International Journal of Computer Science
Scholarly Peer Reviewed Research Journal - PRESS - OPEN ACCESS
ISSN: 2348-6600
http://www.ijcsjournal.com Volume 5, Issue 1, No 28, 2017 ISSN: 2348-6600
Reference ID: IJCS-295 PAGE NO: 1947-1952

EFFICIENT ROUTING MECHANISM IN UNSTRUCTURED P2P NETWORKS

C.Vigneshwari, G.Saranya M.Tech., Assistant Professor

Department of Computer Science and Engineering.

Sir Issac Newton College of Engineering and Technology.

Pappakoil,Nagappatinam-611102

Abstract - Designing efficient search algorithms is a key challenge in unstructured peer-to-peer networks. Flooding and random walk (RW) are two typical search algorithms. Flooding searches aggressively and covers the most nodes. However, it generates a large amount of query messages and, thus, does not scale. On the contrary, RW searches conservatively. It only generates a fixed amount of query messages at each hop but would take longer search time. We propose the dynamic search (DS) algorithm, which is a generalization of flooding and RW. DS takes advantage of various contexts under which each previous search algorithm performs well. It resembles flooding for short-term search and RW for long-term search. Moreover, DS could be further combined with knowledge-based search mechanisms to improve the search performance. We analyze the performance of DS based on some performance metrics including the success rate, search time, query hits, query messages, query efficiency, and search efficiency. Numerical results show that DS provides a good tradeoff between search performance and cost. On average, DS performs about 25 times better than flooding and 58 times better than RW in power-law graphs, and about 186 times better than flooding and 120 times better than RW in bimodal topologies.

Keywords*:* Peer-to-Peer, Search, Stability, Backpressure, Random Walk

1. INTRODUCTION

In the past few years, personal mobile devices such aslaptops, pdas, and smartphones have been more and more popular. Indeed, the number of smartphone users increased by 118 million across the world in 2007, and is expected to reach around 300 million by 2013 . The incredibly rapid growth of mobile users is leading to promising future, in which they can freely share files between each other whenever and wherever. The number of mobile searching users (through smart phones, feature phones, tablets, etc.) Is estimated to reach 901.1 million in2013. Currently, mobile users interact with each other and share files via an infrastructure formed by geographically distributed base stations. However, users may find themselves in an area without wireless service (e.g., mountain areas and rural areas). Moreover, users may hope to reduce the cost on the expensive infrastructure network data. The p2p file sharing model makes large-scale networks blessing instead of a curse, in which nodes share files directly with

International Journal of Computer Science
Scholarly Peer Reviewed Research Journal - PRESS - OPEN ACCESS
ISSN: 2348-6600
http://www.ijcsjournal.com Volume 5, Issue 1, No 28, 2017 ISSN: 2348-6600
Reference ID: IJCS-295 PAGE NO: 1947-1952

each other without a centralized server. Wiredp2p file sharing systems (e.g., bit torrent and kazaa)have already become a popular and successful paradigm for file sharing among millions of users. The successful deployment of p2p file sharing systems and the aforementioned Impediments to file sharing in manets make the p2p file sharing over manets (p2p manets in short) a promising complement to current infrastructure model to realize pervasive file sharing for mobile users. As the mobile digital devices are carried by people that usually Belong to certain social relationships, in this paper, we focuson the p2p file sharing in a disconnected mane community consisting of mobile users with social network properties. In such a file sharing system, nodes meet and exchange requests and files in the format of text, short videos, and voice clips in different interest categories. Atypical scenario is a course material (e.g., course slides, review sheets, assignments) sharing system in a schoolcampus. Such a scenario ensures for the most that nodessharing the same interests (i.e., math), carry correspondingfiles (i.e., math files), and meet regularly (i.e., attendingmath classes)

.

2. LITERATURE SURVEY

[1] A. Ramachandran, K. Bhandankar, M. Tariq, and N. Feamster, "Packets with Provenance," Technical Report GT-CS-08-02, Georgia Tech, 2008.

