Cost Effective Index- Poisoning Scheme for Tackling Copyright Infringement in P2p File Sharing Systems

P Kretthika [1], Sirajul Muneera S [2], Vinutha Yadav D [3], Yoga Lakshmi M [4], Dr. Ashwini K [5]

Student, Dept. of ISE, New Horizon College of Engineering, Bangalore, Karnataka, India[1]

Student, Dept. of ISE, New Horizon College of Engineering, Bangalore, Karnataka, India [2]

Student, Dept. of ISE, New Horizon College of Engineering, Bangalore, Karnataka, India[3]

Student, Dept. of ISE, New Horizon College of Engineering, Bangalore, Karnataka, India[4]

Sr. Assistant Professor, Dept. of ISE, New Horizon College of Engineering, Bangalore, Karnataka, India[5]

ABSTRACT: The rapid growth of P2P technology has enabled millions of users to exchange large number of files, even the copyrighted files are also actively exchanged making copyright infringement a serious issue. In particular, P2P file sharing (using bit torrent etc.) is recognized as a killer application of P2P technology because of several undesired issues like violation of copyright law, and act as a hotbed of cybercrime like phishing scams and leak of personal information. Although by far many schemes have been proposed for the same none of them efficiently tackles the problem by cutting on the cost required for achieving this purpose. This paper proposes a cost effective solution that uses an index poisoning scheme to protect the copyrights in an unstructured P2P network that reduces the spatial cost to one-third and network cost to half.

KEYWORDS: Unstructured peer-to-peer network, file sharing, Index poisoning, illegal file sharing**.**

I. INTRODUCTION

P2P record sharing systems have been sorted as the most recent era of Internet substance conveyance frameworks. In any case, absence of copyright security systems in current P2P applications forestalled them from being considered as a feasible stage to appropriate copyrighted substance .Peer-to-Peer (P2P) innovation has been generally utilized as a part of many fields including IP telephone, live spilling, and record sharing [9], [10], [13]. Specifically, P2P record sharing is perceived as an executioner application for the P2P innovation, and a few P2P document sharing frameworks have been utilized by numerous
clients from the late 90's to the present, counting Napster, Gnutella, Kazaa and BitTorrent. In any case, the advancement of such P2P archive sharing causes a couple of undesired issues starting late, for instance, the illegal sharing of copyrighted substance and some more… Thus by far, numerous challenges have been directed to control the download of unlawful records by obscure customers. DRM (Digital Rights Management) encodes substance using a specific encoding system with the objective that it could be decoded just by using specific programming and in addition hardware [3]. An instance of DRM is Windows Media DRM1 , which requests a private key for playing back encoded substance, which is only issued for each paid customer.The location of illicit record sharing has additionally been explored widely. For example, we can perceive a customer who illegally discharges paid substance to unapproved customers with the guide of cutting edge watermarking [3] and can perceive customers who unlawfully share paid substance by sending an impersonation sidekick [1], [2], [7].Among various such systems list hurting scheme has grabbed a great deal of thought these days. Record hurting changes the record of unlawfully shared reports so they can't be come to by any partner who wishes to get to them through P2P[6].In immaculate P2P frameworks that don't depend on particular list server, duplicates of the file of the mutual documents are dispersed over the system in advance, So that it can viably and effectively procured by flooding a question message over the system. On the off chance that a hub in the companion to peer arrange anytime of time gets a question from some other neighboring hub, if that specific

hub has a file that matches the inquiry then it reacts back by sending that file to the questioning hub in the system, so that the body of the asked for record can be gotten to by alluding to that specific file got. There is a constraint on the quantity of duplicates of file that can be held by an associate and each file has an assigned lifetime. By changing file of unlawful records and by engendering it to all companions in framework, with adequately longer lifetime.

We can significantly reduce the probability of correctly identifying the location of illegal files. The approach involved is combination of three periodical injections of altered index to

- Owner of illegal files

- Upstream peers with a long index lifetime

- Downstream peers with a short index lifetime.

II. LITERATURE SURVEY AND RELATED WORK

There are many index poisoning schemes proposed in the literature. Some of them are Pollution Attack, Index poisoning scheme for winny networks, fingerprinting etc.

DRM (Digital Rights Management) encodes contents using a specific encoding technique so that it could be decoded merely by using specific software and/or hardware [3]. An example of DRM is Windows Media DRM1, which requests a private key for playing back encoded contents, which is individually issued for each paid customer.

