QCon 全球软件开发大会
INTERNATIONAL SOFTWARE DEVELOPMENT CONFERENCE

BEIJING 2018

多云应用管理平台架构设计

演讲者 / 迟连义

主办方 Geekbang. 极客邦科技 InfoQ

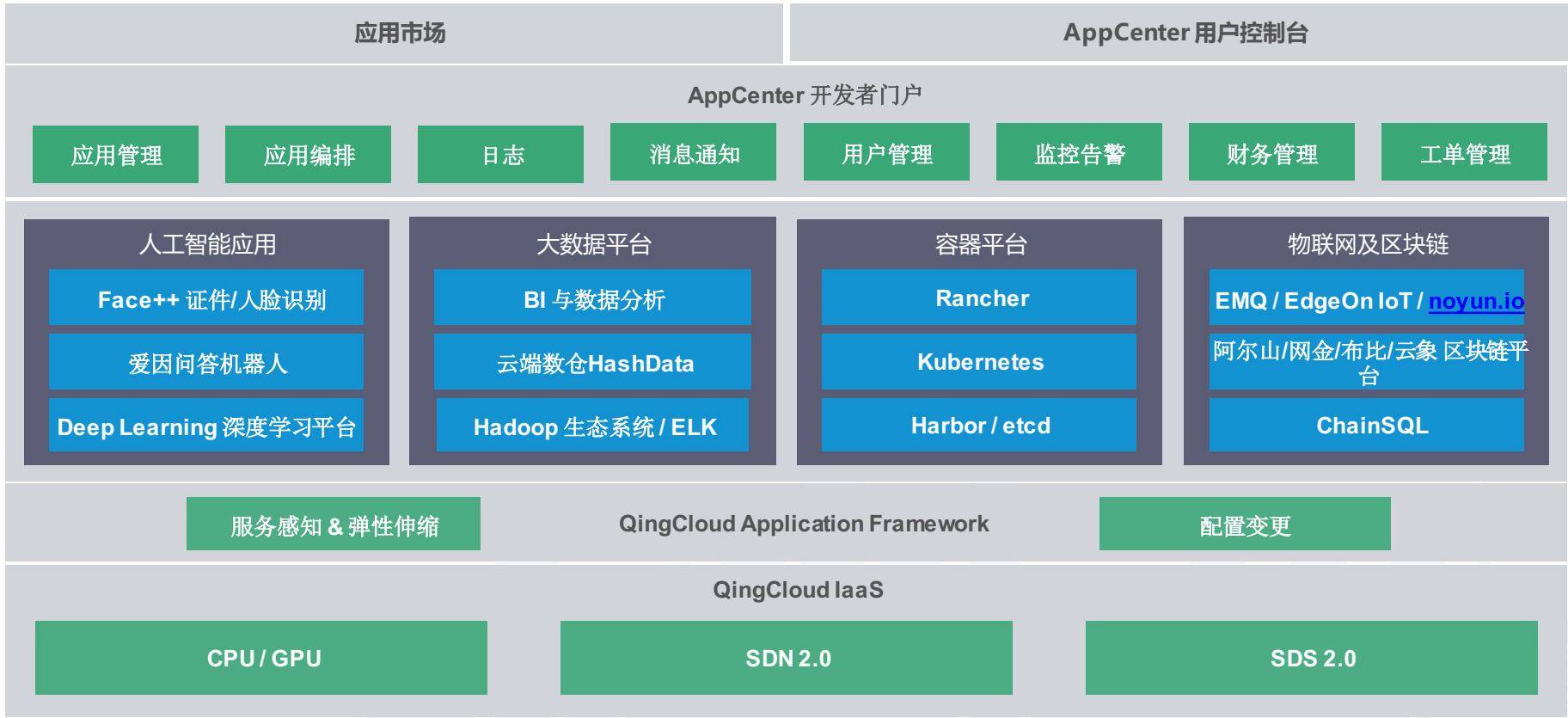
大纲

- 背景
- 功能
- 架构
- 应用场景

背景

- 多云是趋势
- 应用程序管理
- 建立生态

(硬)背景


应用市场
AppCenter 用户控制台
AppCenter 开发者门户
应用管理
应用编排
日志
消息通知
用户管理
监控告警
财务管理
工单管理
人工智能应用
Face++ 证件/人脸识别
爱因问答机器人
Deep Learning 深度学习平台
大数据平台
BI 与数据分析
云端数仓HashData
Hadoop 生态系统 / ELK
容器平台
Rancher
Kubernetes
Harbor / etcd
物联网及区块链
EMQ / EdgeOn IoT / noyun.io
阿尔山/网金/布比/云象 区块链平台
ChainSQL
服务感知 & 弹性伸缩
QingCloud Application Framework
配置变更
QingCloud IaaS
CPU / GPU
SDN 2.0
SDS 2.0

