2. Methodology:

In a peer to peer network, searching is the main issue and resource discovery is very challenging. Random walk and pure flooding have been widely used as a strategy for searching in peer-to-peer networks. Efficient searching for information is an important goal in peer-to-peer (P2P) networks. Searching in an unstructured P2P network is definitely challenging task. In this paper we proposed hybrid protocol named max-degree biased walk which reduce network traffic overhead, reduce searching time and cost, increase high success rate, high response rate and significant message reduction.

2.1 Problem findings and Motivation:

The vital idea of flooding is to spread a query diagonally the all network by forwarding queries to all the neighboring peers. The easy form of flooding is called pure flooding.

2.2 Max-Degree Biased Walk

In max-degree biased walk, every walker selects a neighbor node with great probability if the

Neighbor has a high degree. i.e

$$P(p1 \rightarrow p) \propto \frac{dp}{\sum_{pi \in N(p)} dpi}$$

Figure: 1

Where N(p) is the set of p's neighbor peers and dp is the degree of peer p. The information of a neighbor's degree is periodically swapping throughout the whole network. Accordingly, the query path would be different as the network is developing.

Figure 1 is an example of max-degree biased walk. Assume there are still two walkers. The forwarding probabilities are recorded as the follows. (p0 →p2)= P(p0→p3)=1/2. Therefore, it is greatly possible they select peer 2 and peer 3 correspondingly. P(p2→p3)=4/7,P(p2→p5)=1/7,P(p2→p6)=2/7. It is greatly possible the walker selects peer 3. Since peer 3 has already received the same query, the walker ends. P(p3→p2)=4/9,P(p3→p4)=3/9=1/3, P(p3→p1)=2/9. Assume this time the walker selects peer 4 instead of peer 2, the most feasible one. Then, P(p4→p1)=P(p4→p6)=2/4=1/2. If it selects peer 1, the walker is going to end after the forth step. Since peer 5 does not receive any query message, it is also impossible for peer 0 to get any query hits in this case.

There is, however, a lesser opportunity that peer 5 can acquire the query message if peer 2 selects peer 5 instead of peer 4. In the example, lesser coverage and missing hits also occurs as they are both affected by the idea of selectively selecting neighbors to forward queries. Alike to uniformly random walk, they are slight issues.

2.3 The Proposed Method

Our proposed method is " Hybrid Method ", where every walker selects a neighbour node based of high degree of connectivity. We consider a TTL value, firstly it select two neighbour based on higher degree of connectivity among all the neighbours and decrease the TTL value. After that its proceed pure flooding. It connection region is high degree of connectivity to find the desired resources is easy to get.

2.4 Benefits our proposed method

In " Hybrid Method " at first choose two max degree nodes successively and decrease TTL value by 2.After this Random walk proceed until TTL value 0. In "Hybrid Method " covered a large area of modes. Since, it covered a big amount of region. So the higher probability to find a resource.

2.5 Steps of Proposed Method

Our proposed method is Hybrid Method. A Hybrid Method is considered Pure Flooding and Random Method respectively limitation and advantage. How to work Hybrid Method are shown below.

Step 1: From a query issuer choose a neighbor node, based on higher degree and decrease the TTL value by 1.
Step 2: Node 2 search its higher degree neighbors decreasing TTL value by 1.
Step 3: After decreasing the TTL value by 2, then proceed the flooding approach of node 4, node 8, node 10 and node 12
Step 4: Node 8 flood the message of nodes 7 and 13, decrease TTL value by 1.
Step 5: Node 12 flood the message of nodes 13, 16 and 11, decrease TTL value by 1.
Step 6: 10 flood the message of nodes 5 and 11, decrease TTL value by 1.
Step 7: Node 7 flood the message of nodes 3 and 14, decrease TTL value by 1.
Step 8: Node 13 flood the message of nodes 14and 15, decrease TTL value by 1.
Step 9: Node 16 flood the message of nodes 17, decrease TTL value by 1.
Step 10: Node 11 flood the message of nodes 17, decrease TTL value by 1.
Step 11: Node 5 flood the message of nodes 6, decrease TTL value by 1.

