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AN IMPRESSIVE FILE SHARING IN PASSION - CLUSTERED PEER-TO-PEER SYSTEM USING PROXIMITY- CONSCIOUSNESS

Shaik Mahammad Aslam*, Maddali M. V. M. Kumar
*PG Student, Department of MCA, St. Ann's College of Engineering & Technology, Andhra Pradesh, India.
Assistant Professor, Department of MCA, St. Ann's College of Engineering & Technology, Andhra Pradesh, India.

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ABSTRACT
Comprehensive show of peer-to-peer (P2P) file sharing lies on the ability of file query. To improve the capability of file query, clustering technique can be used. Clustering peers by their mutual passions and by their real proximity can expand file query performance. In this study we announce a clustered P2P file sharing system built on a structured P2P.The structured P2P system provide higher ability in file querying. In the clustering technique the actually-close nodes are formed into a cluster and further actually-close and mutual passion nodes are congregated into a sub-cluster built on a categorized topology. The clustering by their Proximity and passion information will be helpful in each file searching due to the presence of other nodes with the same passion within the Proximity of that node. The objective of this study is to examine how these methods works in the file sharing in Peer-to-Peer network and what are the impacts of these methods in file sharing after applying it.

INTRODUCTION
A significant amount of work has been done in the field of performance optimizing and ability of content sharing peer-to-peer (P2P) networks[3].There are two classes of P2P systems: unstructured and structured. Unstructured peer-to-peer networks do not carry out a particular structure on the overlay network by design, but rather are formed by nodes that arbitrarily form connections to each other, where file query technique is built on either flooding, where the query is spread to all neighbours of node, or random- walkers where the query is forwarded to neighbours which is picked randomly until file is found in the search. Structured P2P networks Distributed Hash Tables (DHTs) [5], by which a node answerable for a key can at all times be found even if the system is in a continuous state of change.

The whole performance of peer-to-peer (P2P) file sharing systems lies on impressive and dependable file querying. Several methods have been wished-for to improve file location efficiency. One another method is a super-peer network topology system. This super-peer network topology involves of super nodes with high connectivity and regular nodes with low connectivity. A super node connects with other super nodes and some regular nodes and they are of high capacity. The regular node connects with a super node. Another method to improve file location ability is through clustering of nodes in the network. File replication technology is also broadly used to diminish hot spots and expand file query efficiency.

Although numerous clustering methods have been suggested with different features, few methods can impressively enrich the file location efficiency. This study presents a technique of clustering nodes based on their passion and nodes Proximity. In this, actually close nodes in the network are formed into a cluster and further group's actually close and common-passion nodes into a sub-cluster [1]. Files with the same passions are placing together and these files are made accessible through the DHT Lookup () routing function. Thereby the search for a file in the network will be more impressive.

In this clustering method there is a proactive information collection of each and every node in the network and these information are disseminated among all the nodes in the network. This proactive information gathering will be helpful for the user in such a way that the user can know about the places of almost all files they want to search. A more impressive method of file replication is also assimilated with this system of node clustering that, a replication of each and every file that are habitually requesting are made and is disseminated among all the nodes.

The most relevant works related to this impressive file sharing by node clustering are:

- Super-peer topology
- Proximity-consciousness
- Passion-based clustering

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- Firmness maintenance

SUPER-PEER TOPOLOGY

In structured P2P systems, firmness maintenance and load balancing can be achieved through the super peer topology, which exploit the heterogeneity of nodes in a peer-to-peer (P2P) network by allocating extra tasks to high capacity nodes called super-peers. Weak peers submit queries to their super-peers and obtain results from them. There may be several issues are associated with locating a file in the super-peer network including client peer-super peer relation, load balancing, file location etc. Such issues can be solved by the self-organized super peer technology, in which the peer relations are automatically discovered, maintained and exploited without user intervention.

In this self-organizing super peer technology [2] there is an impressive caching technique that makes the file querying more unfailing i.e. a two level caching. The Fig.1 shows the structure of the self-organizing super peer network. The super peer possess a file cache that containing pointers to files, which are requested by the peers and the client peer possess the super peer cache containing the super peers that offers the best performance [3].The super peer cache contains the identities of the super peer i.e., the IP address and port number. The cache and the file cache are allotted precedence and based on this priority only the searches are proceeding in the network. The priority of super peer in the super peer cache is increased by one after each positive response based on the LFU policy and the priority increment in the file cache is through the mixed LFU and LRU policy.