A.   Pollution in P2P File Sharing Systems: One approach to battle P2P document sharing of copyrighted substance is to store into the record sharing frameworks vast volumes of dirtied records. Without taking sides in the document sharing civil argument, in this paper we attempt an estimation investigation of the nature and greatness of contamination in the FastTrack P2P arrange, right now the most well known P2P record sharing framework. We build up a slithering stage, which creeps most of the FastTrack Network's 20,000+ super hubs in under a hour. From the crude information accumulated by the crawler for prevalent sound substance, we get measurements on the quantity of remarkable forms and duplicates accessible in a 24-hour time span. We build up a robotized system to identify whether a given variant is contaminated or not, and we demonstrate that the probabilities of false positives and negatives of the location methodology are little. We utilize the information from the crawler and our contamination identification calculation to decide the part of adaptations and division of duplicates that are dirtied for a few later and old melodies. We watch that contamination is inescapable for late prevalent tunes. We likewise recognize and portray various hostile to contamination components

B. The Index Poisoning Attack in P2P File Sharing Systems: In P2P document sharing clients seek list to discover areas of wanted records. Record harming, for specific document, assaults file with fake that may incorporate false IP addresses, sham port number, counterfeit record identifiers. Keep in mind there are diverse sorts of systems p2p, organized and unstructured: record harming assault both with no qualification. In our examination, we consider unstructured record sharing framework as FastTrack and DHT based document sharing framework.

C. An Effective Index Poisoning Algorithm for Controlling Peer-to-Peer Network Applications: Copyright encroachment is viewed as a critical issue in P2P organize interchanges. File and substance harming have been proposed to control the trading of copyrighted substance. Tragically, be that as it may, such control strategies are expensive as far as the measure of control activity since they apply the control strategy to every one of the associates and they produce much control movement. All in all, straightforwardly applying file harming to an associate may by implication harm the neighboring companions, subsequently, it is conceivable to decrease the quantity of associates to focus for a similar impact of harming. A technique to enhance record harming by restricting the extent of harming so that notwithstanding when we apply harming to few companions, we could in any case accomplish an indistinguishable impact of movement control from we connected harming to all associates. In more detail, taking Winny for instance of organized P2P arrange, we propose, execute and assess a calculation to decide the compelling companions for record

harming in view of the deduced organize structure. We effectively lessen the harming focus to 27% of the aggregate companions and accomplish an indistinguishable adequacy from the ordinary strategy harming 96% of the whole system.

D. Controlling File Distribution in Winny Network through Index Poisoning: Distributed (P2P) document sharing systems have seen emotional increment in prevalence for as long as couple of years. Keeping in mind the end goal to take care of the demand of clients, most P2P document sharing systems have been principally concentrating on enhancing transmission proficiency and system adaptability. Be that as it may, these systems don't for the most part have administration instruments for disseminating documents all in all. Thus, copyright encroachments in P2P record sharing systems have turned out to be common. Keeping in mind the end goal to forestall unlawful document circulation, a few hostile to P2P organizations have controlled the record dissemination by file harming. In spite of the fact that record harming intends to muddle utilizes by diffusing a great deal of sham metadata in P2P systems, its belongings have not been very much examined yet. We apply record harming to a Winny organize, a standout amongst the most mainstream P2P document sharing systems in Japan, to control the document appropriation. Our assessment incorporates record harming in a live Winny organize made out of more than 100,000 dynamic associates. The outcome demonstrates that our proposed technique can diminish the quantity of inquiry hits to under 0.004% contrasted with the case without our control, and that list harming is compelling to control few records. In any case, the outcome additionally demonstrates that the list harming could bring about a genuine harm on a Winny arrange, when many records are under our control at the same time.. In spite of the fact that there are many record harming plans proposed in the writing to the writers' best information, none of them could effectively adjust the cost and the execution.

