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An Effective Search in Unstructured Peer-to-Peer Overlay Networks

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***Abstract*— A peer- to-peer (P2P) network is a distributed system in which peers employ distributed resources to perform a critical function in a decentralized fashion. As the peers participating in unstructured networks interconnect randomly, they rely on flooding query messages to discover objects of interest and thus introduce remarkable network traffic. The resultant networks may not perform searches efficiently and effectively because existing overlay topology construction algorithms often create unstructured P2P networks without performance guarantees. Distributed algorithms are used for constructing unstructured P2P networks such that peers having common preferences cluster together. Based on the file sharing pattern exhibiting the power-law property and poses rigorous performance guarantees. Our proposal clearly outperforms in terms of 1. The hop count of routing a query message 2.The successful ratio of resolving a query 3.The number of messages required for resolving a query and 4. The message overhead for maintaining and formatting the overlay.**

Keywords: Unstructured overlay networks, Peer-to-peer system, flooding, Hop Count, TTL.

I.INTRODUCTION

A peer to-peer (P2P) network is a distributed system in which peers employ distributed resources to perform a critical function in a decentralized fashion. As the peers participating in unstructured networks interconnect randomly, they rely on flooding query messages to discover objects of interest. Peer-to-peer (P2P) overlay networks provide various services such as file sharing, information retrieval, media streaming, and telephony. P2P applications are popular because they primarily provide low entry barriers and self-scaling[14]. . A routing protocol shares this information first among immediate neighbors, and then throughout the network. The flexibility of the overlay topology and the decentralized control of the peer-to-peer network make it suitable for distributed applications[12].

II.CHALLENGES

Content distribution is a centralized one, where the content is distributed from the centralized server to all clients requesting the document. Scalability problem arises when multi requests arises at a single time. Servers need heavy processing power downloading takes hours when clients increases requires heavy storage in case of multimedia content.

III.PROPOSED WORK

This paper clearly proposes Peer-to-Peer (P2P) overlay networks have been widely deployed in the Internet, and they provide various services such as file sharing, information retrieval, media streaming, and telephony. In an unstructured P2P network, if a peer wants to find a desired piece of data in the network, the query has to be flooded through the network to find as many peers as possible that share the data [1]. Routing algorithms determine the specific choice of route. Each router has a priori knowledge only of networks attached to it directly. A routing protocol shares this information first among immediate neighbors, and then throughout the network. Most Peer-to-peer networks are based on distributed hash tables [9]. Based on the file sharing pattern exhibiting the power-law property[13], our proposal is unique in that it poses rigorous performance guarantees [5]. Overlay construction algorithm intending to exploit the similarity of peers for enhancing search performance[6],[7]. The overlay networks that exploit the similarity of participating peers can reduce the query traffic. A native random network in the P2P network to minimize the overlay path length between any two peers to reduce the query response time. P2P file sharing networks exhibits the power-law file sharing pattern. An overlay construction algorithm is used to enhance the efficiency and effectiveness of searches in unstructured P2P networks [3],[4].

IV.IMPLEMENTATION

The peers participating in networks connect to one another randomly, peers search objects in the networks through message flooding. To flood a message, an inquiry peer broadcasts the message to its neighbors (by the neighbors of peer x, we mean those peers that have end-to-end connections with y). The broadcast message is associated with a positive integer time-to-live (TTL) value. Upon receiving a message, the peer (say, y) decreases the TTL value associated with the message by 1 and then relays the message with the updated TTL value to its neighbors, except the one sending the message to y, if the TTL value remains positive. Aside from forwarding the message to the neighbors, y searches its local store to see if it can provide the objects requested by peer x. Conceptually, if y has the requested objects and is willing to supply them, then y either directly sends x the objects or returns the objects to the overlay path where the query

message traverses from x to y[8]. Overlay construction algorithms intending to exploit the similarity of peers for enhancing search performance [10], [11] .Distributed algorithms are used for constructing unstructured P2P networks, such that peers having common preferences cluster together.

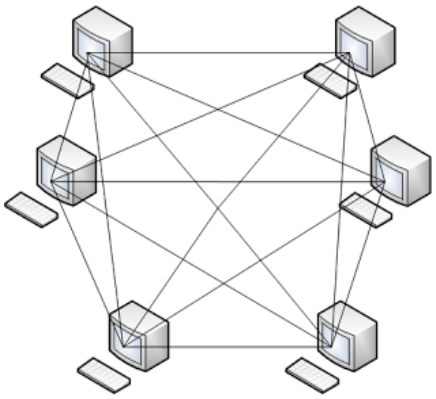

Fig.1 Architecture of peer-to-peer network

V.RESULTS

This project results can be shown by creating classes to peers(nodes) and database.

Each node act as both a transmitter and receiver .Each node tries to forward every message to everyone of its neighbor, except the source node.

Initially the Source node can upload the file and tries to forward to the other nodes which are connected with in that network.

Peers search the object in the network through message flooding. To flood a message an inquiry peer simultaneously sends the same message to the multiple recipients. Instead of forwarding the message to the neighbors first it searches in its local storage. If it can provide the requested object then it can either directly send the object or returns the objects to the overlay path where the message traverses. So that it can minimize the overlay path length between any two peers to reduce the query response time.

VI. CONCLUSION

The overlay networks that exploit the similarity of participating peers can considerably reduce the query traffic than the search protocol based on blind flooding. An unstructured P2P network with rigorous performance guarantees to enhance search efficiency and effectiveness. Moreover, the overlay formation algorithm presented in this paper is oblivious to the physical network topology, and this may introduce considerable wide-area network traffic It would be challenging to design an overlay formation algorithm aware of both the similarity of participating peers and the physical network topology.

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