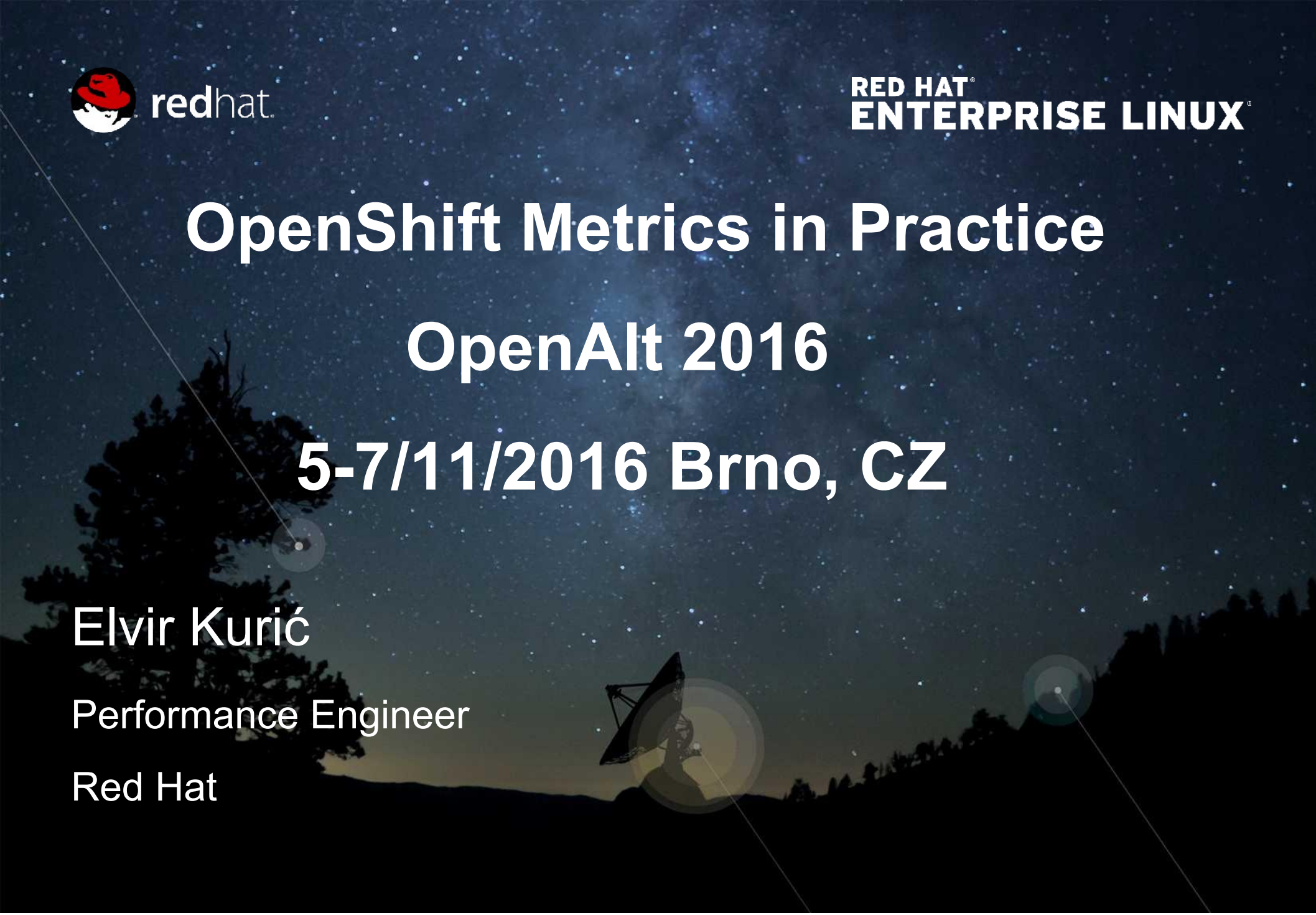

OpenShift Metrics in Practice

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Agenda

- What is OpenShift Container Platform (OCP)
- Openshift metrics components
- Configuration
- Breaking points
- Q/A

What is OpenShift Container Platform (OCP)

- OCP is container application Platform
- Enables to run multiple application on same OCP cluster
- Uses docker as container engine
- Kubernetes as container / pod manager
- master/node/docker/etcd

