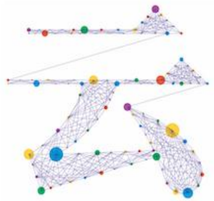
EasyStack
open cloud computing



第四届
全国高校
云计算
应用创新大赛

全国高校云计算应用创新大赛
官方培训班在线课程

容器集群监控

胡正川

EasyStack研发工程师

目录

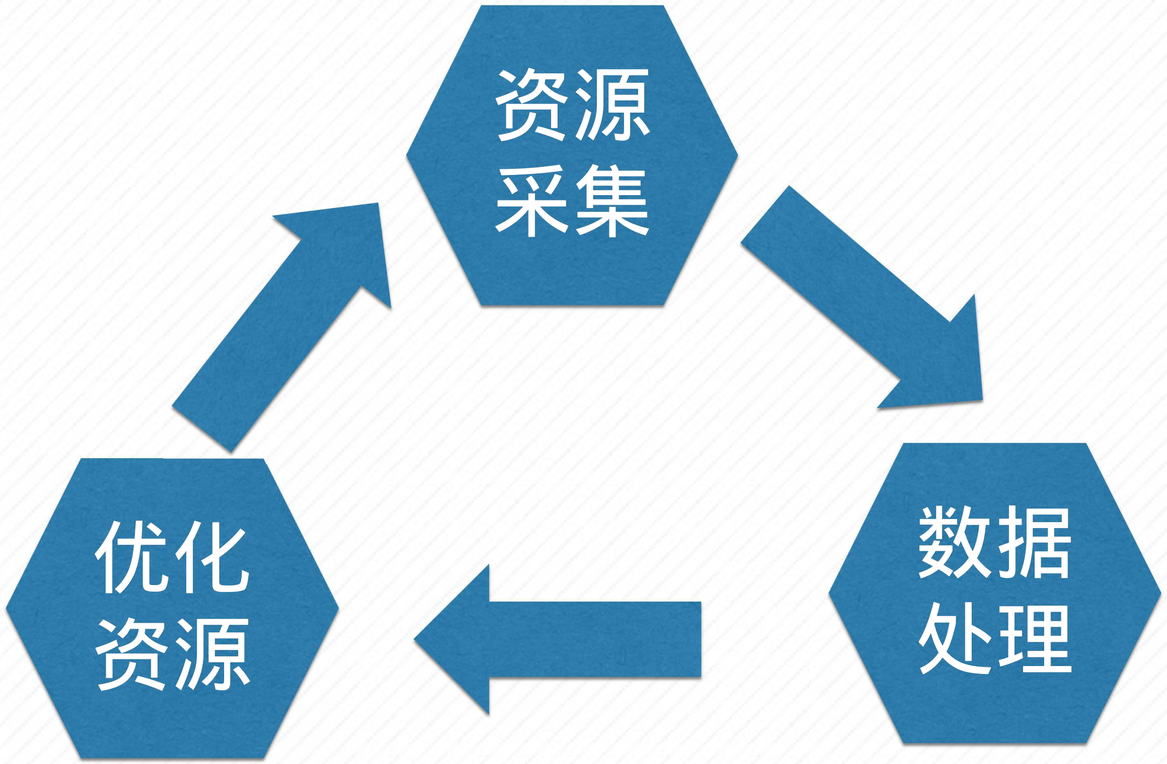
01 容器监控

02 Kubernetes监控

03 Prometheus

04 Prometheus实践

容器监控



采集数据、分析存储数据、展示数据、告警以及自动化处理、监控工具自身的安全机制

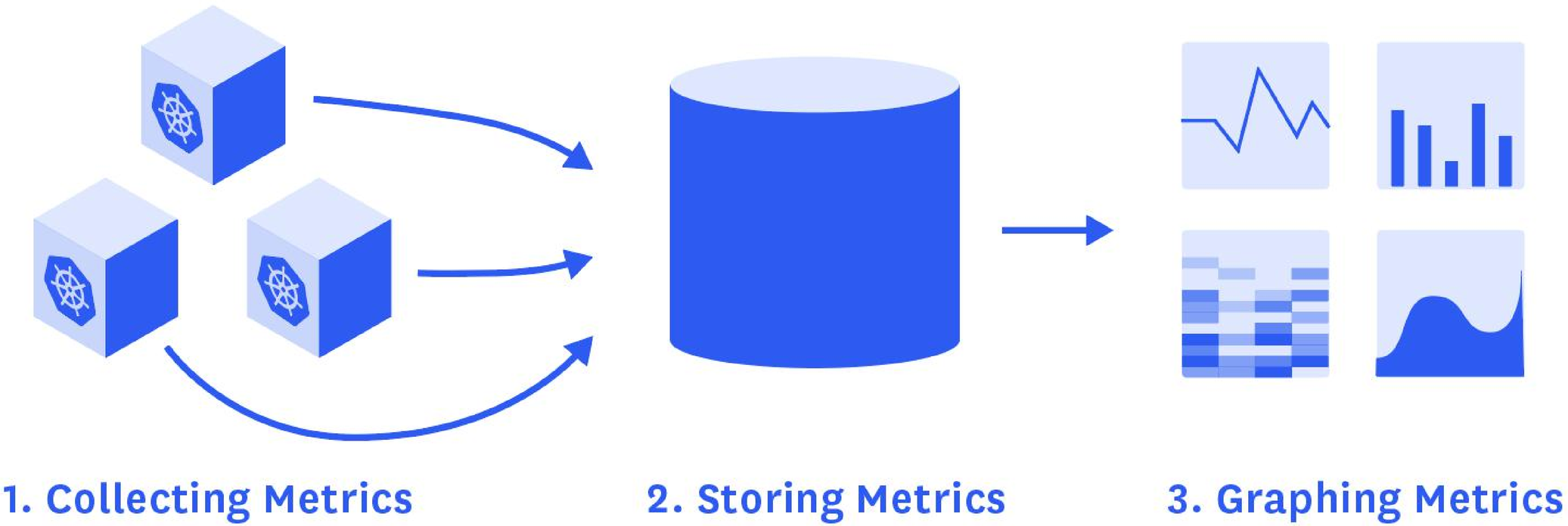
容器监控

关心的监控指标

- 容器本身资源使用情况：cpu，内存，网络，磁盘