This paper presents the design, analysis, user-space implementation, and evaluation of Pedigree, which consists of two components: a trusted tagger that resides on hosts and tags packets with information about their provenance (i.e., identity and history of potential input from hosts and resources for the process that generated them), and an arbiter, which decides what to do with the traffic that carries certain tags. Pedigree allows operators to write traffic classification policies with expressive semantics that reflect properties of the actual process that generated the traffic.

Pedigree captures provenance for network packets in the form of per packet tags that store a history of all nodes and processes that manipulated the packet.

Drawback

- This scheme assumes a trusted environment which is not realistic in sensor networks

[2] W. Zhou, M. Sherr, T. Tao, X. Li, B. Loo, and Y. Mao, "Efficient Querying and Maintenance of Network Provenance at InternetScale," Proc. ACM SIGMOD Int'l Conf. Management of Data, pp. 615-626, 2010

This paper presents the design and implementation of ExSPAN, a generic and extensible framework that achieves efficient network provenance in a distributed environment**.** ExSPAN uses declarative networking in which network protocols can be modeled as continuous queries over distributed streams and specified concisely in a declarative query language.

The ExSPAN prototype is developed using RapidNet, a declarative networking platform based on the emerging ns-3 toolkit. Experiments over a simulated network and an actual deployment in a testbed environment demonstrate that this system

International Journal of Computer Science
Scholarly Peer Reviewed Research Journal - PRESS - OPEN ACCESS
ISSN: 2348-6600
http://www.ijcsjournal.com Volume 5, Issue 1, No 28, 2017 ISSN: 2348-6600
Reference ID: IJCS-295 PAGE NO: 1947-1952

supports a wide range of distributed provenance computations efficiently, resulting in significant reductions in bandwidth costs compared to traditional approaches.

Drawback

- This system also does not address security concerns and is specific to some network use cases.

[3] W. Zhou, Q. Fei, A. Narayan, A. Haeberlen, B. Loo, and M. Sherr, "Secure Network Provenance,"Proc.ACMSOSP,pp.295-310,2011.

This paper introduces secure network provenance (SNP), a novel technique that enables networked systems to explain to their operators why they are in a certain state – e.g., why a suspicious routing table entry is present on a certain router, or where a given cache entry originated. SNP provides network forensics capabilities by permitting operators to track down faulty or misbehaving nodes, and to assess the damage such nodes may have caused to the rest of the system. SNP is designed for adversarial settings and is robust to manipulation; its tamper-evident properties ensure that operators can detect when compromised nodes lie or falsely implicate correct nodes.

Drawback

- This system is not optimized for the resource constrained sensor networks.

[4] S. Chong, C. Skalka, and J.A. Vaughan, "Self-Identifying Sensor Data," Proc. Ninth ACM/IEEE Int'l Conf. Information Processing in Sensor Networks (IPSN), pp. 82-93, 2010.

This technique is similar to traditional watermarking but is intended for application to unstructured datasets. This approach is potentially imperceptible given sufficient margins of error in datasets, and is robust to a number of benign but likely transformations including truncation, rounding, bit-flipping, sampling, and reordering. It provides algorithms for both one-bit and blind mark checking. These algorithms are probabilistic in nature and are characterized by a combinatorial analysis.

Drawback

- It is not intended as a security mechanism, hence, does not deal with malicious attacks
- Practical issues like scalability, data degradation, etc. have not been well addressed

3. PROBLEM STATEMENT:

Previous works about search algorithms in unstructured P2P networks can be classified into two categories: breadth first search (BFS)-based methods, and depth first search (DFS)-based methods. These two types of search algorithms tend to be inefficient, either generating too much load on the system, or not meeting users' requirements. Flooding, which belongs to BFS-based methods, is the default search algorithm for Gnutella network. By this method, the query source sends its query messages to all of its neighbors. When a node receives a query message, it first checks if it has the queried resource. If yes, it sends a response back to the query source to indicate a query hit. Otherwise, it sends the query messages

International Journal of Computer Science
Scholarly Peer Reviewed Research Journal - PRESS - OPEN ACCESS
ISSN: 2348-6600
http://www.ijcsjournal.com Volume 5, Issue 1, No 28, 2017 ISSN: 2348-6600
Reference ID: IJCS-295 PAGE NO: 1947-1952

to all of its neighbors, except for the one the query message comes from. The drawback of flooding is the search cost. It produces considerable query messages even when the resource distribution is scarce.