A Complete graph of Hybrid Approach.

Assume n number of Node, d number of Degree, TTL value = 5.

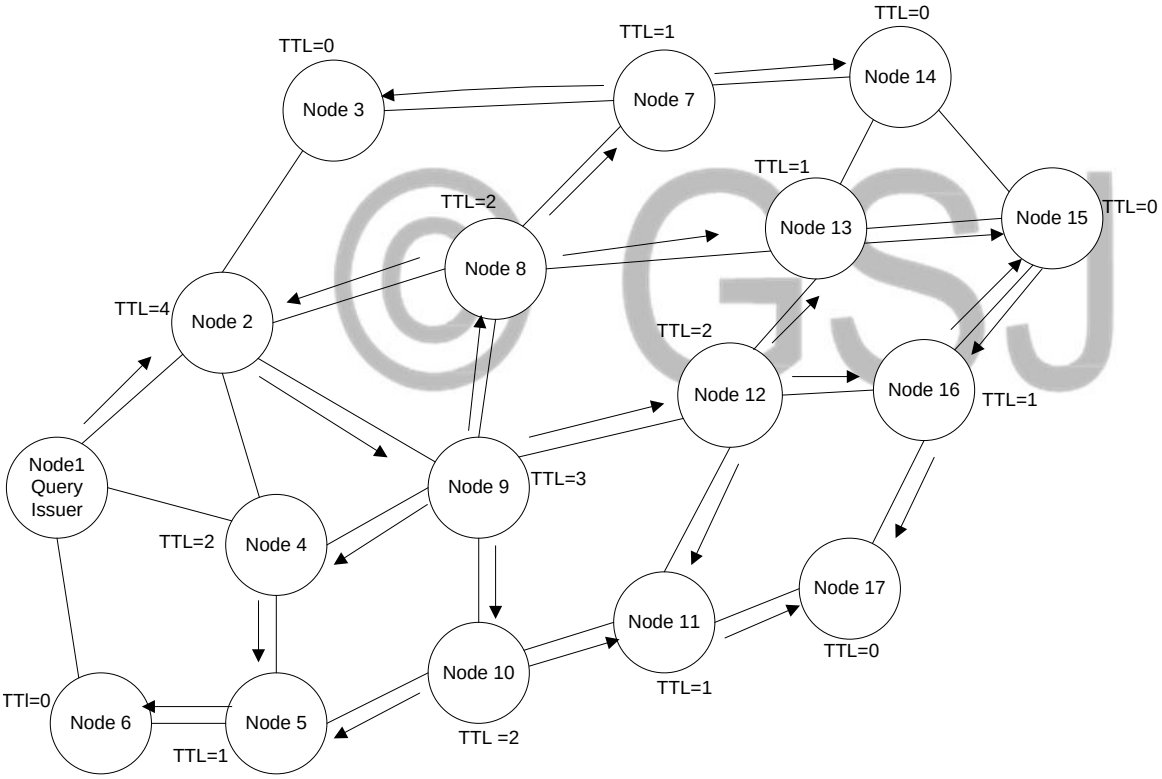

Fig2:Steps of Steps of Hybrid Approach.

3. SIMULATION AND RESULT

3.1 Performance Evaluation:

In this section, we compare Pure Flooding and Random Walk algorithm. We use random graph model to simulate the network. Before each simulation, object replication and query distributions and query tables are set. We used Microsoft excel program for the experiment. To evaluate a protocol's performance, this algorithm is designed to work in a specific environment. In our simulation, we set the number of peers to 20. Each node contacts an average of 4 nodes. The maximum number of walkers is 6; the TTL is set to 5. Moreover, various

parameters are altered in the simulations so that they can be evaluated. We considered the following metrics in the simulation:

Success Rate: The ratio of the number of hits to the total number of requests.

