

Chapter 57

Big Data Optimization for Customer Discounts in Cloud Computing Environment

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ABSTRACT

Large companies have different methods of doing this, one of which is to run sales simulations. Such simulation systems often need to perform complex calculations over large amounts of data, which in turn requires efficient models and algorithms. This chapter intends to evaluate whether it is possible to optimize and extend an existing sales system called PCT, which is currently suffering from unacceptably high running times in its simulation process. This is done through analysis of the current implementation, followed by optimization of its models and development of efficient algorithms. The performances of these optimized and extended models are compared to the existing one in order to evaluate their improvement. The conclusion of this chapter is that the simulation process in PCT can indeed be optimized and extended. The optimized models serve as a proof of concept, which shows that results identical to the original system's can be calculated within 1% of the original running time for the largest customers.

INTRODUCTION

Big data is a slightly abstract phrase which describes the relation between data size and data processing speed in a system. A comprehensible definition of the concept is data whose size forces us to look beyond the tried-and-true methods that are prevalent at that time. This means that a scenario where innovative optimization of both models and algorithms is required to handle large amounts of data might well be

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classified as a big data problem. In PCT, the big data challenge arises from the huge amounts of data needed in order to run simulations for large customers. In some cases more than thousand historical order rows may have to be handled, with multiple possible conditions and discount rates applied to every single one of them. While the data set itself is not extremely large by today's standards, the complex operations and calculations which have to be performed on each one of them adds new dimensions to the simulation procedure. Discounts are for example inherited through a large tree structure containing tens of thousands of nodes and the results must be presented to the user within a reasonable amount of time. The reasonable time limit has been defined as ten seconds for the simulation procedure in PCT. This value is based on research showing that a system user who has to wait even further for results of complex calculations will lose focus something which could prove devastating during a negotiation with a customer. An ideal simulation procedure would always return the results within just a few seconds, since this would mean that simulations could take place during normal conversation without requiring any waiting at all.

DEFINING BIG DATA

Today, innovative era of technology, everywhere that are visible or not visible to us its only technology, everyone are using different-different technology for their daily uses, like if we are taking example of human being daily routine, when the person is wake up at early morning that the person uses different technology like mobile phone, laptop, notebook etc. And also uses the internet connection for checking any updates from their friends at one single time, for that they are transferring or uses huge amount of data in single seconds. Like that if we are taking an example of India there are internet users are increasing very rapidly, now everyone are using the smart phone, laptop and many other digital devices for connecting the different users at a single time, when the different users are connecting through internet at that time they are transferring the huge amount of data to the internet, that data size in the form of zeta bytes, peta bytes etc., this huge amount of data is known as Big data. That contains three main properties Volume, Variety and Velocity. Variety or Volume mainly focuses on the leads to the question of how to process big data analytics and velocity is mainly focuses on the possibilities rather than technologies, about performance and about business impact that we are using. As we already know that data processing for the large amount of unstructured data is very crucial, because consumers and citizens want the immediate response from the server or service providers. If they tweet their message about what in their own mind and they want that message served by the web care teams for their immediate response. As we know that today technology are growing very fast and rapidly. Everyone are using high speed electronic devices and they all wants the high processing and accessing speeds. Time is money and acceleration is synonymous with reasonable advantage. Real time analysis is not fast enough but for predicting what will happen in future is real ambition, if we are moving from the predictive to prescriptive analysis. Most of the data scientists are working on the prescriptive analysis for predicting the future analysis and some of the agencies are using the mobile phone data for statistical analysis. Insight from location data and people are moving around have proven to be an excellent alternative for charting the consumer behavior.

In big data we are analyzing the different data like location data and the people moving around have proven to be an excellent alternative for charting the consumer's behavior. There are many institute that have team of experts in the field of data analytics they are analyzed the problem and solve it what they have. This is an era of the big data time bomb there are many big data initiatives like consumers and

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