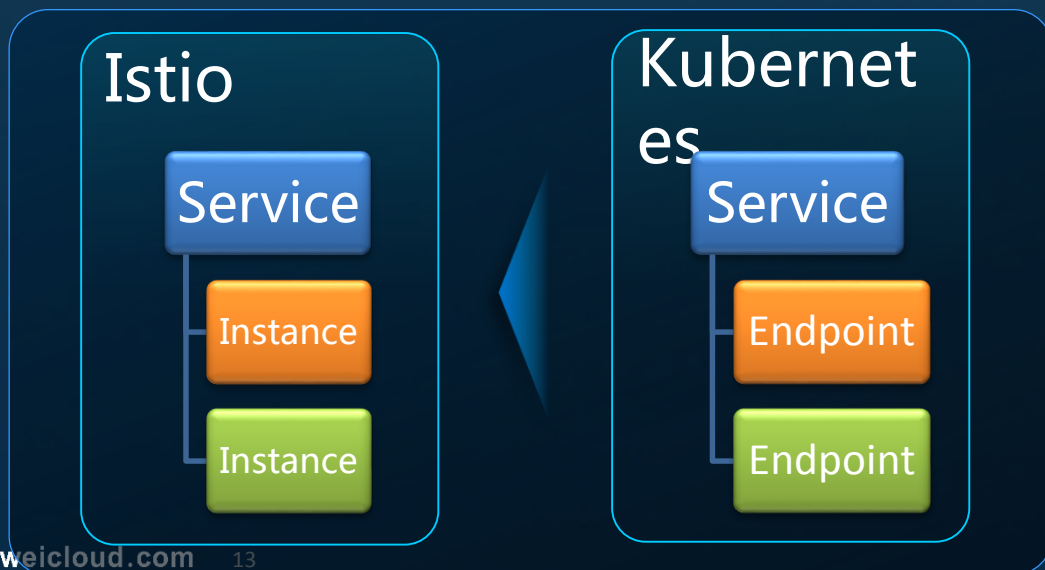
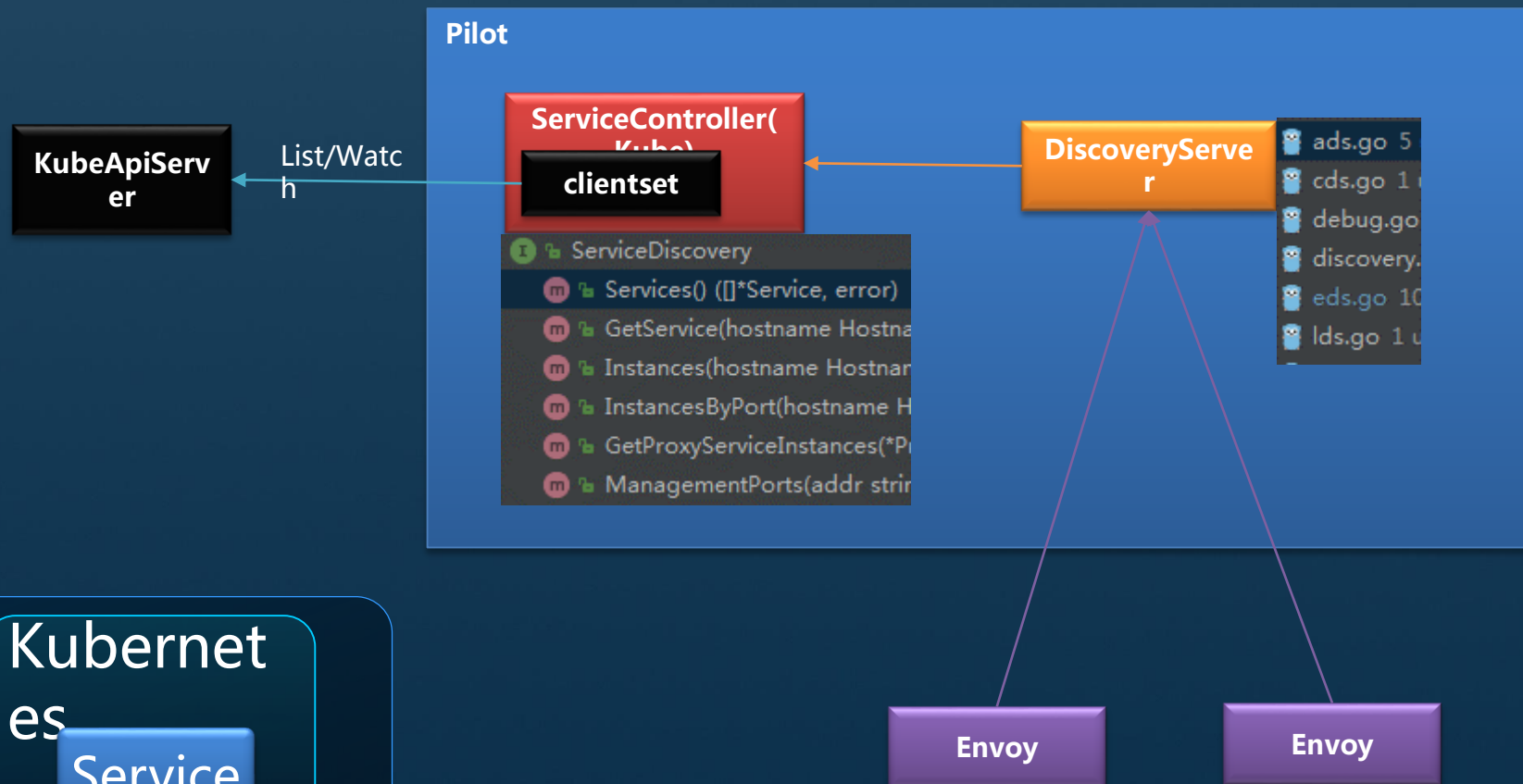