<h3 style="text-align:center">III. PROPOSED SCHEME</h3>

In this paper, we propose a cost-effective index-poisoning scheme for unstructured P2P file sharing systems. The proposed scheme consists of the following four components:
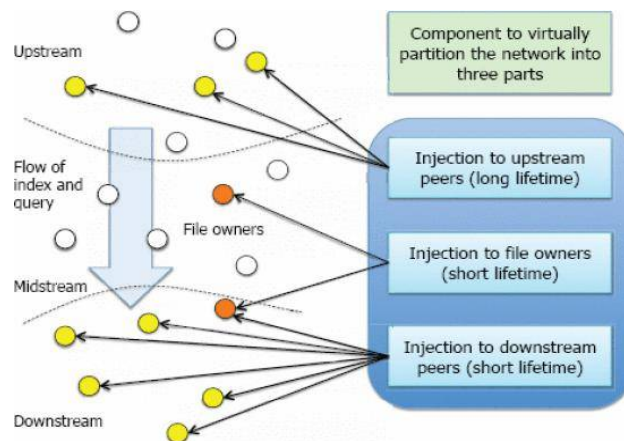
Figure1. Overview of the proposed scheme.

1)   The primary segment distinguishes the course of the stream of records and for all intents and purposes segments the arrangement of looks into three sections as upstream companions, midstream peers, and downstream associates.

2) The second part intermittently infuses duplicates of modified files with short lifetime to the proprietor of unlawful records with time interim T1.

3) The third part intermittently infuses duplicates of modified files with long lifetime to upstream associates with time interim T2.

4) The fourth part intermittently infuses duplicates of modified files with short lifetime to downstream associates with time interim T3.

With respect to the measurements for the cost of list harming plans, we concentrate on the accompanying two components:

• Network cost which is assessed by the aggregate number of messages and additionally the heap of operator to infuse changed duplicates to the system.

• Spatial cost which is assessed by the quantity of adjusted duplicates existing in the system.

To lessen the system cost, we ought to plan a plan so that adjusted duplicate will achieve peers holding the right duplicate through conveyed engendering, and to decrease the spatial cost, we ought to outline a plan so that the lifetime of each duplicate is resolved such that changed duplicate vanishes in the wake of landing at the objective associate.

Algorithms and Pseudo code:

The proposed scheme uses the algorithms listed below for step by step fulfilment of the decided objective. It includes:

1. Seed Detection

2. Network Splitting

3. Poison Spreading
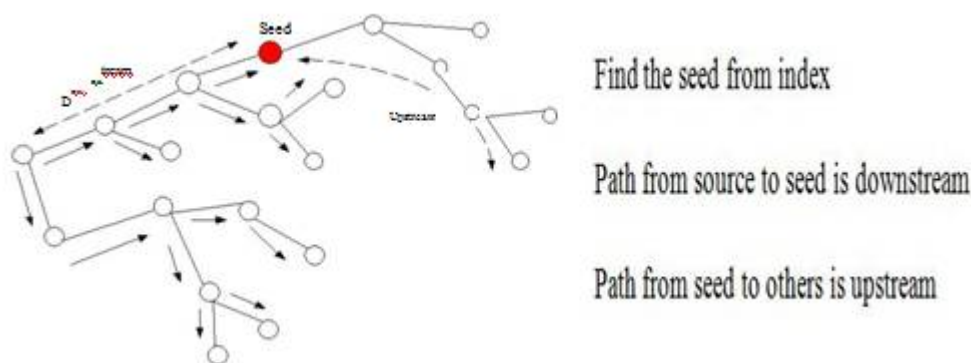
1. Seed Detection
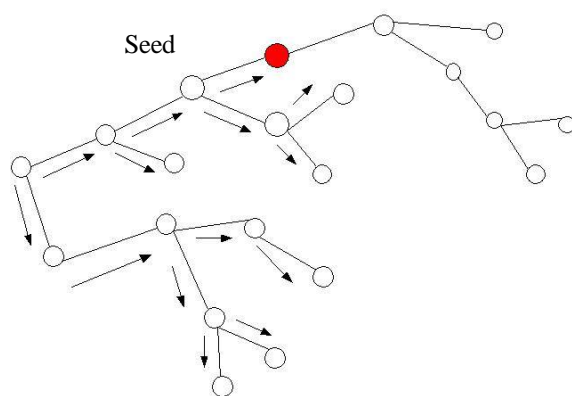

Figure2: seed detection

2. Network Splitting

Figure3: Network splitting

3. Poison Spreading

- Create index poison for seed

- Create index poison for upstream

