

Analysis of MySql Server and MySql Cluster on the Cloud Computing

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ABSTRACT

Cloud computing is a collection of the integrated computing systems over a network, and being one of the many technologies that are currently carried out various development efforts. For database systems, cloud technology using MySQL as one of option for its database management. For huge traffic in the cloud system, MySQL cluster has better performance than the non-cluster, but the comparison is not known yet. This research aims to find a good comparison of performance between MySQL Server and MySQL Cluster on cloud computing system, by measuring multiple parameters using the simple, complex, non-transactional and read-only method, with various request maximum from 10000 to 50000. The result are in terms of time, the MySQL Server's processing speed is better than MySQL Cluster, but for the performance, MySQL Cluster is still better, since it has high availability feature.

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1. INTRODUCTION

Cloud computing is a distributed computing over a network and have ability to run program on many computer devices. Cloud computing become more popular for the researchers, professionals, or companies. The aim of the cloud computing is to apply traditional supercomputing to perform tens of trillions computations per second, such as to deliver personalized information, or to provide data storage. To do this, cloud computing using networks as connection to spread data processing across them. Cloud computing has gained rapid adoption for the last three years as corporate sought more efficient and effective ways in utilizing its IT investment. It provides ability for cloud consumers to use or implement flexible and scalable services without having the computing resources installed directly on consumer's system [1]. Because of that cloud computing being used to minimize the usage cost of computing resources [2].

One of important thing in cloud computing is data provider technology or it more be knowing as database technology. There are two primary methods and one optional methods to run a database on the cloud; Virtual Machine Images and Database as a Service, and managed database hosting on the cloud as the optional method, but in this paper we do not describe about the methods to run database on the cloud.

MySQL as one of database technology which often used in cloud computing system. MySQL is an open source Relational Database Management System (RDBMS) that runs as a server providing multi-user access to a number of databases [3]. To provide high availability, and high throughput with low latency, and allowing near linear scalability, MySQL developed MySQL Cluster. Firstly, MySQL Cluster designed specifically for enterprise-based telecommunications company that desperately needs actuality and the liveliness of the database. Database of these companies, in addition to large capacity also has a very high availability [4].

In order to providing a good service for users, the database-based application needs to deliver high performance and scalability. In addition, it requires complete data availability, which includes fault tolerance, service uptime, and throughput. This study discusses the performance of MySQL Server and MySQL with clustering over the cloud computing system using SysBench. SysBench is a modular, cross-plaform and multi-threaded benchmark for evaluating operating system parameters that are important for a system running a database under intensive load. SysBench also flexible as a testing utility that allows a variety of different test modes [5].

2. RESEARCH METHOD

In this research we proposed stages of research and topology design to measure the database with server and the cluster.