- 物理机的资源使用情况：cpu，内存，网络，磁盘
- 物理机上容器镜像情况，名字，大小

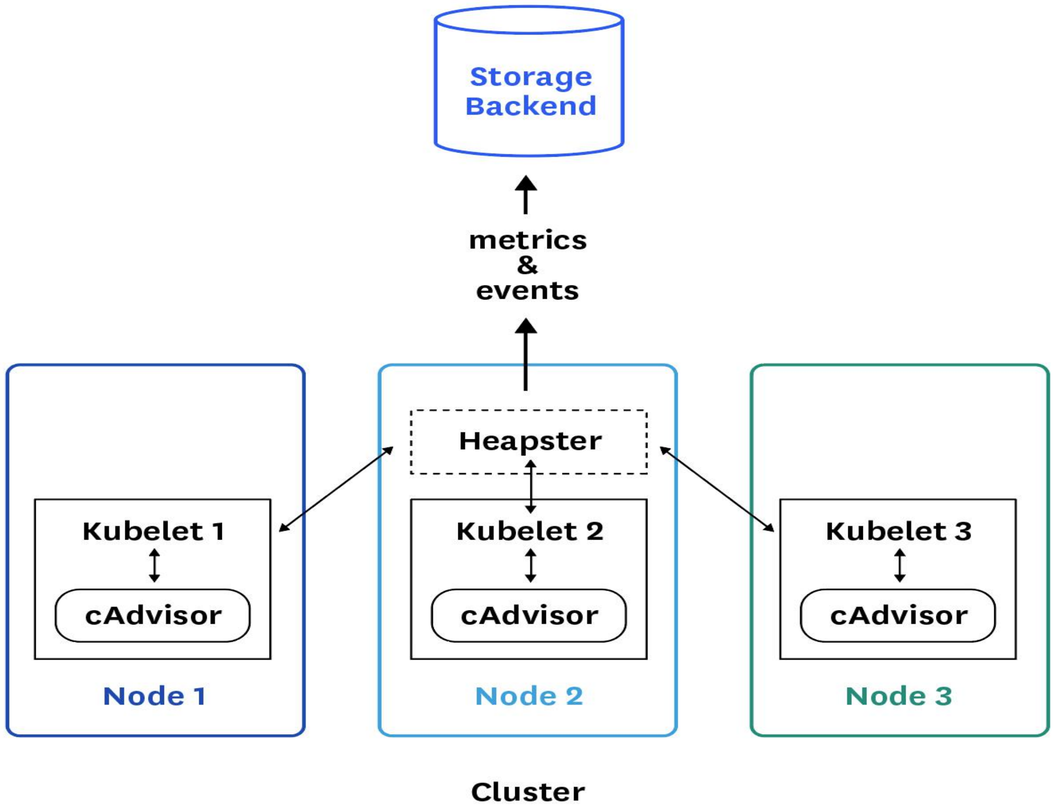
Kubernetes监控

监控



Kubernetes监控

kubernetes原生监控

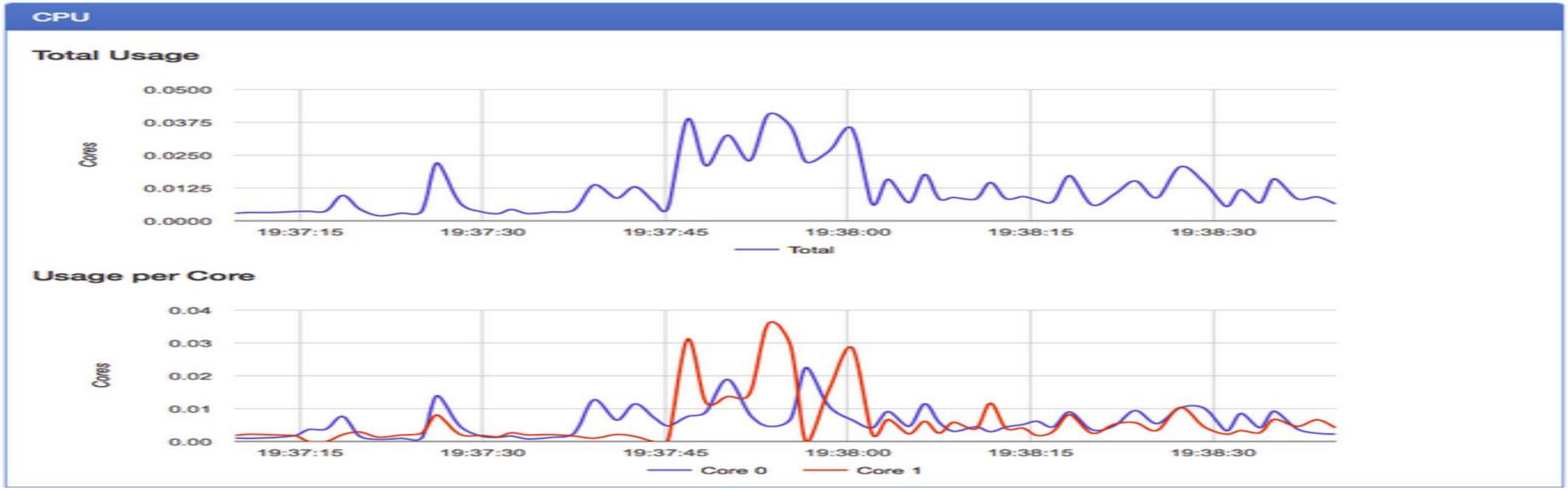


Kubernetes监控

Agent- cAdvisor

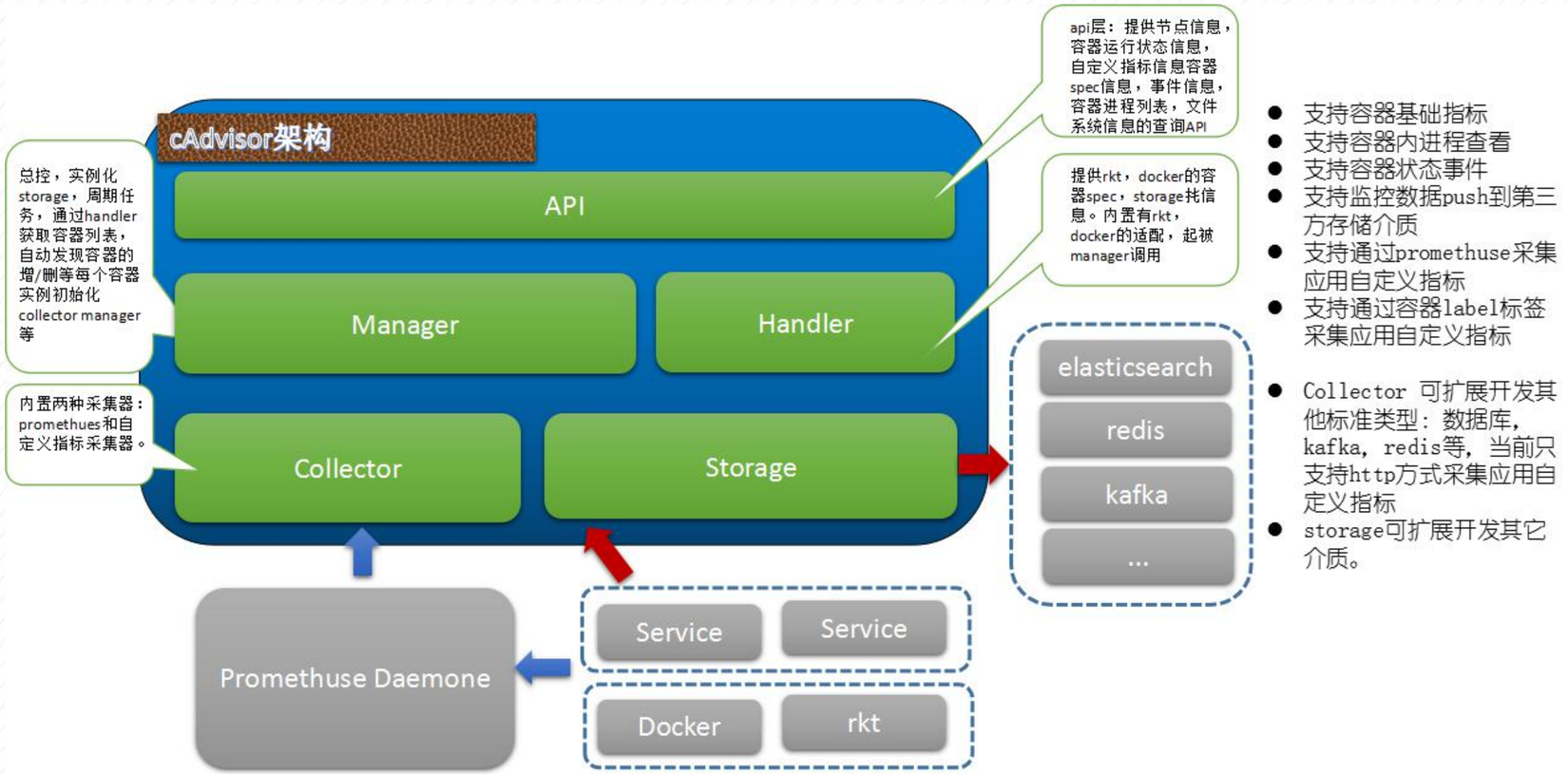
cAdvisor

cAdvisor是一个来自Google的容器监控工具，也是kubelet内置的容器资源收集工具。它会自动收集本机容器CPU、内存、网络和文件系统的资源占用情况，并对外提供cAdvisor原生的API&port82/ 72'



Kubernetes监控

Agent- cAdvisor



- 支持容器基础指标
- 支持容器内进程查看
- 支持容器状态事件
- 支持监控数据push到第三方存储介质
- 支持通过promethuse采集应用自定义指标
- 支持通过容器label标签采集应用自定义指标

- Collector 可扩展开发其他标准类型：数据库，kafka，redis等，当前只支持http方式采集应用自定义指标
- storage可扩展开发其它介质。

Kubernetes监控

heapster

- Heapster collects and interprets various signals like compute resource usage*lifecycle events*etc*and exports cluster metrics via REST endpoints,

