Space Efficient File Management Scheme for Online Video on Content Delivery Networks

B.Lokesh joel[1], Vunnam Satish[2]
[1]*Assistant Professor, CSE, Department of Computer Science and Engineering, Chaitanya Bharathi Institute of Technology, Hyderabad, INDIA*
[2]*M.Tech 2/2 CSE, Department of Computer Science and Engineering, Chaitanya Bharathi Institute of Technology, Hyderabad, INDIA*

***Abstract*- Content delivery networks (CDNs) have been widely used to improve load time in internet sites. These were used to transmit data to users from servers. This network is used for resource pooling with enabling servers to be activated or deactivated in line with current user demand. This paper discusses about online video replication and placement issues in CDNs. It mainly focus on some techniques (i) utilizing complete resource in servers and reduce energy consuming and (ii) limit or avoid replication of data in cache servers. In this paper we are going to use resource-aware heuristic algorithm which was used to recognize replications in cache servers on subscriber arrival and departure. This balance the load between user and cloud while transferring data from cache servers. This also improves performance in the online social networks (OSNs) services in multi cloud environment.**

***Index Terms*- content delivery networks, online social networks, resource pooling.**

I. INTRODUCTION

In recent years social media plays a major role to access online videos from online social networks such as Facebook, YouTube and Vimeo have spread over the world. Many of the OSN server providers prefer to deploy their applications on the cloud environment to reduce cost. OSN services have tremendous data and traffic while transmitting data to user with user's location and time and the users were located across the world to provide these services in recent years. The Content delivery networks (CDNs) have been widely implemented. The way they provide cloud services Fig.1 shows how local CDNs. Servers are located in same place and user can request data through a gateway server and cache servers are virtual machines which provide various services. This CDNs request videos from database video websites like Vimeo, Daily motion, YouTube this CDNs provide video from these sites when user requests the data and users can occupy independent space in every cache servers. These videos among placing on different cache server serve to subscribers without violating bandwidth and capacity limiting its challenges. In this we recognize some problems while transmitting data in existing fails to address like utilizing resource requirements like bandwidth and space. Identifying user/subscriber arriving and departing who was accessing the video clip many studies have addressed the CDNs challenges. This research also investigates energy and resource saving in CDNs and researches had examined how CDNs are going to distribute data from cache servers. This scheme had proposed the "workload" on servers to improve resource utilization and introduced new problem called resource utilization video placement problem. We are using proposed resource-aware heuristic algorithm and also we use adaptive data placement (ADP) algorithm. This both algorithms can apply the various types of CDNs to improve complete utilization of servers and saves resources (e.g. energy, data, cost).

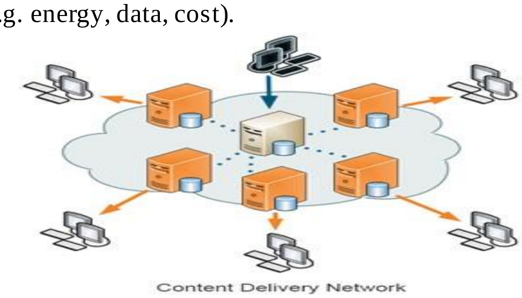

Fig.1. Illustration of local CDN.

II. RELATED WORK

There are many considerable's used as resources to increase the performance of the content delivery networks. In this we focused on which effort has been made to improve the performance of the services in the cloud system. These are categorized into two.

A) Resource provisioning [2]:

There are many projects which provide resource provisioning in the cloud environment. They focused on utilization and saving of resources additionally needed in order to improve performance. However such studies didn't deal with resource saving in content delivery networks in cloud environment.

B) Distributed databases [3]:

Distributed databases can be logically organized to use information distribution across multiple locations. It can be used by placing multiple computers in same locations or else distributed over network of inter connected computers. This was performed in an organization. This distributed database network used in CDNs is managed by one authorized entry.

III. PROPOSED WORK

These CDNs have to supply higher support for delivering content. This has the good effort in net packet transport services. This method can be proposed to utilize the complete space and bandwidth in every cache server and it maintains replication of video clips. And also it decreases video replication on cache servers to save resources like energy and cost and it also utilizes complete space and bandwidth of server. It goes to second server after complete utilization of first server. This ADP or resource-aware heuristic algorithms are used to play important role as "brain" of ENACLOUD. We propose enacloud frame work for automating the workload concentration process by complete utilizing space and bandwidth in server as shown in Fig.2.

