



KubeCon

North America 2017

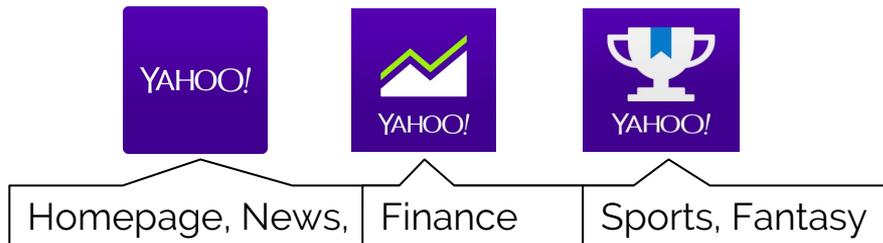
Kubernetes Ingress Controller with Apache Traffic Server

Mrunmayi Dhume, Sr. Software Developer, *Oath*
Suresh Visvanathan, Sr. Architect & Lead, *Oath*

Team

- Core Infrastructure
 - Infrastructure team powering all Yahoo Media Products

Yahoo Media Products



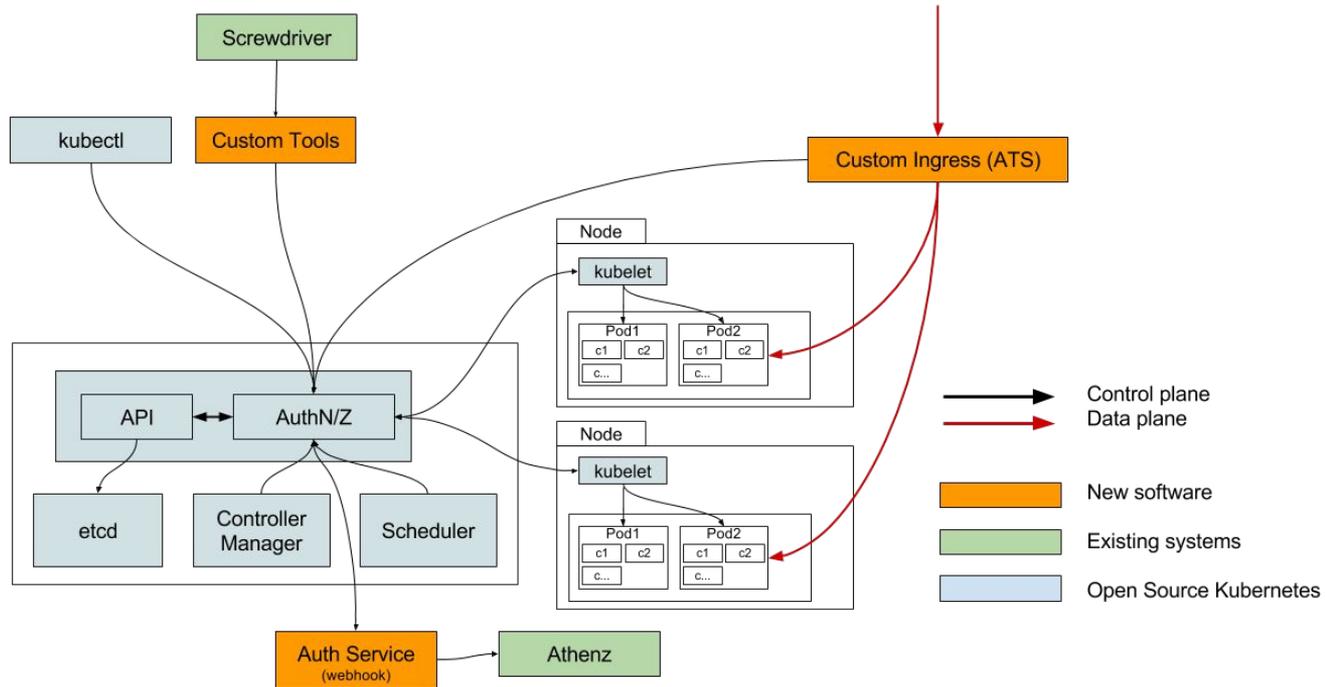
Agenda

- K8s @ Oath
 - Overview
 - Architecture
- Requirements for Ingress
- What is Apache Traffic Server (ATS)
- Design Overview of ATS Ingress controller
 - Key components
 - Salient features

