Algorithm for Prediction based Content Distribution in Cloud

1st Nidhi Bhavsar, 2nd Prof. Jaimin Dave

[1] M.E. Scholar,[2] Professor

[1] Computer Engineering.,

[1] Alpha College of Engineering & Technology, Kalol, India

[1]nidhibhavsar2861988@gmail.com

_____

Abstract - Content distribution network built on clouds have recently emerge and compared to conventional CDN, cloud based CDN have the benefit of cost efficient hosting services without owning infrastructure. Security is prime affecting factor in conventional CDN. So, we will propose a novel secure content distribution framework for cloud controller to securely disseminate their contents to legitimate users via Content distribution network. Use of our framework will enable legitimate users to recieve encrypted content from nearby peer. Our framework utilizes in network caches for reducing delivery latency.

Index Terms – Cloud Computing, Content Distribution Network, Amazon Web Service

_____

I. INTRODUCTION

The Internet changed our life desperately, there is inevitability about that. Through the internet, we are able to reach any information anywhere and anytime.Bill Gates had coined the term in an essay in1996 that "*Content is King*", this phrase has become the most applicable term in recent era [9]. Another term invented by Author Joe Pullizi that is "content marketing" and elucidates it as: "*Content marketing is a marketing technique of designing and collocating admissible and scarce content to attract, get, and enlist a clearly understood target crowd – with the goal of propulsive commercial customer action."[9]* Due to success of Internet, User requests for the popular contents like web pages, images, and games etc. which are operated by popular Web services. These in-demand Web services are requested and often suffer congestion due to large demands made on their services. This produces intractable traffic. Replication and caching are the best solution for the given problem. A Service provider replicates the content to the other server that is nearest to the user. Then the user is redirected to the nearest server and this approach helps to reduce network impact on the response time of the user requests. Cloud Computing is one of the latest tendency in information technology (IT)[4]. The aspiration of the cloud computing is to furnish on-demand computing service that is tremendously reliable, expandable and available in distributed environment. In recent time, many networks are moving to the cloud for its plentiful lucre such as curtailed costs, surging performance, availability and resilience. So we are connecting two significant concepts: the cloud computing and content distribution. Compared to traditional CDNs, cloud-based CDNs have the advantages of cost effective hosting services without occupying framework. It helps to achieve appreciation of user and resource performance by providing an adequate and legitimate allotment of every computing resource.

II. PROPOSED METHODOLOGY

A lot of work has been done in this area aimed at these ends. We proposes the design of an efficient and resilient content distribution which involves the construction of semantic overlay network of surrogate servers based on dominating set and its variants and design of an efficient and resilient algorithm to disseminate the content among the surrogate servers.

As the numbers of users are increasing on the cloud, the content delivery has become the challenge for the cloud provider. To minimize the cost and the latency, I here propose an algorithm for securely distribute contents over internet. I have proposed algorithm which works on the prediction based resource provisioning and caching of the resources. For example, one hindi movie trailer is released, it will be available in all regions of the cloud. It would be watched by many users whenever it would be new. But after few days, the number of users who watch this video would be decrease. Thus based on this user request on the data centers, the usage of the resource allocation is determined. Thus based on the user request prediction Reclaim List of data center would be generated and resource provisioning and caching would be performed.
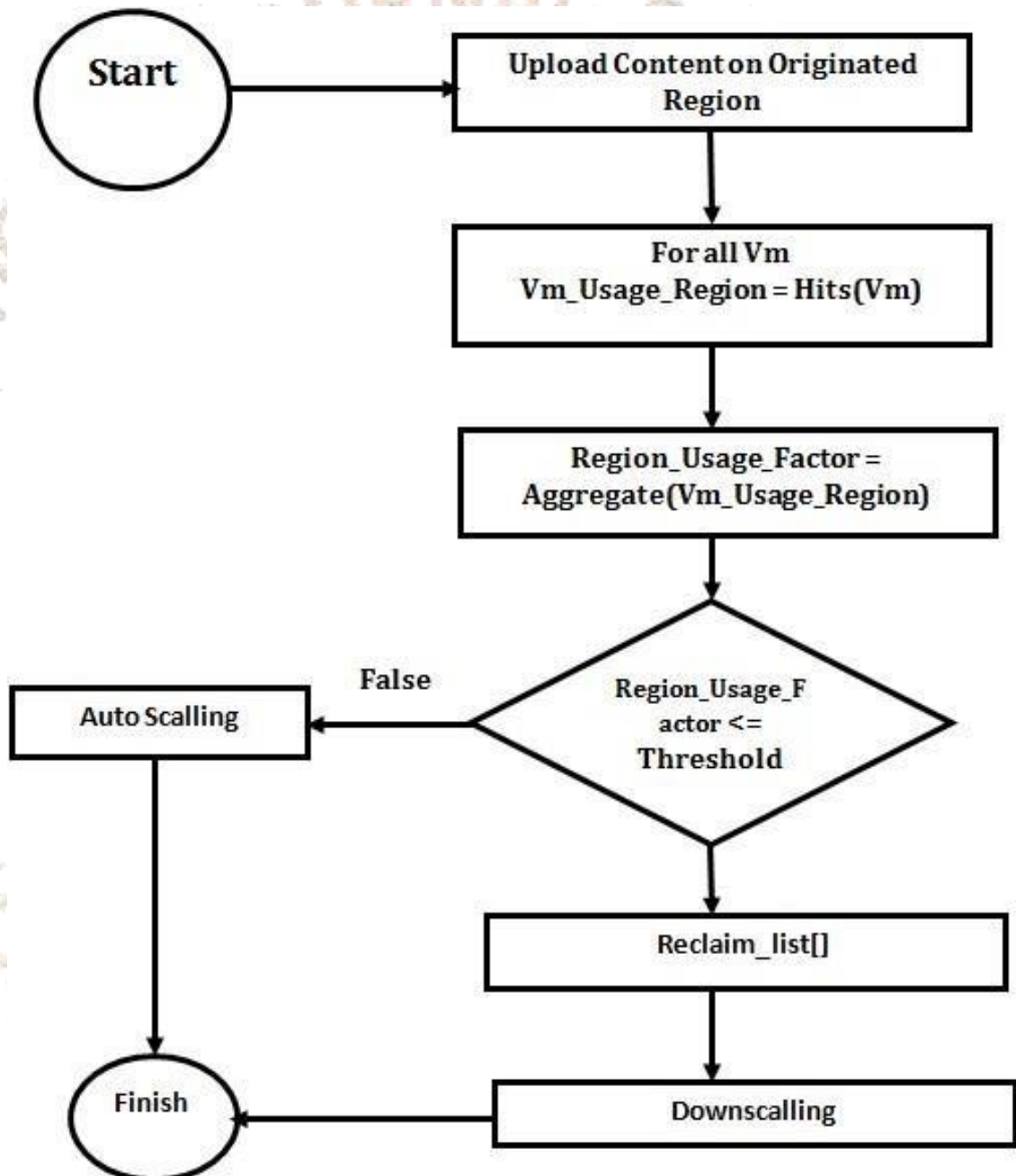