OPENPITRIX

多云 + 应用 + 开源

Run any **application** at any **scale** on any **infrastructure**

功能

多云平台支持

AWS、Azure、Kubernetes、QingCloud、OpenStack等

01

02

多应用类型支持

传统应用、微服务应用、Severless 应用

OPENPITRIX

可商业运营

计量计费、统计、报表

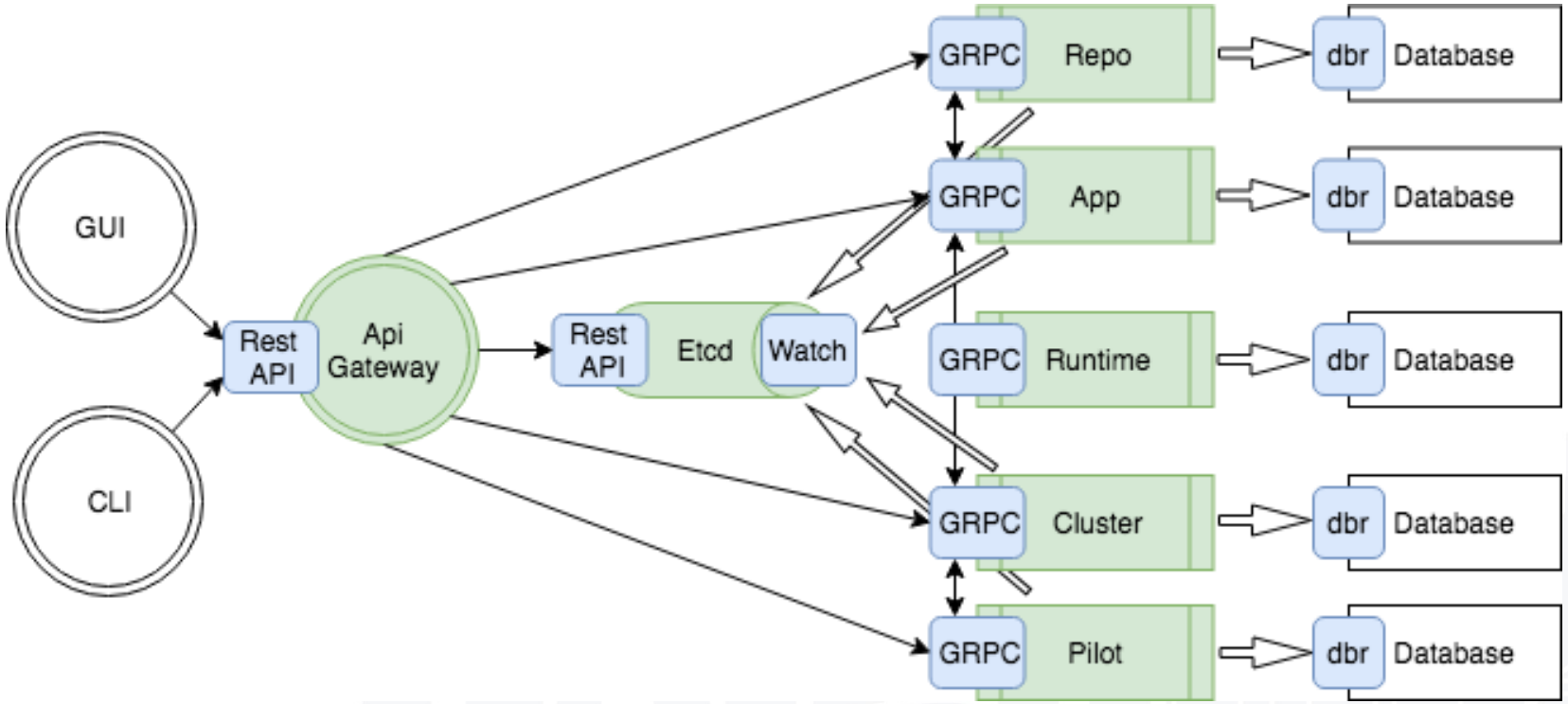
04

03

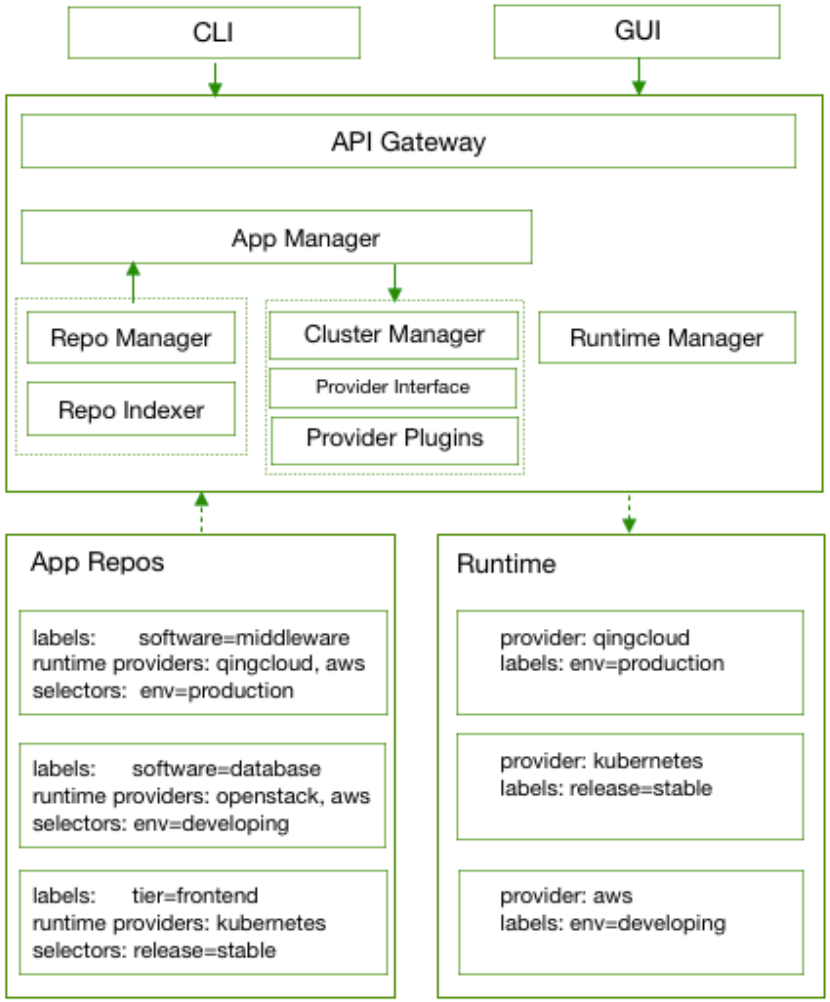