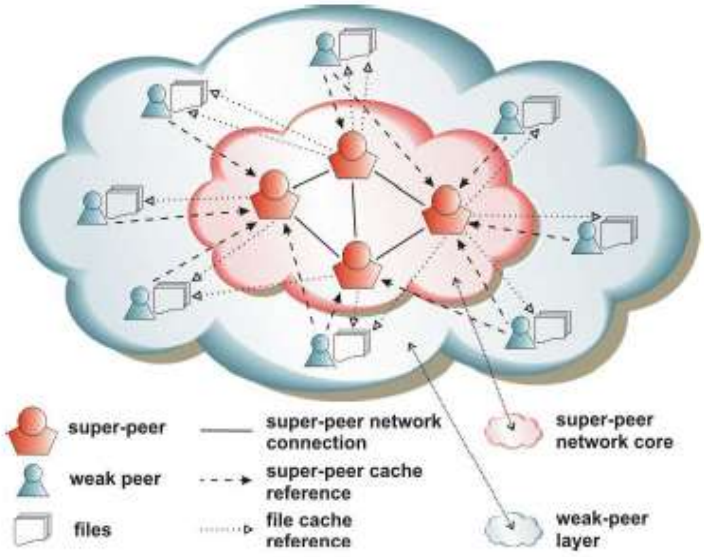

Fig. 1: Structure of self-organizing super peer network

PROXIMITY-CONSCIOUSNESS

Proximity Consciousness is the first step in the clustering technique in the P2P file sharing system. The actually close nodes are gathered together and within this actually close nodes only further classifications of the nodes can be done as shown in Fig.2. Node closeness can be signified by a method called Landmark method [1].The main intuition in this method is that the actually close nodes probable to have similar distance to the certain number of landmarks that are selected. With an assumption that m landmarks are arbitrarily scattered in the internet and measures the distance of each nodes to these landmarks. Thus uses the vectors of distances $<d_1, d_2 \ldots\ldots d_m>$ as Cartesian coordinates of the space. The nodes with the similar vector are considered as actually close nodes and are gathered together to form cluster. In the Fig.2, the outer circle represents the cluster within a particular vicinity which is formed by Proximity aware and within this cluster the nodes are formed to sub-cluster.

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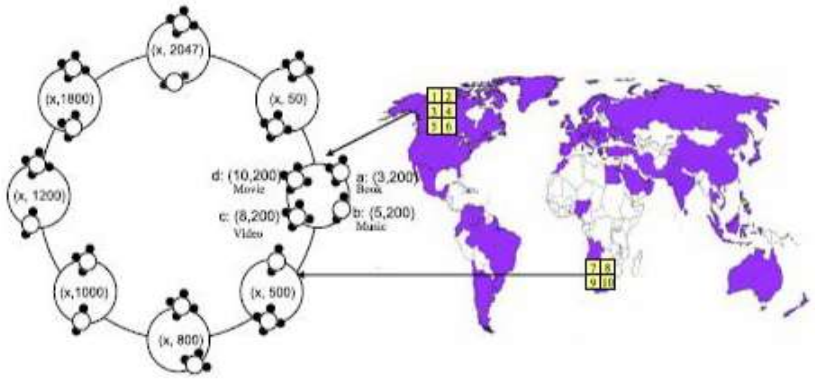

Fig. 2: Structure of Node Clustering

PASSION BASED CLUSTERING

Within the actually close nodes, further classification of nodes are done built on the passion each node is sharing. Nodes with similar passion are grouped together to form clusters [1] [8].The clustering technique starts with the clustering of the actually close nodes and continues by clustering the nodes with their passion i.e., nodes with same passion. The Fig. 3 given below shows the clustering of peers in the peer-to-peer network.

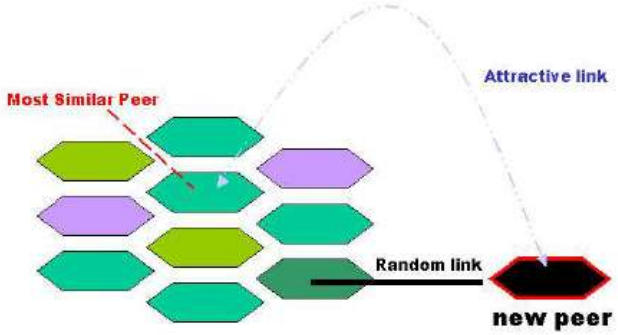

Fig. 3: Peer Clustering

For the passion identification a method of signature calculation is used. Each peer is having a pool of data and these data collection is prepossessed and calculate a signature value SIG to characterize their data properties. Thus each signature value represents the passion associated with each node. Then in the clustering method the signatures values are analyzed and the nodes with similar signature values are formed to a cluster.

FIRMNESS MAINTENANCE

Firmness maintenance mechanism is necessary for the peer-to- peer (P2P) system due to their frequent data updates.

