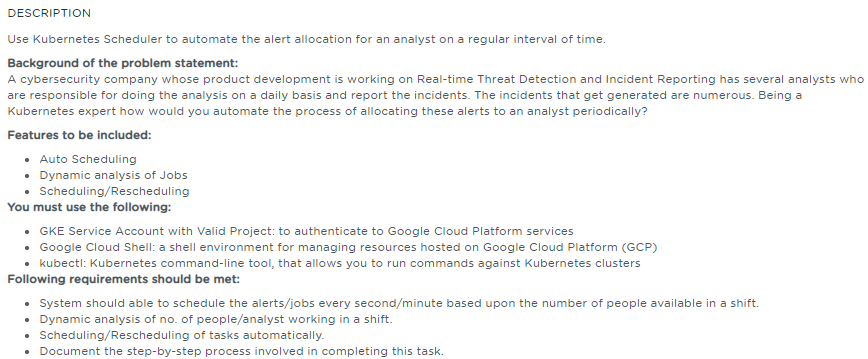
**Job Scheduling Using Kubernetes Cluster - Assessment**



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# **Project Abstract**

The intent of this project is to automate the alert allocation for an analyst on a regular interval of time using the Kubernetes Scheduler.

# **Work Environment**

## **Prerequisites**

Kubernetes cluster, and the kubectl command-line tool must be configured to communicate with your cluster.

**Note:**

Not using the GKE Cluster as mentioned in the problem statement and requirement specification as am facing issue in creating the Cluster in my Trial account

Am using the SimpliLearn Practice lab session to implement this assessment.

## **Setting up Kubernetes Cluster**

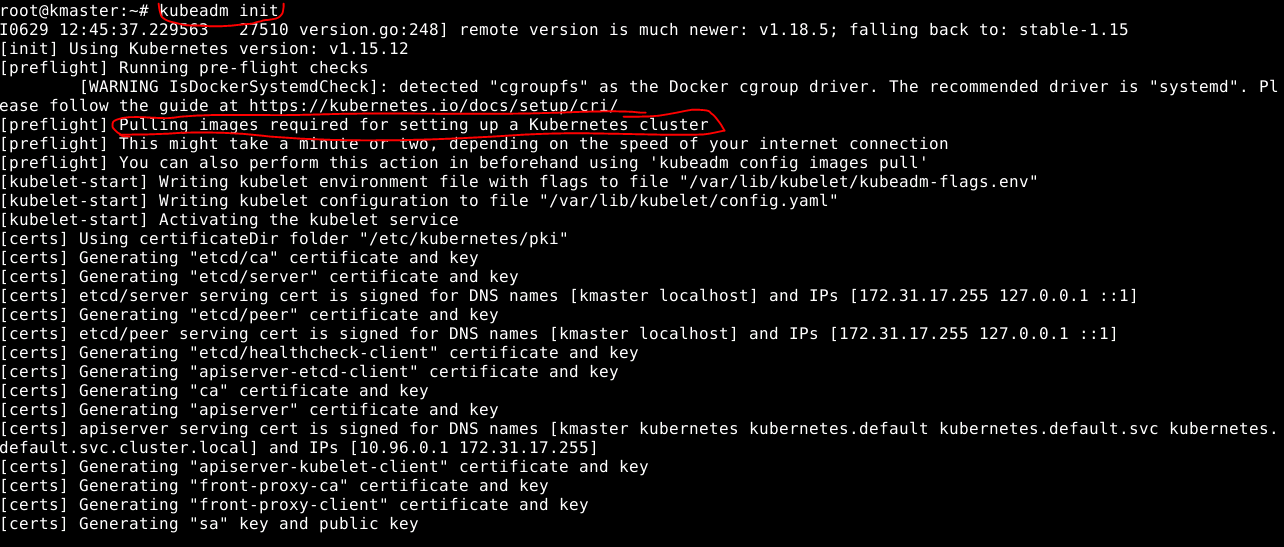
Using the SimpliLearn Practice Lab session, Kubernetes Cluster is being setup with one master and two worker nodes