K8s @ Oath

- Around 12 clusters across 6 data centers globally
- Over 100+ applications
 - Mostly stateless workloads
- Peak requests/sec served from a single cluster - ~185k
- Networking
 - Flat network with routable pod IPs within data center
- Every application has its own decentralized deployment pipeline

K8s @ Oath: Architecture



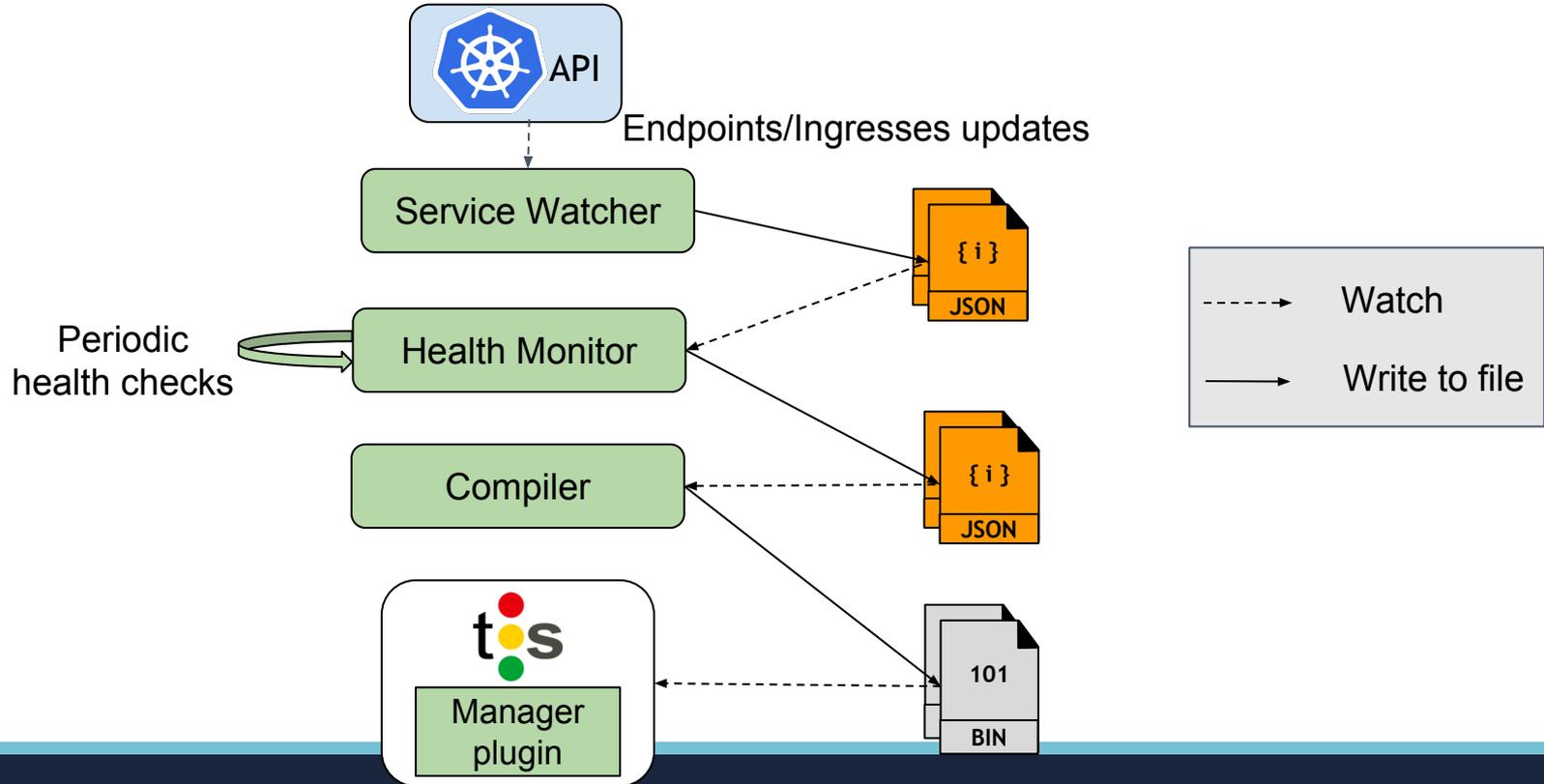
Requirements for Ingress

- Dynamic updates
 - No impact to inflight requests
 - No latency impact or increased long tail latency
- Utilize native K8s ingress resources
- Support autoscaling
- Easy no hassle and automated onboarding
- Support Yahoo proprietary plugins
- Avoid applications usurping existing domains/host names

