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A PATH FOR HORIZING YOUR INNOVATIVE WORK

PEER-TO-PEER FILE SHARING WITH THE BITTORRENT PROTOCOL

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Abstract: Peer-to-Peer (P2P) computing has emerged as a significant paradigm for providing services which are distributed, in particular search and data sharing. Current P2P networks BitTorrent (BT) is currently the most popular file-sharing peer-to-peer (P2P) clients. This system has been proposed for a wide application which includes file-sharing, distributed computation, cooperative backup. Many of the traffic are handled by this peer-to-peer system. BT attempts to build robustness to freeloading (i.e. downloading without uploading) by implementing a tit-for-tat like strategy (TFT) within its protocol. P2P networks are implemented as overlay networks on top of the existing Internet infrastructure. Its connectivity usually differs from the underlying physical connectivity. The multisource downloading is done simultaneously in the BitTorrent. Nodes can be thought of as being connected by logical links, each of which corresponds to a path of one or more physical links.

Keywords: Peer-to-Peer (P2P), File-Sharing, working protocol, BitTorrent.

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1 INTRODUCTION

In peer-to-peer (P2P) file-sharing systems, all peers are both users and providers of resources and can access each other directly without intermediary agents. Typically, peers are autonomous, anonymous and self-interested, which means individuals seek to maximize their own goal achievement rather than act in a benevolent manner [1]. Peer-to-peer is an approach to content distribution in which digital files are transferred between "peer" computers over the Internet. Although a P2P network has a number of advantages over the client-server model in terms of efficiency and fault-tolerance, additional security threats can be introduced. With P2P, the client machines are peers and communicate with one another and share the files. Each peer can uploads and downloads at the same time, and in this process new peers can join the group while old peers leave at any time. By using the P2P system the future of network can be change totally.

Simulating is the most popular way for testing peer to peer algorithms and protocols, because there are not exist problems that given above with analytical methods and experimenting with actual system. Researchers can use available simulator tools or make a custom simulation program by themselves. The goal of the simulating is to validate the schemes that are proposed to use in P2P networks, to evaluate the performance of the schemes and the cost of them. By using the simulations that resemble real-world P2P networks we provide the results. There are many parameters and features that must be simulated close to peer to peer networks such as network topologies, content distribution, replication, free riding, query pattern and bandwidth, etc. Most of them can be modelled by using empirical studies.

2. CLASSIFICATION OF PEER-TO-PEER SYSTEMS

First of all, it should be clear what type of peer to peer network is wanted to simulate because each type of network has own special characters. In the following, we introduce variety of them in detail. The web server and the calendar server are provided by client server system. The peers in this context only request content or service from the server, the clients do not provide any service or content to run this system. The shared content and the services in Peer-to-Peer systems are provided by the peers. In P2P systems, we can generally not distinguish between a content requestor and a content provider [2]. P2P networks are implemented as overlay networks on top of the existing Internet infrastructure. Its connectivity usually differs from the underlying physical connectivity. Nodes can be thought of as being connected by logical links, each of which corresponds to a path of one or more physical links. Some of the important P2P applications exist on the Internet are [3][4].

We can classify P2P architectures into two categories:

• Centralized: use a central directory for file location (see figure 1)

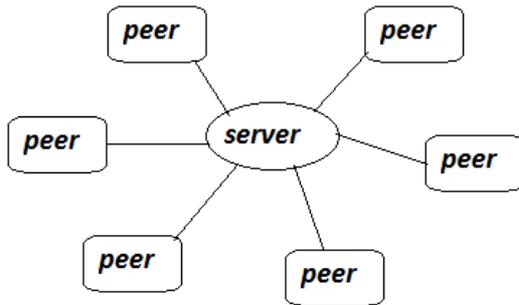• Decentralized: use a distributed directory for file location (see figure 2).
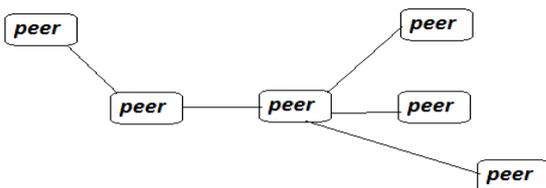
Fig 1: Centralized System