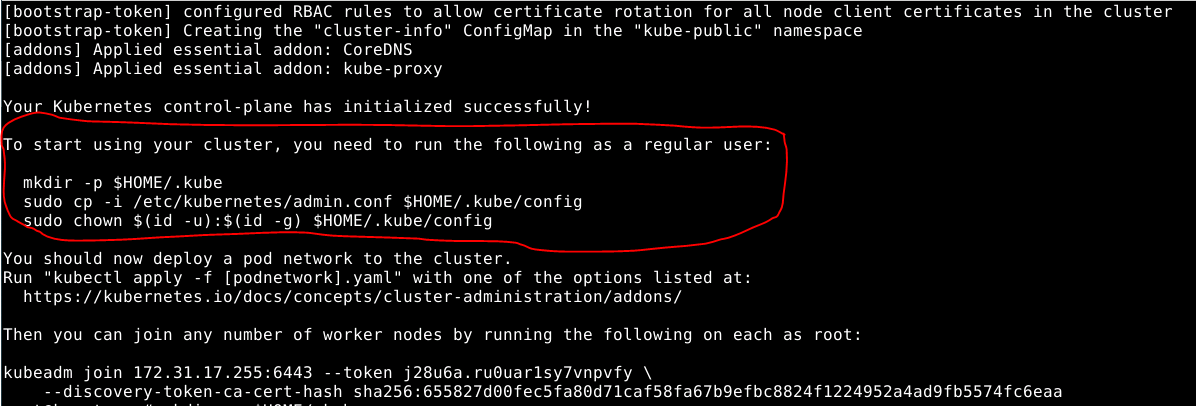
Run the below command on the master

|  |
| --- |
| $ sudo –i  $ kubeadm reset |

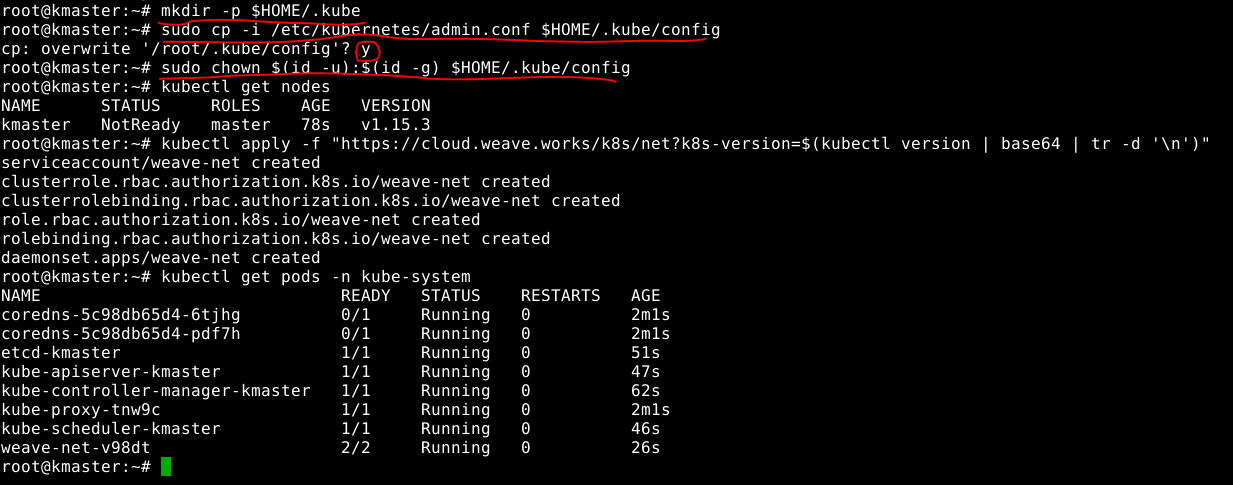
**kubeadm reset** is responsible for cleaning up a node local file system from files that were created using the kubeadm init or kubeadm join commands

Run the below command in order to set up the Kubernetes control plane

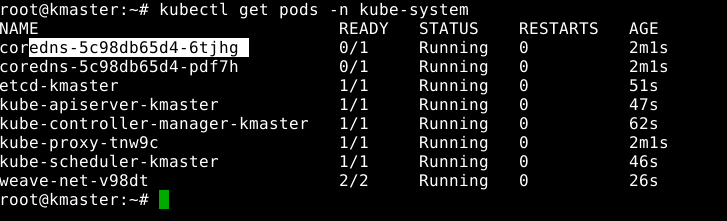




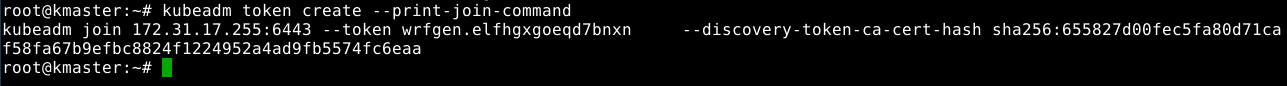
After executing the init command, below screenshot shows various commands used to initialize the configuration and set the correct permissions



