



KUBERNETES MODULE 6

Hands-on: 2

Connecting Prometheus

Operation 1: Create a namespace

```
kubectl create namespace <namespace name>
```

```
ubuntu@ip-172-31-32-239:~$ kubectl create namespace monitoring
namespace/monitoring created
ubuntu@ip-172-31-32-239:~$
```

Operation 2: Create a file named clusterRole.yaml and copy the content for this file given below

```
apiVersion: rbac.authorization.k8s.io/v1beta1
```

```
kind: ClusterRole
```

```
metadata:
```

```
name: prometheus
```

```
rules:
```

```
- apiGroups: [""]
```

```
resources:
```

```
- nodes
```

```
- nodes/proxy
```

```
- services
```

```
- endpoints
```

```
- pods
```

```
verbs: ["get", "list", "watch"]
```

```
- apiGroups:
```

```
- extensions
```

```
resources:
```

```
- ingresses
```

```
verbs: ["get", "list", "watch"]
```

```
- nonResourceURLs: ["/metrics"]
```

```
verbs: ["get"]
```

```
---
```

```
apiVersion: rbac.authorization.k8s.io/v1beta1
```

```
kubectl create -f <file name>
```

```
ubuntu@ip-172-31-32-239:~$ nano clusterRole.yaml
ubuntu@ip-172-31-32-239:~$ kubectl create -f clusterRole.yaml
clusterrole.rbac.authorization.k8s.io/prometheus created
clusterrolebinding.rbac.authorization.k8s.io/prometheus created
ubuntu@ip-172-31-32-239:~$
```

Operation 3: Execute the following command to create the config map in Kubernetes

```
apiVersion: v1
kind: ConfigMap
metadata:
  name: prometheus-server-conf
  labels:
    name: prometheus-server-conf
    namespace: monitoring
  data:
    prometheus.rules: |-
      groups:
      - name: devopscube demo alert
        rules:
        - alert: High Pod Memory
          expr: sum(container_memory_usage_bytes) > 1
            for: 1m
            labels:
              severity: slack
            annotations:
              summary: High Memory Usage
    prometheus.yml: |-
      global:
        scrape_interval: 5s
        evaluation_interval: 5s
```

```
ubuntu@ip-172-31-32-239:~$ kubectl create -f config-map.yaml
configmap/prometheus-server-conf created
ubuntu@ip-172-31-32-239:~$
```

Operation 4: Create a file named `prometheus-deployment.yaml` and copy the following contents onto the file. In this configuration, we are mounting the Prometheus config map as a file inside `/etc/prometheus`. It uses the official Prometheus image from docker hub.

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: prometheus-deployment
  namespace: monitoring
spec:
  replicas: 1
  selector:
    matchLabels:
      app: prometheus-server
  template:
    metadata:
      labels:
        app: prometheus-server
    spec:
      containers:
        - name: prometheus
          image: prom/prometheus:v2.12.0
          args:
            - "--config.file=/etc/prometheus/prometheus.yml"
```

```
^Xubuntu@ip-172-31-32-239:~$ nano prometheus-deployment.yaml
ubuntu@ip-172-31-32-239:~$ kubectl create -f prometheus-deployment.yaml
deployment.apps/prometheus-deployment created
ubuntu@ip-172-31-32-239:~$
```

Operation 5: To access the Prometheus dashboard over a IP or a DNS name, you need to expose it as Kubernetes service. So let's create a service

```
apiVersion: v1
kind: Service
metadata:
  name: prometheus-service
  namespace: monitoring
  annotations:
    prometheus.io/scrape: 'true'
    prometheus.io/port: '9090'
spec:
  selector:
    app: prometheus-server
  type: NodePort
  ports:
    - port: 8080
      targetPort: 9090
      nodePort: 30000
```

```
ubuntu@ip-172-31-32-239:~$ nano prometheus-service.yaml
ubuntu@ip-172-31-32-239:~$ kubectl create -f prometheus-service.yaml
service/prometheus-service created
ubuntu@ip-172-31-32-239:~$
```

```
ubuntu@ip-172-31-32-239:~$ kubectl get svc -n=monitoring
NAME                                TYPE                CLUSTER-IP      EXTERNAL-IP      PORT(S)          AGE
prometheus-service                 NodePort            10.96.115.61    <none>           8080:30000/TCP   87s
```

Check by going to ip and port

Prometheus Alerts Graph Status ▾ Help						
tem.svc.cluster.local on 10.96.0.10:53: no such host						
kubernetes-apisservers (1/1 up) show less						
Endpoint	State	Labels	Last Scrape	Scrape Duration	Error	
https://172.31.32.239:6443/metrics	UP	instance="172.31.32.239:6443" job="kubernetes-apisservers"	3.46s ago	80.58ms		
kubernetes-cadvisor (2/2 up) show less						
Endpoint	State	Labels	Last Scrape	Scrape Duration	Error	
https://kubernetes.default.svc:443/api/v1/nodes/ip-172-31-32-239/proxy/metrics/cadvisor	UP	beta.kubernetes.io.arch="amd64" beta.kubernetes.io.os="linux" instance="ip-172-31-32-239" job="kubernetes-cadvisor" kubernetes.io.arch="amd64" kubernetes.io.hostname="ip-172-31-32-239" kubernetes.io.os="linux"	1.607s ago	27.58ms		
https://kubernetes.default.svc:443/api/v1/nodes/ip-172-31-43-25/proxy/metrics/cadvisor	UP	beta.kubernetes.io.arch="amd64" beta.kubernetes.io.os="linux" instance="ip-172-31-43-25" job="kubernetes-cadvisor" kubernetes.io.arch="amd64" kubernetes.io.hostname="ip-172-31-43-25" kubernetes.io.os="linux"	875ms ago	27.62ms		
kubernetes-nodes (2/2 up) show less						
Endpoint	State	Labels	Last Scrape	Scrape Duration	Error	
https://kubernetes.default.svc:443/api/v1/nodes/ip-172-31-32-239/proxy/metrics	UP	beta.kubernetes.io.arch="amd64" beta.kubernetes.io.os="linux" instance="ip-172-31-32-239" job="kubernetes-nodes" kubernetes.io.arch="amd64"	4.292s ago	13.39ms		