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OPTIMIZATION ON STREAM DELIVERY BASED ON REGION OF INTEREST

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Abstract

Use of high-definition video is increasing on the Internet, which creates difficulties for efficient delivery of large files. Streaming Files are especially difficult to deliver because of the large sizes and number of concurrent viewers. Region Of Interest (ROI) supports efficient high quality files content delivery to multiple sources. The information of receivers will be exposed to the third party during the re-encryption process. Proposed a technique named File re-encryption. By applying a semi-trusted File and re-encrypt the cipher text, data can be shared without exposing information to the third party. They achieved control of access in storage in the network. The optimized towards encrypting a specific region in a File is proposed. The algorithm proposed is ideal for encrypting Files with relatively small Region of Interest (ROI). A pseudo random number generator is used as a basic security feature. Furthermore, Cipher Block Chaining (CBC) is also suggested as an improvement to further enhance the security of the algorithm. The algorithm may be classified as loss since some visual data is sacrificed in the decrypting process. This work proposes the notion of pre-authentication for the first time, i.e., only users with certain attributes that have already. The pre-authentication mechanism combines the advantages of File conditional re-encryption multi-sharing mechanism with the attribute-based authentication technique. Moreover, this work finally proves that the system is secure and the proposed pre-authentication mechanism could significantly enhance the system security level.

Keywords
Region of Interest, Re-encryption, specific region, pre-authentication, security

Introduction:

When delivering content to a large global audience, it is critical to ensure optimized delivery of your content. This new capability is targeted to optimize performance. Media streaming is time sensitive in that packets arriving late on the client can cause degraded viewing experience, for example, frequent loading of data content. The new enhancements, reduces the latency for delivery of media content. For large file download, object chunking is critical. Files are requested in smaller chunks from the origin to ensure a smooth download experience. We apply these enhancements based on the experience with many customers and we will continue adding additional settings to improve content delivery performance.

The Internet has become a critical information delivery infrastructure for global commerce and media, in a relatively short period of time. However, the outstanding popularity of the Internet has also become the biggest impediment to its development as any change affects millions of users. Yet, the current Internet must be changed to meet the requirements of the next generation networking by introducing innovative architecture and service models. Network virtualization has been proposed as a key diversifying solution of the future inter-networking paradigm and is expected to play a crucial role in the next generation Internet.

Network virtualization decouples service provisioning functions from network infrastructure, thus separating the role of traditional Internet Service Providers (ISP) into two independent entities: Infrastructure Providers (InP) and Service Providers (SP). InPs deploy and operate physical network infrastructure and offer networking resources to different SPs instead of providing services directly to end users. SPs discover the available InPs, select the proper set of InPs, and compose the selected networking resources into an end-to-end network service.

The M3QD used an algorithm called AVL tree. This algorithm is used to find the shortest distance. The AVL tree takes the time efficiency is about O (n). This is the drawback because as much as the user increases, it takes much time for delivering the data streams. So, this paper introduces a Track ROI with Red-Black tree algorithm for file content distribution to mobile users over wireless networks. ROI employs a multi-source multi-stream content delivery without any replicated file paradigm which stands at the basis of its flexibility, delay, robustness and high quality of delivery. The proposed solution enables high quality files content delivery, while also supporting user mobility.

RELATED WORK:

A) ADAPTIVE FILE DELIVERY:

The success of any files based application lies in user satisfaction. In order to achieve the user satisfaction, the importance must be given to support high Files Quality levels. To optimize the stream delivery, and it should be matched with the available bandwidth.

Buffering involves pre-loading data into certain area of memory known as a ”Buffer” . Long term variations are overcome by using Rate adaptation technique (Traditional Rate Adaptation algorithms have been shown to choose lower data rates for packet transmissions, leading to reduced total network throughput and capacity).. Layered Quality Adaptation Algorithm is used (LQA)[1] is used to maintain the high levels of user perceived quality at the application layer. Here the number of multimedia files quality layers are adjusted depending upon their available bandwidth resources.

