

Risk Management via Digital Dashboards in Statistics Data Centers

Atif Amin, Dubai Statistics Center, Dubai, Saudi Arabia

Raul Valverde, Concordia University, Montreal, Quebec, Canada

Malleswara Talla, Ryerson University, Toronto, Ontario, Canada

ABSTRACT

Every system, when connected to a network, is susceptible to threat of being hacked. It is important to protect all systems of an organization in real-time in a cost-effective manner. This article presents a well-designed and integrated database for risk management data using a dashboard interface in real-time risk that makes it easy for risk managers to reach a understanding the level of threats to be able to apply right controls to mitigate them. In this article, a case study of a data center for a statistical management institute is presented that proposes the calculation of total risk at the organization level by using the proposed risk database. A digital dashboard is also designed for presenting the risk level results so that decision makers can apply counter measures. The risk level on a dashboard viewer makes it easy for decision maker to understand the overall risk level at the statistics data center and assists in the creation of a tool to follow-up risk management since the time a threat hits until the time of its mitigation.

KEYWORDS

Dashboard, Data Center, Risk Database, Risk Management Expert System, Watchdog System

INTRODUCTION

The term “Business without a Risk” does not exist (D’Souza & Valverde 2015), with rapid growth in technology and as businesses rely on Internet and it is almost impossible to achieve total security, there will always be a breaches and vulnerabilities that threaten business and cause damages. Risk management is mandatory element in every organization where decision makers attempt to find hidden threats and vulnerabilities to protect their systems. Monitoring risk level is a common trend at every organization to implement risk management (Nijburg & Valverde, 2011) as early detection of threats would help security staff and risk analysts to implement appropriate measures that can discover vulnerabilities in the systems (Wolden, Valverde & Talla, 2015). Early detection of risk enhances the chance of successful counteractions (Almadhoob & Valverde, 2014). A data center is a complex facility with several computer systems, telecom equipment and storage systems. The data centers have been successfully implemented in commercial sectors. The data centers for statistics purposes has been growing rapidly in the financial market and health care (Khan & Valverde, 2013). Dashboards for risk visualization have been suggested in the past, Eppler and Aeschimann (2009) suggested a

DOI: 10.4018/IJITSA.2020010102

dashboard for risk communications but did not address the issue of risk factors calculations, other authors have suggested dashboard for enterprise risk management but not specifically for the use of calculation of risk factors in data centers (Scarlat, Chirita & Bradea, 2012). The research focuses on conceptual understanding of information technology assets, how assets can be classified and presented in a risk database, primary focusing on designing and building a successful Information Security Management System (ISMS) module that can help statistics data for early detection of business risk. The following steps illustrate the scope of the research work:

1. Categorize assets into tangible assets (hardware, software) and intangible (data, services and company image);
2. Classify assets (assign access to applications and documents to various levels of management);
3. Group assets in types as (hardware, software, data, files, services, hard documents, etc.);
4. Identify organization's main services and related business processes;
5. Build a relationship between assets and business and store information in a relational database;
6. Identify threats, vulnerabilities and possible impacts through risk assessments, history records, and literature;
7. Create an automated risk assessment plan (RAP) that allows the easy retrieval of risk information;
8. A business continuity plan based on assets, RAP and a risk mitigation plan;
9. ITIL based asset management database (CMDB) for enhancing and maintaining Information security in statistics data centers.

The research focuses on understanding the risk nature surroundings IT assets, the conceptual understanding of assets, how assets can be classified and categorized and how to be presented in a risk database. This paper presents a well-designed and integrated database for risk management data using a dashboard interface in real-time risk that makes it easy for risk managers to reach an understanding of the level of threats to be able to apply the right controls to mitigate them.

With this detailed database design, the proposed approach provides a mean of inquiring risk data at the asset level, giving more options for management and business owners to find the amount of impact that threatens their assets and produce the proper mitigation action at the right time. The research is based on an implementation process at the Dubai Statistics Center.

THEORETICAL BACKGROUND ON RISK MANAGEMENT

The study focuses on understanding risk components and their related threats over statistics data centers assets; in particular the study is going to explore in more detail the risk's causes and reasons and will attempt to find solutions and controls to protect businesses.

The risk topic has been an essential issue since the birth of modern business, today's business is fully dependent on computers, network devices and automated processes where they shape the backbone and infrastructure of each successful organization. To protect their assets and investments business owners invests lots of money and time to secure business and assure its continuity, the idea of protecting assets from risk to be as important as the business itself.

Risks signs occur when organization's infrastructure is threatened or becomes a target by internal or external activities, entities, deliberate or spontaneous which might lead to organization fails to deliver its usual business and services.

Accuracy and consistency become a major requirement to provide better services and earn sociality trust. Confidentiality, Integrity and Availability (CIA) of assets becomes the major top elements at every Information Security Management System design and implementation.

Confidentiality is protection against unauthorized access, appropriation, or use of assets (Khalifa & Mewad, 2017).

17 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/article/risk-management-via-digital-dashboards-in-statistics-data-centers/240763

Related Content

A Hierarchical Hadoop Framework to Handle Big Data in Geo-Distributed Computing Environments

Orazio Tomarchio, Giuseppe Di Modica, Marco Cavalloand Carmelo Polito (2018). *International Journal of Information Technologies and Systems Approach* (pp. 16-47). www.irma-international.org/article/a-hierarchical-hadoop-framework-to-handle-big-data-in-geo-distributed-computing-environments/193591

Social Welfare-Based Task Assignment in Mobile Crowdsensing

Zheng Kangand Hui Liu (2023). *International Journal of Information Technologies and Systems Approach* (pp. 1-28). www.irma-international.org/article/social-welfare-based-task-assignment-in-mobile-crowdsensing/326134

Artificial Intelligence Ethics Best Practices Model for Financial Decision-Making in Chinese Financial Institutions

Wenzhen Mai, Mohamud Saeed Ambasheand Chukwuka Christian Ohueri (2024). *International Journal of Information Technologies and Systems Approach* (pp. 1-18). www.irma-international.org/article/artificial-intelligence-ethics-best-practices-model-for-financial-decision-making-in-chinese-financial-institutions/337388

Virtual Vines: Using Participatory Methods to Connect Virtual Work with Community-Based Practice

Marianne LeGreco, Dawn Leonardand Michelle Ferrier (2012). *Virtual Work and Human Interaction Research* (pp. 78-98). www.irma-international.org/chapter/virtual-vines-using-participatory-methods/65316

Detection of Automobile Insurance Fraud Using Feature Selection and Data Mining Techniques

Sharmila Subudhiand Suvasini Panigrahi (2018). *International Journal of Rough Sets and Data Analysis* (pp. 1-20). www.irma-international.org/article/detection-of-automobile-insurance-fraud-using-feature-selection-and-data-mining-techniques/206874