



APACHE SLING & FRIENDS TECH MEETUP

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Cloud-Native Sling

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Welcome

About me



@rombert

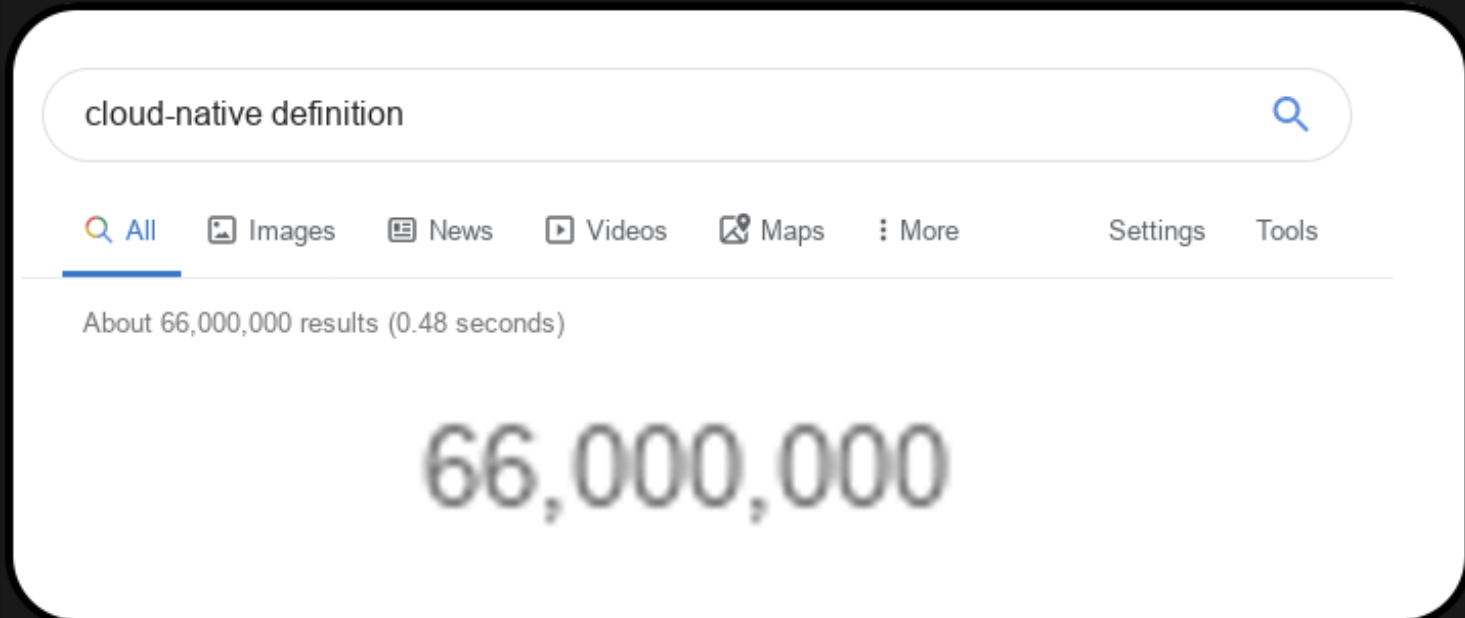
Outline

- Cloud-native applications?
- Managing cloud-native applications
- Cloud-native Sling walkthrough
- Future plans
- Resources



Cloud-native applications?

Cloud-native applications



Defining cloud-native

- ↻ Using cloud-native services
- Application-centric design
- Automation

*Cloud Native Architectures -
Kamal Arora, Erik Farr, Tom Laszewski, Piyum Zonooz*