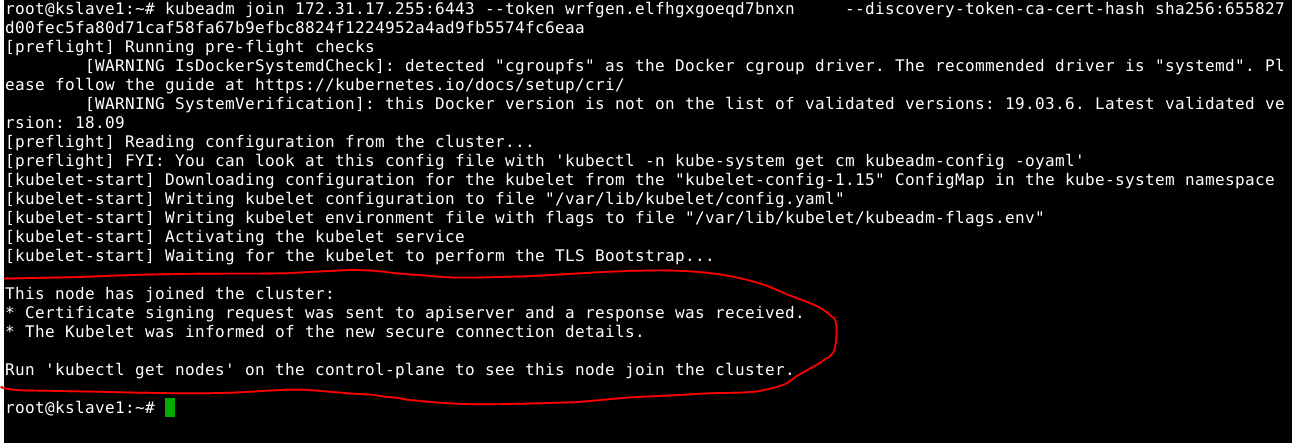
Below screenshot shows the command to verify the master has all the required components running successfully



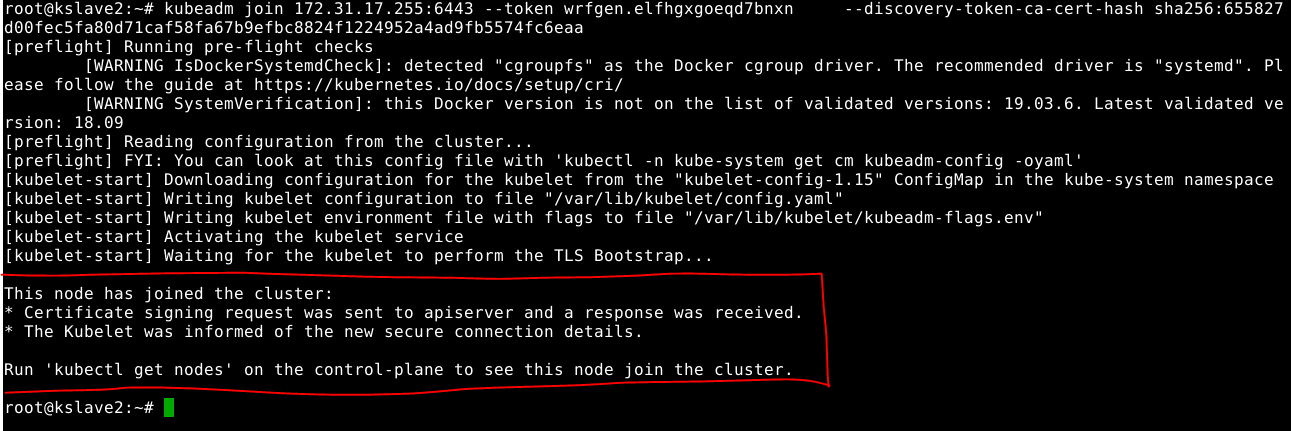
Below screenshot shows the command usage on generating the token for joining the slave nodes in the cluster



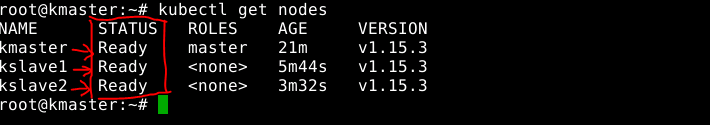
Below screenshot shows the command usage on to join the slave node (kslave1) to the cluster



Below screenshot shows the command usage on to join the slave node (kslave2) to the cluster