Fig-1 Flow Chart of Prediction based Content Distribution

Step 1: For content delivery, first of all the content provider uploads the content in Originated region.

Step 2: After that for each virtual machine, the usage would be calculated based on the requests to the VMs. Based on the VM usage; the usage for the region will be calculated by aggregate function. The reclaim list will be generated based on usage factor and the threshold value. If the usage would be less than threshold value, it would be added to the reclaim list. After that the downscaling will be performed for the reclaim list. If the request for the same content would be generated, the request of user will be redirect to the VMs which are not in the reclaim list.

☐ Proposed Tools:

1. AWS (Amazon Web Services)

In 2006, Amazon Web Services (AWS) started providing IT framework in the form of web service. This web services are known as cloud computing. Most important feature of cloud computing is use infrastructure as per requirement. This helps different companies to use infrastructure without configuring it. Cloud Provider have thousands of the servers and web services which are available for user on rent.

2. AWS S3 (Simple Storage Service)

Amazon Simple Storage Service has an interface for the web service provide by AWS. Using S3, User can store and retrieve the any kind and any amount of data from anywhere and at any time. This service explains how to create buckets, store and retrieve your files, and manage permissions on your resources. This service has also an authentication process for access control. Access control indicated that who is able to access data stored on in buckets using S3.The access control is of two types: read and write. Users are identified by authentication process.

3. Java

Java is a Object Oriented programming language developed by James Gosling from Sun Microsystems (Sun) in 1991. The first version of Java (Java 1.0) was released in 1995. Sun Microsystems was acquired by the Oracle Corporation in 2010. The Java platform allows software developers use java to write program which runs on the Java virtual machine. The Java platform is usually associated with the Java virtual machine and the Java core libraries.

4. Eclipse

Eclipse is an integrated development environment (IDE) for Java and other programming languages like C, C++, PHP, and Ruby etc. Development environment provided by Eclipse includes the Eclipse Java development tools (JDT) for Java, Eclipse CDT for C/C++, and Eclipse PDT for PHP, among others. The Eclipse platform which gives the foundation for the Eclipse IDE is combination of plug-ins and is developed to be extensible using additional plug-ins

5. Java Virtual Machine

The Java virtual machine (JVM) is a software that executes programs like a real machine. The Java virtual machine is designed specifically for a specific operating system, e.g., for Linux a special implementation is required as well as for Windows.

