Chapter 9
The Role of Information System Monitoring in Improving System Availability

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ABSTRACT

The IS availability is an essential requirement that business presents to its IT departments. Ibrahimovic (2016) concluded that, with a very low investment in “monitoring of the relevant components”, it is possible to achieve a significant improvement in IS availability. This chapter starts with a brief introduction of the IS availability. Authors provide a short definition of BBN modeling and address different aspects of IS monitoring, particularly: network monitoring, server monitoring, application, security and business process monitoring. As main artifact of this chapter authors proposed the monitoring. Since the framework emphasizes importance of governance and management layer, chapter contains overview of COBIT 5 and ITIL V3 from the IS monitoring aspect. In the final part of the chapter, authors address the challenges that a monitoring tool needs to address in modern information systems, especially but not limited to DevOps, Cloud and Hybrid IT architectures.
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INTRODUCTION

Modern information systems (IS) are expected to be always-on by providing services to end-users, regardless of time and location. This is particularly important for organizations and industries where information systems support real-time operations and mission-critical applications that need to be available on “24x7x365” basis. Examples of such organizations include process industries, telecommunications, healthcare, energy, banking, electronic commerce and a variety of cloud services.

Information technologies enable modern business, while, at the same time, a success of an organization is becoming increasingly dependent on the appropriate use of information technologies and managing risks associated with IT. The availability of information system is an essential requirement that business presents to its IT departments. Most commonly, IS availability is referred to be part of the of the CIA information security triangle (confidentiality, integrity, availability). There are many factors influencing information systems availability identified in the relevant literature. Among the others, Franke et. al (Franke, Johnson, König, & Marcks von Württemberg, 2012) identified 16 factors, by using an expert elicitation, they found that “monitoring of the relevant components” is the second most influential factor, closely following “change management”. Ibrahimovic (2016) extended Franke’s model with an investment aspect, and concluded that, with a very low investment in implementing best practices in “monitoring of the relevant components”, compared to the investments in other factors, it is possible to achieve a significant improvement in information system availability.

Information system monitoring refers to several activities of observing system and detecting changes that occur during operations. Monitoring helps to analyze the status and utilization of various services and infrastructure components, facilitates optimal use of resources and proactive management, supports capacity planning, trend analysis, and root cause/impact analysis. As the business grows, monitoring helps to optimize the use of infrastructure resources. In addition, the monitoring process includes infrastructure’s environmental controls and controls of the operating environments for key components such as network components, storage arrays, and servers (Gnanasundaram & Shrivastava, 2012)

The chapter starts with a brief introduction of the IS availability and presents necessary definitions and formulas used for measuring the availability of complex information system. We use formulas for complex systems availability calculation presented in Ibrahimovic and Bajgoric (Ibrahimovic & Bajgoric, 2016). They identified overall system availability as an average availability of each service weighted by a factor of importance of a service. Accordingly, in this chapter, we discuss monitoring at the service level, as well as monitoring of the infrastructure components which are important for proper functioning of the service. We provide
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Jim Underwood and Bruce McCabe (2012). Inter-Organizational Information Systems and Business Management: Theories for Researchers (pp. 83-98).
www.igi-global.com/chapter/using-actor-network-theory-research/61607?camid=4v1a