Managing cloud-native applications



Containers, container, containers

```
FROM openjdk:8-jre-alpine
MAINTAINER dev@sling.apache.org

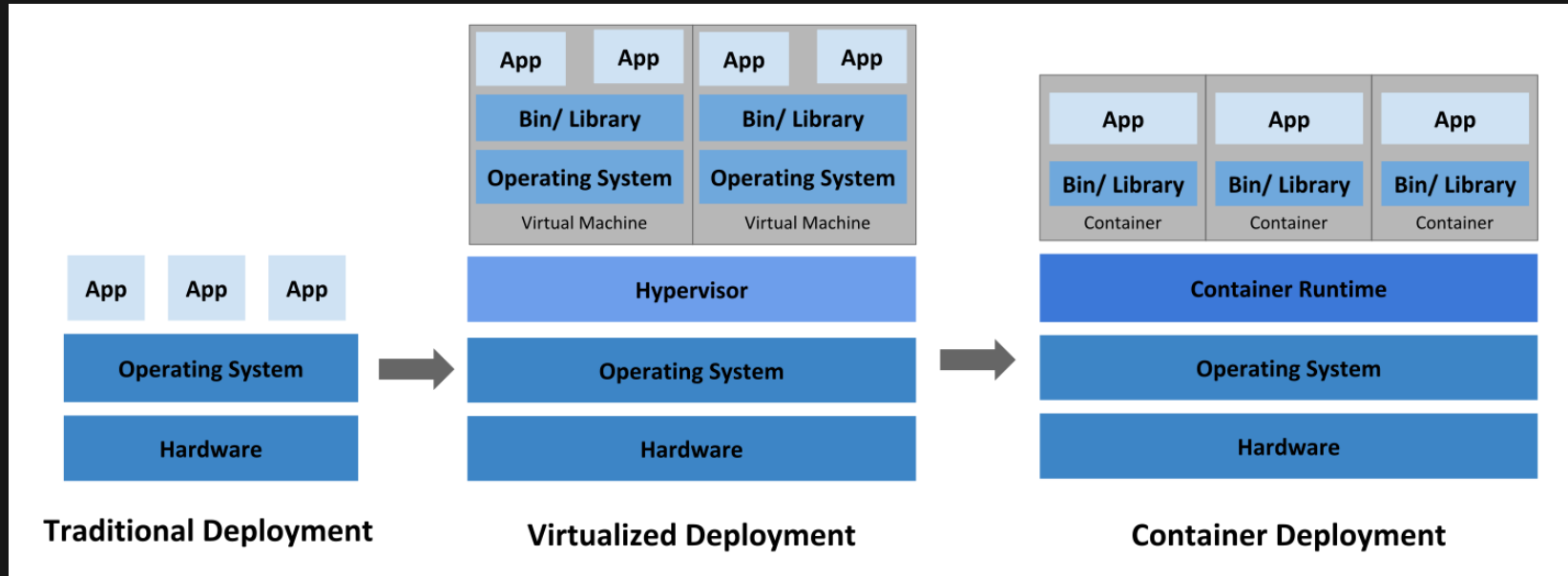
RUN mkdir -p /opt/sling
COPY target/sling-cloud-ready-*.jar /opt/sling/sling.jar

WORKDIR /opt/sling
EXPOSE 8080
VOLUME /opt/sling/sling

ENV JAVA_OPTS -Xmx512m
ENV SLING_OPTS ''

CMD exec java $JAVA_OPTS -jar sling.jar $SLING_OPTS
```

Kubernetes





Kubernetes

```
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
  labels:
    name: wildfly-pod
spec:
  containers:
  - name: nginx
    image: nginx:1.17.1
    ports:
    - containerPort: 80
```

Kubernetes interface

```
$ kubectl get pods
```

NAME	READY	STATUS	A
grafana-78c6877b7f-ghmwp	1/1	Running	1
prometheus-alertmanager-5cfb66f7f7-mtrx2	2/2	Running	1
prometheus-kube-state-metrics-57d85676c5-bvh5j	1/1	Running	1
prometheus-node-exporter-5pdnf	1/1	Running	1
prometheus-node-exporter-6qf72	1/1	Running	1
prometheus-node-exporter-h7bjx	1/1	Running	1
prometheus-node-exporter-wrxfl	1/1	Running	1
prometheus-pushgateway-86cf78b9f4-4m4fc	1/1	Running	1
prometheus-server-747fc94b5d-fx5qf	2/2	Running	1



What does Kubernetes manage?

- Applications (Pods, Services, Deployments)
- DNS services
- Volume management (NFS, Ceph, Azure/GCE disks, AWS EBS, etc)
- Software-defined networking
- Resource quotas (CPU, Memory, etc)
- Rollouts, rollbacks and scaling
- Secrets



Cloud-native Sling walkthrough

Logging

[configurations]

```
org.apache.sling.commons.log.LogManager
org.apache.sling.commons.log.pattern="%d{dd.MM.yyyy HH:mm:ss.S
org.apache.sling.commons.log.file=""
org.apache.sling.commons.log.level="info"
org.apache.sling.commons.log.packagingDataEnabled=B"true"
```

