

UNIVERSITI TEKNOLOGI MARA

**BENCHMARKING AND PERFORMANCE TUNING FOR
CONCURRENT TRANSACTION PROCESSING IN
JBOSS APPLICATION SERVER**

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ABSTRACT

The research is intent on finding a benchmark for one type of application server to process concurrent transaction processing (especially financial type of transaction services) and its performance. By comparing to the initial performance, it is exclusively have been performed a tuning to this same server in order to increase the performance of the concurrent transaction processing. From the performance tuning, a new benchmark of the application server with its limit is discovered. The tuning process is gone through a lot of testing and considerations in order to find the best tuning without affecting other types of performance. JBoss application server is the type of the server used in this project which running a financial service application that have a capability on executing some financial transactions. The tuning is intended to apply within the application server only without changing any component of the financial service application. From the finding of the performance tuning, it gives an opportunities and directions on how to upgrade the application server system for supporting high volume of concurrent transaction processing in single application server.

CHAPTER 1

INTRODUCTION

1.1 RESEARCH BACKGROUND

Application system or application software in computer science is a group of related applications programs designed to perform a specific function. Client-server architecture has partitions tasks or workloads between the providers of a resource or service, called servers, and service requesters, called clients [1]. A server machine is a host that is running one or more server programs which share their resources with clients. A client does not share any of its resources, but requests a server's content or service function. Clients therefore initiate communication sessions with servers which await incoming requests. The server is usually known as an application server which is a software framework that provides an environment in which applications can run, no matter what the applications are or what they do [2].

Application services with the server hosting the services to only one client can easily be found, and of course there is no performance issue for this simple client-server system. It is also easy to find the application services where the server hosting the services to multiple clients which are expected to support concurrent requests for the clients. Most of the application services in the market provide this server and multiple client system. Although the services would run in concurrent process request from the clients, it is barely to get the condition where all the clients are performing the request concurrently and continuously to one server. In real life, some of the high load processes are having a condition where not all the clients are in active mode on performing the requests or some of the clients are having a gap before continuing with the next request (not in continuous manner). At the condition where all the clients are continuously in active mode to perform the requests to one server, the maximum capability of the application server can be reached. It is important to know the maximum performance of the application server can be handled in order to determine the competency of particular application