Peak2Cloud: Scientific Computing on the Cloud

JOSEPH ANTHONY C. HERMOCILLA, University of the Philippines Los Banos

Peak2Cloud (P2C) is an Openstack-based private cloud for scientific and high performance computing. First, we present how P2C was configured and tested. Then we describe vcluster, a tool for rapidly deploying message-passing clusters on P2C. Lastly, we analyze some benchmark results on the performance of P2C deployed virtual clusters.

1. INTRODUCTION

Cloud computing has become a buzzword in today's modern computing, though there is no agreed upon meaning of the term. In 2011, NIST [Mell and Grance 2011] published a definition that is widely quoted and used. The popularity of cloud computing mainly comes from its ability to provision additional resources on demand with minimum intervention from the provider. It leverages advances in virtualization and web services technologies. For example, a website with a sudden increase in workload can start another server machine (virtual) almost instantaneously to accommodate the additional load.

Cloud computing offers service models which include Software-as-a-Service(SaaS), Platform-as-a-Service(PaaS), and Infrastructure-as-a-Service(IaaS). IaaS allows the consumer to provision computing resources(hardware, network, storage) to run arbitrary software including operating systems [Mell and Grance 2011].

2. RELATED WORK

3. METHODOLOGY

4. RESULTS AND DISCUSSION

5. CONCLUSIONS

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Peter Mell and Timothy Grance. 2011. The NIST definition of cloud computing (draft). *NIST special publication* 800, 145 (2011), 7. http://pre-developer.att.com/home/learn/enablingtechnologies/The_NIST_Definition_of_Cloud_Computing.pdf

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Author's addresses: J. A. C. Hermocilla, Institute of Computer Science, University of the Philippines Los Banos

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