

Proposed Protocol for Reliability and Security in Peer to Peer Networks

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ABSTRACT

An important issue in peer-to-peer networks is discussed in this paper. peer-to-peer networks appeared as common method of sharing huge volume of data. These networks allow users to share their resources as completely distributed ones. Here by changing the “Chord” protocol’s structure among increasing the package` transmit speed we assure high reliability in package transmit.

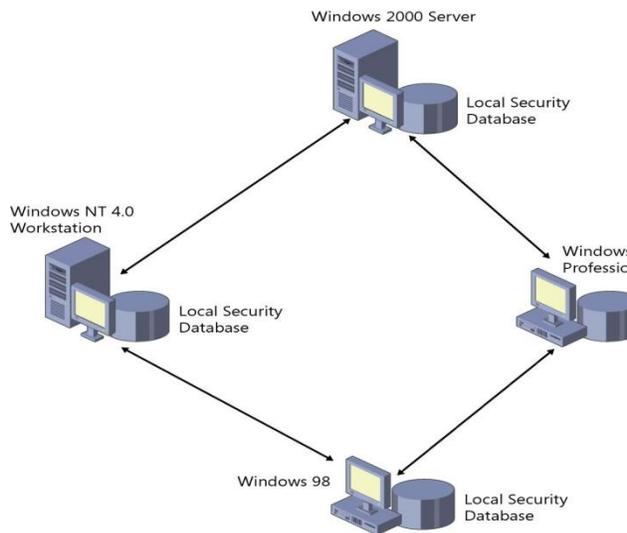
KEYWORDS peer-to-peer networks, Chord protocol, routing, Failure of nodes, Reliability.

I. INTRODUCTION

A peer-to-peer (or P2P) computer network is any network that does not rely on dedicated servers for communication but instead mostly uses direct connections between clients (peers). A pure peer-to-peer network does not have the notion of clients or servers, but only equal peer nodes that simultaneously function as both "clients" and "servers" to the other nodes on the network .P2P is a distributed application architecture that partitions tasks or workloads

among peers. Peers are equally privileged participants in the application. Each computer in the network is referred to as a node. The owner of each computer on a P2P network would set aside a portion of its resources - such as processing power, disk storage or network bandwidth -to be made directly available to other network participant, without the need for central coordination by servers or stable hosts.[1] With this model, peers are both suppliers and consumers of resources, in contrast

to the traditional client–server model where only servers supply (send), and clients consume (receive).



peer-to-peer network's purpose is data sharing and accepting the users' inquiries and research, return a pointer to the data. peer-to-peer network's feature resembles a graph in which vertexes correspond to the network's nodes and edges correspond to the nodes links.

Data transfer speed and reliability in the networks are prominent issues in the networks.

II. CHORD PROTOCOL

Main characteristic of Chord is simplicity, its capability and right function.

As keys are distributed uniformly in Chord system, thus receiving many applicants in a network doesn't disturb the network.

Because in chord system, uniform harmony keys are allocated to nodes, key "K" allocated to the first key, whereas its determiner either equals to K's determiner or comes after K's determiner in its environment. This knot is called K's substitute knot. If we represent the knots as 1 to 2^n , next group is first clockwise one, in uniform harmony allows nodes to enter or to exit the network without any problem.

III. PACKAGE TRANSMIT PROCESS

An important aspect in peer-to-peer networks is that the bandwidth of all clients can be fully used, so the total bandwidth - and usually the available download bandwidth for the average user - grows with the number of nodes, instead of all clients having to share the (limited) bandwidth of the server.

When a node needs to connect other nodes, it should research, and each node needs to connect with current substitute knot in the ring. To do so, it should continue inquiring until

finding two nodes in which targeted keys` determiners locates there. To ensure research function, Chord protocol should assure that any pointer is a substitute for up dated node and pointes the current substitutes. In this point, node individually preserves a routing table, i^{th} entry of the table for node "N" is the first knot`s entity and minimum determiner distance is 2^{i-1} toward "n" on the ring.

IV. FAILURE OF NODES

The idea that is introduced for package`s transmit is that destination and starting point`s route may breaks down for many reasons as the routes data are stored in the tables, if 1 to 2 direct route breaks down, an indirect route $1 \longrightarrow 2 \longrightarrow 3$ is used. If a node transmits a package to its adjacent and receives no response, it observes a breakdown between themselves because its adjacent can either move due to the nodes movement or it hasn`t received the requested package.

In this situation the node locates the sent data package in its local memory and transmits a package with two steps and changes the package`s

destination address to 2 and 3 thus the response package is sent by a node that destination`s address is located in this package.

Practicality, this function needs adding the nodes name on the reply package. In this manner each propeller node propels identifies propellers nodes between itself and destination. Long distance between starting point and destination increases the number of propeller nodes and because their maintenance is costly this limitation can be established as: includes 2 or 3 next nodes which accepts more excess.

Another issue for fail of nodes can explain to this form Each node must knows its successor , when node fail it,s possible other nodes dose not know its successor .

To avoid from this event each node hold a successor table that save the nodes first successor when occur problem to find successor nodes the node contacts the next node from table.

If every nodes fails with probability 1 divide 2 expected time to find successor is $O(\log N)$.

Another issue is necessary band extent to transfer the data as this helps transmitted data. As you know, when there is a package in starting point it will be transmitted by the neighbor nodes, it is transmitted from one neighbor to another one consequently it reaches destination. As the band's extent is necessary to transmit a package, neighbors transmit a package, before receiving the package it should express their band extent to next neighbor, this extent should be compared with needed extent, though when the node is suitable to transmit it is done.

V. SIMULATION

The proposed methods about nodes fail simulate .

The model of the web consist of 30 mobile nodes which are distributed randomly in a space of 1000×1000

if 50% of the nodes fail, only 1.5% of the lookups fail. Simulation results have shown that even massive failures have little impact on robustness.

Failed nodes	Failed lookup
0	0
5	0
10	0.03
15	0.09
20	0.1
25	0.13
30	0.12
35	0.5
40	1.0
45	1.5
50	1.5

VI. CONCLUSION

Peer-to-peer networks are very important networks. This paper tries to develop the package transmit rate regarding the band extent before the package transmit is delayed to next time. Local repair mechanism was discussed in these networks to create reliability. And reliability was analyzed as a function of the number of starting point's nodes comparing to the base protocol, Chord. Results showed the protocol function's development, because when the nodes route breaks down joins the network quickly, consequently the

network's function quality gains only 1.5% of the lookups fail. relative development and then failure Simulation results have. of nodes have been simulated and shows that if 50% of the nodes fail,

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