Cross Layer Adaptive file Delivery method[2] are used in delivery related information gathering and processing which provides high quality for remotely watched files content (The adaptation is done with respect to both channel and data. It constructs the application layer packet. In such a way that it is decomposed into equal ratio link packets. A priority based ARQ together with a scheduling algorithm is applied at Application layer). QOAS shows improvement in end user perceived quality for streaming files content in both wired and wireless networks[3]. Region of Interest based Adaptive schemes that are different parts of the overall text area based on user level of interest[4]. The network condition, buffer status or other parameter is analyzed at client side and request for appropriate quality levels are sent to server and delivers them.

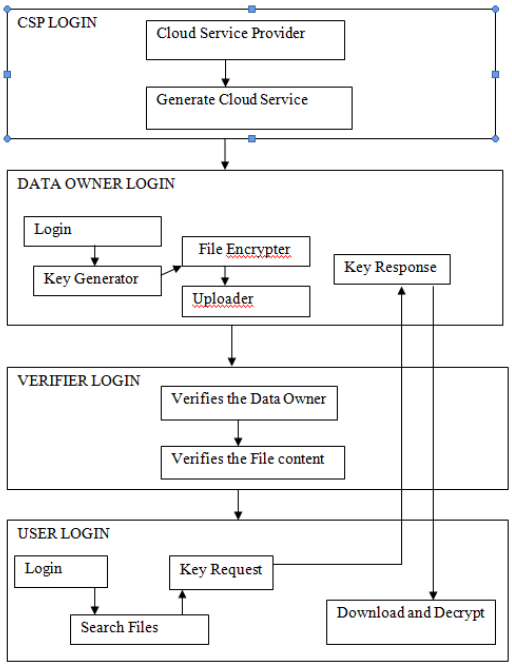
B) CLOUD BASED FILES CONTENT DELIVERY:

To provide rich media services, files computing have emerged to generate, edit, process and search media contents. For Files applications and services over the internet and mobile wireless networks, there are strong demands for cloud computing since large amount of computation required for millions of internet or mobile users at the same time. In this cloud based files technique, users process their files application data in the cloud distributed manner rather than installing files software. Cloud also supports network heterogeneity.

C) TEXT QUALITY ASSESSMENT:

This technique is used to assess the effects of variable network conditions and mobility on user perceived quality. The two categories are Subjective methods and Objective methods. The objective assessment method is classified as out-of service method (the original sequence is available and used during the assessment and no time constraints are imposed) and in-service methods (performed during content delivery without having the original sequence and with strict time constraints). From different perspective the objective methods can be classified into full reference methods (use comparisons with reference streams), reduced reference solutions (employ feature extraction) and no reference methods (no original stream is required for quality assessment). Among the most important and widely used objective metrics are the full reference Peak Signal-to-Noise Ratio (PSNR) and Structural Similarity (SSIM). PSNR is based on signal variation only and has no relationship with the way the human see the streams.

OVERVIEW:



CSP generates cloud servers for the number of users. Data Owner login and key is generated for the file, to be encrypted. Then the encrypted file is uploading to the cloud for the interested users. Verifier verifies the file and generated signature. User login, search the file and request for the key to the Data Owner. Data Owner response for the key request. Data Owner sends the key response to the User Login. User Login decrypt and download the file.

MULTI-SOURCE CONTENT DISTRIBUTION- ALGORITHMS

ALGORITHM 1:

If New_Node_Joined_Cluster
then
Update_Sent_To_Head(Content_List_Size);

Content_List_Sent_To_Head();
end if
if Node_Received_New_Content
then
Update_Content_To_Head(Content_Info);
end if
if Head_Requests_Content_Update
then Update_Sent_To_Head(Content_List_Size);
Content_List_Sent_To_Head();
end if
if New_Cluster_Head then
for all_Nodes_In_List
do Content_Update_Request_To_Node(Node);
end for
end if

If a New Node joins a cluster. The information about the node and the content is collected and updated at the head. When a Node in the cluster receives a new content, the content is updated at the cluster head.
When head asks for content update then the content list is updated. When a New Node becomes a cluster head, then all nodes in the cluster sends content update request.

