Creating a Kubernetes Cluster in Google Cloud Platform

Obviously, the first step towards setting up a Kubernetes Cluster in GCP is to set up an account. If you're just doing testing, you can get a free account with £200-300 of free credit in the first year. Go to https://cloud.google.com and register.

Install the Google Cloud SDK

This contains the CLI tools you'll need to deploy your cluster.

System requirements

Cloud SDK runs on Linux, macOS, and Windows. It requires Python 2.7.x. Some tools bundled with Cloud SDK have additional requirements. For example, Java tools for Google App Engine development require Java 1.7 or later.

On Linux, it can be obtained via apt or yum.

On MacOS and Windows, the only method seems to be download the versioned archive, extract its contents

and then install it like this:

```
#Mac
./google-cloud-sdk/install.sh
#Windows
.\google-cloud-sdk\install.bat
```

Add `--help` for a list of flags you can pass to this script, if you want to get fancy.

If, for some reason, you don't want to use apt/yum on Linux, you can use the versioned archive method there too.

Initialise Google Cloud SDK

Once installed, run `gcloud init` to configure it.

It will run some initial diagnostics, then ask you to log into GCP via your (Chrome) browser.
Once logged in, it will ask you to choose a cloud project to use. If you didn't set one during the process of creating your GCP account, or if you want to create a new one anyway, there will be an option to create a new one.
Next, you will be offered the option to configure a default Compute Region and Zone. If you select "Y", it will present you with a list of 50 numbered zones. If your option is not shown, type `list` at the prompt to see a full list of zones.
Otherwise, type the number of the appropriate zone to continue. **NB.** These choices can be changed later.

Create Kubernetes Cluster

Create your cluster like this

```
gcloud container clusters create foo
```

This will whir away for a few minutes and then present a confirmation looking something like:

```
NAME         LOCATION        MASTER_VERSION  MASTER_IP
MACHINE_TYPE   NODE_VERSION  NUM_NODES  STATUS
foo      europe-west1-b  1.11.7-gke.4    35.205.239.136  n1-standard-1
1.11.7-gke.4  3          RUNNING
```

To import the cluster into kubectl:

```
gcloud container clusters get-credentials foo
```

Maintenance

Resize Your Cluster

Should you need to resize your cluster at any point, follow this guide:

https://cloud.google.com/kubernetes-engine/docs/tutorials/migrating-node-pool

The broad steps are:

- Create a new node pool
- Cordon your existing node pool to stop new jobs being scheduled in it
- Drain the running jobs from the existing node pool
- Check they spin up in the new pool
- Delete the old pool

Background Reading

https://cloud.google.com/sdk/?&_ga=2.230435036.-1545697282.1545122282#download

https://cloud.google.com/sdk/install

https://cloud.google.com/sdk/docs/initializing

https://cloud.google.com/kubernetes-engine/docs/quickstart