# Istio & Kubernetes : 架构结合

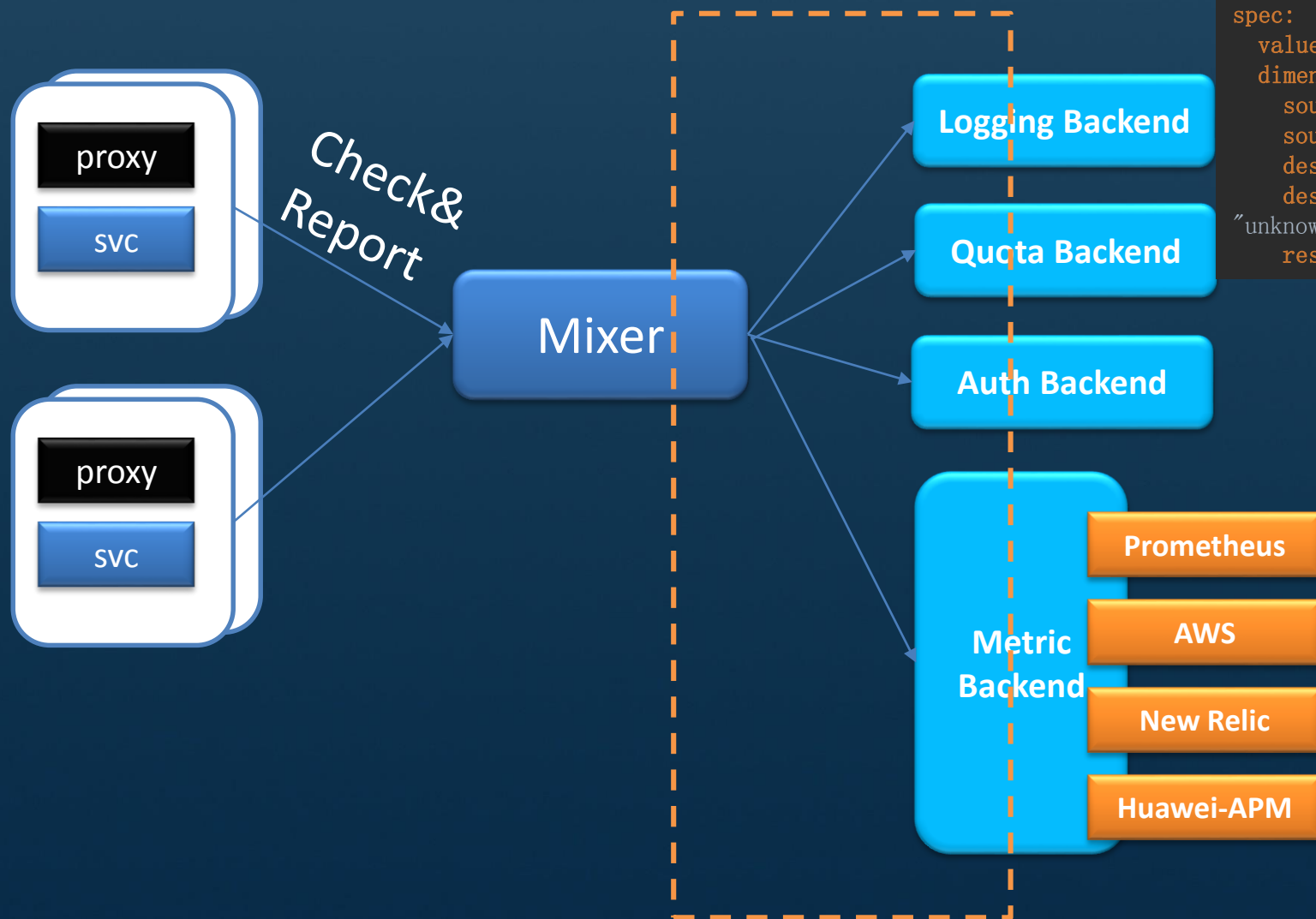


# Istio & Kubernetes : 统一服务发现

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。