ALGORITHM 2:

if Node_request(Content)
then
Broadcast_Request(Cluster_Head,All_Heads);
end if
Sleep(Wait_Time)
if Response_Received==0
then
Fetch_From(Video_Server_Id);
else
Send_To_Requesting_Node(List_Of_Options);
end if

When a Node requests a content, then the cluster head broadcasts the request along with the node's ID to all other heads. If there is no response received from any of the heads, then the content is fetched from the video server else list of options available are sent to the node.

ALGORITHM 3:

Set(Observed_Path_Report);
Report i for 1<=i<=Nil_Paths
for all Msg = Get_Message($Path_i$) do
Increment($Path_i$, $Count_i$);
Update($Path_i$, $Thru_i$); Update($Path_i$, $Loss_i$);
Update($Path_i$, $Delay_i$); Update($Path_i$, $Jitter_i$);
if NextReportTime then
Send_To_Rate_controller :
Report(i, $Thru_i$, $Loss_i$, $Delay_i$, $Jitter_i$);
Reset($Path_i$, $Message\_Count_i$);
Reset($Path_i$, $Thru_i$); Reset($Path_i$, Loss);
Reset($Path_i$,$Delay_i$);Reset($Path_i$,Jitter);
end if
end for

The value of jitter, Throughput, Delay & Loss is periodically reported to rate controller. Later they are reset and monitored continuously for another time interval.

ALGORITHM 4:

Quality Deviation←0
i←0
for all i such that i<=i<=No_paths do
GetFeedback($Loss_i$,$Delay_i$,$Jitter_i$,$Thru_i$)
Compute(Quality $Rate_i$);
Update(Quality Deviation);
end for
if QualityDeviation > Threshold then
sort by Ascend($QualityRate_i$);
BestScore←o;
i←0
for all i such that 1<=i<=No_Paths do
if BestScore<100 then
if BestScore + $QualityRate_i$> 100
then $Rate_i$=ExpectedRate*$QualityRate_i$/100;
BestScore = 100;
else $Rate_i$=ExpectedRate*$QualityRate_i$/100;
BestScore= BestScore + $QualityRate_i$;
end if
else
$Rate_i$ = MinRate;
end if
end for
end if

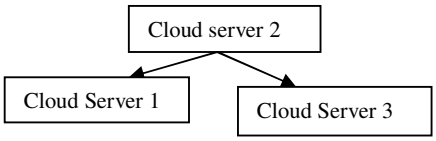
This algorithm aims at achieving transmission rate of ExpectedRate in order to meet the given

requirements. The first step in algorithm consists of calculating the quality scores for each active source. The second step, the rate share is computed for each source according to quality scores and requirements.

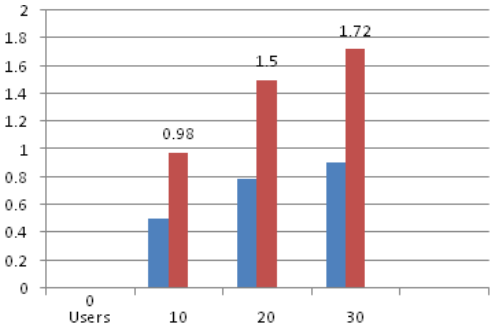
PERFORMANCE ANALYSIS:

In this the delay is optimized by using Red – Black tree instead of using AVL tree, because the tree finds the distance and transfers the data faster than the AVL tree. The time is optimized for traversing in red-Black tree is O(log n) where as in AVL tree, the time optimization is O (n) is used to measure the delay.

In Red-Black tree algorithm the distance is calculated by finding minimum distance from the users request.



Users	TROI	M3QD
10	0.50	0.98
20	0.79	1.5
30	0.91	1.72



CONCLUSION:

This paper has introduced a novel Track Region of Interest (ROI) for file content distribution to the users over hybrid ad-hoc and infrastructure-based wireless networks. The proposed solution is based on algorithms which supports content delivery while enabling user mobility.

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