Lab Work 2 - Cloud Computing

Charlotte Laclau
prenom.nom@univ-st-etienne.fr

October 8, 2021

Instructions

- This lab is your second evaluation for this course
- You can form groups of **maximum 4 students**
- Each group should share a link to a github repository.
- The repository will include all the files to run your code, A README, a small report describing your project and a 3 minutes maximum demo video of your code.
- **Deadline : October 31th 2021**

Goals

- Create an AWS application in which a client submits a request to a worker on EC2. The request is composed of a list of integers.
- The EC2 worker is a Python application that receives the list (the request) and calculates the min, max, mean, median and send them back to the client.
- After sending the response, the EC2 worker must write a log file describing this transaction as txt file on S3 Amazon Storage Cloud.
- Additional details
    - the client is limited to 10 numbers. If more numbers are entered, a message error should be sent
    - numbers must be positive - again a message error is sent to the client if one of the number is not positive

Required Tools

To proceed with the lab, you will need the following tools. Make sure that you have Python installed and the associated libraries. Other services are included in AWS.

- Python (2 or 3) with the library **boto** or Eclipse with AWS plugin installed.
- Amazon EC2
- Amazon S3
- Amazon SQS (Simple Queue Service)

What is Amazon SQS ? What type of queues can you create ? State their differences.

Introduction : Sample Tutorial on boto3

In order to get familiar with the use of the boto library, follow the **Sample Tutorial**.

Before starting make sure that you configured properly boto with AWS (See Quickstart → Configuration).

What is the difference between a resource and a client ?

Project Architecture

The project has a classic Web-Queue-Worker architecture. The core component of this architecture are a web front-end that serves client requests, and a worker that performs tasks. The client communicates with the worker through a **message queue**.

In which situations is a Web-Queue-Worker architecture relevant ?

More precisely -

1. **Client** : a java/python AWS project (with one class that includes main method). It is hosted on your machine (not on the cloud). This client does the following steps:

   - Creates an SQS Queue for requests (called the requestQueue) and use it to submit a request containing a list of maximum 10 integers (separated by comments).
   - Receives the response from the EC2 worker.

2. **EC2 Worker**: this is a java/python application that runs on an EC2 instance. It does the following tasks:

   - Reads the messages from the requestQueue
   - Calculates the results
   - Creates a response queue (called responseQueue) and submits the result on it.
   - Create a new log file (a text file) and store it on Amazon S3.

Go Further: TBD