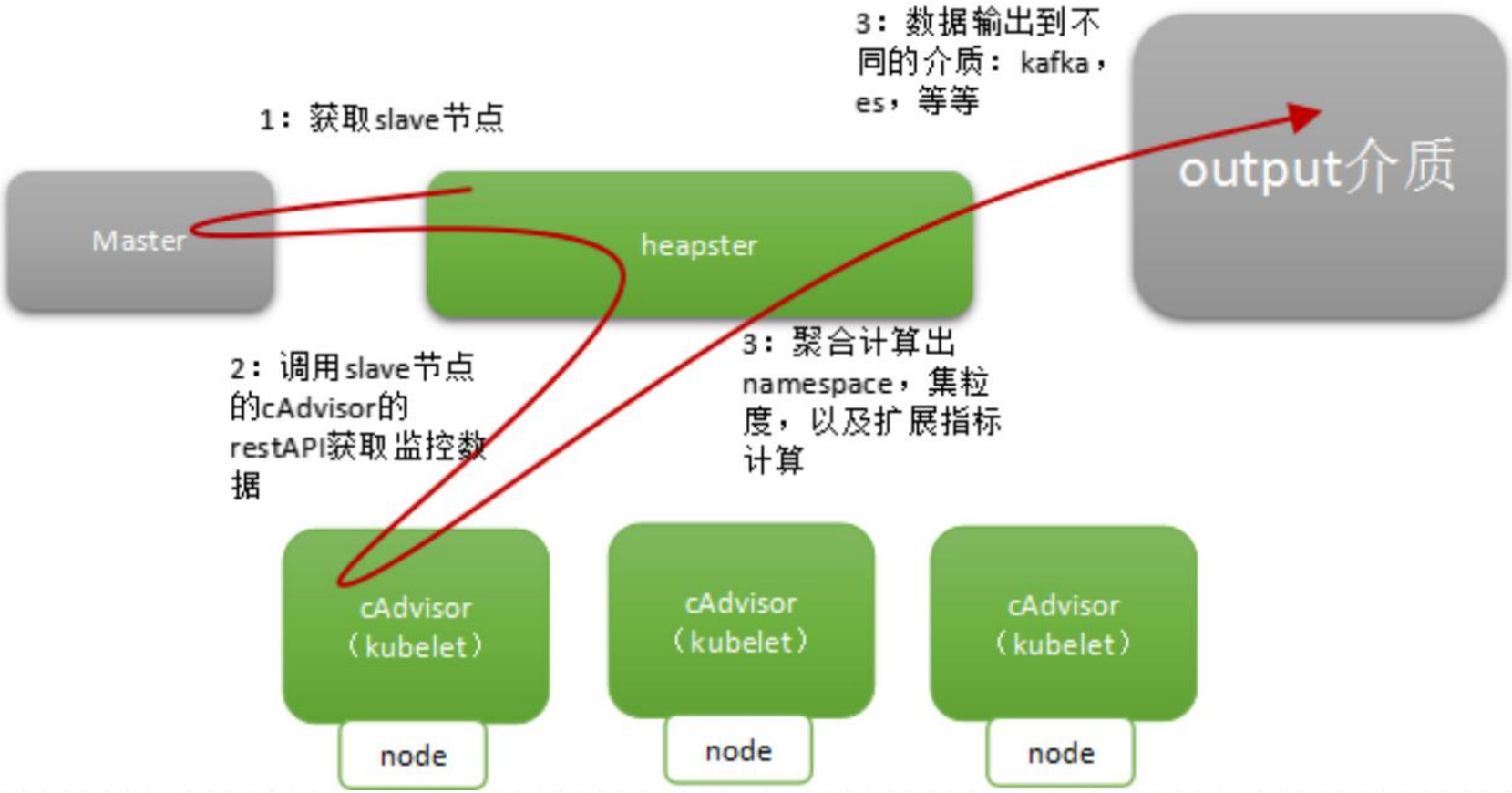
- Heapster supports multiple sources of data,