- Create index poison for downstream

- Propagate index poison in the network

IV. SIMULATION AND EVALUATION

We assess the execution of the proposed conspire by reenactment utilizing an open source P2P test system p2p organize sim. As a solid P2P document sharing framework, we concentrate on Winny and look at the execution of the proposed plot with a straightforward (yet wasteful) conspire in which modified record is infused to all companions. The accompanying previews characterize the outcomes or yields that we will get after well ordered execution of the considerable number of modules of the framework
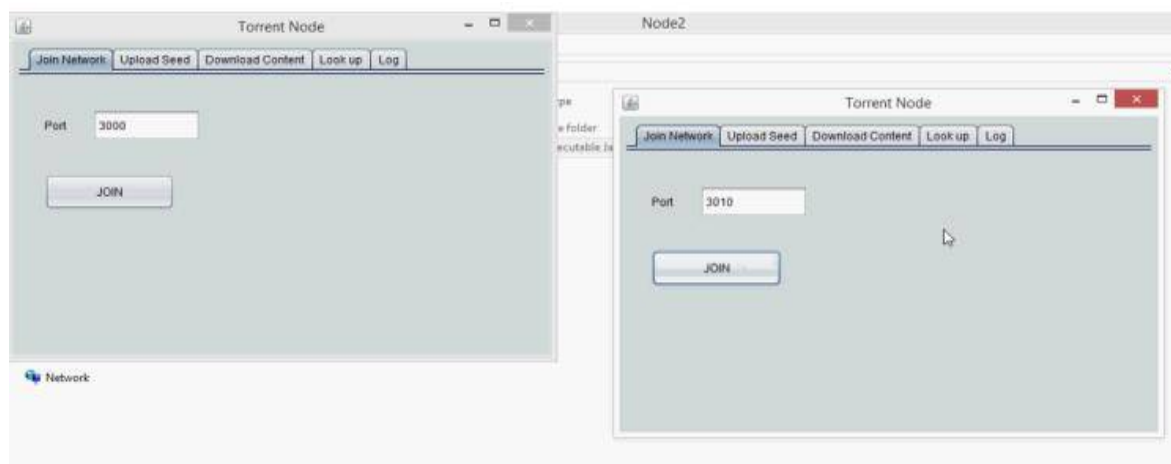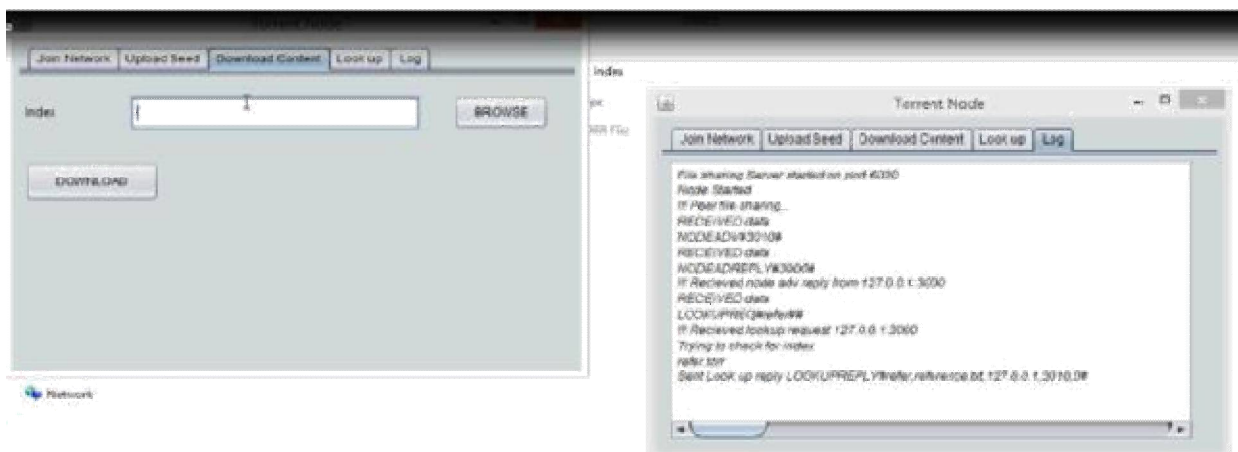