4. Existing System:

Flooding and RW are two typical examples of blind search algorithms by which query messages are sent to neighbors without any knowledge about the possible locations of the queried resources or any preference for the directions to send. Some other blind search algorithms include modified BFS (MBFS) , directed BFS expanding ring and random periodical flooding (RPF).These algorithms try to modify the operation of flooding to improve the efficiency. However, they still generate a large amount of query messages.

DISADVANTAGES:

In the existing system search cost is high.

It produces considerable query messages even when the resource distribution is scarce.

The search is especially inefficient when the target is far from the query source because the number of query messages would grow exponentially with the hop counts.

It's more time consuming one.

Proposed System:

In this paper, we propose the dynamic search (DS) algorithm, which is a generalization of flooding and RW. DS overcomes the disadvantages of flooding and RW and takes advantage of different contexts under which each search algorithm performs well. The operation of DS resembles flooding for the short-term search and RW for the long-term search. In order to analyze the performance of DS, we apply the random graphs as the models of network topologies and adopt the probability generating functions to model the link degree distribution. We evaluate the performance of search algorithms in accordance with some performance metrics including the success rate, search time, number of query hits, and number of query messages, query efficiency, and search efficiency.

ADVANTAGES:

It reduces a search time.

It takes advantages of Flooding based and random walk technique.

Knowledge-based search algorithms take advantage of the knowledge learned from previous search results and route query messages with different weights based on the knowledge.

5. IMPLEMENTATION

Peer Construction:

In this module, we construct a topology structure.While getting each of the nodes, their associated port and ip address is also obtained.For successive nodes, the node to which it should be connected is also accepted from the user.

While adding nodes, comparison will be done so that there would be no node duplication.Then we identify which peer is going to request for a file.

Searching:

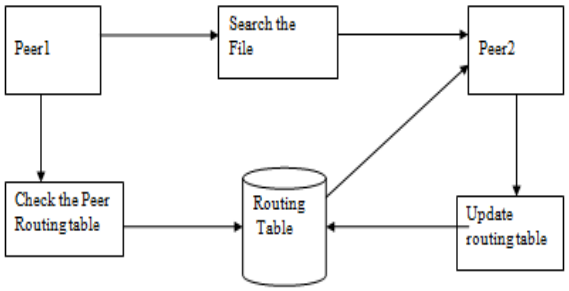
In this module a peer can be searching a file.

International Journal of Computer Science
Scholarly Peer Reviewed Research Journal - PRESS - OPEN ACCESS
ISSN: 2348-6600
http://www.ijcsjournal.com Volume 5, Issue 1, No 28, 2017 ISSN: 2348-6600
Reference ID: IJCS-295 PAGE NO: 1947-1952

Knowledge Based Searching:

In this module we search the file more intelligently. Here we search the peer routing table whether the file is already searching or not. If we already search means it relays the query more intelligently to the corresponding peer.