可扩展、插拔

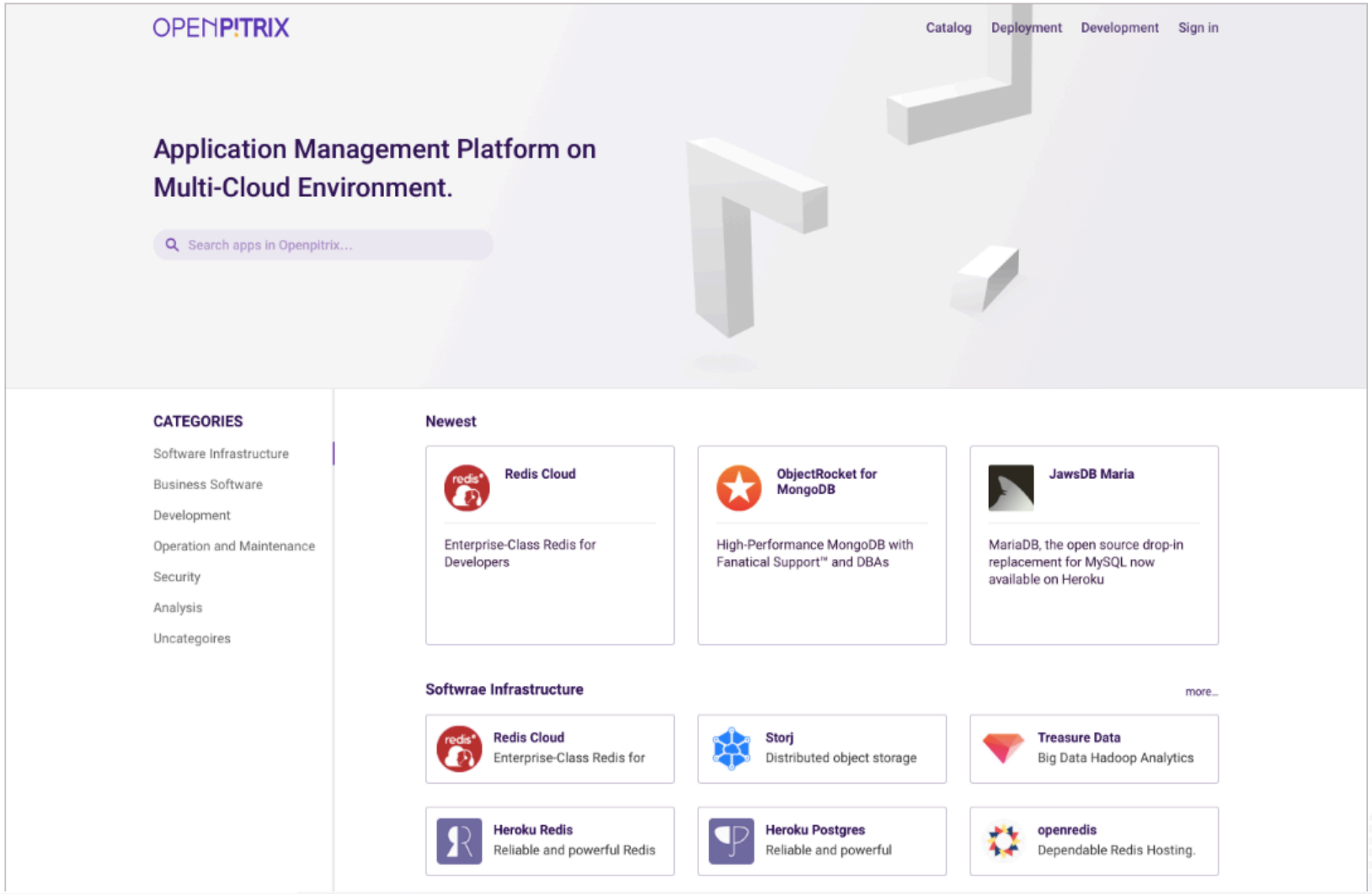
包括云平台支持、应用类型支持

微服务架构

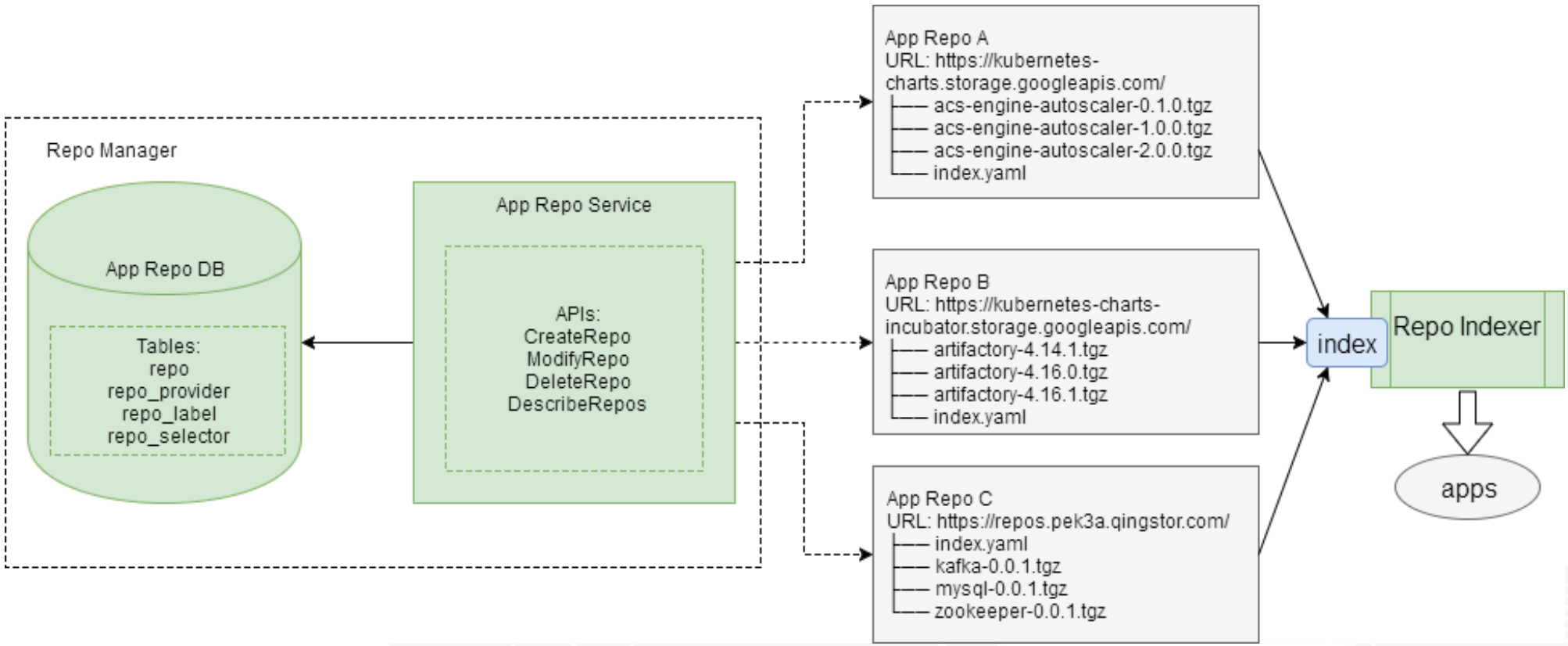

GUI
CLI
Rest API
Api Gateway
Rest API
Etcd
Watch
GRPC
Repo
dbr
Database
GRPC
App
dbr
Database
GRPC
Runtime
dbr
Database
GRPC
Cluster
dbr
Database
GRPC
Pilot
dbr
Database

