

Assignment 2:

Managing Cloud Resources with Code

Introduction

In this assignment you will write a program in Python¹ that will create and use various OpenStack resources, report on the state of resources, and release resources when we are done with them.

Documentation for the OpenStack SDK is available at <https://docs.openstack.org/openstacksdk/latest/user/index.html>.

1 Basic setup

Use the file `assn2.py` as a starting point for this assignment. It has been written to take a command line argument that determines which of three operations your program will perform. The possible arguments and operations are:

report Collect information from the OpenStack cloud and print it to standard output.

up Launch a VM together with associated resources for it.

down Remove the VM and associated resources launched by the **up** operation above.

Each of these three operations are described in more detail below.

Your program should get its connection parameters from a `clouds.yml` file that can be downloaded from the OpenStack dashboard.

2 report actions

If the command line argument is **report**, your program should print a list of the instances in the queried availability zone. For each server, provide the following information:

- instance name
- ip address(es)
- instance status
- image name

Make an effort to present this information in an organised and readable way.

¹This assignment is most easily done in Python, but if you want to take on the challenge of doing this assignment in a different language, that is negotiable.

3 up actions

If the command line argument is `up`, your program should launch a VM instance. More specifically, it should:

1. Check for the existence of a network called `assn2-net` and exit with an error message if it is not present.
2. Generate a keypair.
3. Launch an instance using the keypair you generated and attached to the `assn2-net` network. Use the Ubuntu 16.04 image and the `c1.c1r1` flavour.
4. Obtain a floating IP address and associate it with the VM instance just launched.
5. Print a report with information about the instance including the instance name, floating IP address, and private key. If any errors occur in the process of completing the above tasks, print information about the errors that occurred.

When you create the resources for this, use the naming scheme `username-resource-type`.

4 down actions

If the command line argument is `down`, your program should shut down the vm and delete all associated resources from the OpenStack cloud.

5 Submission

Submit your completed Python program (it should be just one file) by email to the lecturer by the beginning of class on Tuesday, 16 October.

You will be marked on

- The correct functioning of the program;
- The correctness and formatting of the output;
- Correct and effective use of the OpenStack SDK;
- The organisation and structure of your program, including appropriate comments.