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DEVELOP PEER-TO-PEER NETWORKS PERFORMANCE USING TOP-K QUERY PROCESS OVER P2P LIVE STREAMING

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ABSTRACT

In the internet world Peer-to-Peer computing is considered to be a promising technology because of the fact that P2P file sharing plays a brilliant part. Its systems are disseminated systems which aid in the allotment of resources over a large peer population namely file content that is common, software application, computer memory storage and hardware. Cost efficiency and degree of availability of personal computers are two of the main attributes of the P2P file sharing systems. However, the occurrence of free-riding threatens the presentation of P2P file sharing systems. It originates from the denial of peers to quit a few of their resources to the worth of the community. Hence several peer to peer networks lacks the accurate security and in order to shelter these peer to peer networks the top k queries is utilized. Top-k query processing is equivalent to discovering k objects that possess the top grades on the whole. Responding the K top-ranked answers swiftly and competently is the primary aim of these queries.

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KEY WORDS

Distributed Resource, P2P File Sharing, P2P Networks, Top-K Quires.

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INTRODUCTION

A Peer-to-Peer network is fashioned when two or more computers are linked and contribute to a set of lacking going away during a split server PC. It could be thought as any type of network architecture through swap between systems in an unproblematic distribution of computer resources and services. It operates both as a provider and end user or dispatcher and recipient. P2P categorization are wholesome opposed to assortment, fundamental, decentralized, intended, unformed and assortment. Because the Internet possess certain key assets namely information, bandwidth, and computing, the Peer-to-Peer networks are utilized. This is the way peer-to-peer network operates. Suppose you are sprint a P2P file-sharing; attempt to force away an appeal for the file that is necessary to download. Even the software query of the other PCs are linked to the Internet and function the file-sharing software in order to establish the file in the proper position.

If the software commences to detect a PC that contains the folder essential on its hard drive, then the process of download repeats. Thus by swapping the files, the file-transfer load are disseminated among the computers. Utilizing Top-k queries was my primary and the finest choice although famous technologies like VoD, Social tubes, CDNs exists.

Some people simply download files which further impedes other process and this process is referred to as leeching. Peer-to-Peer has numerous benefits such as:

1. Scalable: It means the assets are given or contributed by clients as well. And as per the need the collective assets would be burgeoning.
2. Reliable: It means the specific type of failure doesn't take place. Geometric distribution
3. Simplicity of Administration: The arrangement of the servers is not much essential in order to place order, replication etc.

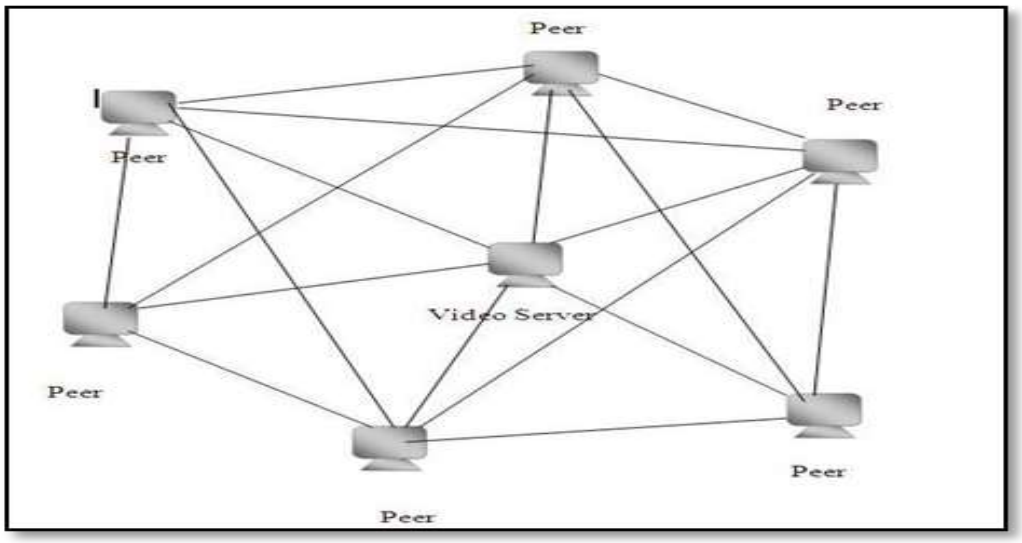

Fig.1: Block diagram of P2P network

[Figure-1] shows that block diagram of the P2P network indicating that all the peers are linked and the data is shared together. In Peer-to-Peer the threats are poisoning, Defection, Adding up of viruses, Denial of Service Filtering, Identity attacks, Spam etc. Also certain safety issues are yet to be addressed by equipments.

