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OPTIMIZED PEER-TO-PEER NETWORKS FOR EFFICIENT FILE SHARING

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ABSTRACT

This paper is to study the scale (size of peers) effect on the operations of peer-to-peer file sharing networks and propose the optimal sizing and grouping decisions. The objectives are to reduce the congestion in the network, to reduce the delay for downloading file, to reduce the duplication of files. This study reveals about the performance and efficiency of peer- to-peer files sharing networks. In the existing system, when each peer node wants to download a file, it broadcasts the request to all neighboring nodes. This leads to congestion in network, delay in download and duplication of file. In the proposed system, the nearer peer nodes are grouped together and a node, called super node, will be having the information of nodes in the group. This technique reduces the delay for downloading file. Since request is sent to only super nodes.

Keywords: peer-topeer , scalable ,efficiency,optimal networks

I. INTRODUCTION

Among the distributed applications, document sharing is the most famous. Distributed advancements have numerous practical qualities that make them extremely appealing. To start with, they depend on peer hubs, yet not the focal servers, to convey information and accordingly are more expandable. Second, on a shared system, it is feasible for any hub to discover another hub with the normal substance that is "close," so transmission postponement might be brought down also. Notwithstanding, there are restrictions in the shared systems, because of the same decentralized engineering. To start with, each associate hub can change its substance; it might be hard to discover wanted substance. Second, shared clients acquire substance from each other; the accessibility of these substances totally relies upon the dynamic clients. Along these lines, content unwavering quality might be an issue.

From multiple points of view, the measure of a distributed system can affect a large number of these elements. A substantial system could ease the substance unwavering quality issue on the grounds that the likelihood of fulfilling asked for content ends up higher if more associate hubs take part in record sharing exercises. It likewise prompts content limitation. Distributed advances use total transfer speed from edge hubs for content transmission to evade clog at devoted servers. Consequently, the compelling data transfer capacity is versatile as for the quantity of dynamic clients. In an expansive scale distributed system, the quantity of questions may prompt system activity clog (one inquiry might be sent various circumstances previously a reasonable administration hub is found), because of restricted limit and system data transmission. Subsequently, deciding the "right" system scale is critical for distributed activities.

In the existing framework, when each associate hub needs to download a document, it communicates the demand to every single neighboring hub. This prompts clog in arrange. The companion hub won't know about closest associate which will have the asked for document. Thus it might download document from a hub from it. This prompts delay in download. If the associate hub gets an answer from in excess of one hub for the asking for record, at that point there will be duplication of document.

II. RELATED STUDIES

There are various papers on the specialized parts of distributed systems. These papers center for the most part around creating productive based hunt instrument to enhance the adequacy of super hubs.

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On the theme of systems scale, Atip Asvanund[1], a doctoral understudy in Management of Information Systems at The Heinz School of Public Policy and Management, Carnegie Mellon University, experimentally investigate organize externality in distributed music sharing systems and recommend that bigger systems are not generally better. Beverly Yang. Hector Garcia-Molina, Computer Science Department, Stanford University, and Stanford, CA 94305, USA, outline different substance sharing distributed hunt designs and analyze the most extreme number of clients that can be served on them. Head servant explores the impact of enrollment size and correspondence action on supportability of online social structure. The aftereffects of this investigation propose that organized correspondence advances give advantages to adjust the restricting effects from enrollment measure. These examinations give profitable observational confirmations on scale impact; however they don't present basic operational measurements for assessing system execution and for picking up bits of knowledge on ideal scale choices.

Concerning gathering of shared systems, Asvanund [2] et al. propose a plan for club enrollment administration in light of substance likeness and physical area. Ledlie [3], et al. build up a progressively assembled framework that can self-compose to defeat instability. Use credit based grouping models to reproduce how self-arranging groups are framed. Their outcomes show that group structures in an arbitrary system can be effectively found in light of property and connection data of companions.

As of late, a couple of specialists have begun to investigate the social and sparing parts of distributed free riding wonder and motivating force system outline. For instance, Golle, Krishnan[4], build a formal amusement theoretic model to create and examine a few installment systems to energize record trade exercises. Proposes a conceivable model to investigate the presence of free-riding practices in distributed record sharing systems. Nonetheless, the structure, accepting a consistent sharing expense without any inquiry forward interconnection, does not expressly examine the effects of framework parameters on organize structures. While a large portion of investigates on shared systems in mechanical spaces accept that clients take after endorsed conventions without deviation.

