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File Sharing System and Node Storage in P2P Access Availability for Social Networks

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Abstract — The MANET is a wide network. Different host nodes are present here. They are moving like routers and communicate with each other for transmission of data..Current peer-to-peer (P2P) file sharing methods in mobile ad hoc networks (MANETs) can be classified into three groups: flooding-based, local broadcasting based advertisement and contact-based. The first two techniques can simply be high overhead and low scalability. They are mainly developed for associated MANETs, in which end-to-end connectedness among nodes is ensured. The third group of method, the social contact-based method adapt to the opportunistic nature of disconnected MANETs. A P2P content based file sharing system, namely Social network based P2P content file sharing system in disconnected Mobile adhoc Networks (SPOON) is used to derive a node's interests from its files for content-based file searching using interest extraction algorithm. For competent file searching, SPOON gathered common-interest nodes that frequently meet with each other as communities. It takes the benefit of node mobility by designating constant nodes, which have the most frequent contact, with neighborhood members, as community coordinators for searching within the community and hugely mobile nodes tat visit other communities frequently as community ambassadors for search in other community. The Work proposes Gossiping algorithm based on pull and push mechanism, so that it gives time slot to each individual node to achieve good relation between ambassadors and coordinators and to avoid transmission overhead and also get efficient file sharing.

Keywords —P2P, Encrypted, file sharing, file availability, MANET.

I. INTRODUCTION

There are two kinds of MANETs, normal MANETs and disconnected MANETs. First has a relatively dense node distribution in a local area while the latter has sparsely distributed nodes that opportunistically meet each other. The local P2P model provides three advantages. Firstly, it enables file sharing when no base stations are available (e.g., rural area). Secondly, with the P2P architecture, the bottleneck on overloaded servers in current client-server based file sharing systems can be avoided. Thirdly, it exploits the otherwise wasted peer to peer communication opportunities among mobile nodes. Because of which, nodes can freely and unremarkably access and share files in the distributed MANET environment, which can possibly support some interesting applications. However the distinctive properties of MANETs, including node mobility, limited communication range and resource, have rendered many difficulties in realizing such a P2P file sharing system. File replication is an effective way to enhance file availability and reduce file querying delay. It creates replicas for a file to improve its probability of being encountered by requests. Unfortunately, it is impractical and inefficient to enable every node to hold the replicas of all files in the system considering limited node resources. Also, file querying delay is always a main concern in a file sharing system. Users often desire to receive their requested files quickly no matter whether the files are popular or unpopular. In a mobile ad hoc network (MANET), mobile hosts can communicate directly with one another using direct pair wireless links. Because it requires no fixed infrastructure and most of the time no explicit administration a MANET can extremely useful to support communication in challenging situations, such as in rural, remote , or disaster-struck areas. P2P computing refers to technology that enables two or more peers to collaborate spontaneously in a network of equals (peers) by using appropriate information and communication systems without the necessity for central coordination. P2P networks are overlay networks typically operated on infrastructure (wired) networks, such as the Internet. However, the P2P overlay network is dynamic, where peers come and go (i.e., leave and join the group) for sharing files and

data through direct exchange. Such peer-to-peer communication paradigm will be very important in wireless multi-hop networks as centralized servers might not be available or located in the Internet. Therefore, P2P will be an interesting alternative for decentralizing services or making its own local resources available in the multi-hop network to serve local user communities. P2P overlay networks in the Internet and mobile ad-hoc networks share many key characteristics such as self-organization and decentralization due to the common nature of their distributed components.

II. LITERATURE SURVEY

[1] T. Hara and S.K. Madria developed the replica allocation methods, there is no central server that controls the apportionment of replicas, but mobile hosts autonomously determine the allocation in a distributed manner. Some of their proposed replica allocation methods need a mobile host as the coordinator which is chosen dynamically. They proposed three allocation schemes which divide in emphasis that is set on access frequency and network topology. The allocation schemes are named as SAF (Static Access Frequency), DAFN (Dynamic Access Frequency and Neighborhood), DCG (Dynamic Connectivity based Grouping). In the SAF technique, the aim is to allocate replica in the mobile host in descending order of access frequency. The mobile hosts do not need to exchange information with each other for replica allocation. No duplication removal takes place as they are not aware of existence of replica with their neighbour.

