E-Commerce Security Research in Big Data Environment

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ABSTRACT

Rapid development of e-commerce and mobile communication opens a new era of big data. In this article, the authors put big data and e-commerce security together. They construct electronic commerce security system from these aspects: the creation of database, the security of information storage, the mining of information based on big data environment thoroughly. The second-generation product distributed platform- Apache Hadoop which is more popular and instant has been brought in. what's more, this article expounds the structure and working process. On the base of this platform, this article analyses the certainty and security of e-commerce transactions data developed on the condition of big data. It puts forward a construction view that people should guide and monitor the behavior of e-commerce, and improve the security system of electronic commerce on the base of data.

KEYWORDS

1. INTRODUCTION

In September 2008, the "Big Data: Science in the petabytes Era" has been published in the famous magazine "Science." So. the "Big Data" has become a hotspot of academia and industry (Feng Deng-Guo et al., 2014). Since 1997, the company-- IBM put forward the concept of e-business (Electronic Business), as an emerging industry, which has been developed rapidly in recent 20 years. Today in the prosperous development of e-commerce, the emergence of big data increased the development of e-commerce to a new national strategy level (Wang, 2014).

E-commerce, as a digital platform, is developing rapidly, which carries a large amount of material and the structure and unstructured data. When a lot of data are growing at the same time, the security of data collection, storage and analysis has become an urgent problem to be solved in e-commerce. Recently, Internet users increase rapidly, and the network interactive ways increase variously, which has brought great convenience for information communication and information sharing. People do business activities through network, which has been a kind of fashion. At the same time, huge amounts of business transaction data are emerging constantly in the information space. These data, as the most basic organization form of e-commerce activities, are for saving energy. Data as biological cells has replicability, infectivity, transmissibility and diffusivity. When infected, it spreads quickly. The spread of transmission channels and fields is often beyond people's expectation (Chen, 2013) When people enjoy convenient communications, resource sharing and many other benefits which are brought by network, e-commerce information security is faced with unprecedented potential threats.

Traditional means of data collection and analysis, faced with the arrival of the era of big data, has become overwhelmed. In the big data environment, e-commerce security research is particularly urgent and important.

Recently, scholars at home and abroad did a lot of researches on e-commerce security issues. Shu Xiwang (Shu, 2013) generalized the e-commerce security issues, especially the latest research results of e-commerce security issues. On this base, combined with the relevant technology of the big data and cloud computing, e-commerce security issues which are based on big data and cloud computing environment have been analyzed. Wang Shanjun(Wang Shanjun,2013)leaves the electronic commerce system such as the information flow, logistics and cash flow as the main research object. She used analytic hierarchy process, the most commonly used, in the Information security risk analysis to analyze security problems which caused by the three factors, and puts forward an effective e-commerce security evaluation model. Si Yingshuo (Si, Yang & Liu, 2011) analyzed E-commerce system security hierarchy by synthesis, aiming at security requirements. He put forward a kind of quantitative risk assessment model. Meng Xiao Ming (Meng Xiaoming,2006)based on OGSA security architecture and multistage agency chain thought, shows the e-commerce security structure based on grid environment, and evaluated and analyzed its safety performance. Du Yansui (Du, 2015) analyzed how cloud computing impacts development of electronic commerce. He puts forward security problems of e-commerce based on cloud computing, and gives corresponding countermeasures. However, scholars at home and abroad about the e-commerce security research which under the big data environment is relatively scarce.

This paper attempts to base on the data resources in e-commerce, and the big data views on the existing e-commerce security system, and strive to use big data analysis and processing method to enhance the defense capabilities of e-commerce security system, at the same to seek social reality in electronic commerce the common characteristics of crime phenomenon such as e-commerce theft, e-commerce fraud and so on. This behavior's safety certificate is to guarantee the safety of the e-commerce market. In the cloud computing of big data environment, using cloud computing technology reasonably is to support the intelligent management for the enterprise.

2. CONSTRUCTION OF ELECTRONIC COMMERCE SECURITY SYSTEM

2.1. Build Security Database

As the Internet enters into the Web2.0 era, Traditional relational database is not able to cope with the large scale and high concurrency Social Network Service model and the expansion of large-scale e-commerce site affairs, which exposed a lot of difficult unsolved problems and, at the same time, greatly restricted the development of the enterprise (Wu et al., 2012; Yu, 2012).

However, non-relational database with its own design concept and the scope of business processing developed very fast. Non-relational database—NoSQL (Yuan, 2010; Feng et al., 2013) is to solve the management of large-scale dataset, including data storage, concurrency control and the diversification of data, which emerges at the right moment to solve the unstructured problems. Now NoSQL have many different types, and each have their own technological advantage, data managers should combine their own needs to choose suitable NoSQL database. It can manifest the advantages of a relational database (Shen et al., 2013). NoSQL database mainly divided into the following types: The key value store database, column-oriented database, and documental database, and graphic database and so on. NoSQL database does not have a unified framework. The difference between two kinds of NoSQL databases exceeds the different kinds of two relational databases. No high and low of NoSQL, only by using NoSQL in a suitable situation which can give full play to the advantages of NoSQL.

Now, what are widely used in the database of NoSQL including Redis, Leveldb, and Mongodb, and HBase. HBase serves as the subproject of Hadoop is suitable for unstructured data storage (Li, 2014). An important characteristic of HBase is based on the column model. It will enhance the

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