

# Peer-to-peer (P2P) file sharing system: a tool for Distance Education

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**Abstract-**Traditional internet service is time consuming, expensive and bulky. The solution of this problem can be peer-to-peer (P2P) file sharing system. In distance learning this process has great scope as it provides a healthy network between the students, researchers and faculties of same community. Nowadays distance education is a very popular system through which anybody can upgrade their qualification or acquire knowledge in various fields. This system is specially made for those who are living in remote and rural areas, physically challenged and working people etc. Peer-to-peer file sharing system will give them the right platform to gather knowledge since this system is the cheapest, time saving and user friendly. This process can play a significant role in future internet services for distance education. In this paper we discuss about peer-to-peer file sharing system and its importance in distance education.

**Keywords-** Peer-to-peer, P2P, Distance Education, Servent, Community

## I. INTRODUCTION:

The very meaning of the term Peer-to-Peer (P2P) File Sharing system is a process of networking by allowing computer hardware and software to function without the need for special central server devices. Peer-to-Peer file sharing system helps each user to contribute and retrieve information. Present websites are based on client-server model where one server contributes and others retrieve. This P2P system will help to share resources between all the users directly. So, the process is time saving, simple and cost effective, anybody can share their resources. Users will get the best material from a pool of resources where proposed system will rank the materials [5]. Web-based collaborative tools such as Helpmate and other web conferencing applications demonstrate that the potential of P2P systems for distance learning and research is large [7]. Now a day's internet watchers have proclaimed "peer-to-peer is the next great thing for Internet" [6]. The advent of peer-to-peer (P2P) technology can be beneficial for the university networks. Peer-to-Peer File Sharing examples include WinMX, eDonkey2000, Bitcomet, Bitlord, Gnutella,

Morpheus, Bear Share, Limewire, Bittorrent, Kazaa Lite, and Napster.

Now a day's distance education is a very popular system through which anybody can upgrade their qualification or acquire knowledge through studies in various fields. Since this system is specially made for those who are living in remote and rural areas, comparatively backward places, and working people, housewives, physically challenged, prisoners and others. Peer-to-peer file sharing system will give them the right platform to gather knowledge since this system is the cheapest, time saving, easy to search and user friendly. This provides a new hope for future internet services especially for distance education. Distance education is the most renowned descriptor used when referred to distance learning [3]. According to Connolly, 'developing appropriate materials is a major challenge' for distance learning [13]. Initially, most distance teaching institutions were mainly designed for older part-time students. Throughout the last two decades more diverse student clienteles have joined distance study frameworks, and it is likely that the future student cohorts, both in distance and campus-based universities will be more heterogeneous [4]. According to Barry Willis 'At its most basic level, distance education takes place when a teacher and student(s) are separated by physical distance, and technology, that is, voice, video, data, and print, is used to bridge the instructional gap [10,11]. From elementary school through doctoral programs, information technology enables self-paced learning with some degree of distance from teaching professionals [9]. The trend is accelerating for distance learning programs to use a broad mix of techniques, methodologies, and media [11]. Higher education systems all over the world are challenged nowadays by the new information and communication technologies (ICT) [4]. Much space is devoted to the potential of ICT [12]. In this aspects use of peer-to-peer file sharing system will help the students of same community directly. Younger students will join distance education [4]. According to the Ministry of Human Resource Development, India, only about 10% of the population in the relevant age-group is enrolled in higher education, and a mere 5% graduate with degrees [8]. So distance education as well as peer-to-peer file sharing system is the most essential for

developing the knowledge based system to learn the best thing directly and easily. Distance education at university level will grow in the coming years and will attract new student clientele [2].