Fig 2: Pure Decentralized System

3. WHAT IS P2P NETWORK

The term Peer-to-Peer refers to P2P networking. Such peer-to-peer network allows computer hardware and software to function without the need for special devices assign to server. P2P is an also alternative to client-server design network. Peer-to-Peer is a popular technology for file sharing applications software like BitTorrent, Shareaza and BearShare. P2P technology helps the P2P client applications upload and download files over the P2P network services.P2P technology can also be found in various other places. Many of the system uses it such as Microsoft Windows XP, contains a component called "Windows Peer-to-Peer networking". Finally, the P2P acronym has acquired a non-technical meaning as well. We may also say the 'P2P' as the network of "people to people". From this P2P is a model for developing software and growing businesses that help individuals on the Internet meet each other and share most of the common interests. Hence, we can say that social networking is an example of this concept.

Peer-to-peer file sharing and the traditional file downloading are different. In peer-to-peer sharing, you use a software program (rather than your Web browser) to locate computers to have the wanted file. Because these are ordinary computers, as opposed to servers, they are called peers.

4. SOFTWARE FOR - P2P FILE SHARING.

Millions of people use free P2P file sharing programs - software to share music, video and files over the Internet. Most of the free P2P file sharing programs already exist. While some P2P software offers a larger user base and greater numbers of files to choose from. Some of the software utilizes which are better in network resources and may be use easily. Some P2P file sharing programs are increasing in popularity while others are decreasing. Consider all of these factors when deciding which P2P network to join.

I. 1. Shareaza

This client offers an extremely powerful search engine capable of connecting to multiple popular P2P networks including, the various software as eDonkey, BitTorrent and Gnutella. Fake or/and corrupted files can be detected by Shareaza file sharing software which includes intelligence. The free Shareaza download are free from ads or spyware. As many of the installed bases of Shareaza client users grow, it has become an increasingly better P2P file sharing program.

II. 2. BitTorrent

BitTorrent is a free P2P software application that has attracted a loyal following among those interested in sharing movies and many of the video programs. Many of the television programs also been shared. The BitTorrent uses the hybrid structure network. When we use BT we must not share everything by it.

III. 3. BearShare

The Gnutella has a popular free software client for the BearShare P2P network. BearShare file sharing program exist both the free and pay download.

Many of such free software are available for use using the P2P file sharing system.

5. CASE STUDY: BIT-TORRENT

Now we'll study how BitTorrent works and how it is different from other file distribution methods. Along with it, you'll learn how to use BitTorrent and what the future might hold for this innovative approach to serving files over the Internet.

BitTorrent (BT) is currently the most popular file-sharing peer-to-peer (P2P) clients [5]. Large files using minimum internet bandwidth can be downloaded fast by using the BitTorrent protocol. As other download methods, BT maximizes transfer speed by gathering file in pieces you want and downloading these pieces simultaneously from people who already have them. BT attempts to build robustness to freeloading (i.e. downloading without uploading) by implementing a tit-for-tat like strategy (TFT) I. It is often believed that this strategy alone is responsible for the high levels of found cooperation. The TFT strategy was championed in Axelrod's book. BT works by various groups of peers also called as swarms with an interest in downloading a specific file coordinating and cooperating to speed-up the process [7].This process makes popular and very large files, such as videos and television programs, download much faster than is possible with other protocols. It costs nothing to use and includes no spyware or pop-up advertising.

If there is a large network where the Bit Torrent is going to use and if there is a single peer going to work as server, (as in fig 3) then the speed get decreases because of the bandwidth is too large.
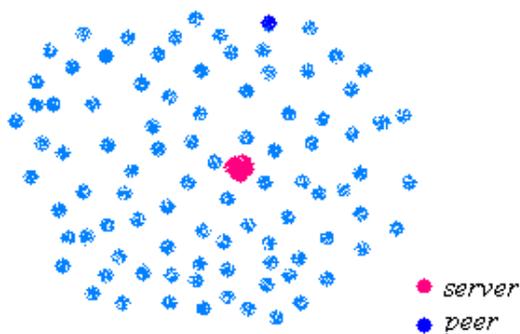

Fig 3: Peer in Bit Torrent network area.

Hence to increase the performance we divide the large area in some small area (as in fig 4).