Below screenshot shows the all the nodes status in the cluster



# **Creation of Job/Tasks using Cronjob**

Cronjobs is mainly used to run the tasks at a specific time or interval and to execute or assign the tasks automatically at regular interval of time

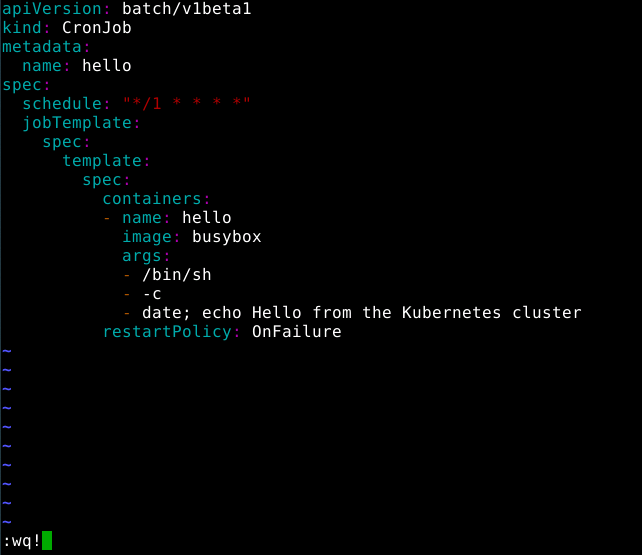
Good choice for automatic tasks such as backups, reporting, sending emails, or cleanup tasks (job scheduling).

CronJobs use job objects to complete their tasks. A CronJob creates a job object each time it runs. CronJobs are created, managed, scaled, and deleted in the same way as jobs.

## **Create a Cronjob**

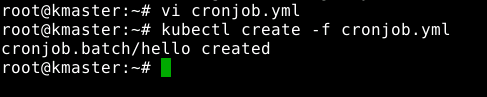
Create a Cronjob from the manifest file as shown below and save the YAML manifest to a file (cronjob.yml)

Below screenshot shows the contents of **cronjob.yml** in the vi editor



## **Run a Cronjob**

Below screenshot shows the creation of Cronjob

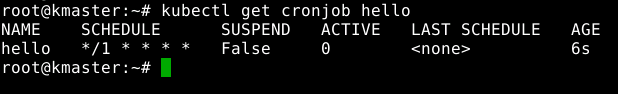


## **Status of Cronjob**

After creating the Cronjob, get its status using this command:

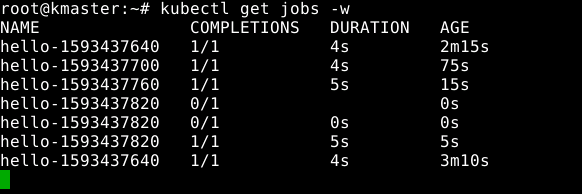
The Last schedule status is set to None as the scheduler is set to run for every 1 minute

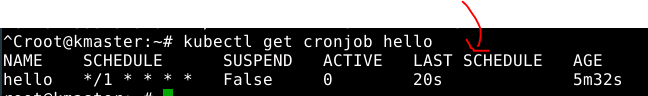
The below screenshot is the output of the command



As you can see from the results of the command, the Cronjob has not scheduled or run any jobs yet. Watch for the job to be created in around few minutes:

Now you've seen (below screenshots) five running job scheduled by the "hello" cron job.



You can stop watching the job and view the cron job again to see that it scheduled the job:

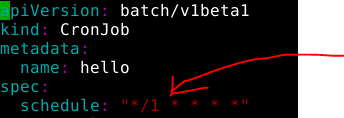
You should see that the Cronjob **hello** successfully scheduled a job at the time specified in LAST SCHEDULE. There are currently 0 active jobs, meaning that the job has completed or failed.

# **Scheduling of Cronjob**

## **Specify when the Cronjob runs**

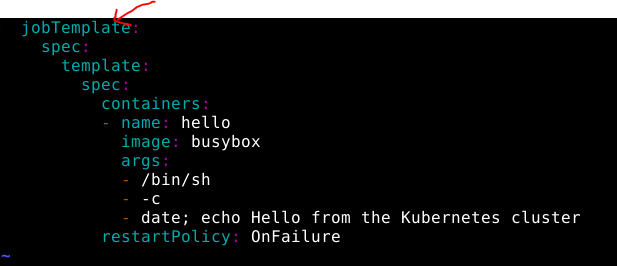
The **spec.schedule** value defined in the Cronjob.yml is \*/1 i.e scheduled for every 1 minute

The **spec.schedule** created in the Cronjob.yml is shown below mentioned



## **Specify what the Cronjob runs**

The **spec.jobTemplate** describes what the CronJob does, including its container images, the commands the containers execute, and the restart policy for the Cronjob.