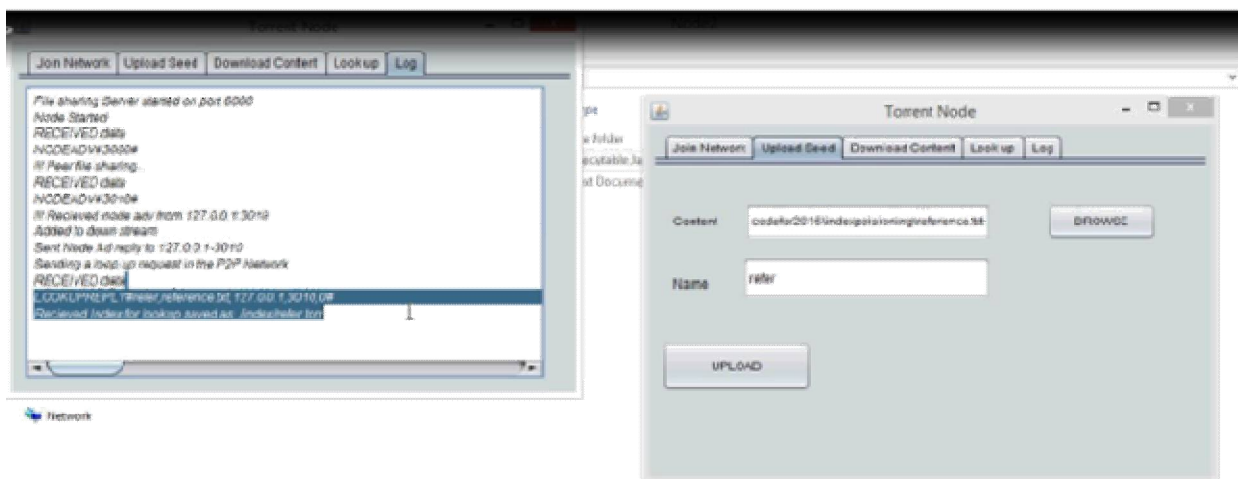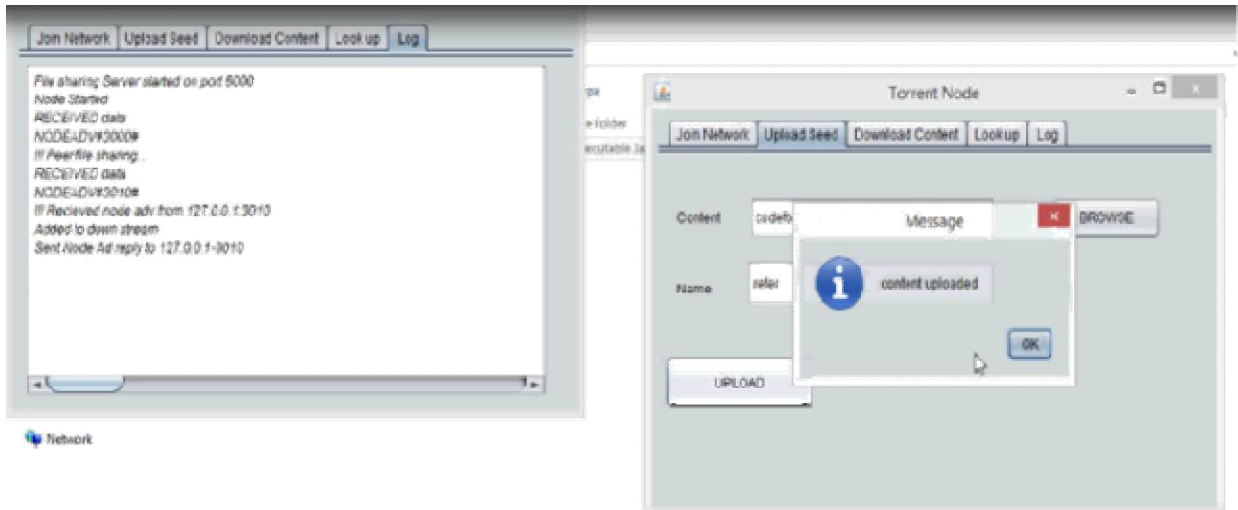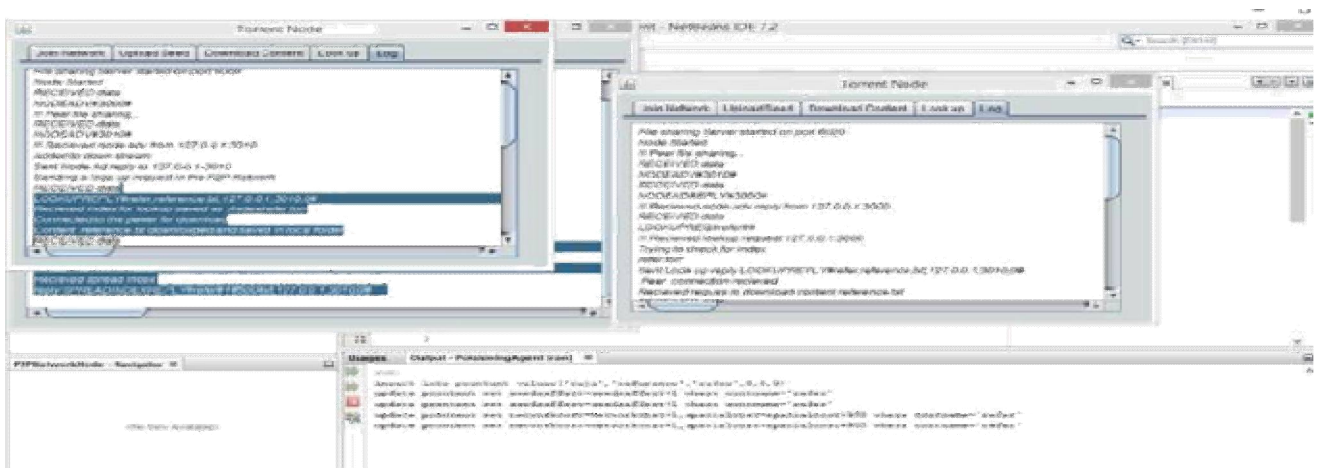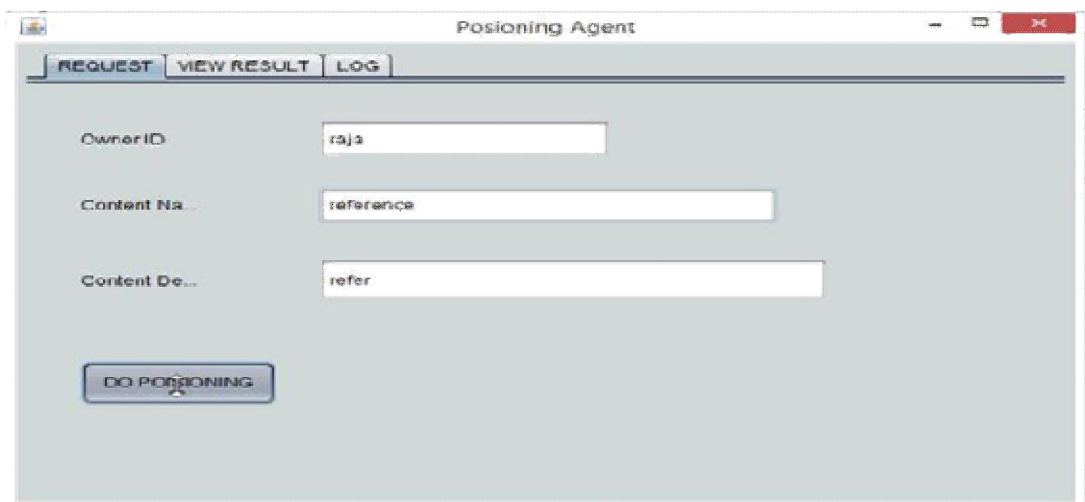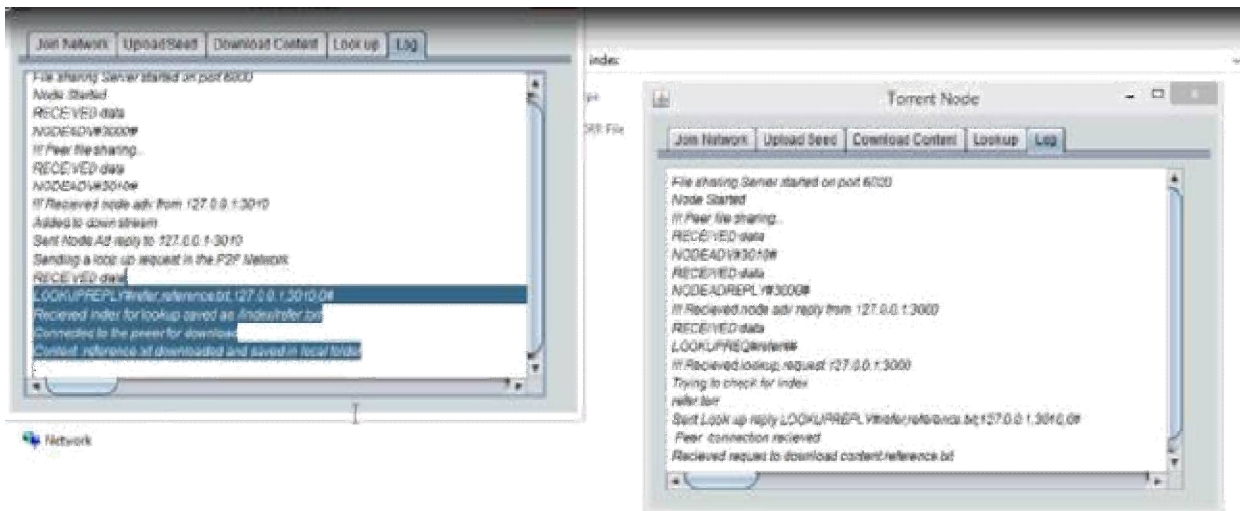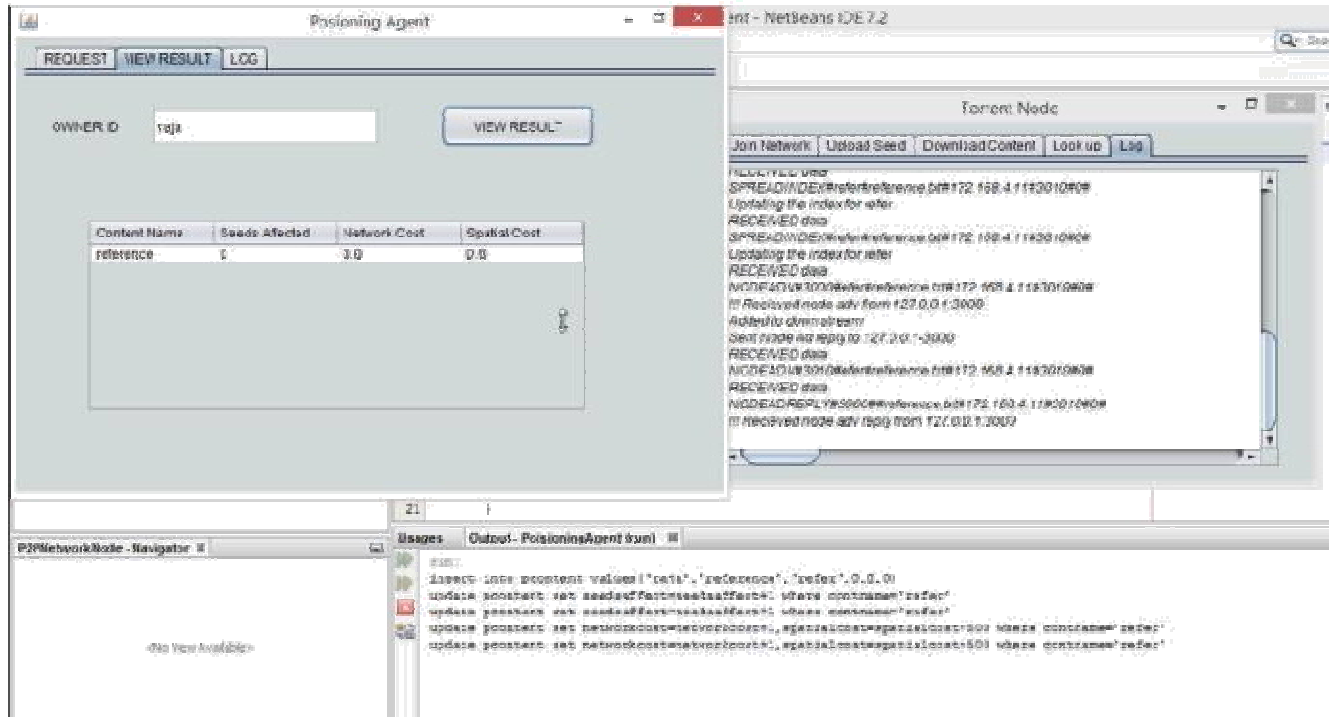
Here the testing validates the software function in a manner that is reasonably expected by the customer.