[2] V. Gianuzzi The considered environment is an ad hoc mobile network, where each mobile node can cooperating with each other and construct the common space, by sharing of its some memory space with the other nodes. The links uses for communication between nodes are maintained as these are found in the same of radio communication range, where the links are bidirectional. A mobiles hosts supports to create replicas and maintain them local memory. It can produce new records (original data and share them with the other users. It can also form locally a data access tracks ("PathData") which allow a quicker access for distant data. They proposed decentralized and distributed algorithm of dynamic data replication for MANETs. For that primary and dynamic replication algorithms are developed.

[3] L. Yin and G. Cao designed and evaluated cooperative caching methods to proficiently support data access in ad hoc networks. Specifically, they recommended three systems: CachePath, HybridCache and CacheData. In CacheData, middle nodes cache the data to serve future requirements instead of fetching data from the data center. They design and evaluate cooperative caching techniques to efficiently support data access in ad hoc networks. First proposed two schemes: CacheData which caches the data, and CachePath which caches the data path. Later analyzing the performance of those two schemes, propose a hybrid approach (HybridCache) which can further increase the outcome by considering benefit of CacheData and CachePath while avoiding their flaws. Simulation outcomes indicate the recommended schemes can expressively reduce the query delay and message complexity when compared to other caching schemes.

[4] J. Zheng, J. Su, K. Yang, and Y. Wang proposed the ADAPTIVE REPLICA ALLOCATION ALGORITHMS for fixed networks. In the fixed networks, the optimal replica allocation scheme of an object depends on the read-write pattern, but in the MANET environment it rest on not only on the read-write pattern but also on the nodes motion. In the ARAM (the Adaptive Replica Allocation Algorithm In MANET) algorithm, each replica node collects access requests from its neighbors and makes choices locally to inform the replica allocation scheme. Thus the ARAM algorithm adapts to the dynamic MANET environment. Furthermore, it can dynamically adjust the replica allocation scheme towards a local (rather than global) optimum. In the MANET environment, algorithm is executed at each replica node periodically and independently. The time duration of the period which is parameter t is a uniform system parameter. It totally depends on the dynamicity the network topology. The period tends to be shorter for a network with more common topological modifications and read-write pattern changes.

III. PROPOSED SYSTEM

The file which is stored by the server or file owner can splitted and stored in encrypted format. The node has the list of all files which are stored in server, that can update automatically and node which wants that file can download that file and access that file. File

sharing in peer to peer mobile ad hoc network is made efficient and reduced delay with help increased cache size. In file sharing, it looks for two operation,

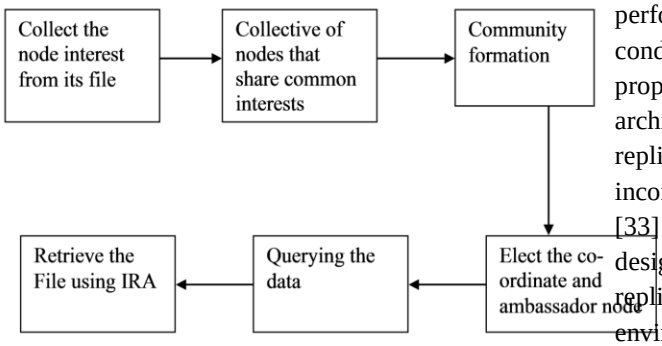
• Cache miss
• Cache penalty

A cache miss refers to a failed attempt to read or write a piece of data in the cache, which results main memory access takes longer latency. Cache misses can be of three types: data read miss, instruction read miss and data write miss. Design and implementation of secured cooperative cache in wireless P2P networks are presented. Through real implementations, important design issues are identified and proposed an asymmetric approach in order to reduce the overhead of copying data between the user space and the kernel space, and also to reduce the data processing delay. The proposed algorithm well considers the caching overhead and adapts the cache node selection strategy to maximize the caching benefit on different MAC layers. Results show that the asymmetric approach outperforms the symmetric approach in traditional 802.11- based ad hoc networks due to removal of most of the processing overhead.

1) The system enhanced meaning of replication by using splitting the replica and stored them in peers on server.

2) System provides the consistency between the files while accessing them by client.

3) The algorithm can stored replica effectively on the peers in encrypted format, which cannot accessible proper file by any unsafe. The proposed work can provide security to files.