# Agenda

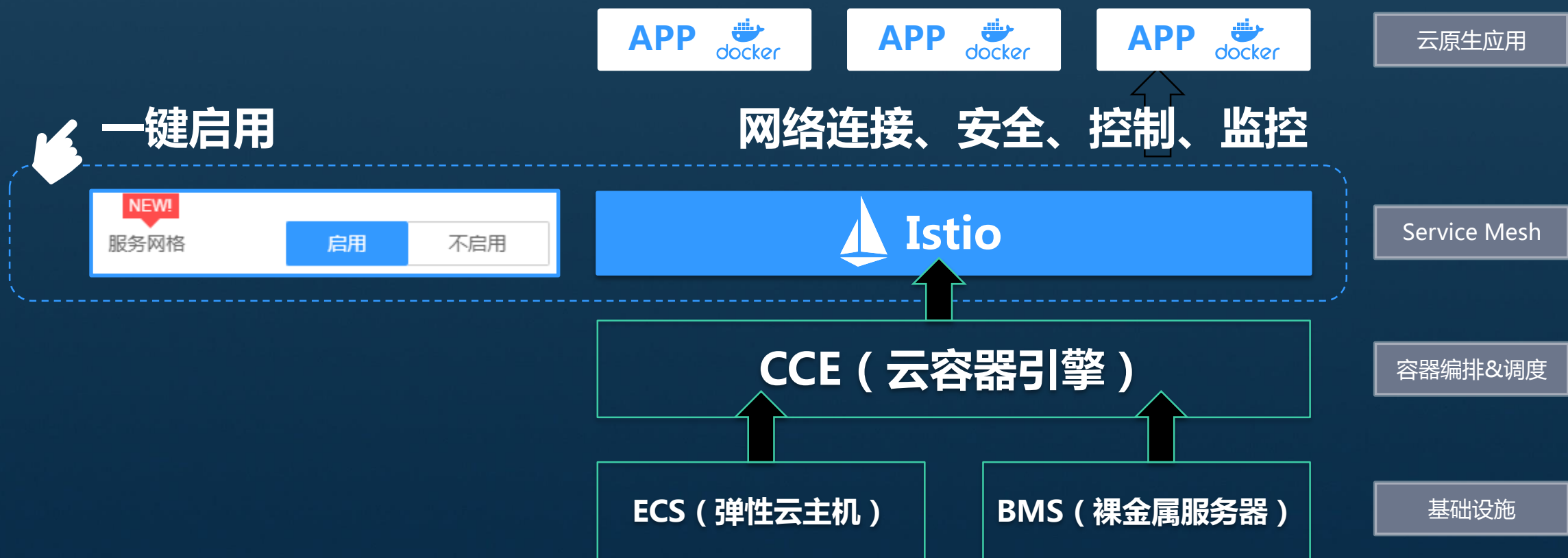
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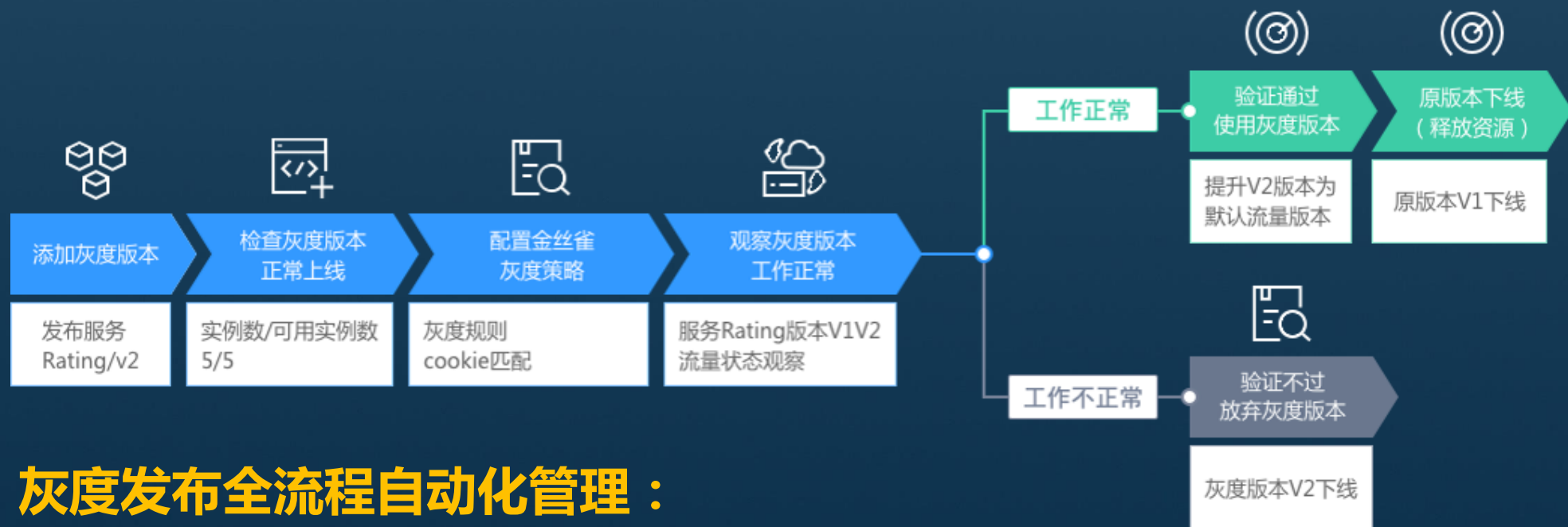
# Kubernetes全栈容器服务