The rest of the paper organized the follwoing manner, the Section II focused litterature survey of the P2P networks and top-k query processing systems. The Section III gives proposed algorithm the Section IV illustrates Result and implementations and the final section derives the conclusion of the paper.

RELATED WORK

Ad-hoc is a P2P network that receive a particular concentration payable to the likely applications. It eases the way people access the same data by accessing the particular record from other the data centers. This saves the bandwidth time enabling people in some specific place to contact the internet via wireless equipment's like roof net. Simultaneously, if one user downloads the video or audio the other people can also get the same file. Through this effective way we can realize that the nodes or users share the information with each other. In fact collaborative caching permits quite a few nodes or users to access the same data. This enhances the system performance with lesser bandwidth and time [3].

By utilizing web cache the P2P networks can further be enhanced. This is possible by inter linking the browser cache of each client with the cache of web proxy and thus the cache information is shared. The most important benefit is that hit ratio becomes better and averts unnecessary application. Few client owns its individual browser cache. A set of clients will be linked to an alternative and when the request is processed, the local cache will be initially utilized. In case of the absence of any match the request will then be directed either to other caches or to the original server. Once the request is established it will kept it in the alternative and go back to the browser and store the document in its cache. Replication of document among diverse stages of the cache, misuse of storage space and restricted scalability are the major drawback [10].

The extended of Peer-to-Peer usage for file-sharing systems is unprecedented. Majority of who uses it are constantly incorporating particular file-sharing systems and hence supplementary amount of things were also being made. The prefect amount and probable elevated magnification of Peer-to-Peer traffic may occur the harmful penalty. Few equipment's to be names are static over time or incapable to be changed, bulkiness of the size, streaming media systems like Servers, P2P and multicasting, Software as a service and clients. The key exceptionality of Peer-to-Peer traffic is "germane to caching", "object reputation" Design and evaluation is possible with these distinctiveness. It is possible to improve the algorithms by utilizing diverse techniques. In the

caching mythology, diverse division sizes for special workloads can be performed. P2P traffic can be identified by individual caches. This includes object popularity. The sizes of P2P object can be enlarged to several Giga Bytes [6].

In this generation file sharing, Internet Protocol Television (IPTV), Video on Demand (VoD) using P2P systems is the current killer applications for the internet. Every day the P2P systems produce enormous traffic and due to this challenge universities have a huge budget to be spent. ISP (Internet Service Provider) also encounter similar issue. There also exists negative efforts which cannot be be altered. Here caching of P2P traffic also occurs caching which does not require changing the P2P protocols, because this can be bring into effective action transparently from clients.

To set off various Caches the alternate cache is designed for various systems by utilizing algorithms. It enables easier identification of connections belonging to P2P systems. Thus Cache results from many recurrence of a process or utterance and refinements. Even the performance of P2P clients are now speeded up than the other clients. Many research works are undertaken on several extensions for Proxy Cache [5].

There is unprecedented growth in peer to peer networks, many functions such as Bit Torrent, audio conferencing. Most of the systems held in this strategy can be used by any user all around the world. This open internet power is strong point of peer to peer system.

By utilizing closed communities and campus community it can be viewed. The closed community is formed and it is also used by the nation-wide ISP in Europe. The ISP can support bulk bandwidth. This ISP allows the user to use both ADSL and FTTH technology. The ADSL uses the copper cable and FTTH uses the fiber cable. The community which was observed in this network is according to eMule (use multiple ID's to attack the KAD network). To avoid the problems, the eMule has been modified by the users. It was referred as ISP community which is called as closed community. The second community was found in the academy site with rapid Ethernet connection. The campus community user has Direct Connect to the peer to peer application. So that the peer which was running in the host joins community which is called as campus-community [7].

