MSCS621 Fall 2018 – Cloud Computing
Project Definition

Objective:

The objective is to learn how the native cloud applications can be developed and deployed into the hybrid cloud environment, but not to make a fancy and awesome application.
Each student needs to set up and configure a hybrid cloud environment (IBM Cloud + other cloud and local cloud environment) and run a cloud application that is built by him/herself. This will include the entire lifecycle of the cloud computing, esp. hybrid cloud computing environment.

Note: Students do not need to create entirely new application from scratch. Instead, they can start from an existing application that is the closest to their objective. We will see many existing applications throughout the course. For example, students can choose an open source application.

Requirements:

- Students need to develop a cloud application in their local cloud environment and to containerize it
- The cloud application should have a web page where users can access via browser
- Students need to connect the cloud application to the cloud services (REST APIs) provided by IBM Cloud (there will be examples) or other cloud providers (if preferred)
- Students need to deploy the developed code (as a form of container) to other cloud provider (Amazon, Google Cloud Platform, or Azure), different cloud than where services are provided. For example, if you use IBM cloud services, you need to install your application to other cloud providers such as GCP, AWS, or Azure.

Submission:

- The git repository: naming convention is **marist-mscs621-<your name>**
- The submission needs to include the final git repository with
  * A complete README.md, which should include
    + Introduction to an application (what it does, how it helps, dependencies, and so on)
    + how to deploy your application
    + Architecture diagram (local cloud development, cloud deployment, communication)
    + API specification if your service is consumed by others
  * Github pages site where the high level introduction under <master-branch>/docs (i.e. marketing, sales)
- The URL for the running application (Note: please make sure you shut cloud instances down after the course, otherwise it will charge you after the free tier ends. I will send a notification after all done).

- The final report (ppt) should include the architecture, components, deployment model, communication, and so on.

Timeline:

- Students need to submit an initial plan with an application type/objective, an application architecture, what cloud providers to use by the midterm week.
- Students need to submit the final code (Git), URL, and report by the final week (see **Submission** above).

Evaluation Criteria:

- Level of Cloud Hybridity (25): different cloud providers, different cloud services/platforms/tools
- Completeness of the working version (25): intuitive service that achieves the objective (no need to be a fancy UI, but focus on the usability)
- Documents (25): README.md and Git Pages
- Report (25): Course project report (ppt)

Development and Pilot Environment:

Students need to develop an application in their local cloud environment (virtualbox + vagrant + docker). Figure 1 below illustrates how the development and pilot environment differ. Students are learning how to set up both environments through the course and make use of them for their projects.

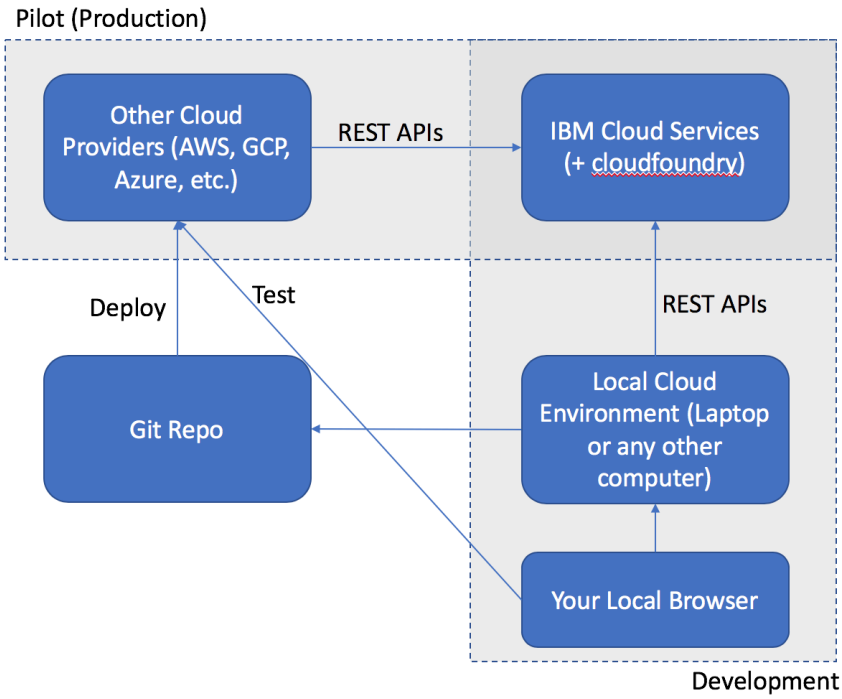

Figure 1. Development and Pilot Cloud Environment

Sample Application:

Students will practice a couple of sample applications throughout the course. Some examples are at https://github.com/watson-developer-cloud