# 无需安装，一键启用，无侵入实现应用治理



# 内置金丝雀、A/B Testing典型灰度发布流程



## 灰度发布全流程自动化管理：

- 灰度版本一键部署，流量切换一键生效
- 配置式灰度策略，支持流量比例、请求内容（Cookie、OS、浏览器等）、源IP
- 一站式健康、性能、流量监控，实现灰度发布过程量化、智能化、可视化

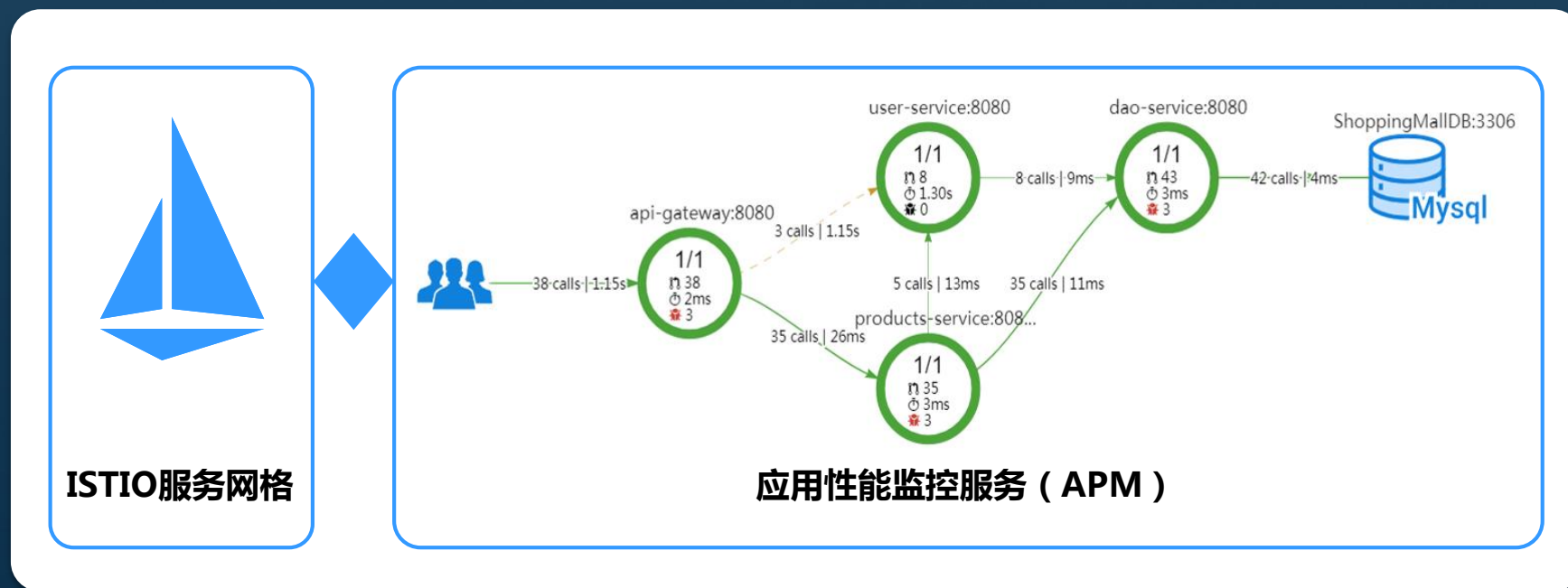
# 策略化的智能路由与弹性流量管理



## 无侵入智能流量管理：

- 权重、内容等路由规则，实现应用灵活灰度发布
- HTTP会话保持，满足业务处理持续性诉求
- 限流、熔断，实现服务间链路稳定、可靠
- 服务安全认证：认证、鉴权、审计等，提供服务安全保障基石

# 图形化应用全景拓扑，流量治理可视化



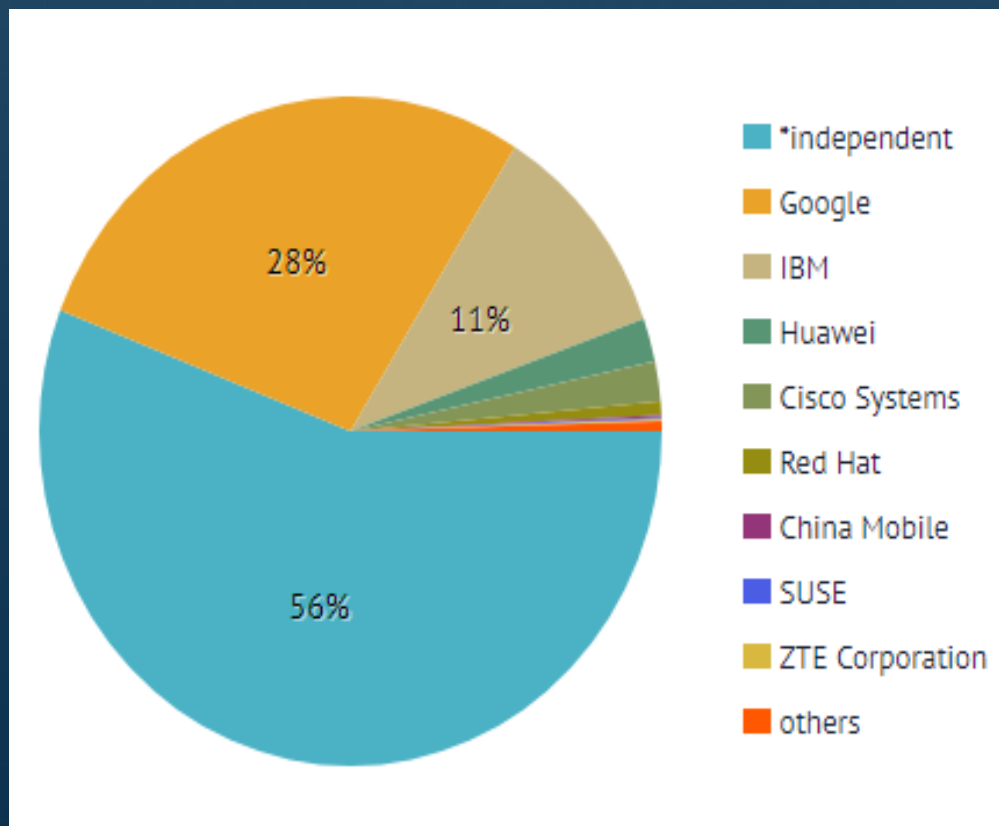
## 实时流量可视化

- 链路健康状态
- 响应时延
- 链路请求数
- 链路异常响应

## 流量治理可视化

- 路由管理
- 限流、熔断
- 故障注入

# Istio 社区贡献



2018年PR贡献提交量		
No	Organization	PRs
1	Google	2940
2	IBM	1122
3	Huawei	<b>222</b>
4	Cisco Systems	202
5	Red Hat	70
6	China Mobile	11
7	SUSE	10
8	ZTE	10
9	SAP	9
10	Pivotal	8

- 截止2018-10-22，累计Pull Requests (PRs)贡献 222条，厂商贡献排名全球第3，(数据来源 stackalytics.com，短网址[bit.ly/2wOoBze](https://bit.ly/2wOoBze))
- 席位：Approver 3席，Member 6席，Contributor 若干。

# Thank You.

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