- Heapster supports the pluggable storage backends,

https8-github,com-kubernetes-heapster

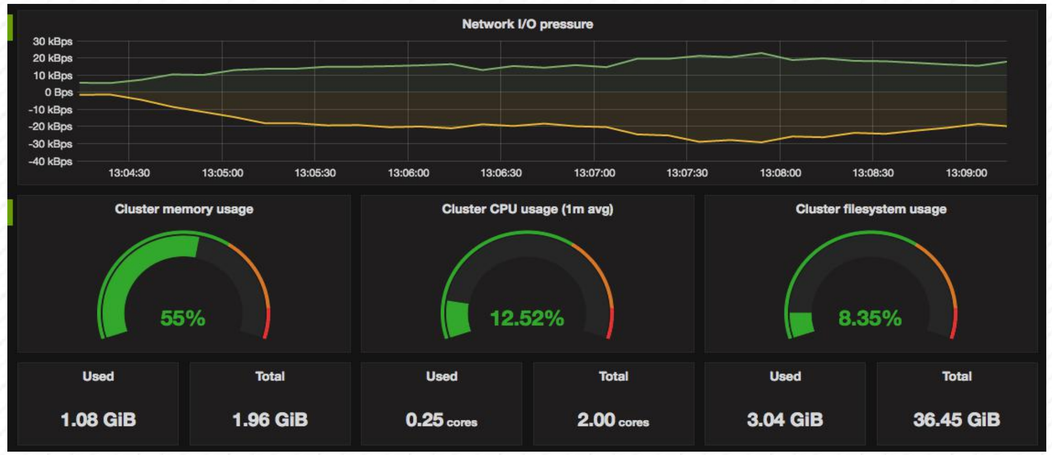
Kubernetes监控

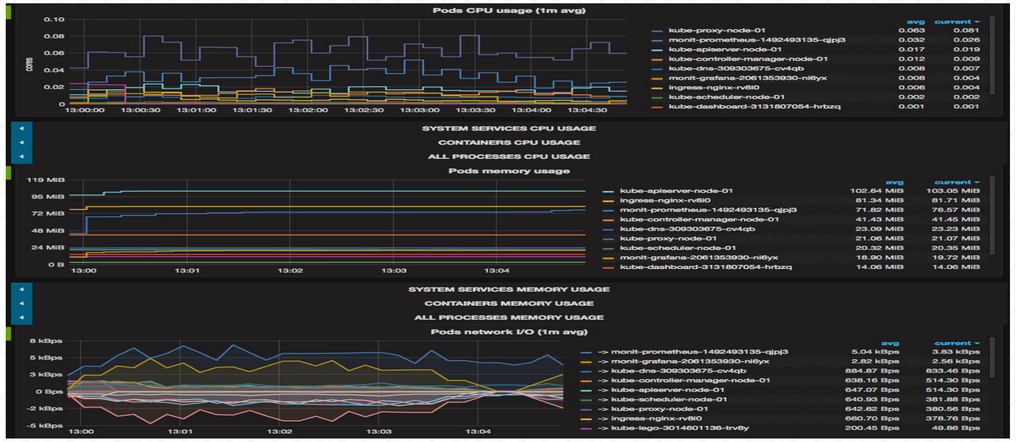
heapster



Kubernetes监控

InfluxDB and Grafana



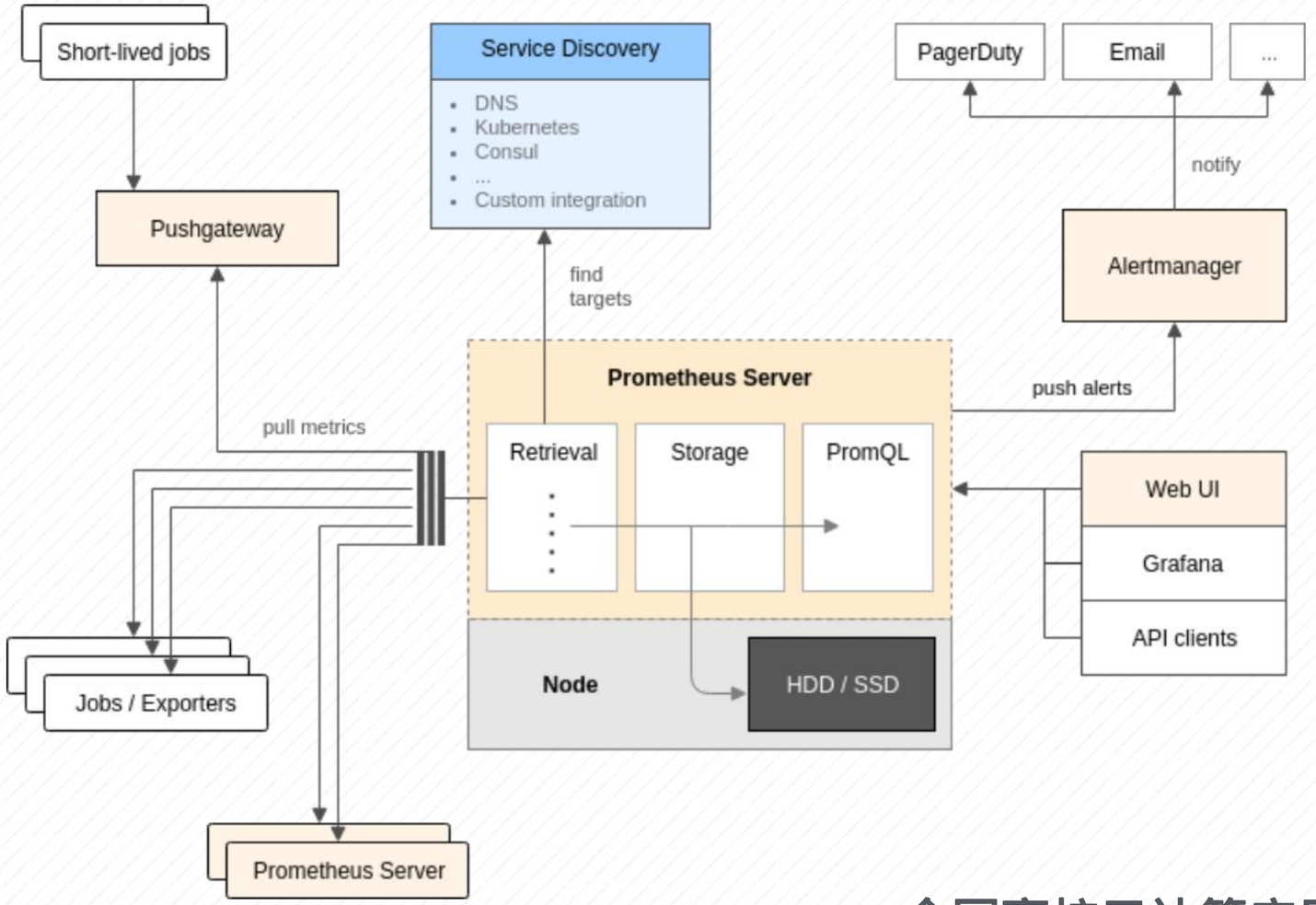


Prometheus

- A Next Generation Monitoring System
- Inspired by google Borgmon monitoring system
- An open- source systems monitoring and alerting toolkit
- Joined the Cloud Native Computing Foundation