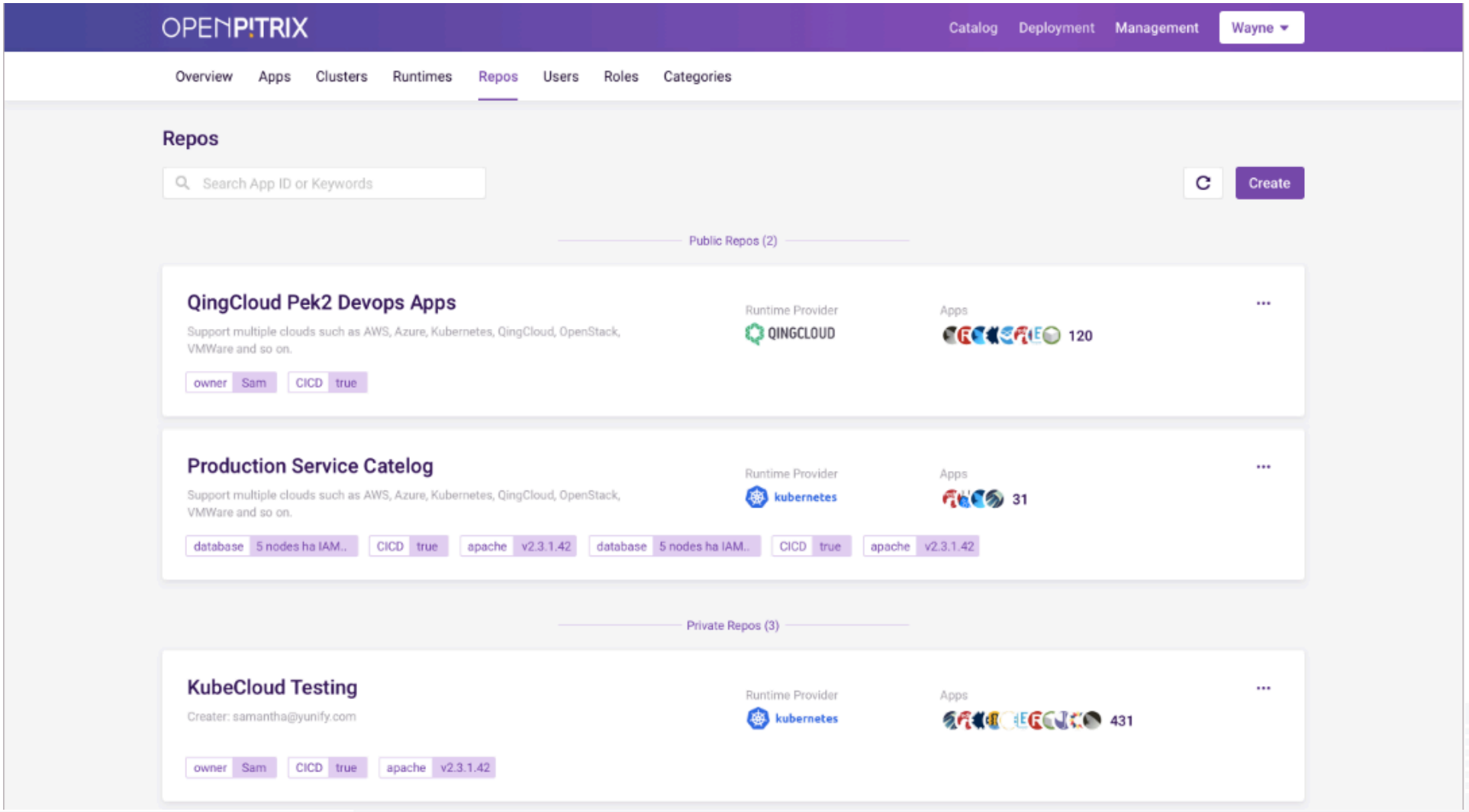
架构概览


CLI
GUI
API Gateway
App Manager
Repo Manager
Repo Indexer
Cluster Manager
Provider Interface
Provider Plugins
Runtime Manager
App Repos
labels: software=middleware
runtime providers: qingcloud, aws
selectors: env=production
labels: software=database
runtime providers: openstack, aws
selectors: env=developing
labels: tier=frontend
runtime providers: kubernetes
selectors: release=stable
Runtime
provider: qingcloud
labels: env=production
provider: kubernetes
labels: release=stable
provider: aws
labels: env=developing

