

Chapter 77

Security Issues and Challenges Related to Big Data

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ABSTRACT

Availability of huge amount of data has opened up a new area and challenge to analyze these data. Analysis of these data become essential for each organization and these analyses may yield some useful information for their future prospectus. To store, manage and analyze such huge amount of data traditional database systems are not adequate and not capable also, so new data term is introduced – “Big Data”. This term refers to huge amount of data which are used for analytical purpose and future prediction or forecasting. Big Data may consist of combination of structured, semi structured or unstructured data and managing such data is a big challenge in current time. Such heterogeneous data is required to maintained in very secured and specific way. In this chapter, we have tried to identify such challenges and issues and also tried to resolve it with specific tools.

INTRODUCTION

The term “Security” refers to the mechanism to avoid risk of unauthorized access and use. A specific resource or process is always called for the purpose to resolve risk. When security is in concern with big data then the size of the big data is always considered a challenging task to provide security.

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Security Issues and Challenges Related to Big Data

As Big Data is too big, fast and versatile, traditional systems cannot compile them with the same approach that was used with database system. It was easy to analyze the tradition database as it contains only structured data and thus such method cannot be used to analyze unstructured data. So, it becomes the most prominent challenge to offer security to such unstructured and massive amount of data – Big Data.

All the characteristics of the Big Data are the challenges in self. In the early era data is structured having a same pattern, uniform speed, and clean; so traditional technologies behave well. But these days' traditional tools and technologies are not sufficient to analysis Big Data.

SECURITY ISSUES IN BIG DATA

As the name suggests, Big Data is the term which describes massive amount of data which may be in structured and unstructured form. These data are used in business on day-to-day basis. Here, the amount of data is not only important but how organization uses this data is important. Such data can be analyzed and used for decision making process for strategic business moves and forecasting in various perspectives.

The “Big Data” term is relatively new and describes the act of gathering and storing massive amount of data for the purpose of analytics. The concept gained momentum in the early 2000s when industry analysts articulated the now-mainstream definition of big data as the three Vs:

Big Data – the term which reveals the fact that it has enormous amount of data availability. Such large volume of data is always combination of both structured and unstructured natured data. In recent days, these data overwhelm business at a very high extent.

Introduction to Security in Big Data

Recent trends of most of the corporates prove that the data is the most important asset of them. Each and every section or department within the company have faith in data which are generated within the company (Moura & Serrao, n.d.). Amount and versatility increased in the data yield some more difficulties in the maintenance of the same. Such huge amount of data can be analyzed using traditional analysis so a new paradigm is introduced known as Big Data.

Big Data is a collection of huge amount of data and they are characterized by four different basic V's. These V's are Volume, velocity, variety and variability. Some authors have added some more characteristics depending upon their understanding and research outcome such as value and complexity. The term refers the data which is collected by the companies and government. This data is about us or about surrounding of us (Schmitt et al., 2013). Such huge amount of data is not only required to maintain and manage because this data is being manipulated and updated every day with another huge amount of fresh data. This phenomenon characterizes the following founding properties of Big Data.

Once you are in the field of Big Data then you have to consider some serious issues related to it like security and privacy. Such issues are required to be considered because of different data sources and formats, streaming nature of data acquisition, cloud based infrastructure and inter-cloud migration as well. The attack surface of entire system is increased because of the use of large scale cloud infrastructure, different software platforms, large computer networks, etc.

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