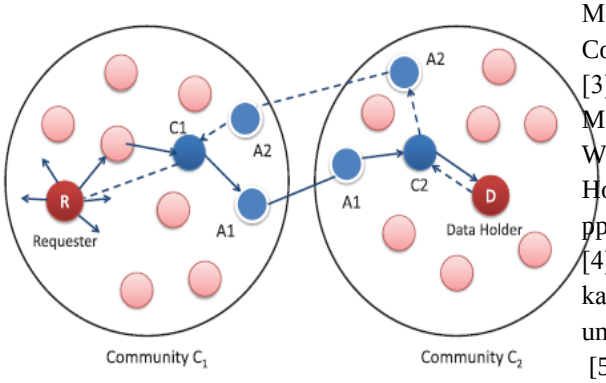
IV.RELATED WORK

This section discusses the existing data replication approaches to improve data availability in mobile environment.

A. Data Replication in MANETs :A network, where content exchange or delivery is done by autonomous peers, it becomes challenging to construct efficient distributed algorithms for content replication. This is due to the autonomy of the peers and their freedom to decide which objects they want to replicate. Additionally, churn (i.e., peers leaving the network autonomously) poses significant challenges to data availability. The proposals in [30], [31] discuss replication in MANETs. E-DCG+ [30] creates groups of mobile peers (MPs) that are bi connected components in a MANET, and shares replicas in larger groups of MPs to provide high stability. An RWR (read write ratio) value in the group of each data item is calculated as a summation of RWR of those data items at each MP in that group. In the order of the RWR values of the group, replicas of items are allocated until memory space of all MPs in the group becomes full. Each replica is allocated at an MP, whose RWR value to the item is the highest among MPs that have free memory space to create it. The work in [31] aims at classifying different replica consistency levels in a MANET based on application requirements, and proposes protocols to realize them. In this work, each replica is valid till its original owner updates it. Hence, applying strict consistency updates may potentially degrade the system performance, given the inherently dynamic nature of the environment. Thus, the work assumes that all applications do not necessarily require such strict consistency, and it defines consistency based on group-level information consistency. For example, in case of a disaster management group, the information must be consistent within the group, but not strictly consistent w.r.t. to the other groups. Here, the local consistency maintenance within a given group is performed via quorums and it is based on local conditions such as location and time. Notably, the proposals in [30], [31] do not consider an M-P2P architecture and data rarity issues. Incidentally, P2P replication suitable for mobile environments has been incorporated in systems such as ROAM [32], Clique [33] and Rumor [34]. ROAM, which is a system designed based on the Ward model [35], satisfies a replication solution redesigned specifically for mobile environments. ROAM further considers replication factors such as local replication, appliance compatibility for replication and consistent updates throughout the network.

B. Data Replication in M-P2P Networks: The work in [41] presented the economic model for efficient replica management in M-P2P networks, in which mobile peer has been incentivized to host replica. Here, mobile peers choose which data should be replicated

based on its importance. In this manner, mobile peers earn revenues from their hosted queried data items. Hence, it encourages peer participation to improve data availability and discourages free riding. Progressively, [43] proposed ConQuer: a groupbased replication method with incentivation in M-P2P networks. This work assume the super-peer architecture for M-P2P network, in which a broker i.e., super-peer has been incentivized for serving constrained query processing by query-issuing peer. Moreover, collaborative peer groups further improves data availability and revenues by mutually allocating and de-allocating data items based on royalty-based model. In a similar vein, a collaborative replication approach for M-P2P networks is also proposed by [40]. The proposal in [44] discussed an economic model LEASE, in which data-providers lease data items to the free-riders in lieu of a lease payment. Hence, it provides free-riders the opportunity to earn revenue by hosting data, thereby incentivizing them towards data hosting. [45] also discussed incentive-based services for a dynamic data management in M-P2P networks.



CONCLUSION

In this paper, we investigated the problem of how to allocate limited resources for file replication for the purpose of global optimal file searching efficiency in MANETs. Unlike previous protocols that only consider storage as resources, we also consider file holder's ability to meet nodes as available resources since it also affects the availability of files on the node. We first theoretically analyzed the influence of replica distribution on the average querying delay under constrained available resources with two mobility models, and then derived an optimal replication rule that can allocate resources to file replicas with minimal average querying delay. Finally, we designed the priority competition and split replication protocol (PCS) that realizes the optimal replication rule in a fully distributed manner. Extensive experiments on both GENI testbed, NS-2, and event-driven simulator with real traces and synthesized mobility confirm both the correctness of our theoretical analysis and the effectiveness of PCS in MANETs. In this study, we focus on a static set of files in the network. In our future work, we will theoretically analyze a more complex environment including file dynamics (file addition and deletion, file timeout) and dynamic node querying pattern.

Our future work will concentrate on efficient and secured file sharing in peer to peer mobile ad hoc network by implementing the proposed technique improved Euclidean algorithm.

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