ABSTRACT

This chapter describes and validates the applicability of a visual analytics tool, named Workload Profile Analytics (WPA), in the context of incident management (IM) inside a large IT services provider. The WPA tool implements a method to evaluate the performance and quality of IM systems that uses temporal information from incident records (tickets). The method is based on a graphical representation, called Workload Profile Chart (WPC), which consists of a log-log chart obtained by computing and plotting the spreading of ticket data. Then, using the chart, a visual inspection is done to examine the concentration of tickets over the various areas of interest of the WPC and a diagnosis of potential issues is suggested. To illustrate how powerful WPA can be, two real world scenarios are depicted and used to validate the use of WPA in a large service delivery organization. Finally, some discussions about further improvements on the tool and research directions are done.

DOI: 10.4018/978-1-4666-8496-6.ch008
INTRODUCTION

This chapter presents and depicts a new analytics visualization tool, named Workload Profile Analytics (WPA), centered on incident handling timing data, developed to allow diagnosing and characterization of Incident Management (IM) issues and challenges in terms of productivity and service quality. To do it, the tool enables an inspection method called Workload Profile Diagnosis (WPD) proposed by (Cavalcante, Pinhanez, de Paula, Andrade, de Souza, & Appel, 2013).

In a nutshell, the tool preprocesses data corresponding to records of incidents (tickets) and computes and plots the spreading of ticket records on a log-log chart, named Workload Profile Chart (WPC). A key component of the preprocessing is the normalization of the elapsed time since a ticket is reported until its assignment to a support analyst (i.e., its ticket assignment delay) and the resolution time, by their respective service-level agreement (or simply, SLA) imposed to the ticket. By comparing the actual and expected distribution values in specific areas of a WPC, the method diagnoses peculiar problems and issues in the performance of Incident Management systems, such as resource and skill allocation matters, or any kind of abnormal behavior, as demonstrated in (Cavalcante et al., 2013) and illustrated in scenarios I and II in this chapter.

Additionally for an in-depth description of the analytics tool developed and the underlying inspection method of a WPC, this chapter depicts two real scenarios arising from service pools of a large IT services provider. For each one of these scenarios, several workload profile charts were plotted and used to show how the tool was paramount on revealing impacts caused by the interventions described. The interpretation of each chart is corroborated by IT experts, providing, therefore a clear evidence of the validity of the proposed diagnosis when applied to practical situations.

After detailing each scenario, we conclude discussing how the tool can be used to evaluate the performance of service pools and how the tool can be introduced in the everyday dynamics of big IT delivery organizations. Moreover, we examine some alternatives of applications and diagnosis in other domains, present some research questions being considered, and suggest directions of further research that could help to evolve the current tool.

BACKGROUND

IT outsourcing services has become a large global industry. Usually, the delivery of IT outsourcing services is often made through very large IT service organizations (IT service providers) whose operations involve a huge variety of support teams (IT analysts). Typically, those teams take care, simultaneously, of networks of thousands of servers, routers, storage devices and systems, and firewalls, among other IT equipment from multiple companies. (Rouse, 2009) offers a good review of the state of academic knowledge on IT outsourcing.

Although in recent years the IT-related services industry has demonstrated an increasing interest in science, design, and management of service systems (Maglio, Kieliszzewski, & Spohrer, 2010), the progress in the development and establishment of methods, best practices, and tools applicable to the complexity and scale of the modern IT service provider is limited. Some recent research work described in (Rouse & Basole, 2010), (Qiu, 2009), and (Banavar, Hartman, Ramaswamy, & Zherebtsov, 2010) have suggested models for IT service delivery systems but have not proposed systematic methods of performance evaluation and characterization of problems and issues.