## II. PEER-TO-PEER (P2P) FILES SHARING

### TECHNOLOGY:

Peer-to-peer (P2P) file sharing technology is a collaborative technology which is based on individual users making computer resources freely available, through their internet connections. The resources include files, computing services, network bandwidth etc. In P2P network systems, there is little or no central control and the resources are shared among all the individuals. Node in the network plays the role both of a client and a server. However, the main hurdle before us is to make such resources readily available without connecting to the present web based powerful central server. P2P works by using simultaneous and multiple Internet connections between peers who join together in the same connected "community" [7].

Traditional Internet clients and P2P clients differs from one another in a way, that is in P2P the clients are sometimes called servents, since they act as both servers and clients. Sometimes it acts as a server and provides the information or replies the queries from other servents and sometimes it acts as a client when it makes the request for information to other servents. When large numbers of such servent applications form a network together, they constitute a powerful and robust information and computational infrastructure that is independent of any single central server. The success of P2P systems can be attributed to a collection of sophisticated client programs that provide stability and effective, decentralized search services [7].

## III. P2P AS A POPULAR FILE SHARING

### TECHNOLOGY:

People who are interested to share their files and resources will be greatly benefited by using P2P system as it will provide them a wider platform. Today much of the content shared on traditional internet system is copyright protected, and P2P systems do enable copyright infringement. P2P has a superb potential to be a future technology for use of the internet having safer, superior and legally safe means than the traditional web-based client-server approach. Traditional web server system sometime provides significant barriers to the clients in accessing internet or downloading data. This is because they are controlled by Internet service providers and third party administrators. The administration of web servers requires addressing many technical issues, such as security, reliability, hardware and software maintenance issues. In P2P technology there are virtually no management or administrative issues, since all system resources are maintained in a 'virtual grid' by individual users at the 'edges' of the Internet [7].

Another notable difference between traditional search engine and P2P is that traditional search engine works by indexing web accessible information gathered through slow crawling process, and therefore often results in out-of-date

information. On the other hand, P2P search results reflect the real-time state of information. P2P system simplifies security issues as there is a designated special directory where users may place their files to be publicly available for sharing. On the other hand, files which are extremely private can be placed in a remote location invisible to the P2P system and will remain protected. Moreover this system is user friendly.

## IV. HIGHER EDUCATION AND DISTANCE

### LEARNING SYSTEM:

Now a day's distance learning is the most popular system by which people can gather knowledge in any time and from any place. Thousands of people, who are deprived of higher education at a young age but desirous to improve their knowledge and qualification can, fulfill their desire by using Distance Learning System. People living in rural, remote, mountainous and border areas can learn and gather knowledge by using this system. This will provide the remote people a high educational environment to share their knowledge and ideas. This distance education system has given them opportunity for higher education and research. P2P is the only means for people trying to share their research and gather knowledge, as this will give them the actual platform.

## V. P2P AND DISTANCE EDUCATION:

The main objective of Distance Education is to extend and offer easy accessible modes of quality higher education and training with the use of up-to-date educational technology. It holds the promise of providing equality of opportunities for higher education to the deprived and denied sections of people. With a view to reaching out to those disadvantageous groups due to poor educational and economic conditions, it has put together various academic programmes to suit the less educated, educated and higher educated groups to achieve the goal of providing higher education and training to their approaches [14].

Other objective of Distance Education is to provide access to higher education to large sections of the population and in particular the disadvantageous groups such as those living in remote and rural areas including working people, housewives and other adults who wish to upgrade or acquire knowledge through studies in various fields.

P2P aims to provide prospects for higher education to a large class of society, including those who could not pursue higher education in the appropriate time due to different reasons. And the physically challenged persons and prisoners are also getting the opportunity to develop their professional skills and knowledge.

To fulfill the objective of Distance Education, development of peer-to-peer file sharing system in between all the students, researchers and faculties of different colleges, institutions and organisations under educational system is important. This will provide an educational environment to all kind of students which will be helpful to gather knowledge and share their resources. This will make this system most popular, technologically advanced in education and IT sector and will be able to give all facilities to the students in remote and rural areas.

