

**UNIVERSITI TEKNOLOGI MARA**

**WEB APPLICATION PERFORMANCE ANALYSIS  
BASED ON COMPONENT LOAD TESTING**

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## **ABSTRACT**

Performance of many Web sites depends on the load on the site at peak time under varying conditions. Performance testing is normally conducted in a reasonably simulated environment with the help of performance testing tools. However, performance of a Web site depends on various parameters and each parameter must be tested under varying stress levels. It is not possible to draw a common denominator for performance parameters to test the Web site due to complexity of Web sites. Different parts of the Web site must be tested with different parameters under varying condition and stress level. The objectives of this study are to determine how many user simultaneously work with the web server without a perceptible slowdown, to evaluate the server response time taken by a web server to serve client and compare the result with the existing web stress tool and verify the performance of above results by measuring the response time for web application and increase an Eduzone web application performance using caching technique. In this work, three test beds has been constructed focusing on various factors that influence the web application performance, and present an Eduzone Web Application that we develop in order to measure the performance of web application. To optimize the web application performance, we apply the concept of cacheable and no cacheable web application. The results presented in this study show that placing some intermediate caches in the network can significantly improve the performance of those applications that distribute content using the only support of client's caches, reducing the bandwidth usage in the network and the response time to the clients.

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# **CHAPTER 1**

## **INTRODUCTION**

### **1.0 INTRODUCTION**

This chapter explained the overview of the research work starting from the research background, problem statement, research questions, objectives and the scope of study and finally discussed the significant of study.

### **1.1 RESEARCH BACKGROUND**

As the e-commerce industry continues to grow, more businesses rely on their Web sites to communicate with customers. A high-performance Web site that quickly and reliably delivers content gains and retains customers and is crucial to a successful and competitive e-business. Few potential customers will return to a frustratingly slow Web site if the customer experiences significant delays or failure. Thus, as part of your organization's Web infrastructure planning and implementation, you need to seriously consider how to improve your Web site's performance.

We can use several methods to improve Web performance: expand Internet bandwidth, use fast network equipment, design efficient Web applications, optimize and upgrade Web server software and hardware, and use Web-caching technology. In addition to these options, we can improve the Web site's performance by adding Web servers and sites and mirroring content across all servers and sites. This method lets share the overall load among servers and sites and reduce the information turnaround time involved in a server's internal processing of client requests. In addition, we can preserve the existing servers rather than retire them to make way for new servers.

Nowadays the virtual world that became more important and the total number of Internet users in the world limit increase is in recent years. Online banking, ticketing, commerce and business are all over the Internet. Because of this, Web services have become important than ever. Web servers provide services that must maintain reliability and maintain tolerable in terms of server response time to customers in