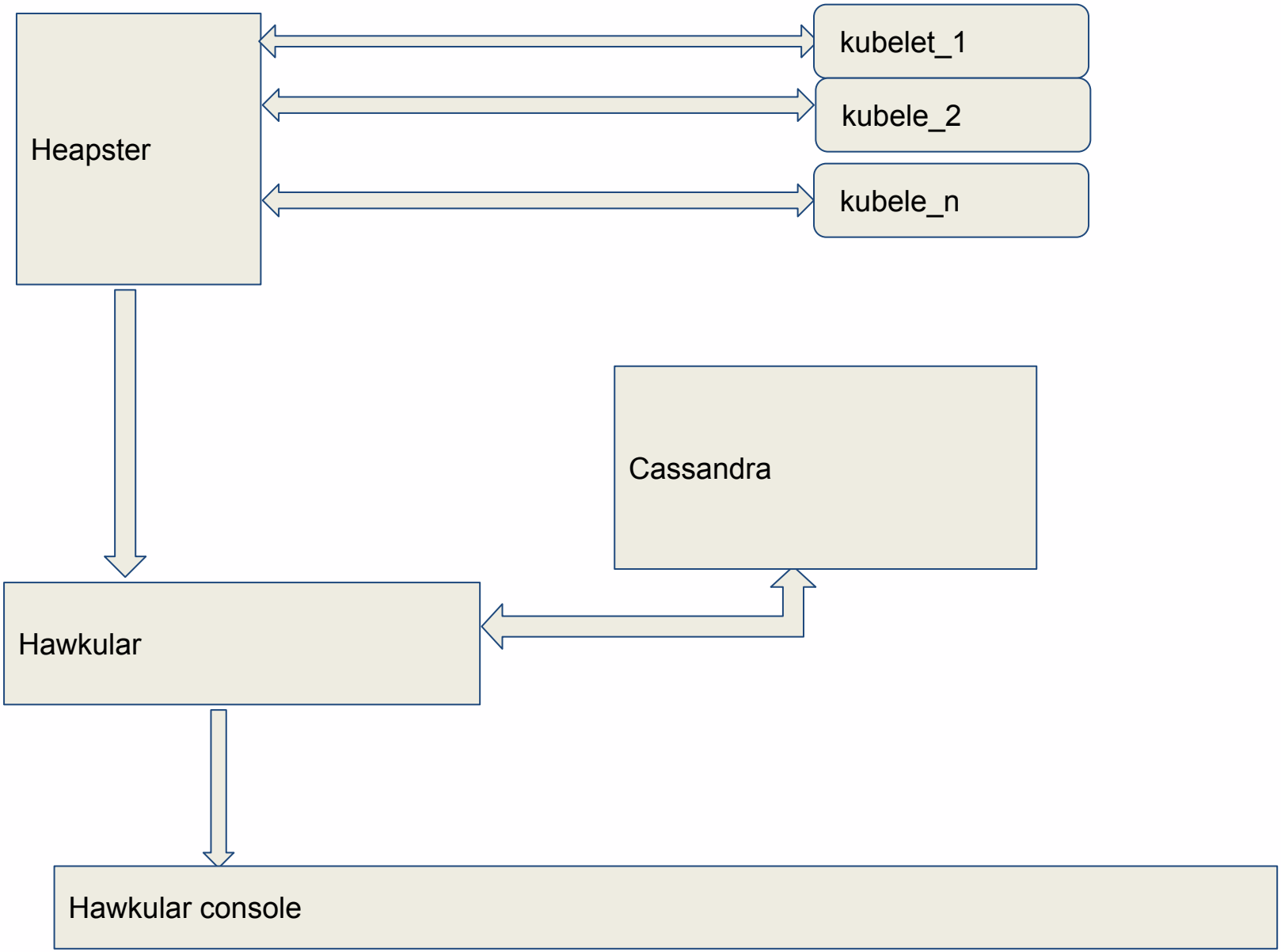
OpenShift Metrics

- It is quite simple
- What metrics does : get data from nodes(kublets) ,write data to database , and show result on web