For each replica group an intersection network is established with two layers [4] [9] as shown in Fig.4. The upper layer is Distributed Hash Table (DHT) built and consists of powerful and steady replica nodes called Chord Replica Nodes (CRN).The lower or the second layer involves of the Ordinary Replica Nodes (ORN). Lower layer is attached to actually close upper layer. When a modernized replica emerges on a node the upper layer initialize a tree called Update Message Propagate Tree (UMPT) by partitioning DHT identifier space. On specific update, the update massage passes over the tree and every replica nodes receive the update message. The CRN are the stable nodes and the ORN are attached to actually close CRN. These two constitute the cluster and the firmness is maintained in each updates in the cluster.

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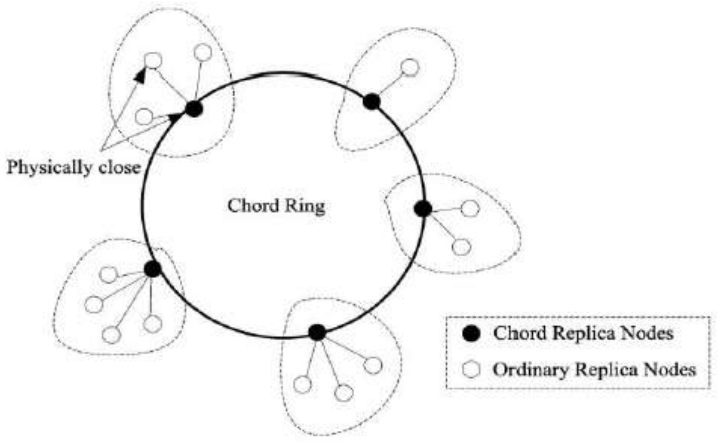

Fig. 3: Hierarchical structure of nodes with CRNs and ORNs

FILE QUERYING

The server maintains the index of all files in its sub-cluster. Every time a server receives a request, the server performs the search in two stages: the intra-cluster searching and the inter-cluster searching. First the server performs the intra- cluster search. It consists of intra-sub-cluster searching and inter-sub-cluster searching [1].The server looks for the key of the invited file. If the key is found, the node sends the location of the file to the requester. If it is not found, the server performs the inter-cluster searching. In this search the DHT Lookup is done among the nodes which enhance the capability of file searching.

Different files are classified into different sub-clusters based on their keys. For example music can be classified as pop, rock, jazz, classic, and melody etc., each with its own key. If there is a requested file in its sub-cluster, the requester receives the location of the file from the server. Otherwise, the request is routed along its own cluster. This clustered P2P system relies on file replication to further improve its file location efficiency. In this, nodes inside a large sub-passion group first search files among their neighbours in a distributed manner. The file requester forwards its request to the sub-interest super node as a complementary method if the search fails. When a new query appears, the peer checked it against a local cache for duplication. If it is found to be duplication, that is, the same message has passed through before, the message will not be propagated. Another one mechanism is the Time- To-Live value to indicate how long a message can survive. Similar to IP packets, every message are associated with a TTL. The TTL value is reduced by one at each time the message passes through a peer. The message will be dropped and no longer forwarded if the TTL is zero.

SIMILARITY

In the present unstructured P2P system, there is no responsibility assignment for each nodes. The future structured P2P system has definite rules for node join and leave. At present query routing is either flooding or random walkers, in which there is no guarantee for data location, because query is simply flooding or arbitrarily propagate to any of the neighbours. In the proposed structured P2P system, file querying is impressive due to the Proximity and passion clustered file sharing. Due to the strictly controlled topology, the data placement and lookup algorithms are exactly so defined built on a DHT data structure and reliable hashing function. The DHT Lookup method can impressively enhance the file searching efficiency. Proximity and passion based clustering may help in the impressive location of the data in the network. The smart file replication method replicates frequently requested file by actually close nodes to enrich the file lookup efficiency. The self-organizing property of the super peer can solve the issues related to the client relation with the super peer, issues associated with the file location by the super peer, load balancing in the super peer topology, thereby enhancing the file sharing efficiency.

CONCLUSION

To enrich the capability of file query, clustering technique can be used. Clustering peers by their common passions and by their real Proximity can expand file query performance. This study, we bring together a clustered file sharing System built on a structured P2P network, in which actually-close nodes are formed into a cluster and further actually-close and common-passion nodes are gathered into a sub-cluster built on a hierarchical topology. This clustered system uses a smart file replication method to replicate a files that are frequently requesting by

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actually close nodes near their real location to enrich the file lookup ability and thereby enrich the overall recital of file sharing in the P2P system.

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