## VI. P2P POTENTIAL FOR EDUCATION COMMUNITIES:

The potential for educational community in P2P technology is great. It makes a revolution in this community if we use this system properly in right way. The great potential of using P2P technologies in education derives from the power of peer communities and the possibilities of sharing information among these peer communities. Today, many college students are comfortable using P2P applications such as Gnutella and Kazaa for sharing multimedia files over the Internet [7]. We can establish a great multimedia as well as electronic soft copy of research thesis, research articles, different books, journals, power point presentations etc. Students of the University can share their knowledge and collect information through this system. They can also put comments and grade the quality of an article or research work, which will give the courage to the authors and scientists and make the system successful one. Students and researchers can develop the different software for their invention, data logger to show the outputs in computer, programmes for working simple robotics and share with each other.

Let us consider a few potential scenarios based upon different educational communities:

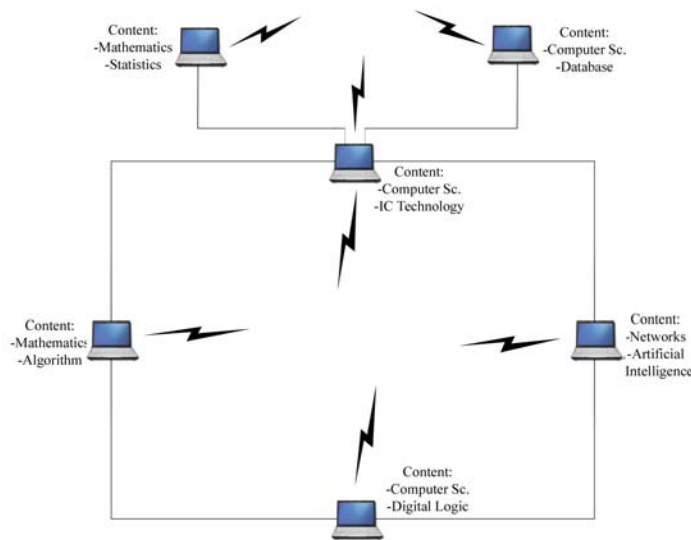


Fig1: A peer-to-peer knowledge-network environment

### A. The classroom community

P2P can support the classroom community and enable to contact through a website of available documents and information to students. In P2P framework, an instructor simply needs to communicate to the students the topic of the file or files to be disseminated.

### B. The student community

Students have to share with each other the information for research activity and gather knowledge with respect to higher educational experience. P2P student community can quickly circulate any information in a very short period of time, which is considered as the most important merits of the system. It makes the system quite attractive to the student community.

### C. The instructor community

Instructor communities that shares information, lesson plans, sample assignments and conducting test exams, educational seminars and other educational resources through this system may be highly benefited by using P2P. In this aspect sharing multimedia has played a great role. Students can share or download one hour classroom video in a particular topic easily and acquire knowledge from anywhere and anytime.

### D. The scientific research community

Researchers can benefit from this system by sharing the latest research works with the other researchers in the same field. For scientific research community this collaborative tool demonstrates that the possibility of P2P system for distance education and research is great.

## VII. CONCLUSION:

Peer-to-peer networks are becoming more and more popular to share information. Since this information is stored locally at the different peers, it is necessary to facilitate the search in an intelligent way [1]. Having seen the limitations of the P2P file sharing system from the discussion made above we find that this system is not suitable for all purpose of use, especially the issues related to major security problems. Generally in educational purpose, the peer which is interested or willing to share their resources will have a wide and better platform. Peer who wants to make public their resources provides a chance to share their resources with everybody. On the other hand peer trying to withhold some resources private without giving an opportunity to other peer to share amongst themselves can keep those resources private. P2P file sharing system if restricted within University networks will lessen the chances of nefarious activities, since all the peers in this system are respected and will be a student, researchers or faculty members. Thus, they can share their resources freely.

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