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RESEARCH ARTICLE



Providing Efficient Data management Services Using Cloud Cache

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Abstract— Cloud computing service provides various computational capabilities to their customer which finds a very drastic change in service infrastructure. The main objective is to reduce the cost of deploying services in the clouds. This entire model faces the performance limitations factors in daily applications and networks. By overthrowing these limitations, the cloud settled speed of the process by migrating data and applications to the cloud and faster access to that data from anywhere. Cloud computing applications that offer data management services are arisen. Such clouds hold up caching of data in order to offer quality query services. The users can inquiry the cloud data, paying the cost for the infrastructure they utilize. Cloud management manages the service of several users in a well-disciplined, although, resource-economic way that allows for cloud profit. Multiple user requests can handle well disciplined, although economically effective way to allow profit in cloud managements. The local cache structure is built for user send queries to cloud cache and pricing solution employs a novel method which estimates the relation of the cache service in time efficient manner to catch the best possible price solution.

Keywords— Cloud computing services, cloud cache, cloud data management, cloud service pricing

I. INTRODUCTION

Now a day, cloud providers tread their various services to users for accessing information which is popular in IT industry. Generally, cloud services are placed over the distributed environment that named as 'cloud', these services provided over the internet to their customers with more flexible and efficient way which is called as cloud computing. These services are being used for the getting money by providing various resources. Cloud resources can be anything like; infrastructure (e.g. Load balancer, virtual machines, servers etc.), platform (e.g. Database, execution runtime, web servers etc.), application (e.g. Email, virtual communication, desktop, games etc.) deploy in the framework. Benefits provided by Cloud Computing such as, Minimized Capital expenditure, Location and Device independence, Utilization and efficiency improvement, Very high Scalability, High Computing power etc. Cloud management uses an economic concept of cloud

services which adopts a cost effective solution with their services. These concepts are used to improve the user responses, making profit, and security of their provided services. In recent times, cloud computing has start its way into the terms of web services [8], [9]. Data as well as demanding software’s are placed over the back end databases accessed through an internet service and possibly cached at the user side. Amazon web services [3], Microsoft Azure [4], Google plus [5], Oracle cloud data managements [6] now offer the data management services in transparent and user friendly manner to access this data.

In such cloud data services, the main aim is to make cached data in a proper structure to hold up the data resources efficiently and makes this data available to the user request in time efficient manner as well as getting some profit from those services. Cashing of cached data is stored in the local cache structure at the user side with appropriate data structure/data and user sends queries to what type of data they are interested. This request is either execute in the local cache system if demanded data are available in the local cache if not, the data will accessed from back end databases.

II. Cloud Cache

Basically, cache is used for the faster accessing recently used data when the same data are requested again, like, data may be accessed over internet servers or web browsers saves some amount of data in their memory. This process is also applicable for dealing with CPU or secondary disks. This data is stored in terms of blocks of memory with some portion of data are placed in that. This data can be accessed later when a request for the same data is placed. The same process is adapted in cloud cache but using these for efficient data management with getting some amount of profit from them. These profits are made up from cached data items which is recently used or accessed by the users when deals with cloud services. In general, fixed pricing for these services cannot give an optimal solution because demand for user request is always unpredictable. Users want services which are useful for their work and not which services provided by cloud to the user. For these user requests, demand of the resources may be anything and maybe changes time to time.

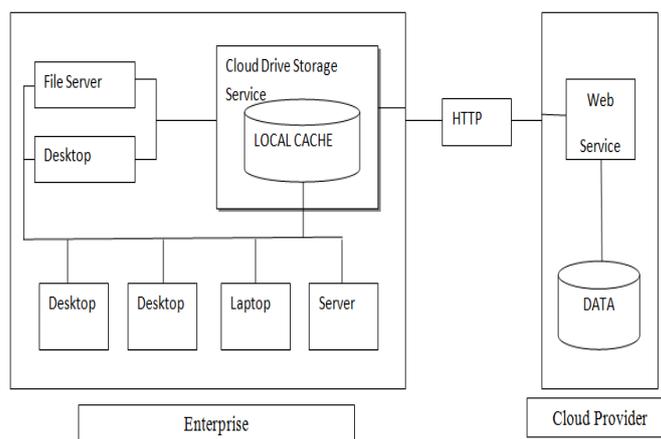


Fig 1. Cloud cache

Such services are difficult to handle because of various requests are placed to serve and setting pricing for that is not easy. This pricing is based on the resource utilization, disk usage, various performance factors, which type of network is to use, what type of services is requested etc. Sometimes price for a particular service may be greater than the actual price because of the lesser used after data is cached. But sometimes it is possible that data are used most frequently and price of those resources might be very close to the actual price.