Logging

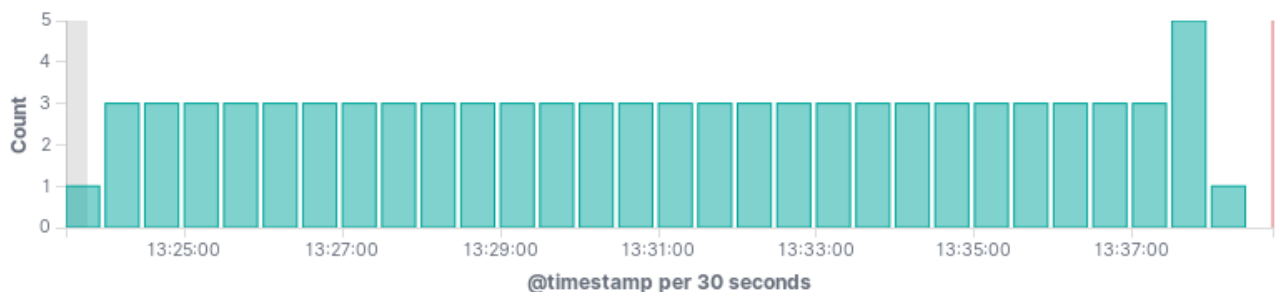
```
$ kubectl logs -f sling
07.08.2019 10:50:45.212 *INFO* [FelixStartLevel] org.apache.sling.co
07.08.2019 10:50:45.216 *INFO* [FelixStartLevel] org.apache.geronimo
07.08.2019 10:50:45.216 *INFO* [FelixStartLevel] org.apache.geronimo
07.08.2019 10:50:45.219 *INFO* [FelixStartLevel] org.apache.geronimo
07.08.2019 10:50:45.221 *INFO* [FelixStartLevel] org.apache.felix.ev
07.08.2019 10:50:45.225 *INFO* [FelixStartLevel] org.apache.felix.ev
```


Logging

Filters `sling AND *ERROR*` KQL Last 15 minutes Show dates Refresh

+ Add filter

logstash-* Aug 7, 2019 @ 13:23:46.353 - Aug 7, 2019 @ 13:38:46.353 — Auto



Time	_source
> Aug 7, 2019 @ 13:38:00.787	<pre>log: F t=2019-08-07T10:38:00+0000 lvl=eror msg="failed to load dashboard from " logger=provisioning.dashboard type=file name=default file=/var/lib/grafana/dashboards/default/sling-zmetrics.json error=EOF @timestamp: Aug 7, 2019 @ 13:38:00.787 time: 2019-08-07T10:38:00.787966899+00:00 stream: stdout _id: nmioa2wBvGs3DodZ0c5p _type: flb_type _index: logstash-</pre>



Startup readiness

```
readinessProbe:  
  httpGet:  
    path: /  
    port: 8080  
  initialDelaySeconds: 15  
  periodSeconds: 5
```