III. SIMULATION RESULTS

In conventional CDN, the request would be allocated to the Vms on which the data is available.Because of this the latency is always high and the user has to wait for the response.
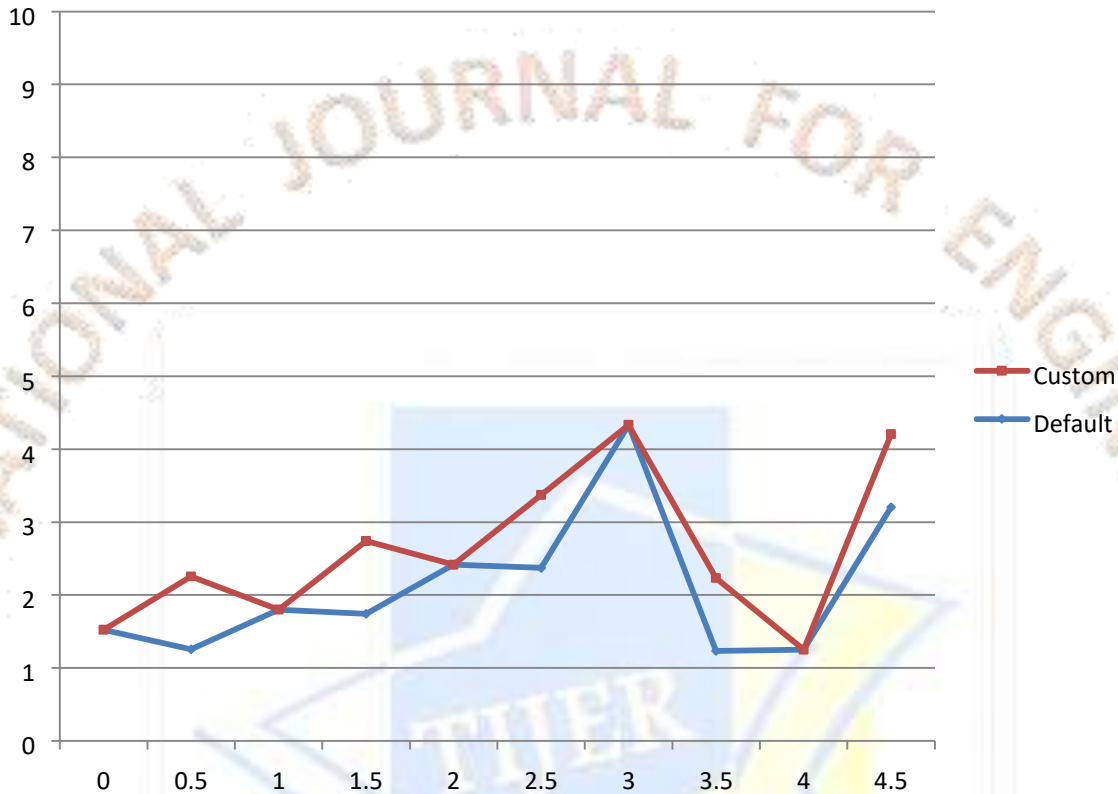
 Using our algorithm, this latency is minimized using replication and caching. The content is available to the nearest instance from the user's location. Based on the number of request for the content, the replicas are managed on different regions. Thus its easily available to user.

IV. CONCLUSION

We propose an algorithm to securely distribute content over the cloud based CDN network. Content would be delivered to the server based on the predication of the user request for that content. Firstly, the new uploaded content would be available on the originated region of content. Based on the user request, the number of data centers would be managed such a way that the user access data from the nearest peer of the CDN in cloud. The cost for the content provider would be minimized and the latency would also be decreased.

VII. REFERENCES

[1]   Menglan Hu, Jun Luo, Yang Wang and Bharadwaj veeravalli , *"Practical Resource Provosong and Caching with Dynamic Resilience for Cloud Based Content Distribution Networks"*

[2]   Amr Alasaad, Kaveh Shafiee, Sathish Gopalkrishnan and Victor C.M.Leung WiNMoS Lab , ―*Prediction-based Resource Allocattion in Clouds for Media Streaming Applications* in 2012

[3]   Zhi-Li Zhang , "*Feel Free to Cache Towards an Open CDN Architecture for Cloud-based Content Distribution*"

[4]   Chrysa Papagianni, Aris Leivadeas, and Symeon Papavassilliou – *A Cloud-Oriented Content Delivery Network Paradigm : Modeling and Assessment* – in September/October 2013.

[5]   Hai Anh TRAN, Abdelhamid MELLOUK, Said HOCEINI ―"*QoE Content Distribution Network for Cloud Architecture*" in 2011 First International Sympoisum on Network Cloud Computing and Application

[6]   Shivadon Chaisiri, Bu-Sung Lee, Dusit Niyato – "*Optimization of Resource Provisioning Cost in Cloud Computing*".

[7]   Balachander Krishnamurthy, Craig Wills and Yin Zhang ―*On the Use and Performance of the Content Distribution Network*".

[8]   ''Four Reasons We Choose Amazon's Cloud as Our Computing Platform,'' The Netflix ''Tech'' Blog, , Dec. 2010.

[9]   http://www.silkstream.net/blog/2014/07/content-is-king-bill-gates-1996.html

[10]   aws.amazon.com

[11]   http://docs.aws.amazon.com/AmazonS3/latest/dev/UploadingObjects.html

[12]   http://en.wikipedia.org/wiki/java

[13]   http://en.wikipedia.org/wiki/javavirtua machine

[14]   Interface development for Eucalyptus based cloud - Albert Folch

[15]   An Overview of Cloud based Content Delivery Network : Research Dimensions and art of state by Meisong Wang, Prem Prakash JayRaman, Rajiv Ranjan, karan Mitra, Sameer Khan