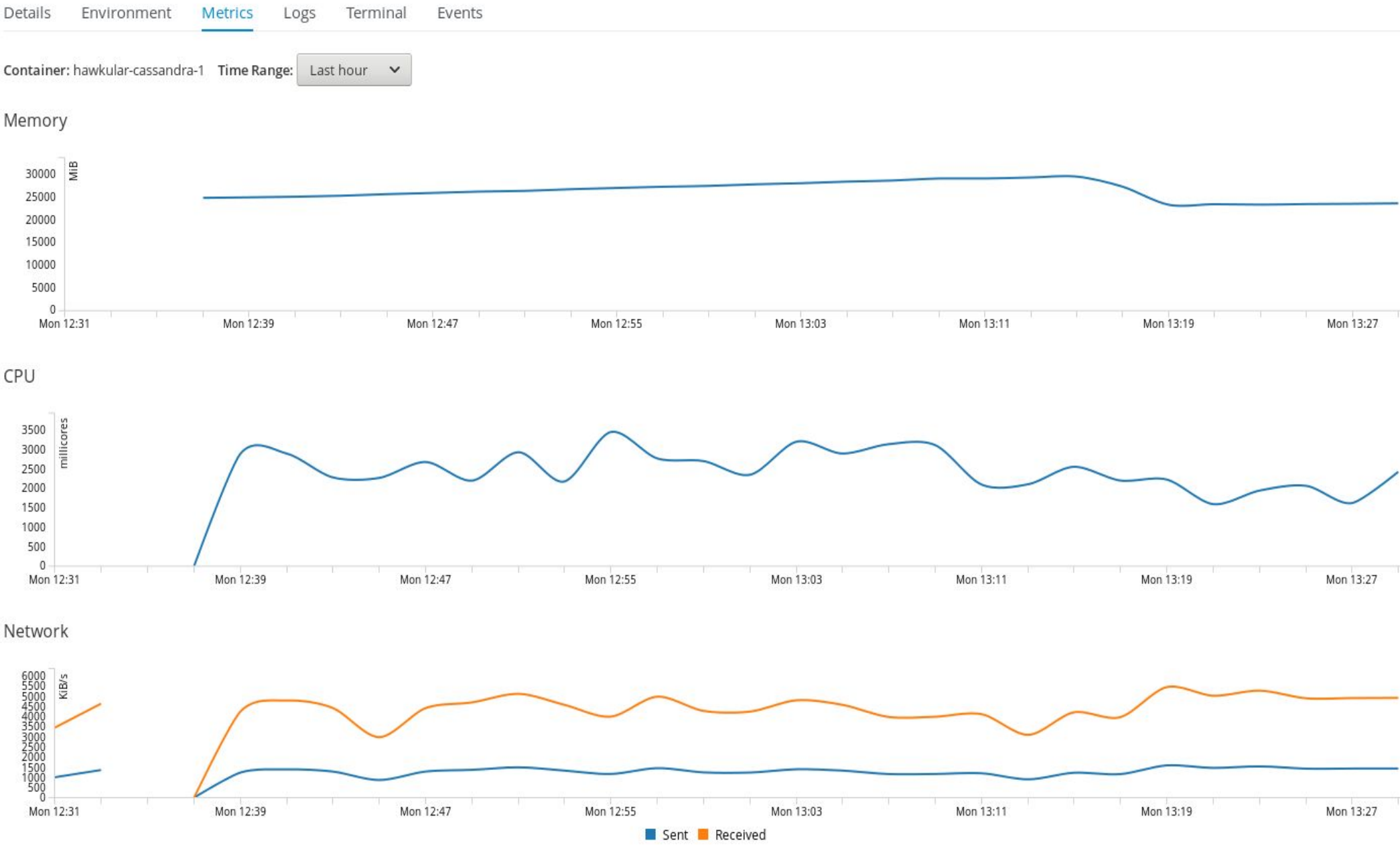
OpenShift Metrics Components

- Cassandra database is used as datastore
- Hawkular
- Heapster

Openshift metrics high level overview



OpenShift Metrics console



OpenShift Metrics Components

- Cassandra database is used as datastore
- Hawkular
- Heapster

OpenShift Metrics Components - Cassandra

- runs as Pod
- Pods (= cassandra nodes) form Cassandra cluster
- USE_PERSISTANT_STORAGE=True
- Watch /var/lib/origin/ if persistent storage not used - can fill it over time