B S Butler and Parkes[5], advocate a distributed model in which clients are discerning and self-intrigued. They build up another working instrument that enables clients to act reasonably while as yet accomplishing great general framework results. Utilizing financial motivator model, Jackson and Wolinsky[6], analyze whether productive (esteem augmenting) interpersonal organizations will shape when self-intrigued people can frame or separate connections.

Furthermore, numerous notoriety and trust frameworks are proposed to give motivating forces to participation without including an evaluating plan. For instance, Ranganathan[7], propose a multiperson detainee's problem model to research client practices and create valuing and notoriety based instruments to enhance framework execution.

Wang and Vassileva[8] propose a Bayesian system based model to construct notoriety that depends on suggestion in shared system. introduce a notoriety based shared confirmation framework, utilizing eigenvector approach, to permit just those hubs that have made sensible administration commitments to get administrations from others. But however to the best of our insight, little consideration has been given to the operational parts of shared systems up until this point.

Christin and Chuang [9], propose measurements for evaluating inertness, sharing, steering, and keeping up cost with a specific end goal to examine the social ideal structure of distributed systems. In this paper, we center on scale issues, and create explanatory model to inspect how organize size and framework parameters influence exhibitions of shared systems and ideal estimating and gathering choices.

III. PROPOSED SYSTEM

In the proposed framework, the closer associate hubs are gathered together and a hub called as super hub will have the data of hubs in the gathering. At the point when an associate hub demands for document, the demand is given to super hub, the super hub checks the record in nearby gathering. In the event that it is accessible, the names of hubs and deferral will be given to asking for hub.

On the off chance that the document isn't found in nearby rundown, the super hub of this gathering offers demand to super hub of different gatherings and recovers the answer and sends it to asking for hub. The asking for hub can choose a hub which has bring down postpone which implies that is the closest hub, and download the document from it. This procedure decreases the deferral for downloading record. Since ask for is sent to just super hubs, clog in system can be decreased.

IV. ARCHITECTURAL DESIGN

We consider a substance sharing distributed system in which the members are ordered as standard associate hubs and super hubs. A super hub and various standard companion hubs frame a group. Just the super hub keeps up avant-garde data on all assets accessible in the group. Each substance asks for (question) is created at one of the companion hubs, and first prepared at the neighborhood super hub on a first-come, first-served premise. For each inquiry it forms, the super hub prescribes an arrangement hub that has the coveted document and the most minimal expected download delay.

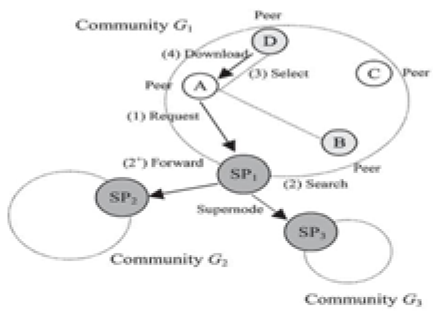

Figure 1: Operational steps of peer-to-peer network

Figure.1 portrays the activities of a super hub based distributed net-work., an associate hub An in group G1 requiring a record that it doesn't possess sends a substance demand to the nearby group focus. The super hub of group G1, SP1, looks through its catalog database and reacts with a rundown of hubs that offer the asked for content (e.g., hubs B and D), alongside the download data (rough deferral). It additionally prescribes the hub with the base download delay as the arrangement (hub D). From that point forward, the not fulfilled (i.e., no hub shares the asked for content in the nearby group G1), asking for hub downloads the substance straightforwardly from arrangement hub D. In the event that the demand is inquiry will be sent to other interconnected super hubs, SP2 and SP3 and, in view of different peering approaches, (for example, parallel or successive forward). In the paper, we expect that unsatisfied solicitations will be communicated (sent in parallel) to all interconnected super hubs.

- ***Flowchart***

Figure 2 and 3 depicts flow chart of peer nodes and super nodes respectively.

