

Google Cloud Platform

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1 Main Objectives and Description

Over the course of this BSP, we try to achieve an automated solution that eases the creation and setup of a new environment, more specifically the Excalibur Environment.

As for the scientific Deliverables, we firstly had to get familiar with GCP since this is the tool we used to create our virtual machines. This means that we had to learn and understand how to work with the platform.

While trying to achieve the provisioning on the instances, we encountered a problem that required us to familiarise with private and public key pairs to get remote access to GCP instances.

Lastly we want to create a tutorial that accompanies our technical solution. The tutorial is meant to guide the DevOps engineer and help him understand and use our solution.

Concerning the technical deliverable, we have to consider two types of users: the DevOps engineer and the Excalibur user.

As for the DevOps engineer, the objective of this BSP is to have a fully automated solution that handles the virtual machine creation on GCP. Added to this, all the necessary tools should be downloaded such that we can put an Excalibur Environment on it. The DevOps engineer also needs to ensure access to the new virtual machine for the Excalibur user.

As for the Excalibur user, we want him to simply be able to connect to the virtual machine created in the cloud and use the Excalibur Environment. The end user should not worry about anything related to the virtual machine's creation and setup.

2 Scientific Aspects and Production

Here we will have a look the scientific deliverables.

2.1 Deliverable 1 – GCP

The first scientific deliverable for this BSP concerns the Google Cloud Platform. In order to be able to work on this project, we had to understand how to work with the

platform in order to ease the set up of virtual machines, as we will rely on this tool for the final solution.

In order to learn about GCP and understand how it works, we decided to look for online courses and tutorials. These courses were meant to teach us the basic usage of the platform as well as a few basic concepts related to it.

Also, when first accessing GCP a message popped up proposing a guided tour through the platform. This was basically an interactive tutorial that showed us how to navigate the platform and where to find the most important tools.

2.2 Deliverable 2 – SSH

After having accomplished the creation of instances on GCP, we wanted to provision these instances using Ansible and the work we have done in the previous semester. We quickly encountered an issue where the Ansible script was not able to connect to the machine and perform the provisioning. As a result we needed to find out how to access GCP instances remotely via SSH.

SSH connections rely on so called *key pairs*. This key pair is composed of a private and a public key. To create this key pair we simply had to run the following command `ssh-keygen`.

We will notice that two keys were generated. One of them is the private and the other one is the public key. The last step is to put the public key onto the remote machine inside its `$HOME/.ssh` folder and we are good to go.

2.3 Deliverable 3 – Tutorial

The final scientific deliverable for this project is a tutorial targeted towards a DevOps engineer. It is meant to help him understand and use our solution. The tutorial should talk about everything that may come in handy for the DevOps engineer in order to understand how the solution works and to be able to build upon it independently.

The tutorial has been written in Markdown. I decided to go with Markdown because it is quite easy to use and you can add it to a GitHub repository. Considering that we will put this solution onto GitHub, this seemed like a very good idea.

Once we were set for writing the tutorial, we began with writing down things we already knew how to do. So we build the tutorial as we went, feeding it with new information as we learnt and discovered it.

Some parts of the tutorial required us to completely restart from scratch because once you have everything set up, there are things that differ compared to doing it the first time around.

Markdown has the ability to insert images and to include references, either external or internal ones. So we can have references to other websites or to other sections within the file. We used both of these to our advantage to illustrate and introduce various notions without interrupting the flow of the text.

3 Technical Aspects and Production

Here we will have a look the technical deliverable, namely the provisioning.

The main technical deliverable for this BSP, is a solution that automates the process of creating and provisioning virtual machines on the Google Cloud Platform in order to host an Excalibur Environment on it. Part of this solution is based on earlier results that have been worked out in the previous semester.