And also many users are using the internet. It has the ability to support large amount of work, can withstand many difficult condition, and has good infrastructure on cost and also it supports many file sharing application. Some networks in P2P which was based on kademila (DHT) like KAD supports million numbers of peers which are connected. One important security which affects peer to peer network is Sybil attack. It is a type of security. And also a malicious user which can gather all information by using fake identities [8]. It monitors the P2P network, polluting the content indexation and also affecting the DHTs. The main target of this Sybil attack is

1. Internet polls – uses multiple IP address to get more votes
2. eMule – use multiple IDs to attack the KAD network.
3. Reputation systems – eBay: create fake accounts and give the feedback to server.

It can be secured using trusted authority that means all nodes should be authenticate with all public keys. The second is resource testing. In that system should have limited IP address, testing the computer power, storage etc. [8].

It was very useful for the reason that algorithms and protocols have been experienced before it is produced. We can make processes and growth in the networks even the simulations are also carried on the same prototype code. This involves either resources to convert low to high range test beds, or it will use the high range services like planet lab so that there will be advantages of practicality of the feral internet and it may to constant too. To avoid this problem they are using the Model Net. It will never move towards or under the outlay of the performance Model Net does not need these experimental facilities like planet lab and one lab. This makes the user to test the P2P application. And it is also suitable for traffic engineering (TE). The main advantage is it can run thousands of unmodified applications. And also social networks are most popular. It provides a greatest share of applications, social connections etc.

The recent rapid development of social network video sharing applications says the evolution is simply communication focused tools to a media portal. Social network needs advanced progression. It depends on content delivery networks (CDNs). And for video content delivery CDNs are very expensive. But the advantage is that

social tube can reduce the work of the server, improves the quality and used in large client application. The present (VoD) technology is not possible to share a particular video in social networks. It results that Social Tube be able to supply a low capture set up delay and small transfer command. To reduce the particular problem they implemented a prototype in planet lab to evaluate the performance of Social Tube. This result from the prototype further confirms the efficiency of Social Tube [1].

The author M.Narayanan describes the tail part of the data segments are not used in the P2P network data communications. So with help of segment table tail part has taken for synchronized with neighboring peers [4].

In current years, P2P networks contains up-and-coming as the best guaranteed approach to tackle problems in the high range powered systems. The co-operative example in these types of networks is that it basically amplifies the check capacity lacking need of particular hold upon or after system communications. Currently Peer-to-Peer networks have accomplished significant outcome to beat the bottom of majority of the applications over Internet. Hence there is no important duty to estimate the particular service. The client has the position for asking any video snip independently at any task of point. We can consider the numerical outcomes of the client performance in VoD service will play the vital roles in gaining accurate understanding of the scalability. Hence we found that various types of video clips are located in different directories on the VoD server [2]

PROPOSED ALGORITHM

So many peer to peer networks are not secured properly. So to secure these peer to peer networks we are using top k queries to implement this. The **[Figure- 2]** shows the Top – K process. The Top-k query processing is equal to finding k objects that have the highest overall grades. The base relation is vertically fragmented across the network. Centralized algorithms require several iterations to complete (recall TA) and each iteration introduces additional latency and messaging.

Table: 1. Proposed Top-K Elements Algorithm

Algorithm for Finding the top-K Elements
{
Sorted access segment
}
Number of Peer is EQUAL TO 0
WHILE Number of Peer is LESS THAN K
DO
Every Peer Pi discovers the m closest local Peer according to the local distance metric WiSi
{
Once the first m Peer have been created
Each peer can minimally locates the subsequent k Peer in sorted order
}
END WHILE
SET Identity as ID is produced by Peer Pi from the ID's created in the previous step
Number of Peer ← |ID0T...TIDp−1|)
M ← M + K
END WHILE
{ Random access / calculation of segments}
Peer ← ID0S...SIDp−1
FOR ID ∈ Peer Do
FOR all Peer j = 0,...,p − 2 DO
Pj: Produced a random rj uniformly from the field F
Pj: Calculates the local weighted score WjSj for Peer ID
Pj: inpj ← WjSj + rj (Mod F)
The local weighted score is returning its function to Pj.
Pj: Launch inpj to Peer Pp−1
Pj: Send −rj (Mod F) to Peer Pp−2
END FOR
Pp−1: Compute spid = Pp−2 j=0 inpj + wp−1Sp−1 (mod F)
Pp−2: Compute sp′id =Pp−2 j=0 −rj (mod F)

