Chapter 14

Load-Testing of Web Site Applications: Analysis and Recommendations

Vijay V. Raghavan
Northern Kentucky University, USA

INTRODUCTION

The growth in e-commerce has been accompanied by an enormous need to host robust web sites. Electronic Commerce has changed the role of Information Technology (IT) function from its elementary business support to providing key competitive advantages. Rapid changes in several technologies, while improving the ability to develop and deliver web sites quickly, have also increased the complexity of designing and managing them. It is easy for a consumer or business partner to change to a different supplier if an in-house or outsourced E-Commerce site does not perform up to expectations. Implementing an appropriate web-application testing program is critical in an environment where barriers to switching suppliers of web sites are minimal. Developing robust web sites that perform well under varying loads can be ensured only by a rigorous testing of these web sites before launching them in a production environment.

An ideal e-commerce application testing should enable organizations to predict, measure and improve their e-commerce solutions. Figure 1 shows a simplified e-commerce architecture. This architecture is considerably more complex than an average client/server architecture. This architecture does not include complex network details and load balancing hardware. Complexity of an E-commerce architecture demands application testing that is much more complex than the testing of other types of applications. While there are different types of soft-
ware testing, this study focuses on load testing especially in the context of web site development.

**NEED FOR LOAD-TESTING**

“Slashdot Effect” refers to a web site becoming virtually unreachable after being mentioned in another popular web site such as http://www.slashdot.org/. Web marketing is capable of creating sudden surges of interest on web site and sites should be designed to withstand slashdot effects. There are many types of testing commonly used, such as usability testing, functional testing, regression testing, load testing, performance testing and stress testing. Among these, load testing can help an organization guard against slashdot effects. The focus on load testing in this paper does not mean that other types of testing are not applicable to the e-commerce environment. A site that can withstand loads but is hardly usable is obviously worthless. Although other types of testing such as “usability testing” are necessary, the present study focuses on load testing, to withstand sudden surges in demand that are common in a web environment.

**BENEFITS OF LOAD-TESTING:**

Load testing can elicit information of the expected number of users an application can support, and the time taken by an application to recover from an overload state. Load testing attempts to simulate real-world interactions of the site. These interactions are then gradually loaded (increased in number) with a view to
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