Prometheus

Architecture



Prometheus concepts

- Date model
  Metric names and labels
  <metric name;{<label name;: <label value;*,,,}
- Metric types
  Counter-Gauge-Histogram-Summary

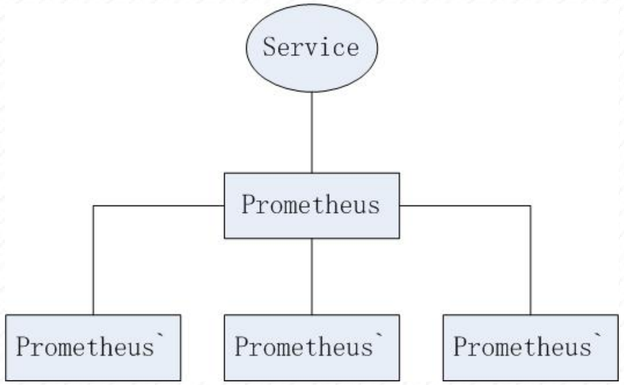
- Jobs and instances
  an endpoint you can scrape is called an instance*usually corresponding to a single process, A collection of instances with the same purpose*a process replicated for scalability or reliability for example*is called a job,

Kubernetes上部署heapster) InfluxDB) Grafana

- kubernetes上部署heapster) InfluxDB) Grafana https8-github,com-kubernetes-heapster-blob-master-docs-influxdb,md

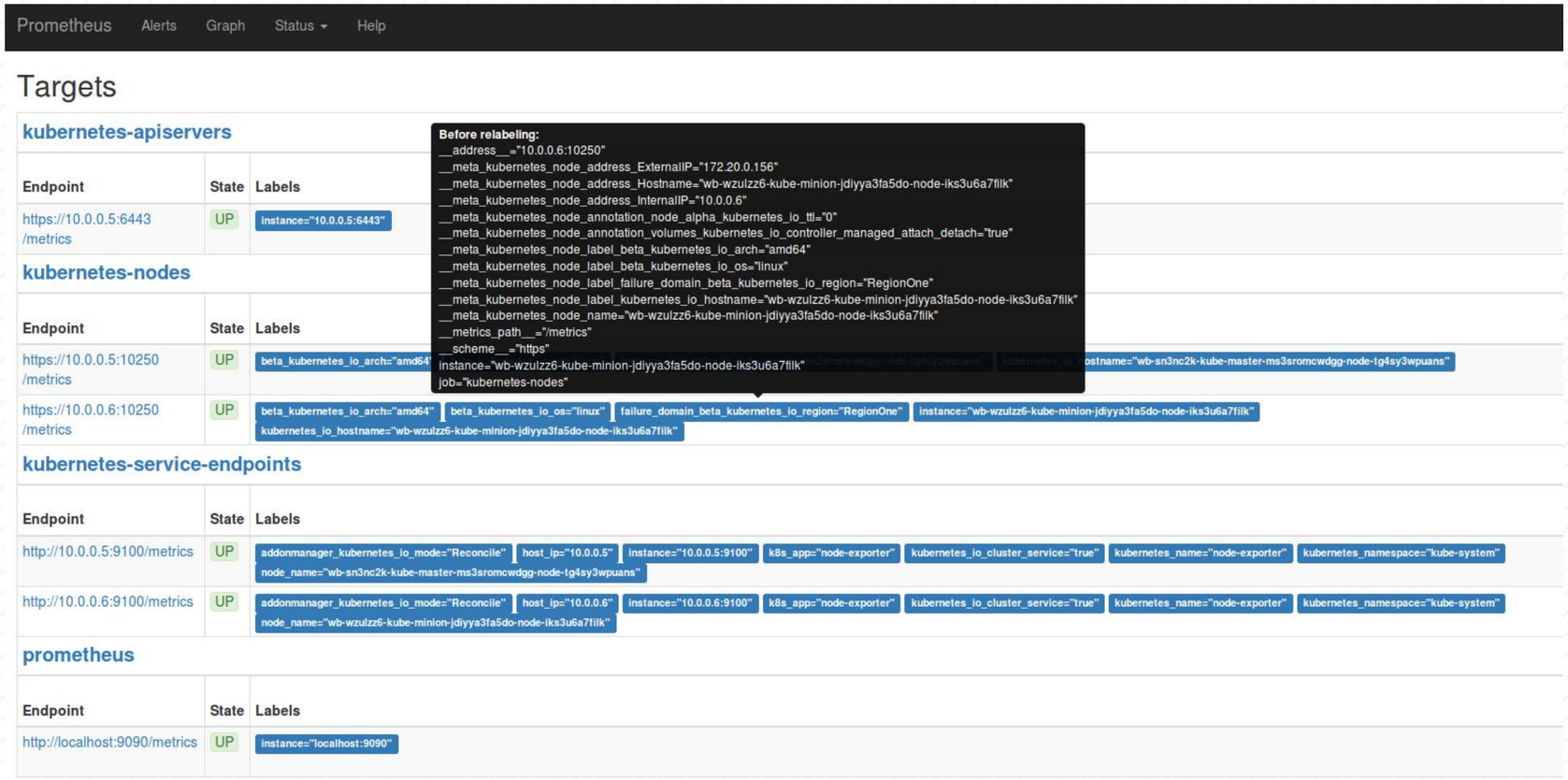
Kubernetes上部署Prometheus

- Kubernetes上部署
https8-github,com-prometheus-prometheus-blob-master-documentation-examples-prometheus- kubernetes,yml
https8-github,com-kayrus-prometheus－kubernetes
https8-github,com-prometheus-node_exporter