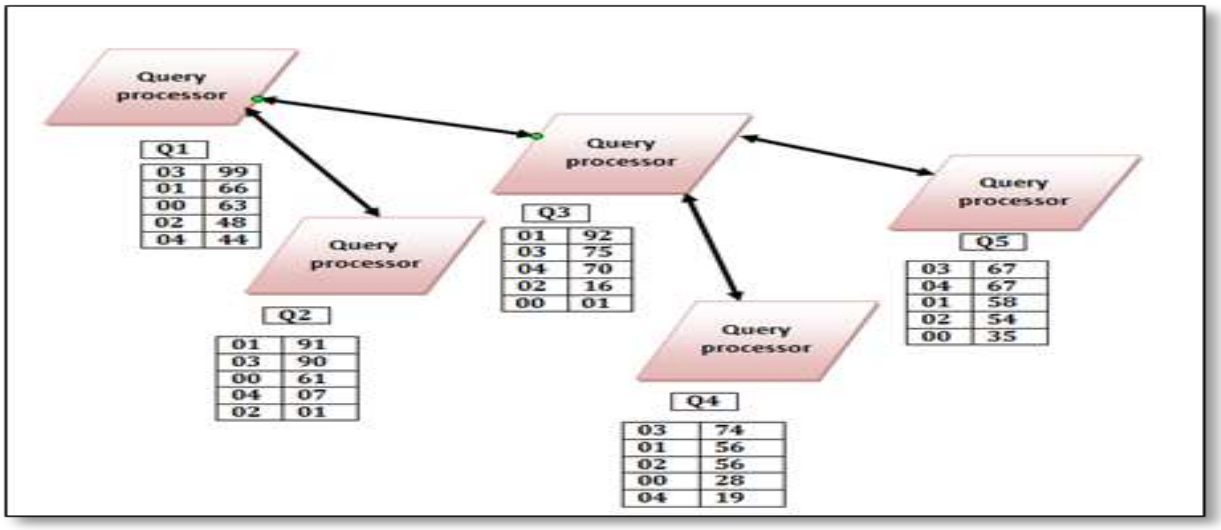

Fig: 2. Top-K query Process

The main objective of these queries is to return the K highest-ranked answers quickly and efficiently. It is used to

1. Reduce the price metric which is linked or connected with the recovery of all the answer sets. (e.g., disk, network, etc.)
2. If we maximize the excellence of the answer set, such that the client is not beset by the means of unrelated outcomes.

RESULT AND IMPLEMENTATION

We implemented in ns2.34, which is discrete event driven simulator tool for learning the dynamic nature of the wireless communication network. The **[Table- 2]** describes the parameters set by ns2.34 simulator. We calculated the End-to-End delay of videos using trace file information. The results show end-to-end delay of the video packets has less delay.

Table: 2. Implementation Parameters

Parameters	Values
Video Packet size	1048
Mac	802.11
Routing protocol	AODV
Prorogation model	Two-ray ground
Application Protocol	TCP/CBR

Once the parameters are set, the eventual step is setting up the threshold of the traffic. Here threshold set has 250 peers which mean that up to 250 peers the server will provide service considering here that every peer with 40 kbps speeds. After accomplishing the threshold point, 250 peers automatically the Top-K Query Process takes accountability to supply services. Thus, whatever the peers are appealing to the server, the whole appeal is made in line. And then based on any one of the scheduling concept that convey work to the concerned peer, that peer will provide service to the requested peer