6.System Model



7.Algorthim

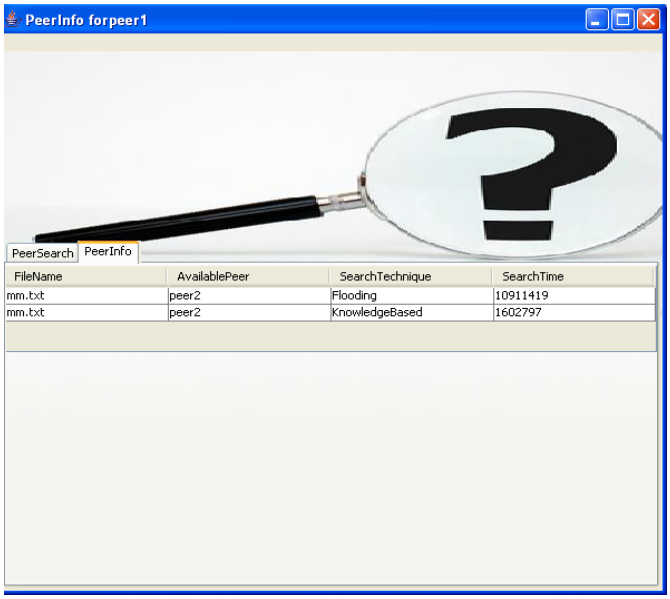
Phase1. When h <= n

At this phase, DS acts as flooding or MBFS. The number of neighbors that a query source sends the query messages to depends on the predefined transmission probability p. If the link degree of this query source is d, it would only send the query messages to d. p neighbors. When p is equal to 1, DS resembles flooding. Otherwise, it operates as MBFS with the transmission probability p.

Phase2. When h > n

At this phase, the search strategy switches to RW. Each node that receives the query message would send the query message to one of its neighbors if it does not have the queried resource. Assume that the number of nodes visited by DS at hop h ¼ n is the coverage cn, and then the operation of DS at that time can be regarded as RW with cn walkers. However, there are some differences between DS and RW when we consider the whole operation.

Screenshots:



8. CONCLUSION AND FUTURE WORK

In this paper, we have proposed the DS algorithm, which is a generalization of the flooding, MBFS, and RW. DS overcomes the disadvantages of flooding and RW, and takes advantage of various contexts under which each search algorithm performs well. It resembles flooding or MBFS for the short-term search and RW for the long-term search. We analyze the performance of DS based on some metrics including the success rate, search time, number of query hits, and number of query messages, query efficiency, and search efficiency.

International Journal of Computer Science
Scholarly Peer Reviewed Research Journal - PRESS - OPEN ACCESS
ISSN: 2348-6600
http://www.ijcsjournal.com Volume 5, Issue 1, No 28, 2017 ISSN: 2348-6600
Reference ID: IJCS-295 PAGE NO: 1947-1952

Numerical results show that proper setting of the parameters of DS can obtain short search time and provide a good tradeoff between the search performance and cost. Under different contexts, DS always performs well. When combined with knowledge-based search algorithms, its search performances could be further improved.

9. REFERENCES

[1]D. Stutzbach, R. Rejaie, N. Duffield, S. Sen, and W. Willinger, "Sampling Techniques for Large, Dynamic Graphs," Proc. Ninth IEEE Global Internet Symp. (Global Internet '06), Apr. 2006.

[2] A.H. Rasti, D. Stutzbach, and R. Rejaie, "On the Long-Term Evolution of the Two-Tier Gnutella Overlay," Proc. Ninth IEEE
Global Internet Symp. (Global Internet '06), Apr. 2006.

[3] D. Milojicic, V. Kalogeraki, R. Lukose, K. Nagaraja, J. Pruyne,B. Richard, S. Rollins, and Z. Xu, "Peer-to-Peer Computing,"
Technical Report HPL-2002-57, HP, 2002.

[4] K. Sripanidkulchai, The Popularity of Gnutella Queries and ItsImplications on Scalability, white paper, Carnegie Mellon Univ.,Feb. 2001.

[5] M. Jovanovic, F. Annexstein, and K. Berman, "Scalability Issues in Large Peer-to-Peer Networks: A Case Study of Gnutella,"technical report, Laboratory for Networks and Applied Graph Theory, Univ. of Cincinnati, 2001.

[6] B. Yang and H. Garcia-Molina, "Improving Search in Peer-to-Peer Networks," Proc. 22nd Int'l Conf. Distributed Computing Systems (ICDCS '02), pp. 5-14, July 2002.

[7] G. Kan, "Gnutella," Peer-to-Peer Harnessing the Power of Disruptive Technologies, O'Reilly, pp. 94-122, 2001.

[8] RFC-Gnutella 0.6, http://rfc-gnutella.sourceforge.net /developer/ testing/index.html, 2008.

[9] C. Gkantsidis, M. Mihail, and A. Saberi, "Random Walks in Peer-to-Peer Networks," Proc. IEEE INFOCOM '04, pp. 120-130,2004.

[10] L.A. Adamic, R.M. Lukose, A.R. Puniyani, and B.A. Huberman, "Search in Power-Law Networks," Physical Rev., E, vol. 64, 046135,2001.