Startup readiness

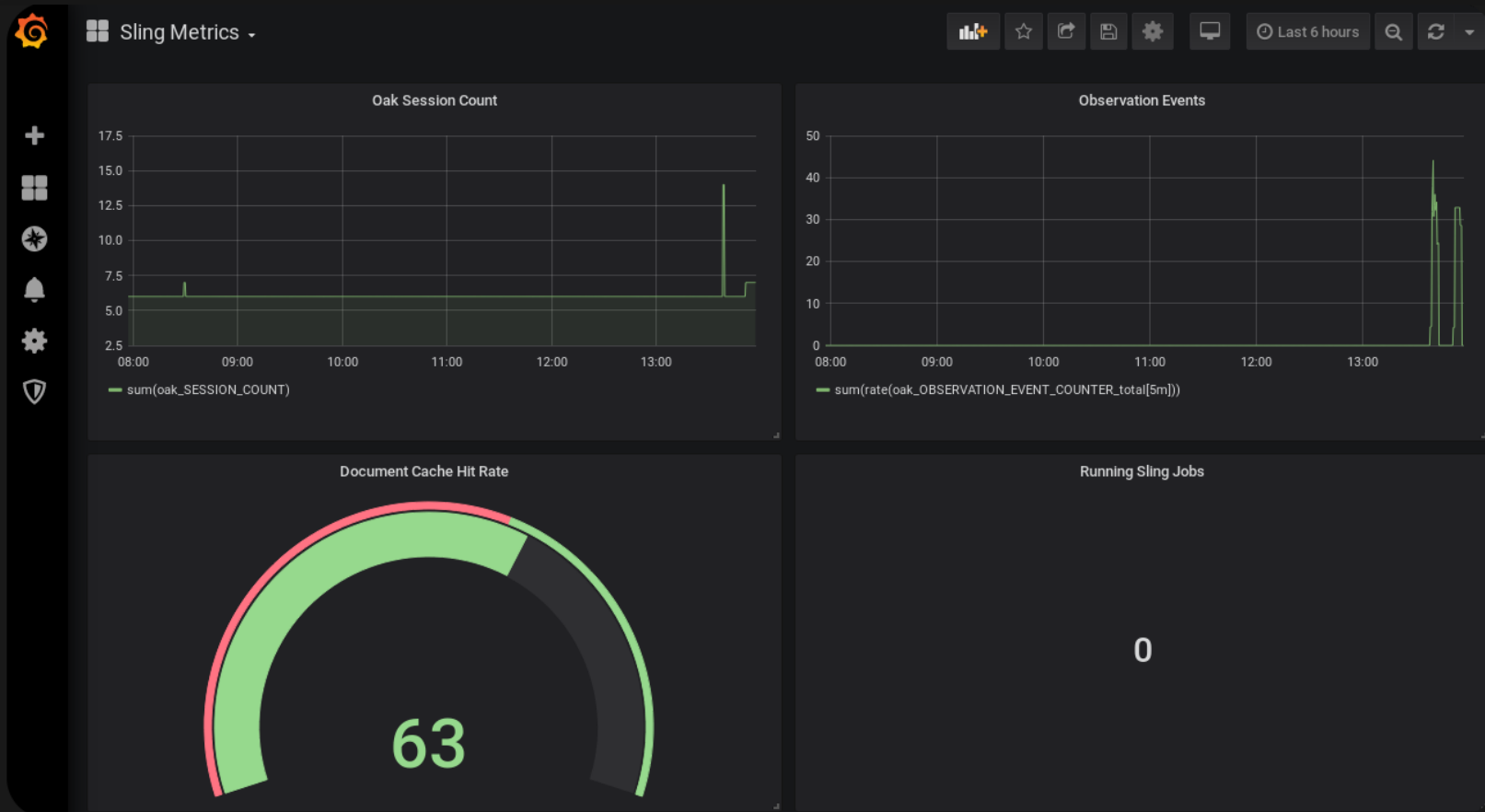
```
$ kubectl get pods -l=app=sling
```

NAME	READY	STATUS	AGE
sling-59c6d6c656-857vq	0/1	Running	23s
sling-59c6d6c656-9wlzm	0/1	Running	23s
sling-59c6d6c656-cbbwc	1/1	Running	13m

Monitoring

```
annotations:  
  prometheus.io/scrape: "true"  
  prometheus.io/port: "8080"
```

Monitoring





Persistence

```
$ kubectl get svc mongo
```

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)
mongo	ClusterIP	10.102.248.138	<none>	27017/TCP

Persistence

```
env:  
- name: SLING_OPTS  
  value: -Dsling.run.modes=oak_mongo"
```

Persistence

```
apiVersion: v1
kind: PersistentVolumeClaim
metadata:
  name: sling-datastore
spec:
  accessModes:
    - ReadWriteMany
  resources:
    requests:
      storage: 10Gi
```




Scalability

```
- replicas: 1  
+ replicas: 3
```

Performance

```
org.apache.sling.dynamicinclude.Configuration-starter
include-filter.config.enabled=B"true"
include-filter.config.resource-types=["sling/starter/hostname"]
include-filter.config.path="/content/starter"
include-filter.config.include-type="SSI"
include-filter.config.add_comment=B
```

Performance

```
apiVersion: extensions/v1beta1
kind: Ingress
metadata:
  name: ingress-sling
  annotations:
    # use the shared ingress-nginx
    kubernetes.io/ingress.class: "nginx"
    # set sticky sessions via cookie
    nginx.ingress.kubernetes.io/affinity: "cookie"
    nginx.ingress.kubernetes.io/configuration-snippet: |
      ssi on;
```

Performance

```
<!-- SDI include (path: /content/starter/sidebar-extensions/hostna  
<h2>System information</h2>  
<p id="system-information">Currently running on host <span class='
```



Future plans

Feature model

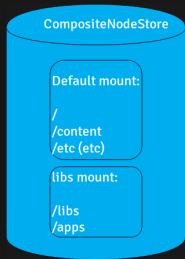
- Next big thing™!
- Smaller docker images
- More flexible feature selection



Docker image extensibility

- Base image + extensions
- Bring your own JVM

Composite NodeStore



- Clear separation of code from data
- Prevent config installation races at startup
- Scripting Bundle Tracker

Drop sticky sessions

- Encapsulated tokens like AEM
- Need to account for Oak DocumentNodeStore background sync delay



All good things...

Resources

- <https://hub.docker.com/r/apache/sling>
- <https://kubernetes.io/>
- <https://github.com/apache/sling-whiteboard>
 - prometheus-exporter
 - starter-extender
- <https://github.com/rombert/sling-cloud-native>