Prometheus实践

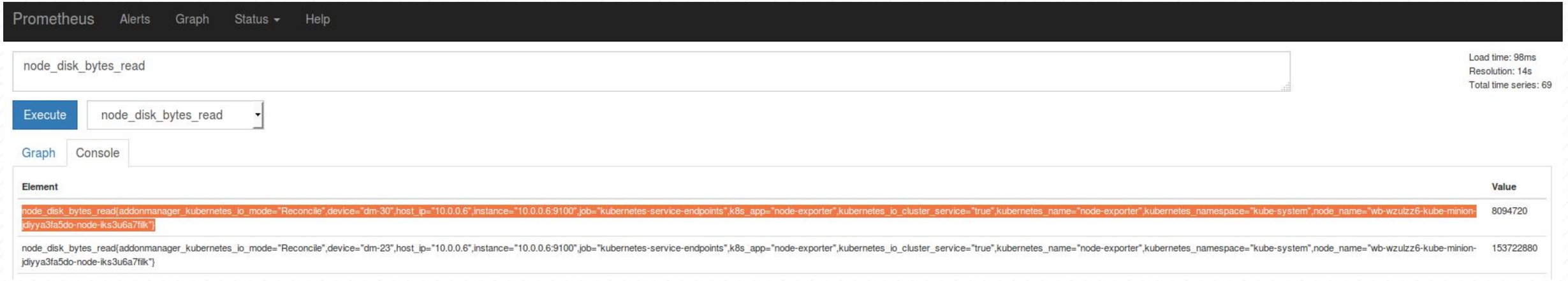
查看Prometheus中endpoint的状态

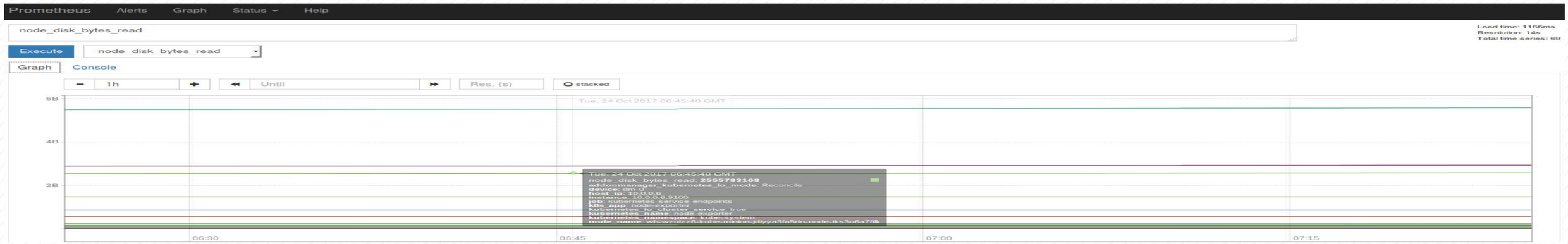


http8-/ 50,0. ,. ,/ 348 1. . . 4-targets

Prometheus实践

查看Prometheus中数据模型





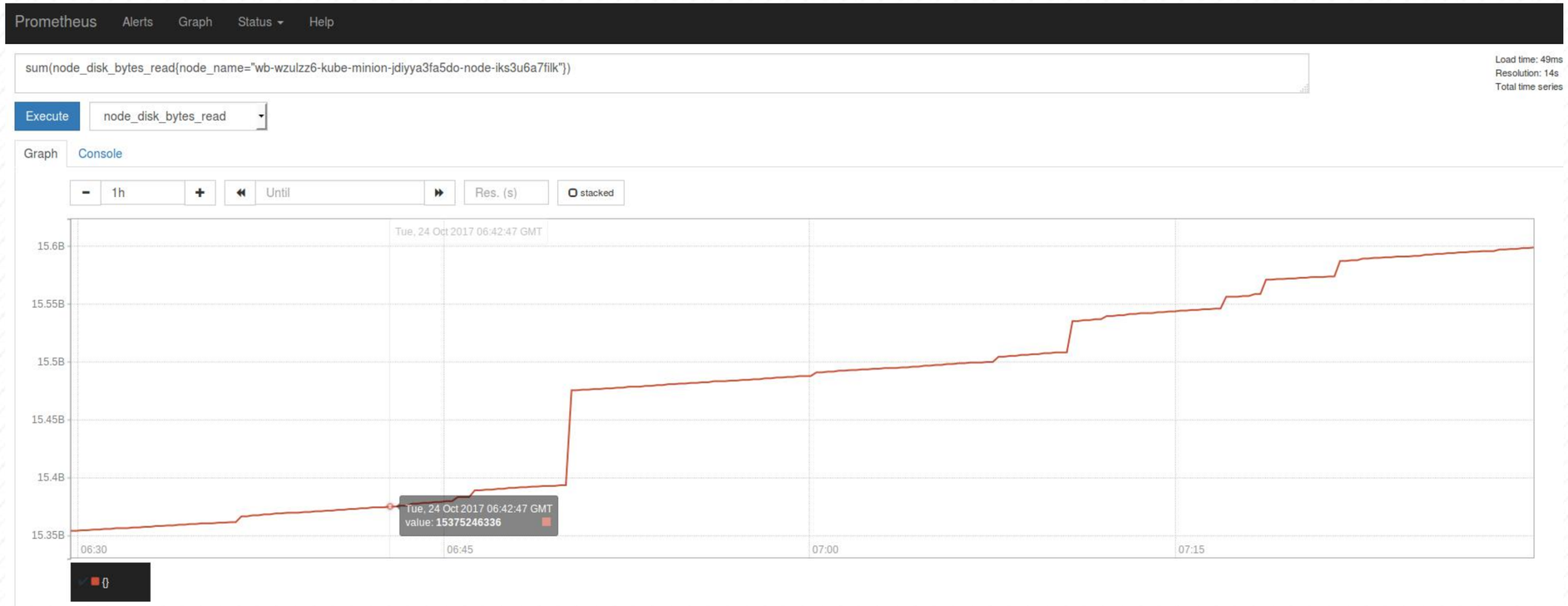
查看Prometheus中数据模型

<metric name;{<label name;: <label value;*,,,}

node_disk_bytes_read{addonmanager_kubernetes_io_mode: "Reconcile"*
device: "dm-
1. "*host_ip: "/ . ,. ,. ,4"*instance: "/ . ,. ,. ,487/ . . "*job: "kubernetes-
service- endpoints"*k6s_app: "node-