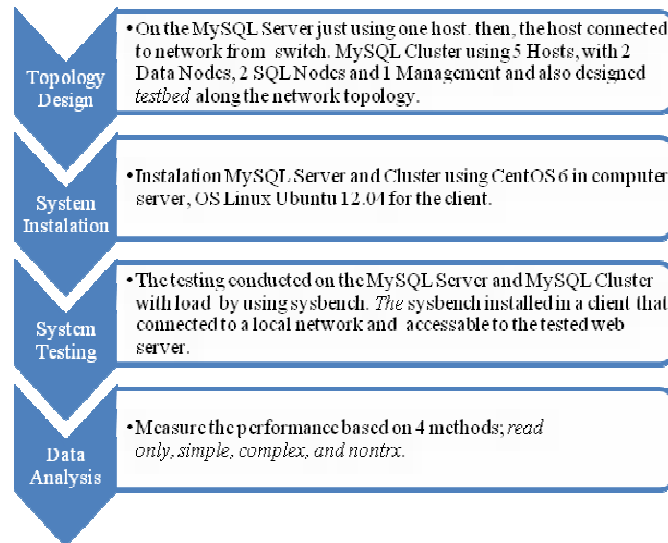


Figure 1. Phase of Research Methodology

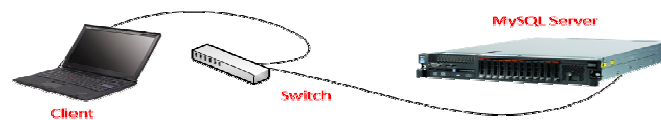


Figure 2. MySQL Server Topology

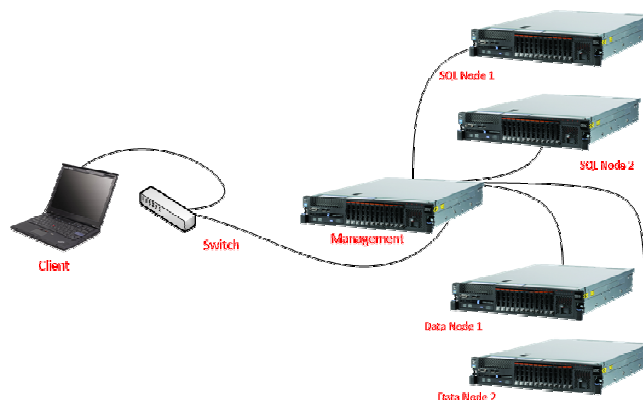


Figure 3. MySQL Cluster Topology

3. RESULTS AND ANALYSIS

Non-transactional method will do, UPDATE on the non-index columns, queries DELETE, and INSERT queries on the database will be tested. In read-only method, will do all possible to do but UPDATE, DELETE, and INSERT. We used some testing method, they are Read only, Simple, Complex, Non-trx. We compared MySQL server and MySQL cluster for each method, with comparison of the thread and request time.