III. Monitoring cloud services

Monitoring cloud performance against the daily applications and networks are very important issue for cloud provider and user. There are various tools available to measure the performance of the cloud services and these are provided it by cloud provider or by third party tools (e.g. Like revaluptime and cloud status) can be used by the users. Avaram (2010) measures the performance of the web sites and measured the response time and latency time of top dominant cloud providers (such as, Google, Rackspace [12], salesforce.com, Amazon [3] and Terremark [13]). In other work, Harzog (2010) has suggested performance monitoring in a virtualized environment by monitoring infrastructure response time. Bannerman (2010) suggested the performance factors

i.e. latency, response time and execution time as one of the greatest risks in cloud computing. Existing cloud services are targeted to developers, such as, Amazon Elastic Compute Cloud (EC2), or the deployment of servers, such as Go Grid, cloud providing local support is Force.com offered by Salesforce.com. Now a day, cloud providers offer data management services based on pricing schemes with allocation of resources to increase profits as well as user satisfaction. All users are charged the same for the consumption of the same service. For maximize profit, cloud caching service uses pricing solution which related to the cache structure used in the local storage of the resources. Similarly, work of pricing for web services focuses on the scheduling user request that is statistically independent of ours, as we require that users' requests for service are satisfied right away.

A. Cache performance of Private cloud model :

In the private cloud model [12], services are owned or leased for a single organization and operated only for that organization. Such data management services are more efficiently provided as per the requests of users and are limited to their organizational purposes are made. A main advantage is you can purchase the sole use of the server with limited scalability but you can also pay for unused resources too. These services are more secure because all storage resources are placed on organization premises with high reliability. The service cost is based on data center, cooling and electricity requires on premise resources. Storing cache data items take faster execution but having higher pricing attached to those services.

B. Cache performance of Public cloud model:

In the public cloud model [12], services are owned by an organization selling cloud services to the general public or to a large industry group. For such services data management is quite difficult because number of services are requested from different region by the user. These services can purchase or access on the usage basis with high scalability but no control of shared resources used or who shares or access them. Security of the service depends upon service providers but reliability based on internet connectivity and service provider availability. Resources are accessed as per usage made by the user and you can pay only for those resources. Storing local cache structure which places data items which handles execution requests depends on bandwidth and network used by the requested user service but having lower pricing attached with those services.

IV. Cloud cache pricing

Pricing is a very sensitive issue all over the world and having good pricing strategy may not give a competitive advantage but wrong pricing structure can creates service failures for companies. On the cloud - platform, infrastructure, software is sold 'as a service' and pricing is based on usage made by the customer. For cloud cache, pricing schemes uses different strategy based on the where cache structure is located, possible ways to access those services from cache, different performance parameters and finally satisfaction of user requests. Cache structure caching the data which is most recently used by the user and according to user demand cache structure is built to accelerate query execution. These cache structures have an operating cost that contains the building and maintenance cost based on this price can be set and makes profit from service of queries is performed in cache. Service of queries is performed either in the cloud cache (if neither data already cached) or in a back-end database.

Cache structure caching the data which is most recently used by the user and according to user demand cache structure is built to accelerate query execution. These cache structures (table columns or indexes) have an operating cost that contains the building and maintenance cost based on this price can be set and makes profit from service of queries is performed in cache. Service of queries is performed either in the cloud cache (if necessary data are already cached) or in a back-end database. Pricing is based on relation of the index interaction [10] and Cache is always placed at service provider's site so it is accesses fast and data in that was recently accessed. But this also faces various problems such as, network setup used by the customer side or small companies which access these cached data. If network failure or any other network related problems occurs, in these case user pays as per the extra charged on these services which makes user unhappy about these services provides by cloud providers. These services are based on infrastructure used by service providers and users of those services. Cloud provider always trade their services as much efficient as possible with requested data has been processed from closest server from requested query site.

It is possible to place these cached data locally at the user site and query has been processed from this site. Most used or accessed data has been placed in that structure and makes these as a local server and operation is proceeding from these structures. These structures also have maintenance and building costs with which type of data or data structure is used for these services. Pricing is set as optimal as per the local cache infrastructure to caching cached data or application.

V. Remark

In this paper, proposed cache based data management services are approached to handle efficient user query services. The main goal is to maximize the cloud profit using optimal pricing associates with the cache services and makes user satisfaction. It is also possible to use above discussed the situation when cloud services accessed in the private infrastructure or small organization and most accessed data items cached locally in their premises and handled by cloud provider companies. In this, the cache is not only used for traditional ways like to access faster recently visited data but also trading these cached data over cloud services it also possible that to get profit.

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