exporter"*kubernetes_io_cluster_service: "true"*kubernetes_name: "node
- exporter"*kubernetes_namespace: "kube- system"*node_name: "wb-
wzulzz4- kube- minion- jdiyya1fa3do- node- iks1u4a5filk"}

Prometheus实践

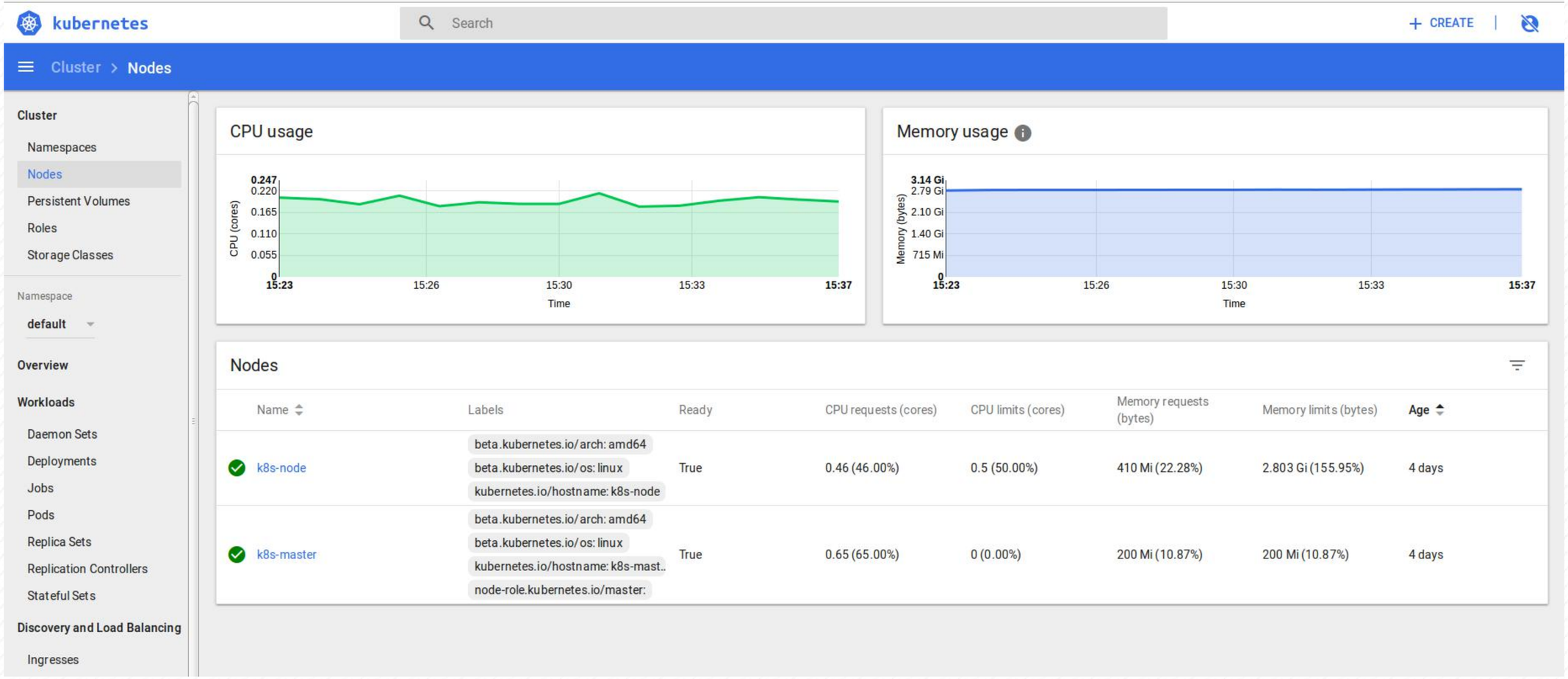
Prometheus中的数据模型



sum&node_disk_bytes_read{node_name: 'wb- wzulzz4- kube- minion- jdiyya1fa3do- node- iks1u4a5filk"}'

Prometheus实践

如何在Kube_dashboard中增加监控指标



如何在Kube_dashboard中增加监控指标

- 在kube_dashboard中扩展使用goclient来获取Prometheus中的数据
- 扩展kube_dashboard的前端界面展示prometheus中的数据
- 重新制作dashboard的image，更新到kubernetes集群中

THANK YOU