

UNIVERSITI TEKNOLOGI MARA

**ENHANCEMENT LOAD
BALANCING IN FAILOVER WEB
SERVER BY USING HTTP-
RESPONSE STATUS TECHNIQUES
WITH PFSENSE OPENSOURCE**

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ABSTRACT

In a web server environment, the load balancer is mostly a crucial component of computer networking. The primary function of a load balancing is to distribute user requests or network traffic load efficiently across multiple servers or a cluster of servers, which it guarantees high availability and reliability by sending the workload only to servers that are ready and online. The method of election of the resources behind the load balancer will require some algorithms and techniques to process the client request. There are few load balancing algorithms available that help load balance works efficiently across multiple servers. HTTP-response status techniques are used in the load balancing to ensure the web page is accessible across multiple web server. Furthermore, this research will evaluate the number of success rate for the user that successfully load the web page. Besides, notification of the HTTP-response status will be developed for the web server. Next, this paper will discuss the current approach used for web server load balancing to provide high availability system. Then, this paper will propose the architecture design and techniques will use during the implementation stage. Moreover, there will be a simulation with the research parameter. Based on the scenario created, the results and finding will be analysed and discussed. In conclusion, based on the ten (10) scenario, the failure error 404 and 500 occur in ICMP based monitoring, which in the network layer while congestion issue in HTTP based monitoring, which is in the application layer. Increasing the number of failures causes the number of failures of successfulness rate in ICMP based and congestion in HTTP based monitoring. Meanwhile, an email notification was introduced in ICMP and HTTP based monitoring as a notification to the administrator when the failure occurs.

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CHAPTER ONE

INTRODUCTION

In chapter one of this research, introduction will be discussed of this research. This chapter covers the background studies of the e-commerce website business continuity, three-tier architecture and loads balancer concept. Next, also included in this chapter are Problem Statement, Research Questions, Hypothesis, Research Objectives, Research Scopes & Limitation and Significant of Research.

1.1 Background of study

In most organizations primarily in the public and private sector, business continuity is one of the main factors to be concerned about. Online application system such as e-commerce website where people purchase goods, products, and services on the Internet are rapidly increase nowadays (Sharma, 2018). These companies are relying on their online business to run their operations and marketing (Saddiqa, Karim & Gani, 2016). If the system down, it will be causing an inaccessible to their customer; it may impact their company's name reputation and business (Felter, 2019). Moreover, critical web application failure that relies on the industry with busy processes can affect the company lose a lot of money (Bella, Data & Yahya, 2018).

Moreover, the e-commerce system may face a unique set of technical issue and business challenges to the design the website and infrastructure (Kabang & Asa, 2015). In terms of technology, insufficient storage server capacity, scalability concerns, fault-tolerant capability and the growth of size and complexity of the e-commerce system, then the pressure of the burdened technical IT staff with the budget. The online e-commerce system includes client-server, web-based applications, and database where they are designed and developed by using a three-tier architecture (Rouse, 2019). According to Prasetijo, Widiyanto & Hidayatullah (2016), the popular website of social media and Google have a massive number of the client an insufficient resource with single server and strategy are needed to provide high availability inaccessible to the client.