Self-Hosted Github Runners Deployment on K8s

GitHub Runners: For running the GitHub actions we need to configure the runners where the workflows run.

There are 2 two types of runners:
1)Github hosted runners
2) Self-hosted runners

Deploying the GitHub runners on Kubernetes cluster:

We are deploying our runners on a cluster using a helm chart.

1)Installing Cert Manager:

->Adding the helm chart
helm repo add jetstack https://charts.jetstack.io

->Updating the helm repo:
helm repo update

->Installing the cert-manager helm chart
```
helm install \
  cert-manager jetstack/cert-manager \
  --namespace cert-manager \
  --version v1.14.0 \
  --set prometheus.enabled=false \
  --set installCRDs=true
```

NOTE: if you don’t want to install the CRDs you can remove the option (--set installCRDs=true)

It will Install on the cert-manager namespace

2) Installing the actions runner controller:

The controller is the deployment manager that controls the runner's deployment.

->Creating the namespace for the runners:
kubectl create ns github-runners

->Adding the github secrets for the actions controller:

```
kubectl create secret generic controller-manager \
   -n github-runners \
   --from-literal=github_app_id=<> \
   --from-literal=github_app_installation_id=<> \
   --from-file=github_app_private_key=<>
```

->Adding the secrets
For getting the secrets we have to create the GitHub app in the organization settings in GitHub.
Then install the GitHub app in the organization.
Then you will get the Application ID and the Installation ID:

->Adding the helm repo of the actions runner controller:
helm repo add actions-runner-controller
https://actions-runner-controller.github.io/actions-runner-controller

->Updating the repo
helm repo update

->Installing the actions runner controller helm chart:
helm install actions \
  actions-runner-controller/actions-runner-controller \
  --namespace actions \
  --version 0.14.0 \
  --set syncPeriod=1m

Now our controller is ready!

3)Runner Deployment:

->Single Runner
If you want the single github actions runner,
You can apply the runner.yaml file
https://github.com/antonputra/tutorials/blob/main/lessons/089/k8s/runner.yaml

Then edit the repository with the repository URL where you need to add the runners.

->Multiple Runners:
Or if you want multiple runners:
You need to apply the runner deployment file by replacing the repo

https://github.com/antonputra/tutorials/blob/main/lessons/089/k8s/runner-deployment.yaml

->Autoscaling with Runners:

Apply the below autoscaler and replace the repo names
https://github.com/antonputra/tutorials/blob/main/lessons/089/k8s/horizontal-runner-autoscaler.yaml

Then that's it we have deployed our runners on our cluster.

You can verify the runners at the
GitHub repo settings > Actions > Runners

For reference:

https://www.youtube.com/watch?v=lD0t-UgKfEo&ab_channel=AntonPutra
https://github.com/antonputra/tutorials/tree/main/lessons/089

NOTE:
Cert-manager should be single in cluster
For better practice deploy it in separate namespace
You can use single arc for multiple repo runners.

Few Possible Errors:

Error While deploying the actions-runner-controller:

Need to check whether all CRDs properly uninstalled
Check mutatingwebhookconfiguration
Kubectl get mutatingwebhookconfiguration
kubectl delete mutatingwebhookconfiguration
mutating-webhook-configuration

Check validatingwebhookconfigurations
Kubectl get validatingwebhookconfigurations
kubectl delete validatingwebhookconfigurations
validating-webhook-configuration