Functionality to be tested	Input	Tests done	Remark
Register the torrent node into P2P network	Multiple nodes get register	Registration done	Success
Uploading the content in the torrent mode	Browse for the torrent node and upload it	Content upload can be viewed	Success
Do poisoning agent	select the content	Content for poison	Success

V. CONCLUSION

This venture proposes a file harming plan for P2P document sharing frameworks. The proposed plan is a mix of three distinct infusions with various parts, and could be connected to general unstructured P2P document sharing frameworks the length of the course of the stream of lists and inquiries can be identified. The reproduction comes about show that the proposed plan could accomplish nearly a similar execution with a basic (however costly) plot in which changed list with an adequately long lifetime is specifically infused to all associates in the framework. A future work is to assess the cost of the plan in more detail, and also the point by point assessment of the execution under various settings. A use of the plan to other unstructured P2P records sharing framework, for example, BitTorrent and Overnet is likewise a significant issue

REFERENCES

[1]   E. Abdullah and S. Fujita. "Prevent Contents Leaking in P2P CDN with Robust and Quick Detection of Colluders." *Journal of Informatio Processing (JIP)*, 20(2):378–385 (2012).
[2]   E. Abdullah and S. Fujita. "Reputation-Based Colluder Detection Schemes for Peer-To-Peer Content
Delivery Networks." *IEICE Trans. Information and Systems*, E96-D(12):2696–2703 (2013). [3] R. J. Anderson. *Security Engineering: A Guide to Building Dependable Distributed Systems*, Wiley, 2008.
[4]   J. Kong, W.-D. Cai, and L. Wang. "The evaluation of index poisoning in BitTorrent." In *Proc. the 2nd International Conference on Communication Software and Networks (ICCSN '10)*, 2010, pages 382–386.
[5]   J. Liang, R. Kumar, Y. Xi, and K. W. Ross. "Pollution in P2P File Sharing Systems." In *Proc. the 24th IEEE International Conference on Computer Communications (INFOCOM)*, 2005, pages 1174–1185.
[6] J. Liang, N. Naoumov, and K. W, Ross. "The Index Poisoning Attack in P2P File Sharing Systems." In *Proc. the 25th IEEE International Conference on Computer Communications INFOCOM)*, 2006, pages 1–12.
[7] X. Lou and K. Hwang. "Collusive Piracy Prevention in P2P Content Delivery Networks." *IEEE Trans. on Computers*, 58(7):970–983 (2009).
[8] P. Putra and A. Nakao. "An Effective Index Poisoning Algorithm for Controlling Peer-to-Peer Network Applications." In *Proc. International Workshop on Modeling, Analysis, and Control of Complex Networks (Cnet '11)*, 2011, pages 17–22.
Li. "Design and Deployment of a Hybrid CDN-P2P System for Live Video Streaming: Experiences with LiveSky." In *Proc. of the 17th ACM International Conference on Multimedia (MM'09)*, 2009, pages 25– 34.
[11]   M.   Yoshida,   S.   Ohzahata, A.Nakao,   and   K.   Kawashima.   "Controlling File Distribution   in   Winny   Network   through   Index   Poisoning."   In   Proc. International   Conference   on   Information   Networking   (ICOIN   2009), 2009, pages 1–5.
[12]   M.   Yoshida,   S.   Ohzahata, A.Nakao,andK.Kawashima.   "Controlling File   Distribution   in   Share   Network   Through   Content   Poisoning."   In Proc.   the   24th   IEEE   International   Conference   on   Advanced   Information *Networking and Applications (AINA)*, 2010, pages 1004–1011.
[13]   X. Zhang, J. Liu, B. Li, and T.-S. Peter Yum. "CoolStreaming/DONet: A Data-driven Overlay Network for Peer-to-Peer Live Media Streaming." In *Proc. of the 24th Annual Joint Conference of the IEEE Computer and Communications Societies (INFOCOM)*, Vol. 3, 2005, pages 2102–2111
[14]   Keerthi Priya K, Dr.Ashwini K, "Implementation Of Server Resource Management System for Cloud Environment", International journal of Computer Science and Mobile Computing, vol 4, Issue 5,May 2015.
[15]Ganya Pooncha C, Keerthi Priya K, Dr.Ashwini .K, Dr.Prakash Shelvanthmath, "A Survey on Energy Aware scheduling of VM's in Cloud Data Centers", International Journal of Computer Science and Mobile computing, Vol 4, Issue 3May, 2015.
[16]   Keerthi Priya K,Ganya Pooncha C,Ashwini .K, Dr.Prakash Shelvanthmath, "A Survey on Dynamic Resource Allocation Method for Cloud Environment",