Here we form the different server base on the bandwidth area of each peer. The large amount of peer which is having the nearest server will download and upload the data from it. There are five servers and many peers which uses the BitTorrent for file sharing. BitTorrent works by groups of peers (called swarms) with an interest in downloading a specific file coordinating and cooperating to speed-up the process [8].The working structure of this is suitable to increase the performance of the speed of file sharing and the various viruses attack can get minimize using this strategy (as in fig 5).
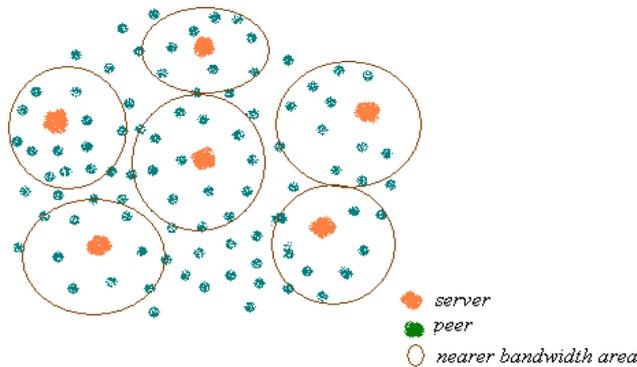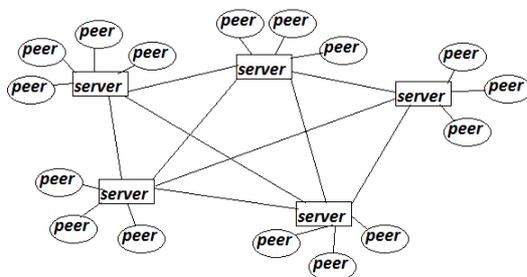
Fig 4: Peer with swarm depends on bandwidth.

Fig 5: Hybrid structure of Bit Torrent to increase the speed and decrease the spyware.

6. WORKING OF BIT-TORRENT PROTOCOL

Now we will review a widely protocol sharing content of P2P of BitTorrent. The content to be shared is broken into blocks of a fixed size and these chunks of data are then downloaded from different peers which have the desired file. There are some components which makes the BitTorrent different from other following are some of them:

1] TRACKER

Used to find other peers contact information who is interested in the same torrent. Stores peers contact information by the torrent bases.

Every BitTorrent network has a unique machine called tracker. It is the centralized entity which keeps the record of the peers sharing a particular content and responsible for coordinating the download file. Private and public trackers anybody can use public trackers for publishing content. Peer uses HTTP protocol for tracker communication. 160 bit info hash is used to identify torrents content in the network calculated from the info part of the torrent file. Tracker is connected when starting, refreshing, and stopping or completing a torrent, starting and re-

announcing returns a peer list for the asked info hash, re-announcements are done at regular intervals, and tracker must have timeout for the peers to remove non-existing peers.
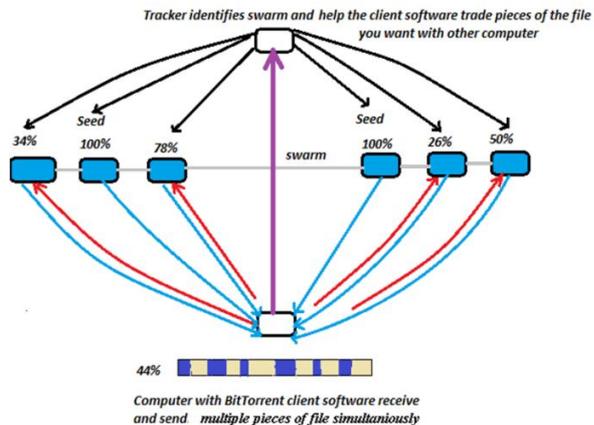

Fig 6: Working of BitTorrent Protocol

2] BitTorrent client:

This is software which runs at each peer in the P2P system and it helps share and download content from other peers.

3] Uploading content:

When a peer wishes to share content with other peers, it creates a torrent file [10] containing the URL of the unique tracker in the system. It then uploads this torrent file using its BitTorrent client software. This sharing is called seeding of content. Once the file is seeded it becomes available to other peers for download.

4] Downloading Content:

When a peer wishes to download content from the P2P network it searches for it on the tracker. If the search is successful, the peer downloads the torrent file for the same. This torrent file is then opened with the Bit Torrent client software.

IV. ACKNOWLEDGMENT

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