# The Controversial World of On-Line File Sharing: An Investigation of Online File-sharers

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## ABSTRACT

*On-line file sharing has enjoyed a meteoric rise since its appearance in 1999. This phenomenon has brought with it multiple ethical and legal issues that question the technology's legitimacy in a networked world. Despite ethical and legal questions, on-line file sharing is here to stay and will continue to proliferate. Given this, it is useful to learn more about the phenomenon of on-line file sharing. In this paper we examine the file sharers themselves % their demographics, attitudes, biases, proficiency in computer use, etc. Studying these concepts and characteristics will enable academics and practitioners to learn more about the social dimension of on-line communities and will enhance the design and development of virtual organizations.*

## I. INTRODUCTION

Computer-networking has undergone a gradual transformation over the years % from being a means to transport data between computers at different locations in a building to the present context which allows users to access servers across the globe, all in a matter of seconds. From a societal point of view, the networking concept has also grown into its own subculture, spawning various forms of communication and data exchange. But for what started as a simple concept to enable people to exchange files and data with one another, the idea of on-line file sharing has become a phenomenon of its own that has attracted the attention of a very diverse cross-section of society such as scientists, researchers, management professionals, casual computer-users, producers and distributors of digital media, students, the news media, law enforcement, and computer systems administrators, just to mention a few. In its short history, on-line file-sharing has overwhelmed computers, computer networks and law enforcement across the globe. The growth in popularity of "mp3" file-downloads and various other forms of online media has spawned the concept of peer-to-peer (P2P) networking and made it into a household name. The phenomenon has brought with it multiple ethical and legal issues that question the technology's legitimacy in a networked world. Despite ethical and legal questions, on-line file sharing is here to stay and will continue to proliferate. Given this, it is useful to learn more about the file sharers themselves % their demographics, attitudes, biases, proficiency in computer use, etc. Studying these concepts will enable academics and practitioners to learn more about the social dimension of on-line communities and will enhance the design and development of virtual organizations.

## II. NAPSTER AND THE EMERGENCE OF ON-LINE FILE SHARING COMMUNITIES

One of the most notable and infamous filesharing programs to hit the global network was Napster which hit the internet in mid 1999.

Napster revolutionized the way music is distributed to individuals around the world. The software was "freeware" and was available for download off of the Napster website. It became an instant hit on college campuses across the United States, giving college students instantaneous access to all their favorite songs at no cost. The software soon spread to the home and even business PC's. Its popularity increased more and more with each install of the application and download of a .mp3 or .wav file. Before Napster's introduction, the downloading of music was present. However a user's only means to get mp3 files meant sifting through a multitude of websites and/or attain access to various FTP (File Transfer protocol) sites spread around the world. This made downloading music a challenge and often required a lot of time. Napster changed this dramatically, with its easy-to-use user interface and powerful search query system and a large base of users % 80 million in late 1999 (King, 2002).

Napster was a hugely successful disruptive technology. But its success also contributed to its demise. One of the first to notice the problems caused by Napster were systems administrators at university campuses, which suffered from decreased network performance due to "bandwidth hogging" by music down-loaders. Because music files were the primary files being downloaded, the music industry began to see Napster as a threat to its livelihood, and referred to music file downloads as pirating of copyrighted material. The Recording Industry Association of America (RIAA) claimed that Napster was denying the recording artist the collection of royalties associated with album sales. Recording artists themselves had mixed emotions on the software application; some felt it was robbing them of profits while others felt it was spreading their music to even more and more listeners (Mann, 2003). The RIAA filed lawsuits in 1999 accusing Napster of promoting and infringing copyright violations. The RIAA also sent cease-and-desist letters to school administrators advising them of the copyright violations involved. The heavy-metal rock group, Metallica also filed a lawsuit against Napster in 2001. Metallica's lawsuit alleged that Napster had violated three different areas of the law: copyright infringements, unlawful use of digital audio interface device, and the Racketeering Influenced & Corrupt Organizations Act (RICO) (Jones, 2000). Metallica's lawsuit made the name Napster even more popular and recognizable than earlier. However, this lawsuit was the beginning of Napster's legal problems. In July 2000, the United States Ninth Circuit Court District Judge Marilyn Hall Patel issued the first of two injunctions that closed down the Napster service (King, 2002). The Napster company and web site (http://www.napster.com), which in late 1999 boasted of 80 million registered users, is now defunct.

