Cloud-Powering DH Research

DHSI 2017, June 5-9, 2017

Rough Schedule

(Note that the schedule and content may change but the overall scope should remain fixed)

Pre-Course Setup: Setup should preferably be done before you arrive at the course to help make the best use of your class time. The course exercises will be done on **your personal laptop** to better allow you to continue using what you learn in the course after you leave.

Before arriving for the course, if you can, it is strongly recommended to get a **Compute Canada Cloud account.** Getting an account usually takes a few business days as it is a manual process, ensuring you have a Compute Canada Cloud account at least a week before the course begins is recommended. There are two steps to getting a CC Cloud account:
1. Get a general Compute Canada account
2. Get a Compute Canada Cloud account

To get a Compute Canada account you need to either be a faculty member or librarian at a recognized academic institution in Canada or know someone who is that can sponsor your Compute Canada account. To get a Compute Canada account follow the instructions provided on this Compute Canada page. Once you have a CC account, you then apply for a cloud account here. You will need to provide your CC account user name and an email associated with your CC account.

For those who are unable to acquire a Compute Canada Cloud account we will have guest accounts that you can use during the course, however having your own account is preferable as you may continue to use it after the course has completed.

The only setup required on your laptop is **ensuring you can open a Linux command line terminal**. For Windows users MobaXterm is recommended. Download and install MobaXterm and verify you can run it. For Linux and Mac users you already have a terminal built in to your operating system. To see how to open your terminal on your Mac see this youtube video. If you are a Linux user running Ubuntu this youtube video shows you how to access the terminal. If you are having trouble accessing a terminal on your laptop before you arrive we can help you at the beginning of the course.

Day 1/Monday: *What the cloud is and a quick, hands-on introduction to working with OpenStack.* This day will lay down the fundamental concepts of cloud computing and walk through the basics of using OpenStack to manage cloud resources. This day will culminate in creating a basic webserver. An introduction of the command line in Linux will also be covered.

Day 2/Tuesday. *Practice.* We'll take the basic concepts introduced on Monday and elaborate on them in various combinations to provide exposure to the flexibility of the environment. Topics explored in more detail will include security management, backups, and storage options. The core example that will be used to illustrate these topics will be the setup of a WordPress site.

Day 3/Wednesday. *Advanced Tools.* With a solid foundation on using an Infrastructure as a Service Cloud in place we'll move on to work with some advanced tools for setting up and working with cloud environments to create research environments. This will include tools like cloud init (for automatically

configuring new virtual machines) and HEAT (for automating the creation and configuration of multiple interdependent cloud resources).

Day 4/Thursday. *Independent Hands-on.* Participants are encouraged to bring their own cloud problem/project to the course and today is the day that we will focus on solving those problems and/or deploying those projects. For those without a problem/project at hand the instructors will provide a suitably challenging use case.

Day 5/Friday. *Clean-up.* We only have the morning here so we'll be focused on adding any final components to the independent projects from Thursday, making sure that all participants have understood the relevant concepts, and pointing to resources for continuing to work in the cloud in the future.

Some initial course reading suggestions.

Note that all content will be covered during the course and it is not necessary to be familiar with the content of these readings in advance (although it will certainly help).

A decent free overview of cloud computing is [Cloud Computing Made Easy](#).

Other free documents which give a decent overview of the cloud are Vendor sponsored copies of "Cloud for Dummies". The good things about these versions of this book is that they are are free. The bad things about these materials is that they are particularly targeted towards a business audience and bent towards the particular platforms and services of the sponsor. If the bad seems to be outweighing the good, then consider picking up the standard copy of "Cloud Computing for Dummies" from a bookstore or a local library. Of the vendor sponsored copies we recommend the [Ingram Micro version](#). There are also two from IBM, one called [The Limited Edition](#) and one called [The Midsized Company Limited Edition](#).

There are also some youtube videos which give an overview of what OpenStack is: [OpenStack 101 - What is OpenStack?](#) and [What is OpenStack?.](#)

Finally the OpenStack [user documentation](#) is a good reference once you have begun working with OpenStack. Also there is some documentation specific to the Compute Canada Cloud on the [Compute Canada wiki](#). The wiki content is a work in progress but does have some useful instructions for common tasks while working with VMs and OpenStack.