



ISSN 2278 – 0211 (Online)

## An E-Mail Based Solution for Peer to Peer File Download

**Rachana C. R.**

Associate Professor, DOS in Computer Science  
PBM Mahajana PG Centre, K.R.S Road, Metagalli, Mysore, Karnataka, India

### **Abstract:**

Peer-to-peer networking, often referred to as P2P, is perhaps one of the most useful and yet misunderstood technologies to emerge in recent years. When people think of P2P they usually think of one thing: sharing music files, often illegally. This is because file-sharing applications such as Bit Torrent have risen in popularity at a staggering rate, and these applications use P2P technology to work.

Peer-to-peer (P2P) file sharing has seen both tremendous popularity and seemingly endless controversy. For many, P2P software clients have become part of the standard suite of PC applications. With millions of users world-wide sharing music, video, software, and pictures, file movement on these networks represent a significant percentage of internet traffic. Peer-to-peer file-sharing networks enable users to “publish” or “share” files – any file from music to video to spreadsheets.

An email based Peer-to-Peer file download technique will be a huge improvement over the existing P2P networks since every node would be reachable, and it would be possible to send a file to multiple users without uploading it multiple times. An E-mail address can be used to uniquely identify a particular host on the internet irrespective of the nature of his network connection. This paper presents an innovative idea of downloading files through e-mail using the concept of P2P. The data communication between the peers would occur through the process of message passing. Message passing would be done through Electronic-mail.

**Key words:** peer to peer networks, email, file download

### **1. Introduction**

Peer-to-peer file sharing is different from traditional file downloading. In peer-to-peer sharing, the user runs a program (software) to locate computers that have the file which is needed by the user. Because these are ordinary computer, as opposed to servers, they are called peers. The process works like this:

- Peer-to-peer file-sharing software is run on the user’s computer and a request is sent out for the file which needs to be downloaded.
- Locate the file; the software queries other computers that are connected to the Internet by running the file-sharing software.
- When the software finds a computer that has the file which is needed on the hard drive, the download begins.
- Others using the file-sharing software can obtain files they want from the user computer's hard drive.

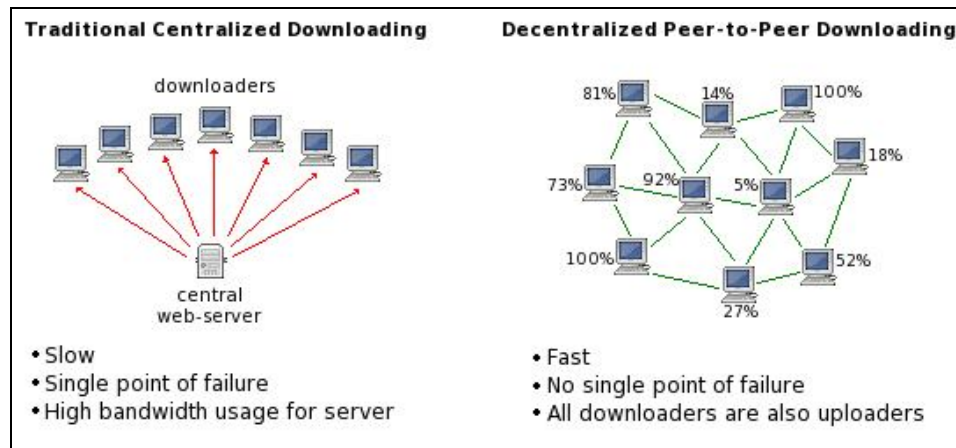


Figure 1: illustrates the difference between traditional file download and p2p file download.

### 2. Email Based Approach

In a peer-to-peer network, there is no server to log users in, check their passwords and grant them access to resources on the network. For this reason, there is a greater effort required to maintain the network, but once these procedures are understood, the effort is very manageable. Proper attention spent up-front in setting up the system will make ongoing maintenance much easier and less time-consuming.

Several small applications are designed to perform certain functions for sending the pieces of information. One application is designed to cut a large file using a file cutter. It makes use of the SMTP protocol to send the mail to the Gmail account of the client who has requested for a file for peer download. Copy of the pieces is stored in the e-mail address associated with the client. The user id and the password of the client are authenticated before the file transfer.

POP3 protocol plays a major role in receiving the E-mail into the Gmail account inbox of the peer client who has requested the file. Only if the username and password of the peer client matches with the information on the file sending peer (server), the mail is delivered to the peer client. Otherwise, an error message will be suitably displayed.

