

**GCP – HOL -Session 19**

**Chef Configuration on GCP Cloud**

This HOL session helps you to quickly set up infrastructure on Google Cloud Platform with the Chef configuration management tool. You will start from nothing and end with provisioning and configuring multiple resources on GCP using open source GCP-specific Chef cookbooks.

## Objectives

* Demonstrate a sample configuration management workflow using a single machine running **Chef Client**.
* Show how to install and use the Chef GCP cookbooks.

## Before you begin

1. Create a new GCP project or select an existing one in the **Google Cloud Platform Console**.
2. Enable a billing account.
3. Install the **Google Cloud SDK**.

## Setup

### **Provision a Compute Engine instance**

This HOL session is written using the **us-east1-b** Compute Engine zone. You may choose any zone.

This HOL session is written using the **Ubuntu 16.04 LTS** machine image. You may use any machine image that supports Chef.

1. In the Cloud Platform Console, go to the **Compute Engine >> VM Instances** page.
2. Click the **Create Instance** button.
3. Set **Name** to chef-workstation.
4. For **Zone**, choose **us-east1-b**.
5. For **Machine type**, choose **f1-micro**.
6. In the **Boot disk** section, click **Change** to begin configuring your boot disk.
7. In the **Preconfigured image** tab, choose **Ubuntu 16.04 LTS**.
8. Click **Select** at the bottom of the dialog.
9. Click the **Create** button at the bottom to create the instance.

NOTE: You can also use the gcloud command instead:

gcloud compute instances create chef-workstation --machine-type f1-micro \  
--image-family ubuntu-1604-lts --image-project ubuntu-os-cloud \  
--zone us-east1-b

It will take a few moments to create your new instance.

### **Download a service account key**

You'll need a service account key to authorize Chef to manage your GCP project.

1. In the Cloud Platform Console, go to **IAM & admin >> Service Accounts**.
2. If prompted, select your GCP project.
3. Click the **Create Service Account** button.
4. Set **Name** to chef-service-account.
5. For **Role**, choose **Project** >> **Editor**.
6. Check the box **Furnish a new private key**.
7. For **Key type**, select **JSON**.
8. Click **Create** at the bottom of the dialog.

The service account key should be automatically downloaded to your computer as a JSON file with a name like YOUR\_PROJECT\_NAME-12345678abcdef.json.

NOTE: You can also use the gcloud command instead:

gcloud iam service-accounts create chef-service-account --display-name \  
"chef service account"  
gcloud iam service-accounts keys create ~/chef-account-key.json \  
--iam-account chef-service-account@YOUR\_PROJECT\_NAME.iam.gserviceaccount.com

In this case, the service account key will be downloaded as ~/chef-account-key.json.

Once your service account key is downloaded, you'll need to upload it to your new chef-workstation Compute Engine instance:

gcloud compute scp /PATH/TO/SERVICE\_ACCOUNT\_KEY.json \  
chef-workstation:credentials.json --project YOUR\_PROJECT\_NAME --zone \  
us-east1-b

### **Install Chef client**

1. SSH into your chef-workstation instance.

gcloud compute ssh chef-workstation --zone us-east1-b

1. Download the chef client package for **Ubuntu 16.04**.

wget https://packages.chef.io/files/stable/chef/13.8.5/ubuntu/16.04/chef\_13.8.5-1\_amd64.deb

1. Install it.

sudo dpkg -i chef\_\*

NOTE: If you selected a different machine image for your Compute Engine instance, you'll have to download the correct package and install it with the appropriate package manager.

Remain ssh'd into your chef-workstation instance.

### **Initialize a Chef repository**

On your chef-workstation instance:

1. Setup a cookbooks directory.

mkdir -p .chef/cookbooks  
cd .chef

1. Configure Git.

git config --global user.email "you@example.com"  
git config --global user.name "Your Name"

NOTE: if git is not installed, install it:

sudo apt-get install git

1. Initialize a Git repo.

git init  
git commit -m genesis --allow-empty

You should see a message like [master (root-commit) 7d75bc7] genesis.

NOTE: Having at least one commit allows you to start downloading Chef cookbooks, as you'll do in the next step.