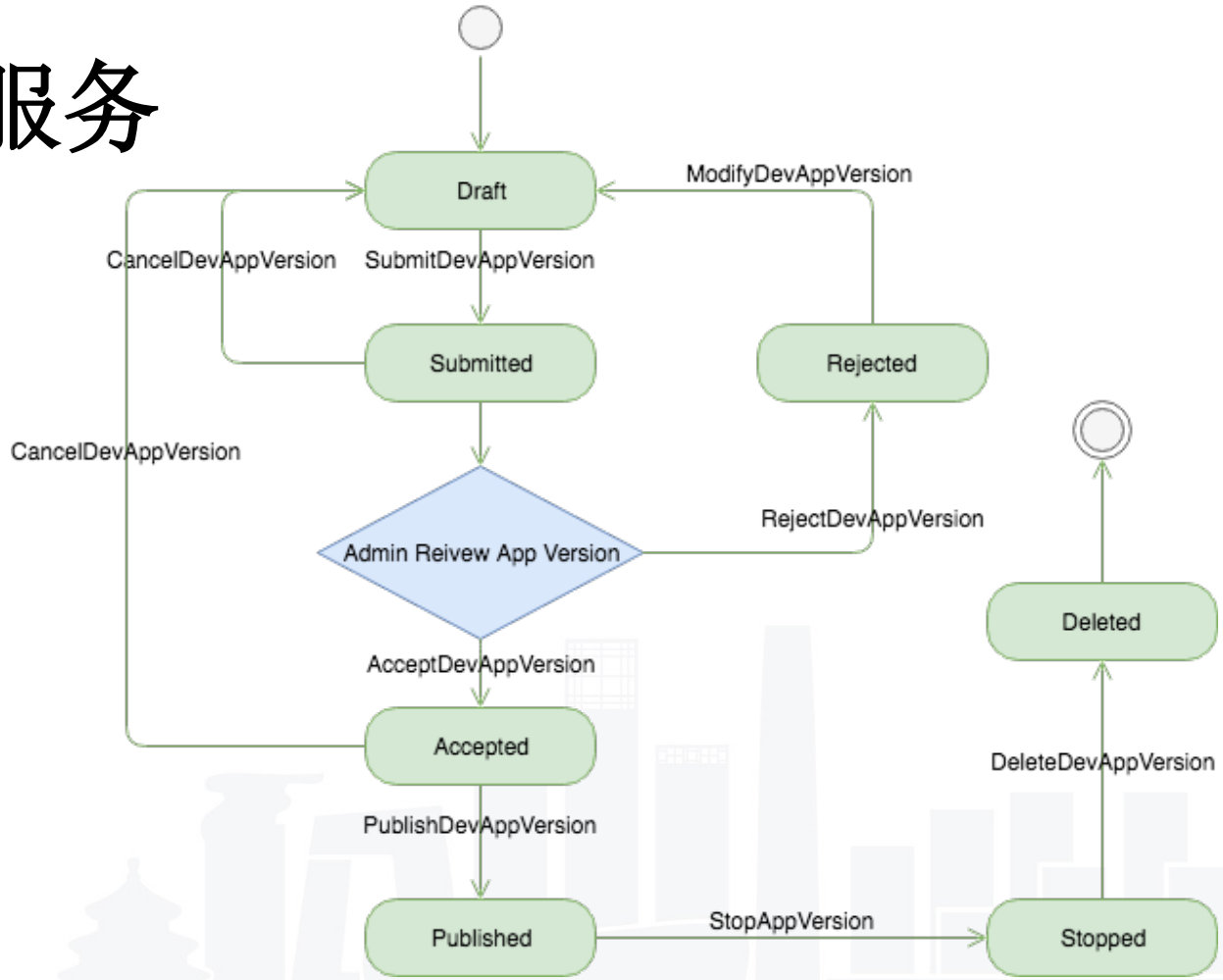

OPENPITRIX
Catalog
Deployment
Development
Sign in
Application Management Platform on Multi-Cloud Environment.
Search apps in Openpitrix...
CATEGORIES
Software Infrastructure
Business Software
Development
Operation and Maintenance
Security
Analysis
Uncategoires
Newest
Redis Cloud
Enterprise-Class Redis for Developers
ObjectRocket for MongoDB
High-Performance MongoDB with Fanatical Support™ and DBAs
JawsDB Maria
MariaDB, the open source drop-in replacement for MySQL now available on Heroku
Softwrae Infrastructure
more...
Redis Cloud
Enterprise-Class Redis for
Storj
Distributed object storage
Treasure Data
Big Data Hadoop Analytics
Heroku Redis
Reliable and powerful Redis
Heroku Postgres
Reliable and powerful
openredis
Dependable Redis Hosting.

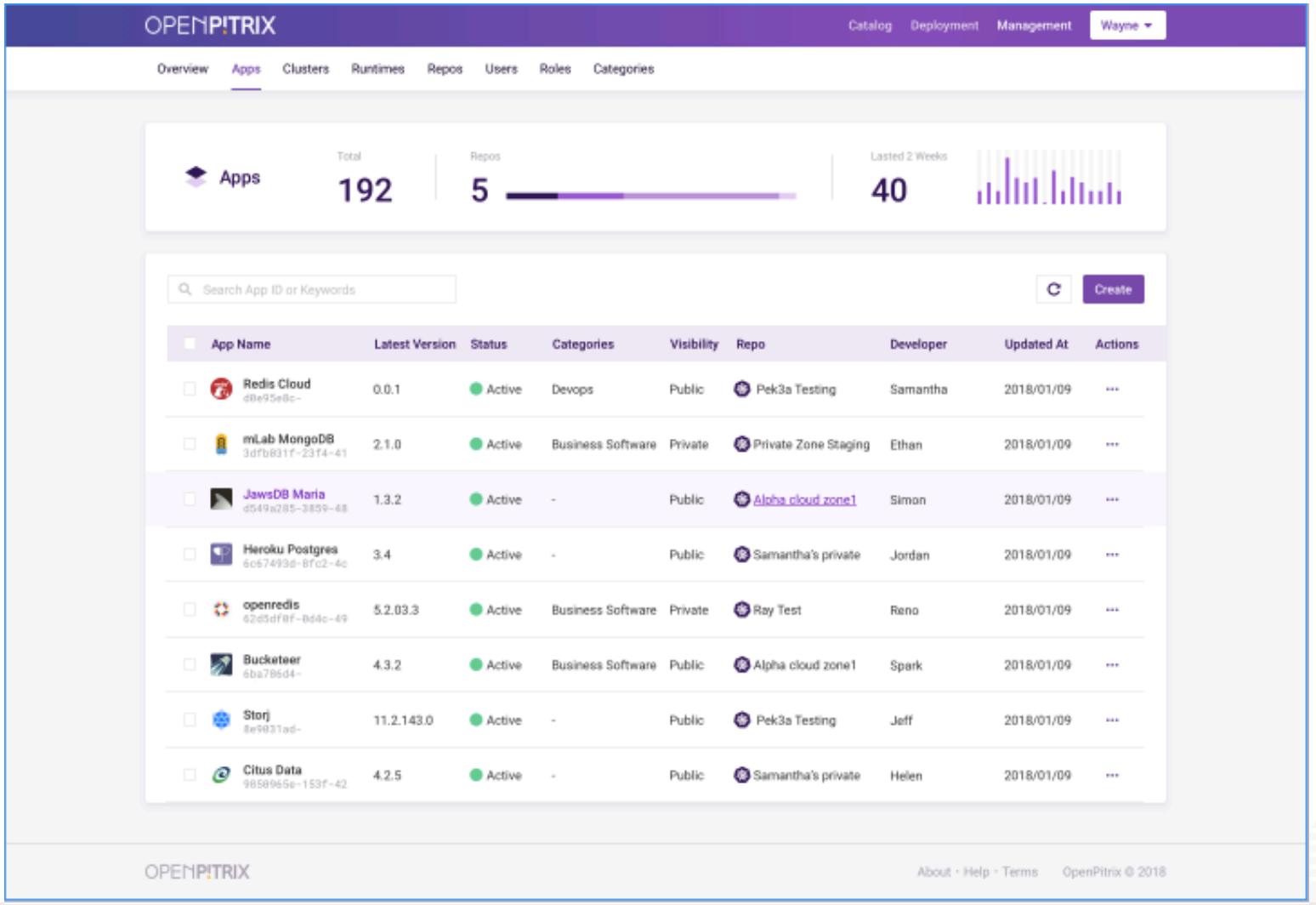
Repo 子服务


Repo Manager
App Repo DB
Tables:
repo
repo_provider
repo_label
repo_selector
App Repo Service
APIs:
CreateRepo
ModifyRepo
DeleteRepo
DescribeRepos
App Repo A
URL: https://kubernetes-charts.storage.googleapis.com/
acs-engine-autoscaler-0.1.0.tgz
acs-engine-autoscaler-1.0.0.tgz
acs-engine-autoscaler-2.0.0.tgz
index.yaml
App Repo B
URL: https://kubernetes-charts-incubator.storage.googleapis.com/
artifactory-4.14.1.tgz
artifactory-4.16.0.tgz
artifactory-4.16.1.tgz
index.yaml
App Repo C
URL: https://repos.pek3a.qingstor.com/
index.yaml
kafka-0.0.1.tgz
mysql-0.0.1.tgz
zookeeper-0.0.1.tgz
index
Repo Indexer
apps