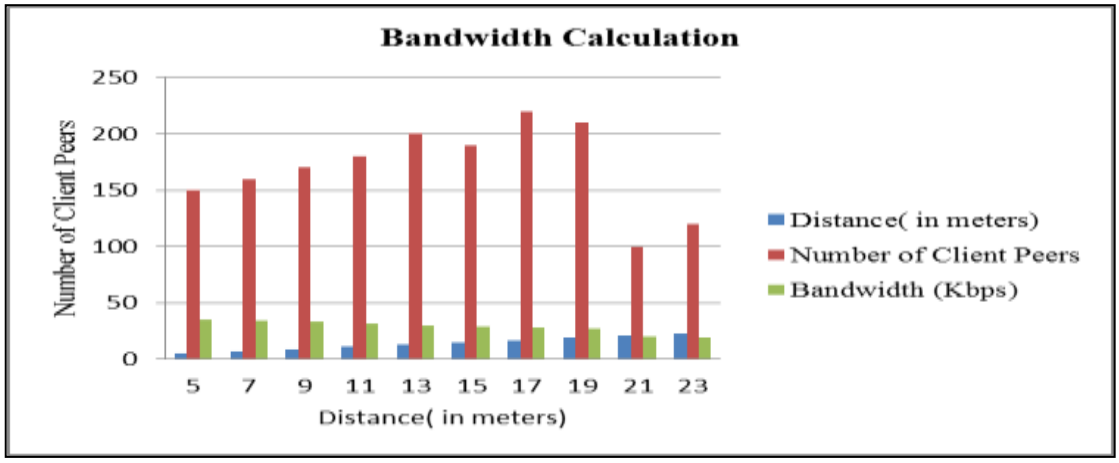

Fig: 3. Bandwidth Calculation

The Top-k query processing is equivalent to discovering k objects that possess the top grades on the entire networks. The **[Figure-3]** drawn bandwidth calculation of the P2P networks. The x-axis proceeds distance of the peers and y-axis continues the number of clients participates in the Peer-to-Peer Networks.

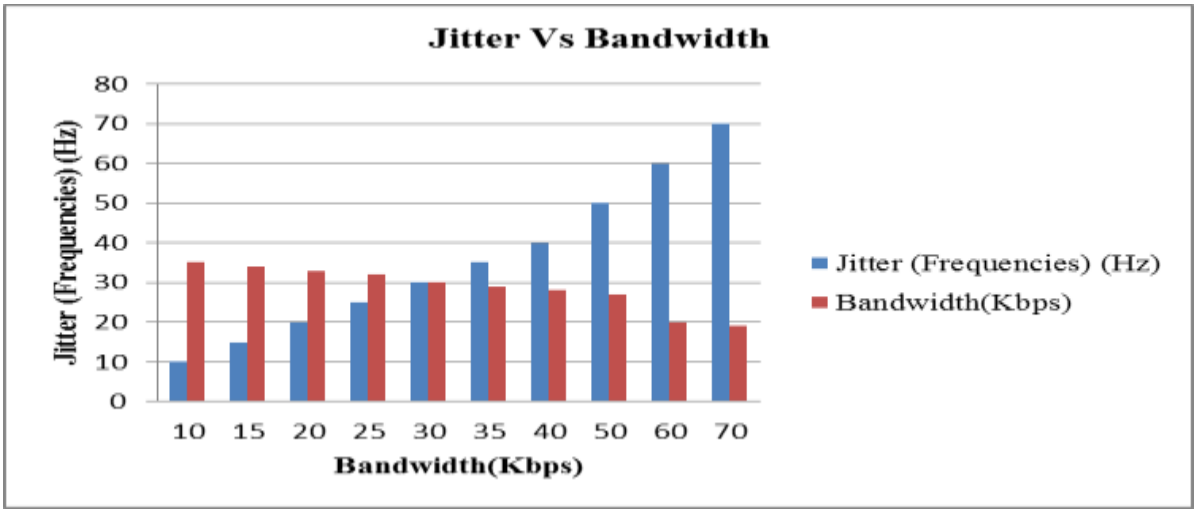

Fig: 4. Bandwidth with Jitter

The P2P networks mainly depends on Jitter, so we have to take the main factor Jitter and to produce better result. The **[Figure-4]** illustrates Jitter versus Bandwidth. Server provides service to client is employed after the threshold point based on the parameters like Distance of the peers, nearest path of the client/server, Jitter status.

CONCLUSION

Hence we can bring to a close that one of the most promising technology worldwide is the Peer-to-Peer networks. It is utilized not only for media file sharing but the set-up can initiate a new channel for efficient and competent downloading and sharing of files, data and information. There should be proper security procedures to evade the potential leak of responsive or individual information and other safety breach. Organization administrators must ensure that every demand corresponds with the commercial security guidelines. End users comprising home users should be particular to clear up the possibility of diffusing viruses over the peer-to-peer network. The downside of Top-K Query process can be conquered by introducing new technology and built it as a trusted network.

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CONFLICT OF INTEREST

The authors declare no conflict of interests.

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