## Configure

### **Download the Chef GCP cookbooks**

On chef-workstation:

1. Download the google-cloud cookbook from the **Chef Supermarket** via the knife command.

knife cookbook site install google-cloud

NOTE: ~/.chef/cookbooks is a default path for the knife cookbook command. If you want a different path, you'll need to specify it in a custom knife configuration file.

When installation finishes, you should see many new directories in the cookbooks directory, such as google-cloud, google-gauth, etc.

### **Write a Chef recipe**

On chef-workstation:

1. Create a new recipe directory under the google-cloud cookbook.

mkdir -p cookbooks/google-cloud/recipes

1. Edit a new recipe file cookbooks/google-cloud/recipes/default.rb:

gauth\_credential 'mycred' do  
  action :serviceaccount  
  path ENV['CRED\_PATH'] # e.g. '/path/to/my\_account.json'  
  scopes [  
    'https://www.googleapis.com/auth/compute'  
  ]  
end  
  
gcompute\_zone 'us-west1-a' do  
  action :create  
  project ENV['GCP\_PROJECT'] # e.g. 'company-org:chef-gcp-project'  
  credential 'mycred'  
end  
  
gcompute\_disk 'instance-test-os-1' do  
  action :create  
  source\_image 'projects/ubuntu-os-cloud/global/images/family/ubuntu-1604-lts'  
  zone 'us-west1-a'  
  project ENV['GCP\_PROJECT']  
  credential 'mycred'  
end  
  
gcompute\_network 'mynetwork-test' do  
  action :create  
  project ENV['GCP\_PROJECT']  
  credential 'mycred'  
end  
  
gcompute\_region 'us-west1' do  
  action :create  
  project ENV['GCP\_PROJECT']  
  credential 'mycred'  
end  
  
gcompute\_address 'instance-test-ip' do  
  action :create  
  region 'us-west1'  
  project ENV['GCP\_PROJECT']  
  credential 'mycred'  
end  
  
gcompute\_machine\_type 'n1-standard-1' do  
  action :create  
  zone 'us-west1-a'  
  project ENV['GCP\_PROJECT']  
  credential 'mycred'  
end  
  
gcompute\_instance 'instance-test' do  
  action :create  
  machine\_type 'n1-standard-1'  
  disks [  
    {  
      boot: true,  
      auto\_delete: true,  
      source: 'instance-test-os-1'  
    }  
  ]  
  network\_interfaces [  
    {  
      network: 'mynetwork-test',  
      access\_configs: [  
        {  
          name: 'External NAT',  
          nat\_ip: 'instance-test-ip',  
          type: 'ONE\_TO\_ONE\_NAT'  
        }  
      ]  
    }  
  ]  
  zone 'us-west1-a'  
  project ENV['GCP\_PROJECT']  
  credential 'mycred'  
end

1. Set the appropriate environment variables. You can directly inline these values in the code; they are parameterized like this for your convenience.

# The service account key JSON file you uploaded earlier to  
# '~/credentials.json'. However, CRED\_PATH requires an absolute path.  
export CRED\_PATH='/home/USERNAME/credentials.json'  
export GCP\_PROJECT='YOUR\_PROJECT\_NAME'

## Deploy

### **Run Chef Client**

On chef-workstation, run chef-client in 'local mode' with your recipe:

chef-client --local-mode --runlist 'recipe[google-cloud::default]'

You should see output streaming by as the command operates. It should terminate with something like Chef Client finished, 2/8 resources updated in 35 seconds.

You just provisioned a Compute Engine instance on GCP using a single machine running Chef Client. You can check the status of your Compute Engine instance on the **VM Instances** page.

### **Deleting the project**

The easiest way to eliminate billing is to delete the project you created for the HOL session.

To delete the project:

1. In the Cloud Platform Console, go to the **Projects** page.
2. Click the trash can icon to the right of the project name.

**Warning**: Deleting a project has the following consequences:

If you used an existing project, you'll also delete any other work you've done in the project. You can't reuse the project ID of a deleted project. If you created a custom project ID that you plan to use in the future, you should delete the resources inside the project instead. This ensures that URLs that use the project ID, such as an appspot.com URL, remain available.

### **Deleting instances**

To delete your Compute Engine instances:

# Run on your local machine, \_not\_ the chef-workstation instance.  
gcloud compute instances delete chef-workstation --zone us-east1-b  
gcloud compute instances delete instance-test --zone us-east1-b  
# Repeat with any other instances you may have made.