OPENPITRIX
Catalog
Deployment
Management
Wayne
Overview
Apps
Clusters
Runtimes
Repos
Users
Roles
Categories
Repos
Search App ID or Keywords
Create
Public Repos (2)
QingCloud Pek2 Devops Apps
Support multiple clouds such as AWS, Azure, Kubernetes, QingCloud, OpenStack, VMWare and so on.
Runtime Provider
QINGCLOUD
Apps
120
owner Sam
CICD true
Production Service Catelog
Support multiple clouds such as AWS, Azure, Kubernetes, QingCloud, OpenStack, VMWare and so on.
Runtime Provider
kubernetes
Apps
31
database 5 nodes ha IAM..
CICD true
apache v2.3.1.42
database 5 nodes ha IAM..
CICD true
apache v2.3.1.42
Private Repos (3)
KubeCloud Testing
Creater: samantha@yunify.com
Runtime Provider
kubernetes
Apps
431
owner Sam
CICD true
apache v2.3.1.42

App 子服务


Draft
ModifyDevAppVersion
CancelDevAppVersion
SubmitDevAppVersion
Submitted
Rejected
CancelDevAppVersion
Admin Reivew App Version
RejectDevAppVersion
Deleted
AcceptDevAppVersion
Accepted
DeleteDevAppVersion
PublishDevAppVersion
Published
StopAppVersion
Stopped


OPENPITRIX
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Apps
Total
192
Repos
5
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40
Search App ID or Keywords
Create
App Name
Latest Version
Status
Categories
Visibility
Repo
Developer
Updated At
Actions
Redis Cloud
0.0.1
Active
Devops
Public
Pek3a Testing
Samantha
2018/01/09
mLab MongoDB
2.1.0
Active
Business Software
Private
Private Zone Staging
Ethan
2018/01/09
JawsDB Maria
1.3.2
Active
-
Public
Alpha cloud zone1
Simon
2018/01/09
Heroku Postgres
3.4
Active
-
Public
Samantha's private
Jordan
2018/01/09
openredis
5.2.03.3
Active
Business Software
Private
Ray Test
Reno
2018/01/09
Bucketeer
4.3.2
Active
Business Software
Public
Alpha cloud zone1
Spark
2018/01/09
Storj
11.2.143.0
Active
-
Public
Pek3a Testing
Jeff
2018/01/09
Citus Data
4.2.5
Active
-
Public
Samantha's private
Helen
2018/01/09
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部署问题

- 规范问题 -- 如何定义一个应用

- 解决：
  - 微服务应用：Helm 规范
  - 传统应用：沿用青云 AppCenter 规范

```
package.json          # A json file containing app information
cluster.json.tmpl     # A manifest tmpl file
config.json           # A json file containing configuration values
LICENSE               # OPTIONAL: The license or markdown file or link
README.md             # OPTIONAL: A human-readable README file
locale/zh-cn.json     # OPTIONAL: Containing language translation
```

config.json

```
{
    "key": "MYSQL",
    "label": "MYSQL",
    "description": "MySql properties",
    "type": "array",
    "properties": [
        {
            "key": "cpu",
            "label": "CPU",
            "description": "CPUs of each node",
            "type": "integer",
            "default": 1,
            "range": [1,2,4,8,16],
            "required": "yes"
        },
        {
            "key": "memory",
            "label": "Memory",
            "description": "memory of each node (in MB)",
            "type": "integer",
            "default": 2048,
            "range": [2048,8192,16384,32768,49152],
            "required": "yes"
        },
```

cluster.json.tmpl

```
{
    "name": "{{.cluster.name}}",
    "description": "{{.cluster.description}}",
    "subnet": "{{.cluster.subnet}}",
    "nodes": [{
        "role": "zk",
        "container": {
            "type": "docker",
            "image": "gcr.io/google_samples/k8szk:v2"
        },
        "count": "{{.cluster.role_name.count}}",
        "cpu": "{{.cluster.role_name.cpu}}",
        "memory": "{{.cluster.role_name.memory}}",
        "services": {
            "init": {
                "nodes_to_execute_on": 1,
                "post_start_service": false,
                "cmd": "/opt/zookeeper/bin/init-service.sh"
            },
            "start": {
                "cmd": "/opt/zookeeper/bin/start-service.sh"
            },
```