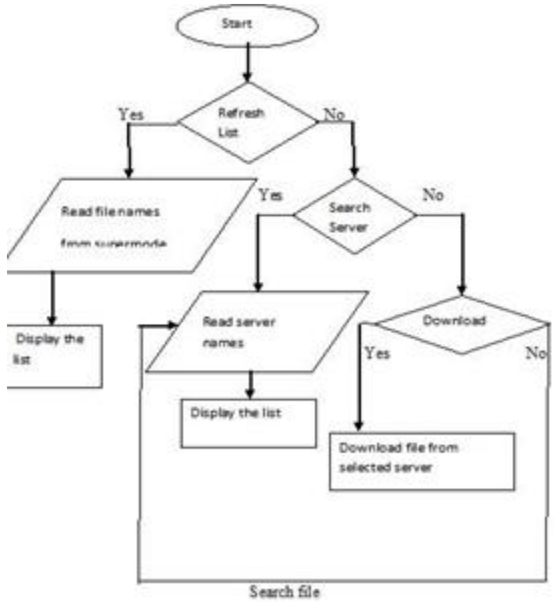

Figure 2:Flowchart of peer node

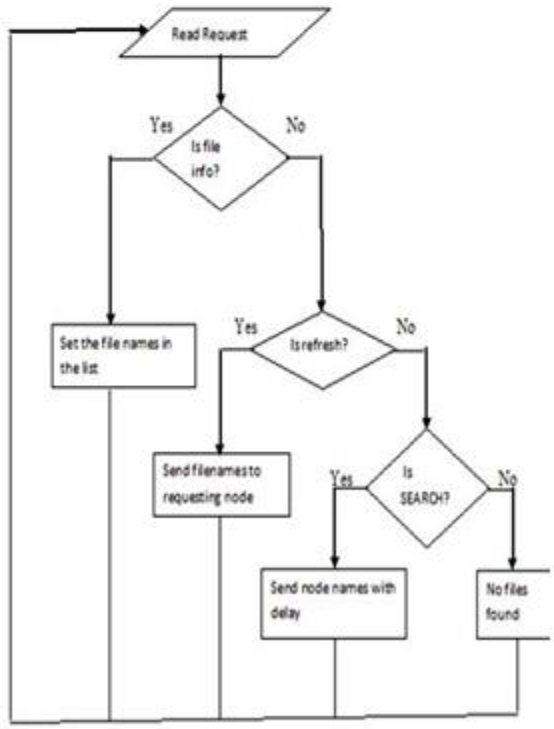

Figure 3: Flowchart of super node

V. IMPLEMENTAION

Figure 4.The architecture diagram depicts three groups in our paper. Each group consists of four nodes and a super node. Each node in the group is a peer node. It behaves as both server and client. Each peer node consists of a set of files which can be downloaded by any other peer node. Whenever the node wants to download a file, it behaves as

client. When a request for file download is received from other peer node, it behaves as server. The undertaking is actualized in view of the above design. The engineering outline portrays three gatherings in our task. Each gathering comprises of four hubs and a super hub. Every hub in the gathering is a companion hub. It acts as both sender and customer. Each companion hub comprises of an arrangement of records which can be downloaded by some other associate hub. At whatever point the hub needs to download a record, it acts as customer. At the point when a demand for document download is gotten from other associate hub, it carries on as server.

A super hub comprises of the rundown of every accessible document in its nearby gathering. Each time a hub downloads a document, the rundown in super hub will be refreshed. At the point when an associate hub demands for a record, the demand is given to the super hub of the gathering to which the asking for hub has a place. The super hub checks in its neighborhood list for the asking for document. On the off chance that any of the hubs contains the asking for record, the hub name and its postponement is sent to the asking for hub. In the event that in excess of one hub contains same document, the asking for hub can choose the hub with bring down postponement to download the record.

On the off chance that the asked for document isn't found in nearby gathering, the super hub sends this demand to the super hubs of different gatherings and sits tight for reaction. At the point when the reaction is given back, the super hub sends it to asking for hub. The asking for hub can choose any of the hubs recorded in it to download the document.

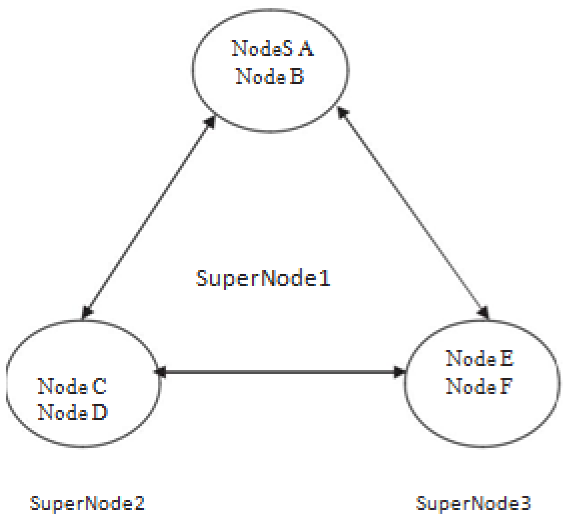

Figure 4: Architecture diagram

VI. RESULTS AND DISCUSSION

Figure 5 depicts super node before connecting, there are 4 nodes A, B, C, and D are grouped to form a super node group1.