Duplicate message: The number of duplicate messages generated while searching for the file.

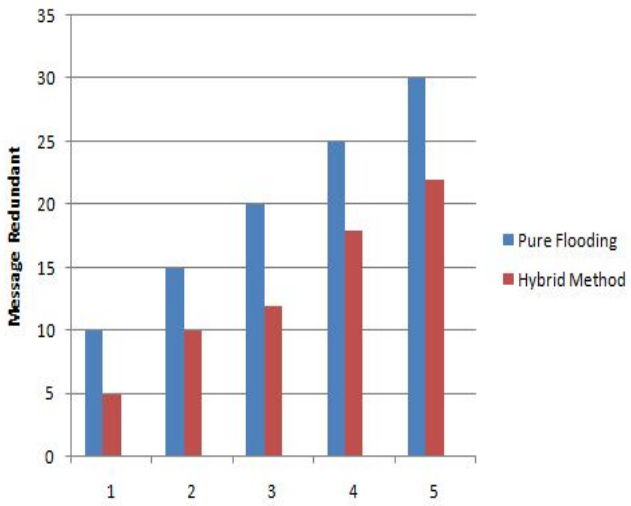

Fig:3. Message Redundant of Pure Flooding and Hybrid Method

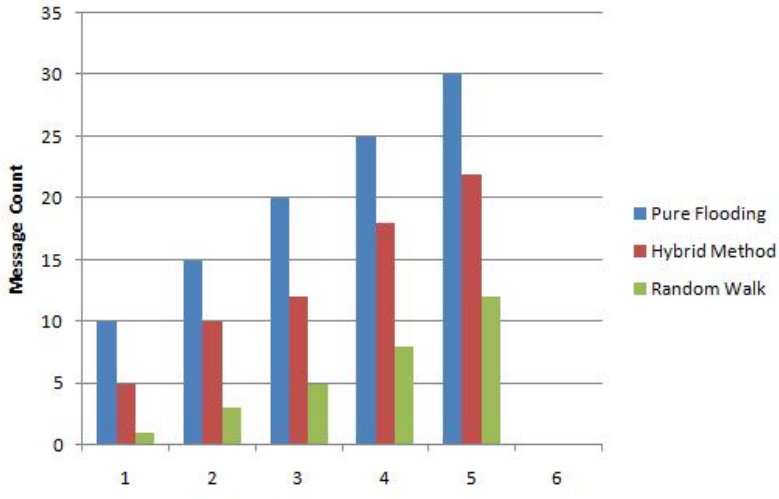

Fig: 4 Message Count of Pure Flooding, HybridMethod and Random Walk.

Simulation Parameters	*default values*
Number of Nodes	*20*
P2P model	*Pure*
Graph model	*Random*
Average node degree	*4*
Walkers deployed(k)	*10*
TTL	*5*
Number of objects (files)	*20*
Max degree	*6*
Min degree	*2*

Table 1: Simulation Parameters and their default values

Fig: 3displays the number of message redundant between Pure Flooding and Hybrid Approach. We have tested our works in 5 steps and TTL=5. The Pure Flooding method is occurred a lot of message redundant on the other hand the Hybrid Approach reduces this problem that is shown above figure.

Fig: 4 Display the comparison of Message Count among Pure Flooding, Hybrid Method and Random Walk.

4. Conclusion and Future works

In this paper, we survey the comparison of two searching method pure flooding and random walk. We examined the success rate, hit per query, duplicate message. We proposed a new approach called Max-Degree Biased Walk. We can summarize the benefits of Max-Degree Biased Walk as follows:

1.High success rate.

2.Reduces duplicate message.

3.Reduces time and cost.

4..Reduces network traffic overhead.

5.High probability of finding resources.

