ADAPTIVE FRAMWORK FOR DATA DISTRIBUTION IN CLOUD- ELASTIC SERVER ARCHITECTURE

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ABSTRACT

The increasing quantity of information to be processed and store in a data center and cloud also, the Internet applications shows high workload variability have increased the importance of efficient data management. Data placement and data distribution has most important topics in data management and it's directly effect on various characteristics of server. Also, the limitation of current I/O infrastructure facing dramatic growth of data generation needs, the ability to build a novel model for robust decision making. In this work, we present adaptive framework for data distribution in cloud-elastic server architecture, a framework for adaptive data distribution over cloud. It is a framework for automatically predicting workload on various server also performing data distribution. This framework also responsible for data slicing both vertically and horizontally and also responsible for task scheduling.

Keyword: - *prediction, adaptive control, data distribution, cloud.*

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1. INTRODUCTION

The growing amount of information over an internet or a cloud is one of the most important problem now a day, which direct impact on a various characteristics of server such as performance, scalability, availability and many more. Controlling data layout is difficult when processing over a large data volumes, as the reorganization or restructuring of large data sets is severely restricted by the capabilities of I/O infrastructure and must not negatively impact on important quality of service which is required by system. However, controlling data layout has become an increasingly difficult task because of the various application running over an internet shows high variability in workload due to various factors such as expected and unexpected events, periodic seasonality and trends [7]. Traditionally, these variations have been overcome by additionally provisioning the infrastructure, but this method has been costly and risky, as the peek volume is short- lived and the server utilization in normal traffic periods is between 10 percent and 50 percent [1]. Elastic computing has changed the way I think about server side web development .the idea that an application can automatically scale as workload changes or more recourses are required is extremely powerful. Nouncer uses its own elastic technologies to allow every component to fork into multiple instances in order to accommodate the need for more com- putting power. This technology is at the core of what makes Nouncer a best platform for the volume and frequency of user interaction associated with micro-blogging. This project fall under domain cloud computing, Cloud computing is nothing but a delivery of various services and computing resources over the Internet. The variable demand of Internet applications was satisfied by cloud computing. Cloud computing allows elastic horizontal scalability of server infrastructures, which al- lows to dynamically allocate resources according to user demand and to pay or charges only for the resources used by users. How- ever, efficiently using the dynamic allocation of resources provided by clouds which de- pends on understanding and controlling the natures of dynamics of workloads and minimizing the data traffic inside the data center. Increasing scale and demand variations pose huge challenges on developing, deploying, and evaluating control mechanisms and policies for efficient resource allocation [1][3][10]. The main aim of our framework is to simplify process of data distribution also performing workload prediction and data slicing over an elastic infrastructure such as cloud.

2. LITERATURE SURVEY

Literature survey is the most important step in software development process. Before developing the tool it is necessary to determine the time factor, economy and company strength. Once these things are satisfied, ten next steps are to determine which operating system and language can be used for developing the tool. Once the programmers start building the tool the programmers need lot of external support. This support can be obtained from senior programmers, from book or from websites. Before building the system the above consideration r taken into account for developing the proposed system.

A) Dynamic and Elastic Scalability in Cloud Computing Database Architecture:

Nowadays, companies are becoming global organizations. Such organizations do not limit themselves in conducting business in one country. They need dynamic, elastic, scalable cloud computing platform that operates around-the-clock. Full functionality, adaptability, non-stop availability and reduced cost are the major requirements that are expected from cloud computing services. Planned or unplanned system outages are the enemies of the successful business in cloud computing environment. Hence it requires highly available, elastic scalable systems. In this paper, we analyze the benefits of cloud computing and evaluates the database architectures namely shared disk database architecture and shared-nothing database architecture for high availability, Dynamic and Elastic Scalability[1].

B) Dynamic Resource Allocation using Virtual Machines for Cloud Computing Environment:
Cloud computing allows business customers to scale up and down their resource usage based on needs. Many of the touted gains in the cloud model come from resource multiplexing through virtualization technology. In this paper, we present a system that uses virtualization technology to allocate data center resources dynamically based on application demands and support green computing by optimizing the number of servers in use. We introduce the concept of ―skewness‖ to measure the unevenness in the multi-dimensional resource utilization of a server. By minimizing skewness, we can combine different types of workloads nicely and improve the overall utilization of server resources. We develop a set of heuristics that prevent overload in the system effectively while saving energy used. Trace driven simulation and experiment results demonstrate that our algorithm achieves good performance [3][11].

C) Multi-model prediction for enhancing content locality in elastic server infrastructures: - Infrastructures that performing on-line applications experience dynamic workload variations depending on diverse factors like quality, popularity, marketing, periodic patterns, fads, trends, events, etc. Some predictable factors such as trends, periodicity (cyclicity) or scheduled events allow for proactive resource provisioning in order to meet fluctuations in workloads. However, proactive resource provisioning needs prediction models estimate future workload patterns [1]. in this paper presents a multi-model prediction method, in which data are grouped into bins based on content locality, and an autoregressive prediction model is appointed to each locality preserving bin. [13].

D) Dynamic Load Balancing on Web-server Systems: - The increasing growth of traffic on the word Wide net is inflicting a fast increase within the request rate to common internet sites. These sites will suffer from severe congestion, particularly in conjunction with special events, like Olympic Games and independent agency scout. The directors of common sites perpetually face the necessity of rising the capability of their Web-servers to satisfy the strain of the users. to handle common internet sites relies on the replicating all data across a mirrored-server design, that provides a listing of freelance address sites that manually designated by the users. This resolution incorporates a range of disadvantages, together with the not user- transparent design, and therefore the lack of management on the request distribution by the Web-server system. A more brilliant resolution is to consider a distributed design that may route incoming requests among many server nodes during a user-transparent method. This approach will doubtless improve outturn performance and supply Web-server systems with high measurability and accessibility. However, variety of challenges should be self-addressed to create a distributed server cluster operate with efficiency as one server at intervals the framework of the HTTP protocol and Web browsers [14].

E) Enterprise Applications in the Cloud: - A Roadmap to Workload prediction and characterization Cloud computing is becoming the most attractive technology for enterprise applications (EA) deployment, because of its intrinsic ability of agile adaptation to the variations of the business demands. Performance of cloud deployed EAs depends on clouds ability to dynamically redistribute its resources allocated to EA in way (order) to synchronize them with the fluctuations of business workloads. Queuing model based capacity planning helps to find a correct

Subsection text here. Balance between demand from the businesses that are using EA, and supply of resources provided by cloud infrastructure. EA business users generate transactional workload that requires allocation of system resources to be processed [11].

F) Characterizing, Modeling, and Generating: Workload Spikes for Stateful Services Evaluating the resiliency of stateful Internet ser- vices to significant workload spikes and data hotspots needs realistic workload traces that are usually very difficult to obtain. A popular approach is to implementing a workload model and generate synthetic workload, how- ever, there exists no characterization and model of tasteful spikes. In this paper To analyze five workload and data spikes and find that they vary significantly in many important things such as steepness, magnitude, duration, and spatial locality.

3. CONCLUSIONS

Finally Conclude that To the best of our knowl- edge this is fist system to introduce effective data distribution on cloud using a various approach such as data slicing, adaptive data distribution and workload prediction.

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