OpenStack Capstone Sprint Report

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1. Sprint Planning Meeting - 01/31/2013

1.1 Sprint Backlog

Our backlog can be found in the Microsoft Project plan located in our Git repository, which is accessible from Trac. We also have 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 give a nice historical view of what we've done and any future plans that we have.

2. Sprint Review Meeting - 02/26/2013

2.1 Customer Demo

We have started working on some of the use cases that were defined but they are not ready for a demonstration. We have been in contact with IBM and they understand that our project requires a fairly steep amount of implementation tasks to get OpenStack up and running before it's really ready to be demoed. For the time being we have been using instances of Devstack on VMs for testing purposes. We've also implemented Hadoop in a pseudo cluster on a VM as well as a three node cluster on Amazon EC2. Until the necessary OpenStack infrastructure is in place, we will continue to do testing in our smaller development environments and will replicate them to OpenStack as soon as we're able to.

2.2 Stakeholder Involvement Review

We have able to meet with our company each week on Tuesday morning. For the first few meetings our progress was slow as our mentor, Michael, was unable to attend due to prior commitments. Once Michael was involved, the meetings became very conductive as we were able to determine what aspects of our project were feasible. We were also given constructive feedback on our documentation. IBM has been active on our Google groups page, since this has been our most active form of communication with IBM and the department.

For the use cases that we have planned out, we have been keeping in touch with the professors and other stakeholders (Dr. Ludwig, Dr. Denton, Robert). We were able to set up several meetings where we we discussed pertinent information. In these meetings we were able to find more information about how OpenStack will interact with the data and then how it will process it. We also dedicated one meeting to discuss storage possibilities with OpenStack and began dismissing misconceptions about the storage services it provides. Our most active communication tool has been the Google groups discussion boards where professors and other stakeholders have been very active.

John also began discussing a large use case with the College of Engineering where they would like to evaluate a cloud environment for common IT resources. John has started a discussion board on the Google group to get more feedback from the CS department and IBM.

2.3 Data Management Review

We've been very meticulous on Trac to keep it as current and relevant as possible. We use tickets to track tasks and keep a weekly log in the roadmap section. We also have improved how and 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 and we also just grated our sponsor permission to this as well so they can actively comment and review documents without us emailing multiple copies back and forth.

2.4 Requirements Review

Requirements for this project are constantly monitored as we are continuously finding more information about features and limitations of OpenStack. It is important to note that we have defined the requirements for this project based on the requirements we've gathered from professors and system administrators. These requirements were also levered to suit our time frame as well as our capabilities. We've also already made revisions to initiation and planning document as well as our requirements specification document.

2.5 Progress Review

2.5.1 Work Completed

We have completed a significant amount of research on OpenStack, Hadoop, and Amazon's Web Services (primarily EC2). This research has given us a firm grasp of what we need to do and has provided a model of how we'd like to do it. We have met with several professors from both the Computer Science department and personnel within the College of Engineering to come up with corresponding use cases. This has given been the goal of this sprint and was the primary goal sought out by IBM. Finally, we have been keeping up with the required documentation along with additional documentation requested by IBM. We are still on schedule according to our Microsoft Project plan.

2.5.2 Work Not Completed

We have yet to do a manual implementation of OpenStack; that is, installing each component of OpenStack without the use of Devstack. We plan to proactively develop documentation while we implement OpenStack (including all necessary components, especially Quantum) and related tooling for the desired use cases. This documentation will allow future users to follow the steps. We will document (not only) the basic

implementation process, but the process for our given use cases. Ideally, the documentation should allow use cases of the two departments to continue using OpenStack on their own.

3. Sprint Retrospective Meeting - 03/05/2013

3.1 Top Highlights

- Determine the scope and feasibility of the project.
    - After several meetings with IBM we have narrowed the scope of our project. We've evaluated the use cases we currently have and have agreed on what our goals are for the next sprint.
- Obtained a good understanding of OpenStack.
    - After several weeks of intense research, trial-and-error, and meetings with our mentor, we have obtained a good understanding of OpenStack and its components. This has allowed us to successfully debug the errors and problems we have faced with implementation. It also gave us heads-up on what we need to document for future use.
- Determine various use cases amongst the departments
    - We were able to meet on multiple occasions with professors of both departments to determine possible use cases. The professors have also been active in our Google groups discussions weighing in recommendations and opinions about requirements throughout the process.
- Keeping up with our Microsoft planner.
    - We have been keeping up with our weekly sprints and required documentation due dates outlined in our Microsoft Project plan.

3.2 Top Lowlights

- Debugging and fixing errors within OpenStack.
    - We have spent a significant amount of time dealing with bugs and errors when implementing OpenStack. OpenStack has a nasty habit of completely breaking whenever a single component fails.
- Implementation progress has been slow.
    - We haven't reached our desired goals of OpenStack implementation. We would wish to be further along the way. We have been delayed due to bugs with implementation and keeping up with documentation.

- Slow project start with respect to implementation.
    - We were unable to get a fast enough start on our project due to Michael being busy with meetings, and a weak understanding of OpenStack.
    - Another factor that contributed to the slow start was a lack of initial focus. We had to spend some time gathering use cases within the C.S. department before we could begin implementing things; this was overhead with which other groups did not have to contend.

3.3 Reflection on Improvements

We are now putting more effort into installing OpenStack manually rather than from the automated Devstack script. As we began our implementation we found many of its limitations and spent a fair amount of time debugging issues. While this may have not have been the best use of our time, it's not all a loss as we did gain more knowledge about OpenStack along the way.

We've also, with the aid of this report, refined our goals and determined more concrete goals for how we want to focus our resources through the next sprint. At this point much of our research is complete and we are looking forward to focusing more heavily on implementation.