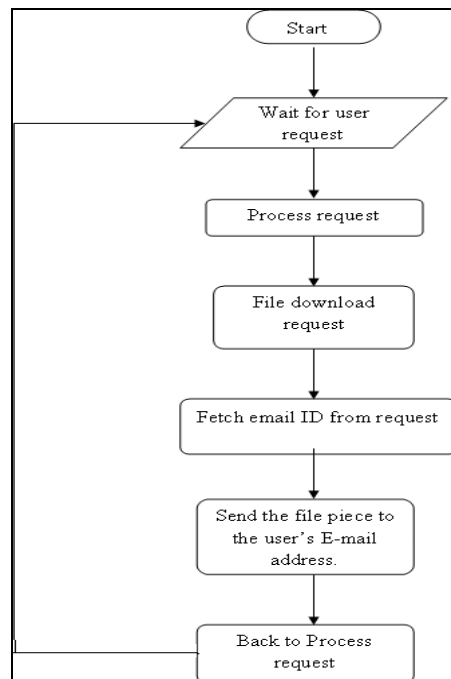


Figure 2: Functionality of the server peer

Specifically, the client peer is responsible for,

- Receiving Meta data from the client.
- Monitoring the file pieces from server peer module.
- Interacting with other modules via message passing.

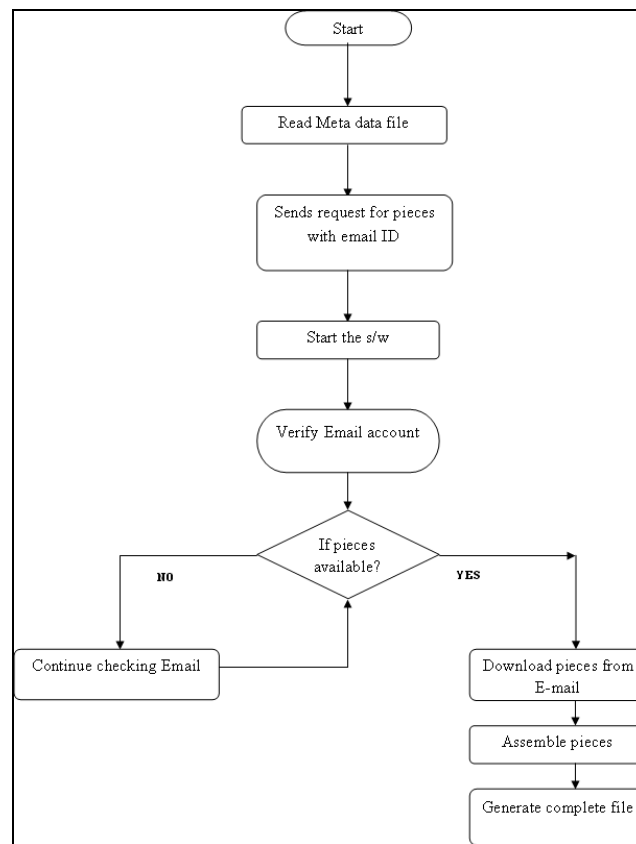


Figure 3: Functionality of the client peer

Once the receiving of the required pieces of file is complete, the attachment downloader saves the actual file in the client-peer system by reassembling all the pieces of the file.

Another application checks for new mails in the peer client's inbox for the arrival of new pieces of the file every 1 minute.

Functional Requirements include:

- A peer must join the network using its peer name and password.
- After running the application, a shared folder containing the Meta data files must be shared with the other peers.
- The client peer must download the metadata file from the server and upload it into its application.
- The pieces of the file must be first sent to the E-mail ID specified by the client peer and then to its respective system.

### 3. Conclusion

Peer to peer applications are many. They include Consumer file sharing, Distributed resource sharing, Content distribution, P2P communications, and Collaboration applications. Their main characteristics include Peer nodes have awareness of other peer nodes, Peers create a virtual network that abstracts the complexity of interconnecting peers despite firewalls, subnets, and lack of specific network services and Each node can act as both a client and a server. This paper has successfully illustrated how an email id can be used for file downloads using P2P technology.

### 4. References

1. Mike Kissing, Jeremy Tout, Peer-to-Peer File-Sharing Expanding and Specifying the Model, <http://www.wpi.edu/Images/CMS/EPL/kissingrandtout.pdf>.
2. J. Myers and M Rose, Post Office Protocol - Version 3, IETF RFC 1939, May 1996; Available: <http://www.ietf.org/rfc/rfc1939.txt>.
3. Jonathan B. Postel, Simple Mail Transfer Protocol, IETF RFC 0821, Aug. 1982; Available: <http://www.ietf.org/rfc/rfc0821.txt>.
4. Bram Cohen, The BitTorrent Protocol Specification in Jan 10, 2008. [http://www.bittorrent.org/beps/bep\\_0003.html](http://www.bittorrent.org/beps/bep_0003.html)
5. Ying Li, Lijuan Yang, Chune Zhang, Improvements on the security of P2P file-sharing system based on JXTA, International Conference on Electronics, Communications and Control (ICECC), 2011