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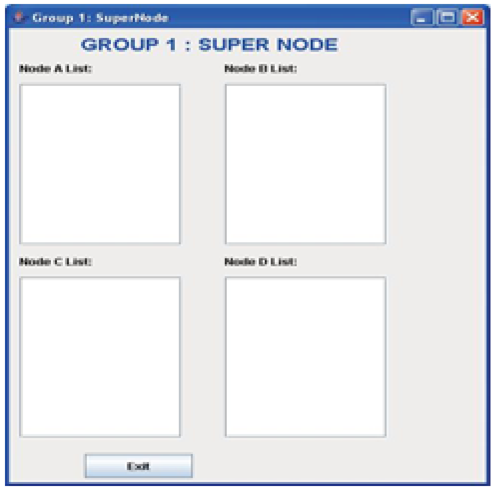

Figure 5: super node before connecting

Figure 6 depicts peer node before connecting, Group1 node A which is having option select node to download file and select file for download. To search the file first need to connect to server

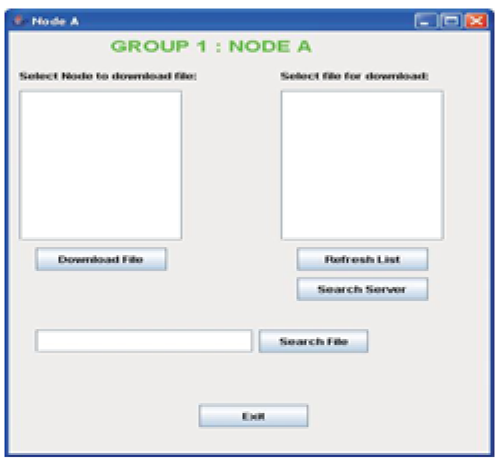

Figure 6 depicts peer node before connecting

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Figure 7: peer node A after search

Figure 7 depicts node A after search, select a node to download files, and select file for downloading files. And Figure8 also depicts super nodes after connecting all the nodes A, B, C and D are having the list of files. Figure 9 depicts peer node A during the download process, selected files will be downloading.

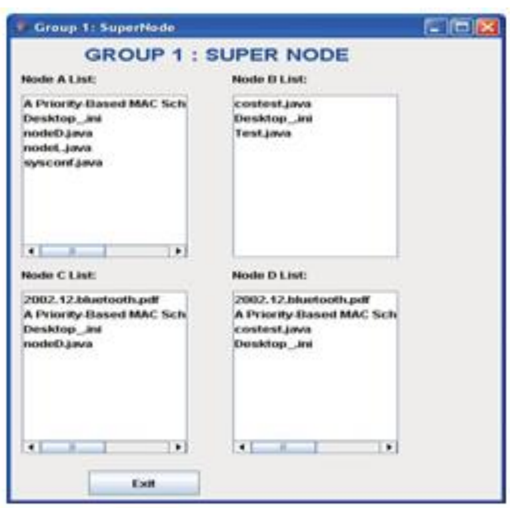

Figure 8: super node after connecting

Figure 9: peer node A during download

Figure 10 depicts Peer node A with duplicate messages, if The files are already exists in the same directory, it shows That file is already available in the directory with dialog message

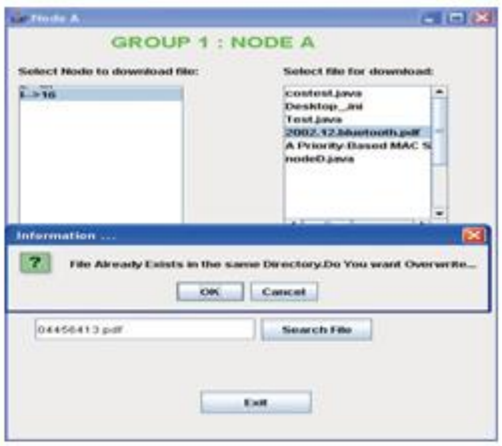

Figure 10: peer node A with duplicate message

VII. CONCLUSION AND FUTURE WORK

By grouping the nodes into a group and using super nodes, the delay for file download can be reduced. This technique also reduces the congestion problem since the number of requests is also reduces, as we send requests from super node to a super node. There should be some backup mechanism such that when a super node fails to respond, the peer nodes can send request to the other node. This will be our future enhancement. In the existing system, when each peer node wants to download a file, it broadcasts the request to all neighboring nodes. This leads to congestion in network, delay in download and duplication of file. In the proposed system, the nearer peer nodes are grouped together and a node, called super node, will be having the information of nodes in the group. This technique reduces the delay for downloading file. Since request is sent to only super nodes.

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