OpenShift Metrics Components - Cassandra

- Pods (= cassandra nodes) form Cassandra cluster

```
$ nodetool status

Datacenter: datacenter1

=======================

Status=Up/Down

|/ State=Normal/Leaving/Joining/Moving

--  Address    Load        Tokens       Owns (effective)  Host ID                               Rack

UN  172.20.215.4  6.89 GB    256          37.1%             e4c5e737-49db-49f6-af16-4217faae4ae3  rack1

UN  172.20.215.3  5.82 GB    256          30.6%             3cd272e4-4cc4-4fc8-bb62-1b315920be46  rack1
```

OpenShift Metrics Components - Heapster

- runs as Pod
- Heapster gathers metrics data from OCP cluster
- It gets metrics for every pod - across all namespaces
- Send these data to Hawkular metrics via API

OpenShift Metrics Components - Heapster

- # oc get logs <heapster_pod>
- Querying source:
  kubelet:172.16.8.156:10250
  I1104 09:28:46.635172 1
  kubelet.go:232] successfully obtained
  stats for 200 containers

OpenShift Metrics Components - Hawkular

- runs as Pod
- Stores metrics data to Cassandra DB

OpenShift Metrics configuration

- OCP Advanced installation
- Openshift-ansible https://github.com/openshift/openshift-ansible
- openshift_hosted_metrics_deploy=true

OpenShift Metrics configuration

- openshift_hosted_metrics_deploy=true
- To avoid hostdir as storage option check
- openshift_hosted_metrics_storage_kind parameter

OpenShift Metrics configuration

- It will then pick up values from configuration file metric-deployer.yaml (openshift-ansible)
- After installation (and if all went fine) in OCP web there will be also metrics tab

OpenShift Metrics configuration

- In background it does something as

```
# oc create -f metrics-deployer-setup.yaml -n openshift-infra

# oadm policy add-role-to-user edit
system:serviceaccount:openshift-infra:metrics-deployer -n
openshift-infra

# oadm policy add-cluster-role-to-user cluster-reader
system:serviceaccount:openshift-infra:heapster -n
openshift-infra
```

OpenShift Metrics configuration

- In background it does something as

```
#oc secrets new metrics-deployer nothing=/dev/null -n
openshift-infra

#oc process -f metrics.yaml -v
HAWKULAR_METRICS_HOSTNAME=dhcp7-170.example.n
et,USE_PERSISTENT_STORAGE=true,IMAGE_VERSION=
v3.3 |  oc create -n openshift-infra -f -
```

OpenShift Metrics configuration

- After starting all metrics pods

```
#  oc get pods
NAME                          READY     STATUS      RESTARTS   AGE
hawkular-cassandra-1-mp5gn    1/1       Running     0          2d
hawkular-metrics-5srpo        1/1       Running     0          2d
heapster-0npf8                1/1       Running     1          2d
metrics-deployer-op83i        0/1       Completed   0          2d
```

If there are issues with metrics starting?

- oc describe pod <pod_name> (kubectl)
- oc logs <pod_name> (kubectl)
- Mostly when not possible to pull image and/or hostname specified in HAWKULAR_METRICS_HOSTNAME is not good

OpenShift Metrics configuration - breaking points

- Use persistent storage for data - always!
- Limit cassandra pods on how much memory to use
- Watch system usage where metrics pods are running
- One set of metrics pods can handle ~10k pods - just guidelines

OpenShift Metrics configuration - breaking points

- For more, scale cassandra/hawkular pods
- 1k pods will generate cca 2-3 GB of data in cassandra - plan accordingly
- Adapt METRIC_RESOLUTION=10(s) and METRIC_DURATION=7(days) (in metric.yaml)

OpenShift Metrics configuration - breaking points

- If possible use dynamic provisioned storage for OpenShift Metrics

DYNAMICALLY_PROVISION_STORAGE=true

Check metrics.yaml

Resources

- Upstream : https://github.com/openshift/origin-metrics
- Downstream

https://docs.openshift.com/enterprise/3.1/install_config/cluster_metrics.html

Q/A

Thank you

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