3.1 Charts of Testing Method



Figure 4. Read Only with 10000 until 50000 maximum request

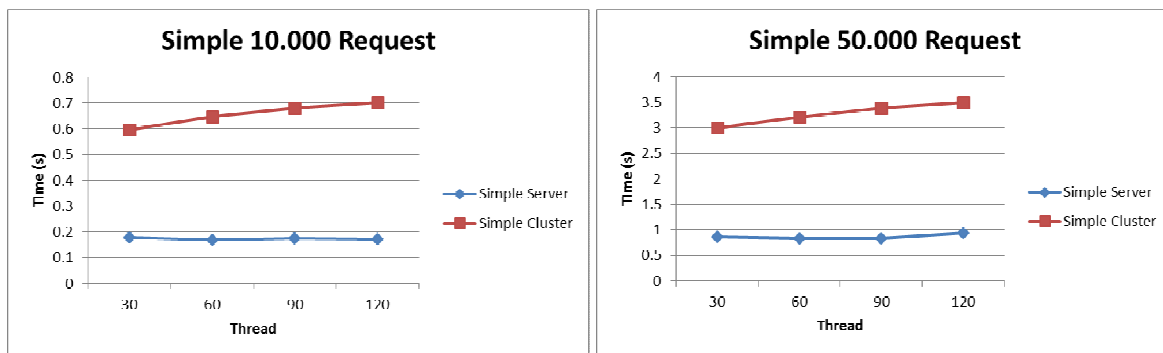


Figure 5. Simple with 10000 until 50000 maximum request

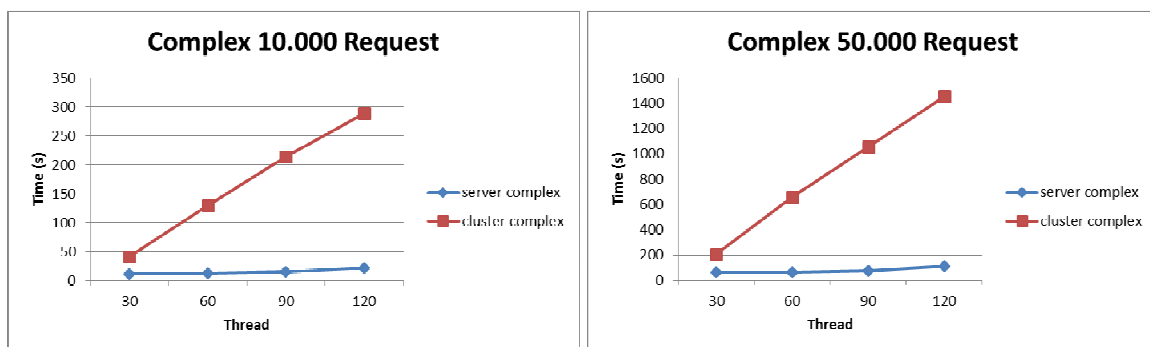


Figure 6. Complex with 10000 until 50000 maximum request

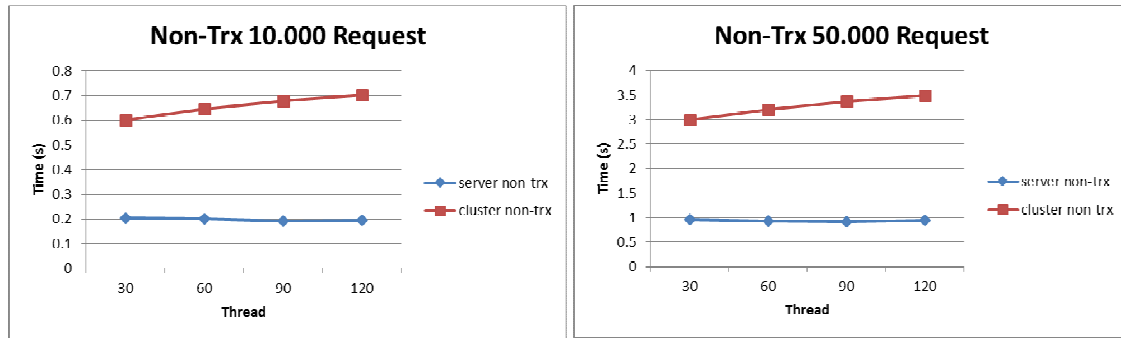


Figure 7. Non-Trx with 10000 until 50000 maximum request

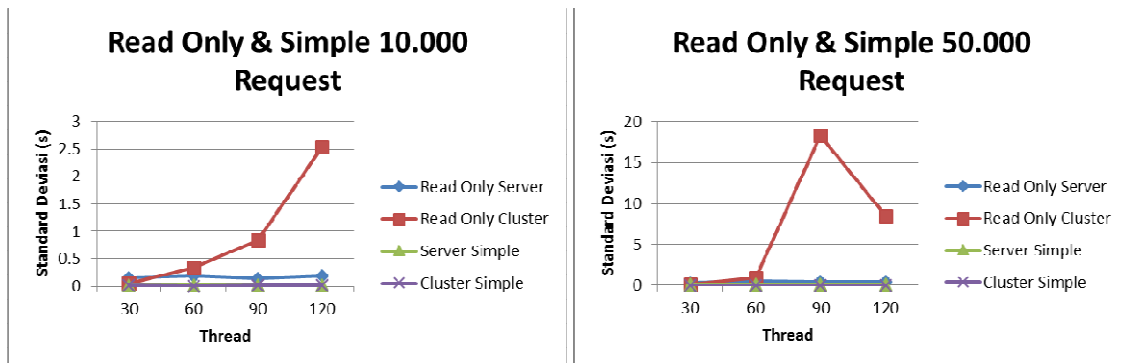


Figure 8. Standard Deviation Read Only and Simple with 10000 until 50000 maximum request

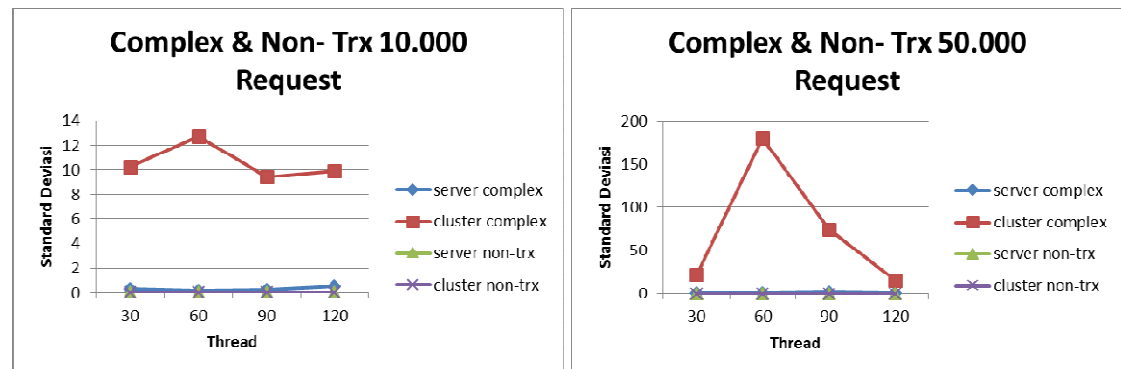


Figure 9. Standard Deviation Complex and Non-Trx with 10000 until 50000 maximum request

Based on the charts for each testing method with 10000 until 50000 maximum request, it explained that the completion time in MySQL server is faster than MySQL cluster. Nevertheless, MySQL cluster has high availability and scalability rather than MySQL server, since the cluster can replicate the data to each of the nodes.

4. CONCLUSION

For the time aspect MySQL server is faster than MySQL Cluster, because in the cluster the data replicated, and it consume processing time. However, MySQL has other advantage, like availability for replicate data among the nodes, and it make the availability in cluster higher than the server.

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