What is Apache Traffic Server

- Fast and scalable L7 proxy
- Handling over 400TB a day at [Yahoo!](#) both as forward and reverse proxies
- Extensible through an easy plugin framework
- Customizable load balancing algorithms (through plugins)

Ingress Design Overview



Key Components

- Service watcher
- Health monitor
- Compiler
- ATS & ATS Manager plugin

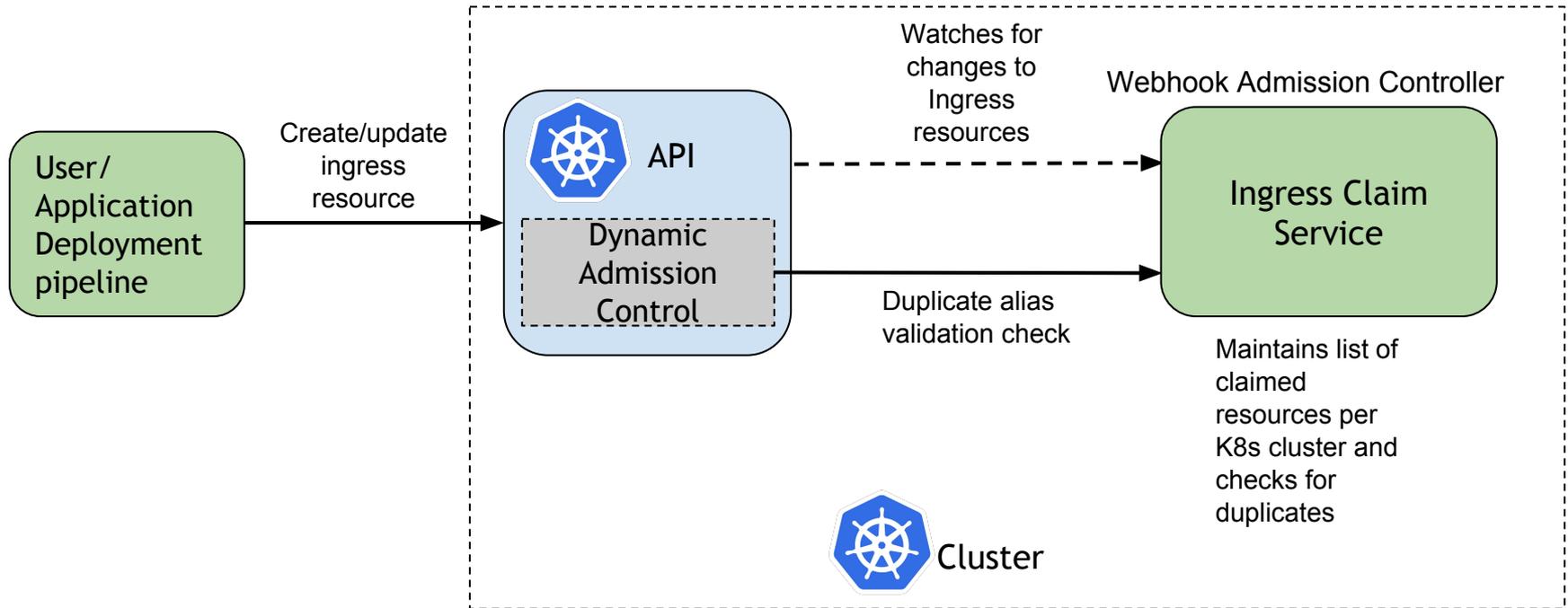
Salient Features

- Dynamic updation of endpoints
- Active health-checking
- Cluster level fail-out
- App level fail-out
- Preventing usurping of domains by multiple teams

Ingress Specification

```
1  apiVersion: extensions/v1beta1
2  kind: Ingress
3  metadata:
4    labels:
5      app: xyz-production-us-west
6      environment: production
7      appName: xyz
8    name: xyz-production-us-west
9    namespace: xyz-k8s
10   annotations:
11     ports: "80,443"
12     aliases: "xyz.yahoo.com,us-xyz.yahoo.com,us-west-xyz.yahoo.com"
13     default_domain: "xyz.production.us-west.yahoo.com"
14   spec:
15     rules:
16     - http:
17       paths:
18       - path: /rotation
19         backend:
20           serviceName: localhost
21           servicePort: 8002
22     backend:
23       serviceName: xyz-production
24       servicePort: 8080
```

Ingress Claim





KubeCon

North America 2017

Demo



KubeCon

North America 2017

Q&A