部署问题

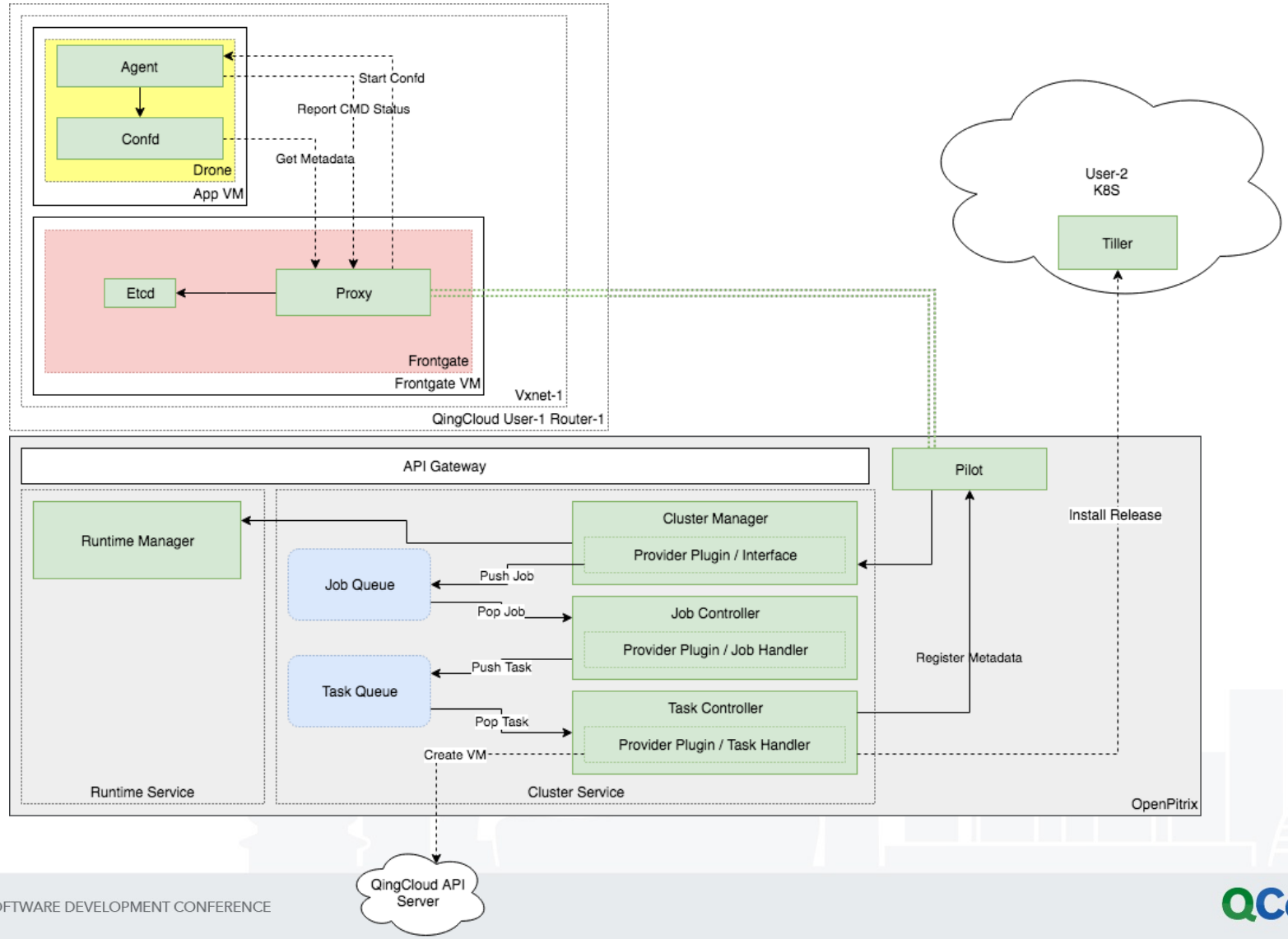
- 映像问题 -- 应用映像如何分发到多云环境

- 解决：
  - 微服务应用：Docker image 分发方式
  - 传统应用：Vm image 由平台自动创建并 share

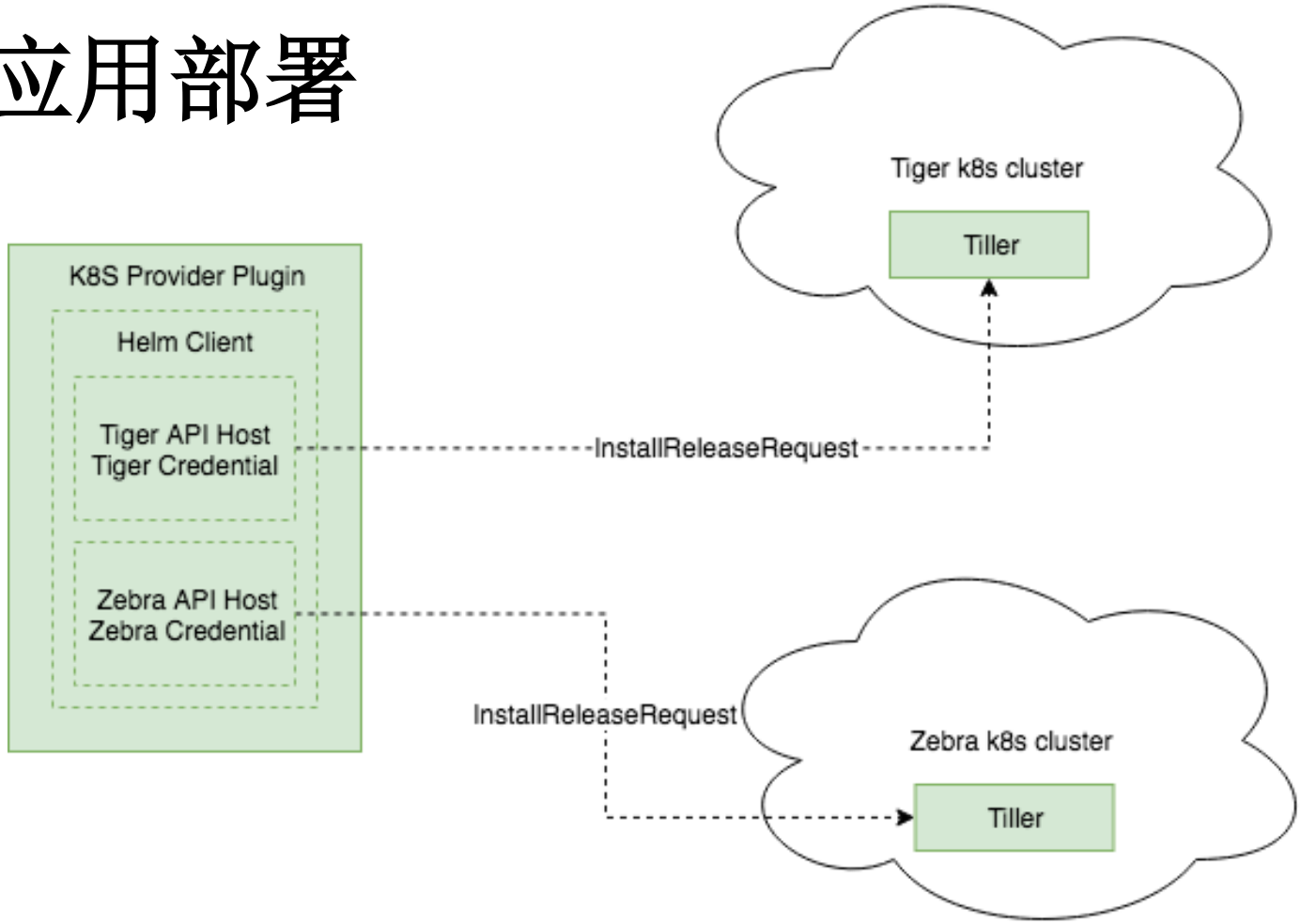
部署问题

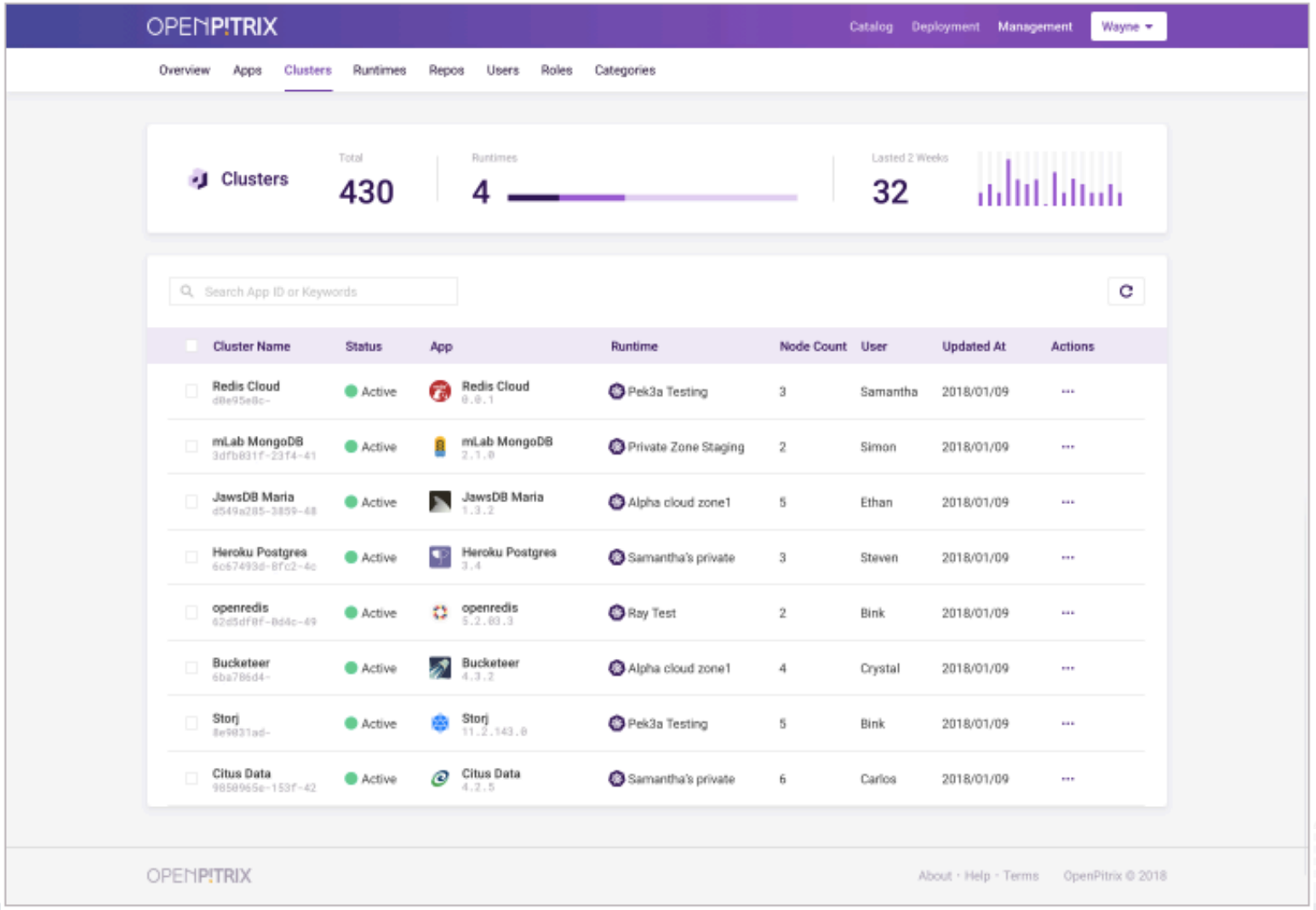
- 网络问题 -- 如何操作云主机执行命令

- 解决：
  - 微服务应用：经由 Kubernetes 的 api server
  - 传统应用：经由 Pilot + Frontgate + Drone 通路


Agent
Confd
Drone
App VM
Start Confd
Report CMD Status
Get Metadata
Etcd
Proxy
Frontgate
Frontgate VM
Vxnet-1
QingCloud User-1 Router-1
User-2
K8S
Tiller
API Gateway
Pilot
Runtime Manager
Cluster Manager
Provider Plugin / Interface
Job Queue
Push Job
Pop Job
Job Controller
Provider Plugin / Job Handler
Task Queue
Push Task
Pop Task
Task Controller
Provider Plugin / Task Handler
Create VM
Install Release
Register Metadata
Runtime Service
Cluster Service
OpenPitrix
QingCloud API
Server

容器应用部署


Tiger k8s cluster
Tiller
K8S Provider Plugin
Helm Client
Tiger API Host
Tiger Credential
InstallReleaseRequest
Zebra API Host
Zebra Credential
InstallReleaseRequest
Zebra k8s cluster
Tiller


OPENPITRIX
Catalog
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Apps
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Users
