OpenStack Capstone Sprint Report

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1. Sprint Planning Meeting - 04/11/2013

1.1 Sprint Backlog

Our backlog can be found in the Microsoft Project plan located in our Git repository, which is accessible from Trac and Github. We have also been using Trac's ticket feature for small tasks and we are striving to actively update them accordingly. As we're doing weekly sprints, the most pertinent information can be found in the roadmap section of Trac. We update this weekly after meeting with our mentor to reflect the goals we set for each sprint. This also provides a nice historical view of what we've done and any future plans that we have.

2. Sprint Review Meeting - 04/18/2013

2.1 Customer Demo

Our customer demo is essentially complete. Over the past two weeks we have upgraded our development environment from Folsom to Grizzly. We have also started to build up the production environment using a virtual machine as the controller node. One of our compute nodes from the development environment was moved to the production environment. In addition, one of the compute nodes the department has allocated for OpenStack (that was running the old Essex release for the department) has been added to the environment.

Lastly we've been testing Savanna within Grizzly on DevStack and have been able to successfully launch clusters. We are limited by the hardware resources available in this virtual environment, but hope to be testing this soon on the Grizzly development environment. Overall there are a few tasks remaining that we need to complete, but we are confident that the production environment is will be completed in time.

2.2 Stakeholder Involvement Review

We have been working on meeting the requirements given to us by IBM and the computer science faculty. We have been meeting with IBM every Tuesday morning to give our status updates and ask any questions we need. We have been in contact with Robert Foertsch about migrating our production environment into the computer science department's environment. We also plan on holding a presentation for the computer science department. In this presentation we are going to go through all the functionality of OpenStack and some of the possibilities it can offer. Finally, we have been working on documenting our process for future usage. This documentation will hopefully allow future users within the department to deploy their own working OpenStack instances.

2.3 Data Management Review

We've been very meticulous on keeping Trac as current and relevant as possible. We use tickets to track tasks and keep a weekly log of our biggest goals in the roadmap section. We also have improved how all project data is stored as Trac and Git are not our only data management resources. We maintain all documents on a shared folder on Google drive that our sponsor has access to which allows us to provide them any documents or files that we're working on in real time. Finally, we meet 4 days a week to work on our project. At each meeting we discuss and review our progress, and we

document them in our status reports. We also have been updating our Trac's tickets.

2.4 Requirements Review

Our requirements have not changed since the last sprint report and we have been keeping up with meeting our requirements. With the headway we've made with Savanna we're confident we will be delivering Hadoop working within OpenStack. We also have been making steady progress with configurations, specifically with Quantum. We have been able to get routing to work so instances can reach the public network. We still need to refine and test this for stability, but we're confident we'll be completing all of our committed tasks.

2.5 Progress Review

2.5.1 Work Completed

We were able to get Quantum working on our development environment when it was running Folsom. Then when we moved our primary development compute node to the production environment we found that our other nodes were not functioning correctly. In making this discovery, we found that one of our nodes had an issue with the version of the kernel, so we decided we would rebuild this node and upgrade the environment at the same time.

The development environment was upgraded in parallel to the production environment since we were having success with Grizzly on the production hardware. We encountered some minor issues with getting databases synced for the new version of OpenStack, but all of these problems have now been resolved. We still have some problems with Quantum and Cinder in Grizzly, so we hope to resolve them over the next few days. We have been documenting this process while we work on it. This documentation is to be used for future installations/deployments of OpenStack.

2.5.2 Work Not Completed

We still need to get Quantum working on Grizzly. The main issue that we are having is getting the metadata service and routing to the public Internet working. We also do not have LDAP with the CS department working on any parts of OpenStack yet.

3. Sprint Retrospective Meeting - 04/22/2013

3.1 Top Highlights

- Physical Multi-Node Setup
  - Both of our environments are running on multiple nodes using a controller/network node and the remaining nodes are all compute nodes. We're able to launch instances and have them spawn on each compute node (VMs on node01 and node02).
- Quantum Works
  - The project's greatest difficulty was getting the Quantum component working. We spent numerous hours on figuring out how Quantum needs to be configured. We are now able to create virtual networks using Quantum and instances have public network connectivity.
- Grizzly Setup
  - We have both environments now running on Grizzly, the latest version of OpenStack.
- Savanna Setup
  - Savanna is an add-on for OpenStack that allows users to create virtual Hadoop clusters within OpenStack. Savanna uses a REST API that is accessible through the command line interface and through a Horizon module.
- Documentation
  - We have been keeping up with our documentation for deploying and using OpenStack. Hopefully, this will encourage more use of the system by the department.

3.2 Top Lowlights

- Debugging and Fixing Problems
  - We wish that we would have made this much progress during the previous sprint. Though we've learned a lot about OpenStack, we have only had a very small amount of time to actually cater its abilities to better suite the department.

3.3 Reflection on Improvements

We spent a significant amount of time debugging and testing Savanna on our development environment that was running Folsom. After Grizzly released we ran DevStack on one of our VM hosts to test the latest release. We decided to install Savanna on this environment and found that all the issues that we were having no longer existed on the Grizzly release. Unfortunately this resulted in a fair amount of time being exhausted that we weren't aware of.

We hope if others within the department continue to work with OpenStack will use our development environment and notes to get started. We lost a lot of time in the initial setup of OpenStack which we wanted to instead spend on working with higher-level components of the system.