

# Cloud Computing Simulation for Smart Grid

Hanlin Chen

the Department of Electrical and Computer Engineering  
Ohio State University  
chen.8059@buckeyemail.osu.edu

April 8, 2019

## 1 Introduction

The growth of power data in smart grid motivates use of high performance cloud computing application. In the cloud model, all data processing, software and hardware are delivered to users via internet in forms of service such as platform as a service (Paas), software as a service (Saas) and infrastructure as a service (Iaas). Compared to traditional computing framework, the cloud computing can handle much higher volume of data from smart grid and provide promising power management to users. The performance of cloud model could be addressed by its processing speed and throughput. In addition, various factors such as hardware infrastructures, allocation of virtual environment and smart grid application are directly linked to these performance measurements. In this paper, we proposed a novel cloud based data center architectures to improve data processing in the smart power grid. The runtime simulation is done to investigate the effect of hardware configuration and allocation policy of virtual machines on execution of smart grids application using open source toolkit Cloudsim [1]. the structure of paper is as follow. Section II reviews overall architectures of proposed cloud based data center for smart grid. Section III studies two common VM scheduling: time shared policy and space shared policy. Section IV includes all simulation results and time analysis. Section V gives the conclusion.

## References

- [1] Cloud Computing and Distributed Systems (CLOUDS) Laboratory, “Cloudsim.” [Online]. Available: <http://www.cloudbus.org/cloudsim/>