IV. METHODOLOGY

A) Adaptive data placement method:

This adaptive data placement method is used to find the replication of video and to improve the performance of the server in content delivery network. It maintains the relationship between user and server. When transferring data, it also uses reduced number of activated cache servers with avoiding video replications by recognizing video replication in cache servers. This adaptive data placement method shows user arrival and departure from cache server.

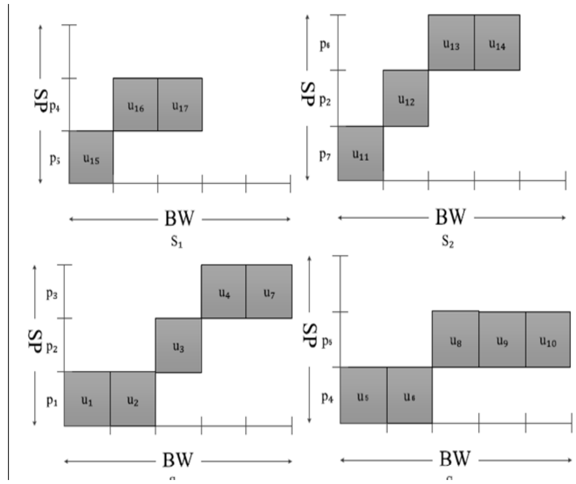

Fig. 2. Example of file placement in CDN.

B) Resource-aware heuristic algorithm:

In this we are going to present design of our resource aware heuristic algorithm. It plays important role in enacloud. It mainly aims power efficient nodes to minimize the complete energy consuming which takes in cloud server pool. We know that resource node will take higher energy efficiency when it was fully loaded. So this algorithm tries to decrease the workload of minimal set of resource nodes. There are some events which occur randomly and present existing doesn't know who the user was going to access the knowledge. As example if a user requests, it allows him to access the knowledge with knowing his address of subsequent workloads. So our algorithm will work in an event deliver process and it compute placement scheme.

- Basic method: It will be like first-fit, best-fit and worst-fit may also applicable hear with some changes. However we are going to focus mainly in workload arrival event and workload departure. Every time new user is allowed to access if a new user (i) arrived it was connected to $node_1$ and the another user (ii) arrived it was connected to $node_2$ when user (i) access data from $node_1$ if there was any free space user (ii) also access data from $node_1$ only rather than going to $node_2$.

- Algorithm details: Our idea is based on the smaller users who use limited bandwidth or space is easy to insert into gaps of the cache servers. To use all the cache server capacity handling if the cache server was full we go through to next cache server. This algorithm will divide the region of user's size into sub intervals according to the partition method. And we discuss the arrival of the user to insert the new arrival of user into nodes pool. We propose recursive algorithm shown in below.

ALGORITHM I. INSERT PROCEDURE

Procedure: insert

Input: *x,* size of the arrival workload

Output: a placement scheme

1. if $level(x)=2M$-3 or $level(x)=0$
2. insert *x* using First-Fit
3. return the destination node of *x*
4. foreach node *v* in pool
5. foreach workload *w* in node *v*
6. filter out *w* where $level(w)<level(x)$
7. place *x* to *v** using Best-Fit
8. sort each workload *w** in *v** where level(w*)<level(*x*) to { *w*1*, … , *w*n* } in ascending order
9. for i = 1 to n
10. if *v** can accommodate *x*
11 break
12. pop *wi** from *v** and *Insert* (*wi**)

ALGORITHM II. POP PROCEDURE

Procedure: Pop

Input: The node x that the workload departs

Output: migration scheme

1. for each workload w in node v
2. pop w and invoke Y=Insert(w)
3. Return i _Y

V. CONCLUSION

Now days there are number of online social network services in cloud environment to access video. This video placement scheme was proposed to save the resources (e.g.; space, bandwidth) with full utilization of capacity of cache server. With limited decreasing of video replication it can applied to various types of CDNs by analyzing user traffic. In this paper we introduced a new approach of data placement to improve CDNs. By implementing new methods such as resource heuristic algorithm and adaptive data placement algorithm. It can maintain and recognize video subscription of arrival and departure of user and it uses the complete space in cache server by inserting into gaps which was free in cache server. It can be used to decrease the count of usage of cache server by that it can save resource like (cost, energy, data) in servers by complete utilization of the server.

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