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Categories
Clusters
Total
430
Runtimes
4
Lasted 2 Weeks
32
Search App ID or Keywords
Cluster Name
Status
App
Runtime
Node Count
User
Updated At
Actions
Redis Cloud
Active
Redis Cloud
Pek3a Testing
3
Samantha
2018/01/09
mLab MongoDB
Active
mLab MongoDB
Private Zone Staging
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Simon
2018/01/09
JawsDB Maria
Active
JawsDB Maria
Alpha cloud zone1
5
Ethan
2018/01/09
Heroku Postgres
Active
Heroku Postgres
Samantha's private
3
Steven
2018/01/09
openredis
Active
openredis
Ray Test
2
Bink
2018/01/09
Bucketeer
Active
Bucketeer
Alpha cloud zone1
4
Crystal
2018/01/09
Storj
Active
Storj
Pek3a Testing
5
Bink
2018/01/09
Citus Data
Active
Citus Data
Samantha's private
6
Carlos
2018/01/09
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应用场景

- 多云（混合云）一站式应用管理平台
- 云管平台（CMP）整合
- 可以作为Kubernetes的一个应用管理系统

关于 OPENPITRIX

- 官网： https://openpitrix.io/
- 开源： https://github.com/openpitrix
- Slack： openpitrix.slack.com

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Thanks!

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