For future work, we plan on giving the hybrid protocol named Max-Degree Biased Walk which improves for with a new simulation technique.

5. REFERENCES

[1] YanzheCheQiang Yang Xiaoyan Hong, A Dual-active Spatial Cloaking Algorithm for Location Privacy Preserving in mobile Peer-to-Peer Networks.2012 IEEE wireless communication & networking conference: Mobile and Wireless Network.

[2] C. Chow, M. Mokbel, and X. Liu, A peer-to-peer spatial cloaking algorithm for anonymous location-based service in Proc. of int. Symposiumon Advances in Geographic Information Systems, pp. 171–178, SIGSPATIAL GIS 2006.

[3]ShivSutar, ManjiriPathak, PreranaSonawane, DeepaliUgale,Privacy Preservation by Anonymization and Location Monitoring System for WSN.International Journal of Engineering Research and Applications (IJERA) ISSN: 2248-9622 www.ijera.com Vol. 2, Issue 3, May-Jun 2012, pp.104-108.

[4] C.-Y. Chow, M. F. Mokbel, and X. Liu, Spatial cloaking for anonymous location-based services in mobile peer-to-peer environments,"Geoinformatica, vol. 15, pp. 351–380, April 2011.

[5] Kaashoek, Frank Dabek,HariBalakrishnan,Chord: A Scalable Peer-to-peer Lookup Protocol for Internet Applications. This researchwas sponsored by the Defense Advanced Research Projects Agency (DARPA) and the Space and Naval Warfare Systems Center, San Diego, under contract N66001-00-1-8933

[6]Aberer, K., Datta, A., Hauswirth, M.: Efficient, self-contained handling of identity in peer-topeer systems. IEEE Transactions on Knowledge and Data Engineering **16**(7), 858–869 (2004).

DOI 10.1109/TKDE.2004.1318567

[7]Freemind. http://freemind.sourceforge.net/ (2008)

[8] Auvinen, A., Vapa, M.,Weber, M., Kotilainen, N., Vuori, J.: Chedar: Peer-to-peer middleware. In: Proceedings of the

20th IEEE International Parallel & Distributed Processing Symposium (IPDPS) (2006)

[9]Aberer, K., Datta, A., Hauswirth, M.: Efficient, self-contained handling of identity in peer-topeer systems. IEEE Transactions on Knowledge and Data Engineering **16**(7), 858–869 (2004).

DOI 10.1109/TKDE.2004.1318567

[10] Garcia-Martin, M., Matuszewski, M., Beijar, N., Lehtinen, J.: Sharing files with the session

Initiation protocol (sip). Internet Draft, draft-garciasipping-file-sharing-framework-00 (work in progress) (2007)

[11] Douceur, J.: The sybil attack. In: Peer-To-Peer Systems: First International Workshop, IPTPS,Revised Papers. Springer (2002)

[12] Freemind. http://freemind.sourceforge.net/ (2008)

[13] Girdzijauskas, S., Galuba, W., Darlagiannis, V., Datta, A., Aberer, K.: Fuzzynet: Zero-maintenance ringless overlay. Tech. Rep. LSIR-REPORT-2008-006, EPFL (2008)

[14] Campbell, B., Rosenberg, J., Schulzrinne, H., Huitema, C., Gurle, D.: Session initiation protocol (sip) extension for instant messaging. IETF RFC 3428 (2002)

[15] Bryan, D., Jennings, C.: A p2p approach to sip registration and resource location. Draft-bryansipping-p2p-01 (work in progress) (2005)

[16] Campbell, B., Rosenberg, J., Schulzrinne, H., Huitema, C., Gurle, D.: Session initiation protocol (sip) extension for instant messaging. IETF RFC 3428 (2002)

[17] Bryan, D., Jennings, C.: A p2p approach to sip registration and resource location. Draft-bryansipping-p2p-01 (work in progress) (2005)