Multi Path Routing Technique Based RRP for P2P Network

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Abstract. All articles must contain an abstract. Peer to Peer (P2P) network is useful for developing applications and downloading files from the internet. In the existing P2P networks, communication is initiated and supported by peers. Security issues constitute the main challenge in the design of reliable communication techniques for P2P networks. In the past, Rumor Riding Protocol was used in distributed systems for performing coordination and communication. However, the existing Rumor Riding Protocol is used flooding technique to forward the response to the initiator it may leads high network traffic to avoid this I have Enhanced Multi path forwarding technique to Rumor Riding Protocol and also enhancement with security features to make them suitable for downloading applications in P2P networks. In this method, it enhances the Rumor Riding Protocol with security features by including a Cryptographic Puzzle, a Challenge Question scheme using trust modeling and an intelligent beta reputation model for secured communication in P2P networks. For this purpose, five new techniques are proposed in this research work, all of which aim at enhancing the security of communication using Rumor Riding Protocol in the P2P networks.

1. Introduction
In distributed systems, it is necessary to perform client server communication for coordinating distributed processing. In such a scenario, a single coordinator monitors a number of participant nodes. There are situations in which a node has to act as both the client and the server (Takeda et al 2008). Such networks are called Peer to Peer (P2P) networks in which the P2P computing feature provided by the nodes are useful in resource sharing among the computers. Here, the resources may include processing power, knowledge of distribution of information, distributed disk storage and committed protocols for coordinated transaction processing in distributed databases. In a P2P networking system, the computers which participate in the distributed processing can act not only as clients but also as servers and hence the transactions can be started by any node while the participating nodes coordinate with the coordinator node for concurrent storage and retrieval of data. In a database scenario, concurrency control and recovery protocols are already available for both the centralized database and the distributed database systems. The same concept is used in P2P networks with a slight variation. This is useful for file transfer, transaction processing and distributed query processing. In distributed systems, many facilities are provided for effective storage, maintenance, communication and retrieval of data. Among them, file sharing is one of the most important features that are highlighted by many users who are in the process of developing their applications.
using the P2P networking systems. In this scenario, the P2P network performs effective communication by the introduction of new protocols and also by the use of the existing protocols for network communication (Takeda et al 2008). In P2P networks, the resources, namely, CPU, memory and registers of nodes can be used effectively for speedy processing of distributed queries. In addition, it helps to perform file sharing to enable sharing of the media files such as e-books, e-learning materials, music playing systems, movies, computer games to enable cost reduction for all users. The nodes are also called peers. In P2P, networks are interconnected through local area networks, wide area networks and also the internet. Moreover, the existing Peer-to-Peer file sharing technologies have evolved through many different design stages based on the earlier networks such as Napster and also the other recent models such as Bit Torrent protocol. According to Schlosser and Kamvar (2003), many factors have contributed to the development of new protocols for effective file sharing in P2P networks. In addition, other factors, namely, digital contents, network bandwidth, storage and access techniques, text processing capabilities, image, audio and video processing techniques have contributed to the popularity of P2P networks by allowing effective file sharing.

1.1. Unstructured Peer to Peer Network
In a structured P2P network, the network has a centralized topology. On the other hand, the unstructured P2P network has a distributed topology in which the tasks to be carried out are divided among the peers in the network. The peers in a P2P network have equal privileges and hence all the nodes are responsible for the increase in the overall performance of the network. In such a scenario, the peers must get linked with various heterogeneous networks including internet and hence they require a highly efficient cooperation other networks in the network configuration. In a Peer-to-Peer (P2P) network, the functioning of the network is dependent entirely on the client’s computation power instead of its own computation power. They need not have a fixed network topology and the links can be either wired or wireless. Therefore, the clients in this network are considered as peers in the network with responsibility for coordination in communication. Hence such nodes perform a set of operations in order to maintain their link with other nodes instead of using a central server (Baptiste Pretre, 2005).