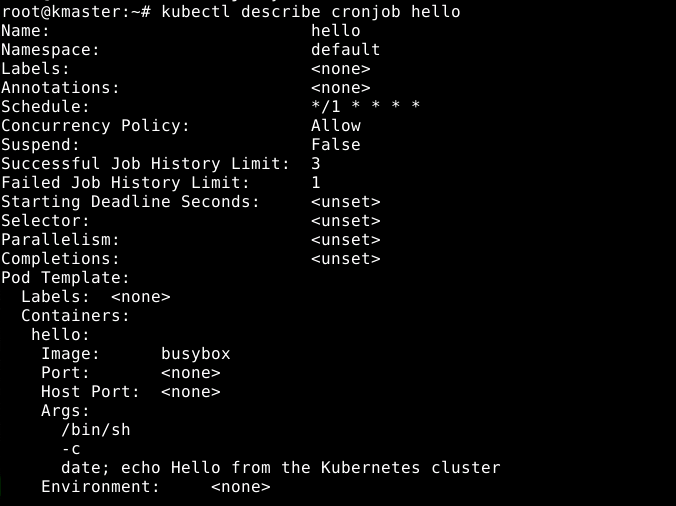
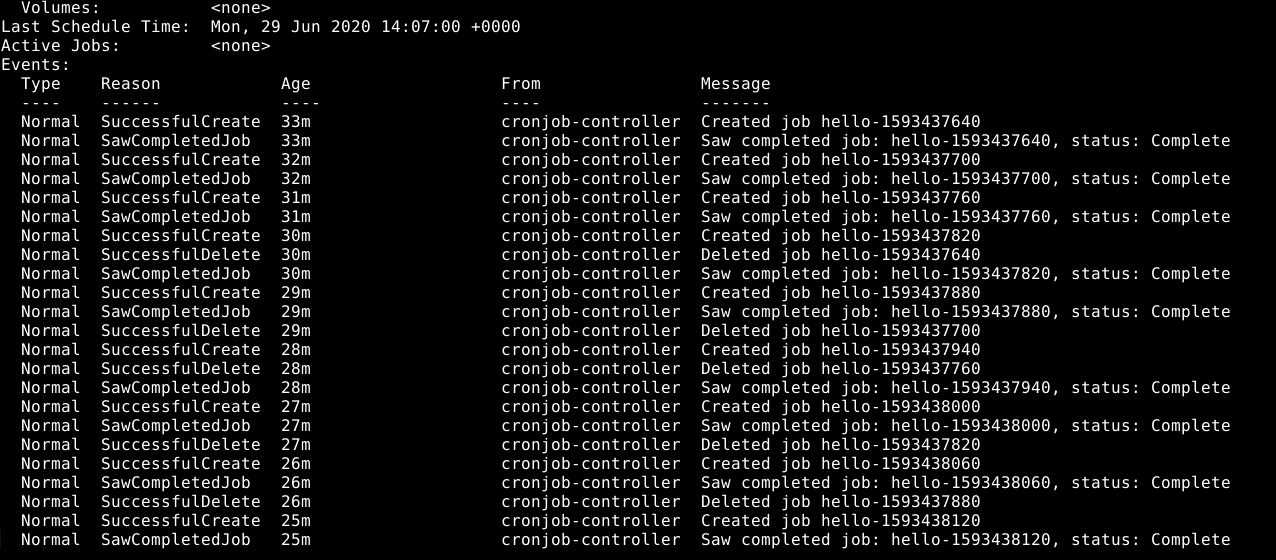
## **Specify Deadline (optional)**

The **spec.startingDeadlineSeconds** field is optional. It stands for the deadline in seconds for starting the job if it misses its scheduled time for any reason.

After the deadline, the cron job does not start the job. Jobs that do not meet their deadline in this way count as failed jobs. If this field is not specified, the jobs have no deadline.

## **Inspecting a Cronjob**

To check a Cronjob's configuration, use kubectl describe:

# **References**

|  |  |  |
| --- | --- | --- |
| **S.No** | **Components** | **Reference** |
| 1 | Write-up Document | 1.Job\_Scheduling\_using\_k8s\_Cluster\_writeup.docx |
| 2 | Sources | 1.Job\_Scheduling\_using\_k8s\_Cluster\_sources.docx |