

Adding a Metrics to the kubernetes cluster for pod and nodes resource monitoring

why the metrics is needed in the kubernetes cluster?

--> It need for monitoring pods and nodes resource utilization for better performance of kubernetes cluster. It also needed to find out which pod or node is consuming more resources.

1. Generally the metrics are not added in the k8s cluster.
2. Verify that by checking the pod in kube-system namespace the pod should be present by the name of metrics-server.
3. its used for collecting metrics such as CPU and memory usage from the nodes and pods in your cluster, which `kubectl top node` and `kubectl top pod` commands rely on.

find more about the kubectl top command using help option

```
kubectl top --help
```

if the metrics server pod is not present in cluster you will get below error after performing top command.

```
kubectl top nodes
```

```
root@WE360-K8-master1:~# kubectl top node
error: Metrics API not available
root@WE360-K8-master1:~# kubectl get deployment metrics-server -n kube-system
Error from server (NotFound): deployments.apps "metrics-server" not found
```

How to add metrics server in kubernetes cluster.

run to install metric server in kube-system

--> `kubectl apply -f https://github.com/kubernetes-sigs/metrics-server/releases/latest/download/components.yaml`

to view to logs of metrics pod

```
kubectl logs -n kube-system deployment/metrics-server
```

If the metrics pod is not in ready state which means the pod is not connecting with kubelet service it can be happened due the certificate issue

To resolve the issue with secure way you can regenerate the certificate of cluster from `kubeadm init phase` command.

1. renew certificate

```
kubeadm init phase certs all --config /path/to/your/configuration/file.yaml
```

2. restart kubelet service

```
sudo systemctl restart kubelet
```

resolve issue with pod insecure configuration.

1. Edit the deploy for changing the pod setting

```
kubectl edit deployment metrics-server -n kube-system
```

2. Add the insecure-tls in containers args for passing command.

```
spec:
  containers:
  - name: metrics-server
    args:
    - --kubelet-insecure-tls
```

Now check the pods and node utilization.

```
kubectl top nodes
```

```
root@WE360-K8-master1:~# kubectl top nodes
NAME                CPU(cores)   CPU%   MEMORY(bytes)   MEMORY%
we360-k8-master1    172m         2%     2910Mi          9%
we360-k8-master2    192m         2%     2646Mi          8%
we360-k8-master3    195m         2%     3003Mi          9%
we360-k8-worker1    75m          3%     1616Mi          42%
we360-k8-worker2    74m          3%     1734Mi          45%
we360-k8-worker3    74m          3%     1721Mi          45%
root@WE360-K8-master1:~#
```

reference: https://kubernetes.io/docs/reference/kubectl/generated/kubectl_top/