The unstructured P2P network has gained great importance when compared to other types of structured networks due to their potential for effective carrying out downloading applications. Therefore, many researchers in the area of computer networks have focused their attention on the area of P2P networks and developed new protocols which suit the requirements of the unstructured P2P networks. One of the major problems in the P2P networks is the presence of requirements which need application of the decentralized search techniques. In such systems, the existing search algorithm are highly time consuming and the search is not always successful. Therefore, it is necessary to propose a better representation and search algorithms which can perform parallel search and retrieval from distributed systems in an efficient way.

2. Problem Statement
In RR protocol follows 3 Phases they are Key generation, Query Issues, Query Forwarding in key generation phase we have used ASE algorithm to encrypt the message and the initiator forward the query to the responder basically RR protocol follows non path based techniques which is used to increase the anonymity of the message . The initiator follows query generation method to follow the query to the network. The intermediate node receive the two keys and act as the intermediate agent which is used flooding technique to forward the data the responder also respond use the flooding methods so the initiator may receive multiple response for a single request which is raised heavy network traffic so the performance of the network may get slow down . To avoid this we can use Multi path routing technique to forward the data.
3. Proposed Method

Multi Path routing protocol is important technique in Routing method. The routing method has 2 protocols they are Single Path Routing protocol and Multipath Routing protocol. In single path we have used RIP its known as Routing Information Protocol here the nodes information is passed through the Routing table which has the name of the node and IP address of the node based on this table we can understand the status of all the nodes in the network. In case of Multi cast Routing method follows Protocol Independent Multicasting (PIM) basically it follows two mode operations they are dense mode and another one is sparse mode. Both the modes are used to forward the data to group of destination. Basically these nodes are used shared tree function here the data is send to the router of shared tree and passed to the next node of the tree which nodes are not interested to belong this group they can send the prone message to the source router now that particular node may remove from the multi cast forwarding group.

![shared tree and source-based tree](image)

**Figure 1. Shared tree Versus Source-based tree**

Figure 1 described the features of shared tree and Source based tree. In shared tree all the routers are connected to the source routers in case of source based tree all the routers are connected to the individual parent routers.

**Algorithm1:**

Step 1: In Rumor riding protocol the initiator sends the query to the peer to peer network with two key values they are 1. Cipher key and Rumor Key.

Step 2: The Sender who is received the both the key values and decrypt the Rumor values with help of cipher key.

Step 3: After becoming intermediate node its forward the Rumor key the Reaming nodes in network using Multicast forwarding method.

Step 4: PIM protocol is used to prune the nodes which nodes are not interested to receive the information from the network.

Step 5: Finally all we can reduced the number of nodes from the network.

4. Performance and Results

In our experimental result we have used NS2 simulator to show the performance. Here Our proposed system shows High performance on Multi cost based RR protocol than the Flooding with RR protocol. We have taken 3 parameters they are packet delivery ratio, through put and delay. Our proposed method shows high packet delivery ratio and high through put values in case of delay has decreased.

4.1. Initiator as Repulsive Node

In our experiment we are varying the time as 5, 10,15,20,25 and 30sec. Figure 2 shows the results of delivery ratio by varying the time from 5 to 30 in Initiator attack with RR and RR protocols. When comparing the performance of the two protocols, Attack with RR protocols shows poor performance of peer to peer network.
4.2. Sower as Repulsive Node
Varying the time as 5, 10, 15, 20, 25 and 30 sec Figure 3 it show the results of delay ratio by varying the time from 5 to 30 in case of packet delivery ratio the X access show time in seconds and Y axis’s shows the ratio of delivering packets in case of throughput and in the graph X axis shows time in seconds and Y axis shows the successful received packet at a particular time (MBPS).

4.3. Sower as Repulsive Node
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5. Conclusion
In P2P network without any server all the nodes can easily send or request the file from one node to another node. RR method is consider as good protocol for send or receive the file but here many attackers will act because every node hide their authentication to overcome we have proposed trust and cryptographic based authentication. First we should authenticate the sender and next we should
authenticate the receiver node they can mutually authenticated by each with help of mutual authentication.

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