Despite legal setbacks which led to its demise, Napster was still considered the pioneer in the world of P2P file sharing, spawning a multitude of similar P2P applications all being produced using Napster's

original source code as the benchmark model. These applications include Gnutella, Morpheus, Limewire, BearShare, WinMX, and the most recent and popular application Kazaa. Each of these applications allow users to share and download music, but have also extended the search queries to include other data files such as movies, video clips, and even software, thus making P2P ever more desired and sought after (Graham, 2002, Warner 2002).

## III. THE P2P SUBCULTURE

Despite legal woes and pressure applied by the media giants and entities like the RIAA, and college and university administrators who are worried at the flood of pirated files that clog their campus networks (Trounson, 2002), users around the globe still flock toward the idea of free music, movies, and software. This craze has developed into its own subculture where users ranging from pre-teens to young adults in college, and business professionals to the average blue collar workers are all engaged in mining the Internet for the latest MTV hit, song or movie. According to a 2002 article by Thomas, "19% of those ages 12 and over — use P2P software (Thomas, 2002)."

The technology industry has even embraced this fact and has showcased several TV ads revolving around the creation of music compilations from downloaded music (Bai, 2003).

The Yankee Group, in a 2002 report on the future of on-line file sharing, has predicted that the "future is bright for on-line file sharing." The report states that the success of legitimate online downloading sites % such as MusicNet, Rhapsody, MusicNow and Pressplay, will depend on whether they offer a wide range of content from all five major record labels as well as from independents (Lyman, 2002). The report concluded that they must also give consumers ownership % including the ability to copy songs % and must make downloadable files portable, meaning that they can be played on different devices at home, at work and while mobile. "Consumers want to burn music," Goodman (of the Yankee Group) said. "[Services have] got to give them ownership, and you need content" (Lyman, 2002). It is not difficult to see that Kazaa provides all of these features to its users.

### What, exactly, is the "P2P subculture?"

According to Richard Barbrook, (available online at http://www.hrc.wmin.ac.uk/theory-sonicboom.html) reviewer of John Alderman's (2001) book or the emergence, growth and effects of P2P computing and file sharing, "the gift economy remains at the heart of the Net."People build their own websites, contribute to listservers, send emails and take part in chatrooms. If someone asks for some information, they are usually happy to give it to them. For music fans, (the concept of) file-sharing is a dream come true. From the latest releases to deleted rarities, everything is available for only the cost of connecting to the Net. Net users could usually find someone who would give them copies of tunes which they are looking for - and, in return, they were delighted to send out tracks from their own collections to those who requested them. Although accessing Net still costs money, downloaded music is free. Since payment wasn't required, these music files were usually formatted in MP3 - an open standard without any copyright protection. Like other Net obsessions, sharing music soon developed into a fun way of meeting people on-line. Fans could chat about their favourite musicians while giving away tunes. This underground scene was given a massive boost by the invention of Napster. Written by an MP3 collector, this program created a virtual meeting-place where people into swapping music files could find each other. From the moment of its release, the popularity of Napster grew exponentially. Early adopters recommended the program to their friends who, in turn, passed on the good news to their mates. What had begun as a cult quickly crossed over into the mainstream. For the first time, rebellious youth were identifying themselves not by following particular bands, but by using a specific Net service: Napster. A new generation gap had emerged. Each youth subculture achieves notoriety by antagonising its elders. Just like hippies smoking dope, the users of Napster were united through a minor form of civil disobedience: breaking the copyright laws."

### Studying the P2P subculture

Given this background, it is our contention that studies are required on the nature of those who use file downloading software. This will give all the stakeholders % the media producers, distributors, end-users and legal entities a better picture of the sub-culture. Studies of the end-user aspects of on-line file sharing will also lead to the future development of file sharing applications within corporations, to be used for corporate resource sharing (e.g., the "Mesh" file-sharing system by Subramanian and Goodman, 2003). For our study, we conducted a survey of users of file downloading software. We discuss the survey below.

*Table 1*

| P2P User Survey |
|---|
| 1)Gender |
| male |
| female |
| No Comment |
| 2) Do you know what P2P stands for? |
| Yes |
| No |
| 3) Do you share files off your computer |
| Yes |
| No |
| 4) Have you ever downloaded the following software? |
| Kazaa |
| Napster |
| WinMX |
| Bearshare |
| Morpheus |
| Other |
| None |
| ALL |
| 5) If you downloaded the software, what did you use it for? |
| 1) Music |
| 2) Movies |
| 3) Software |
| 6) Did you pay for these files? yes/no |
| 7) If not would you? yes |
| no |
| No comment |
| 8) How many files have you gotten through this software? |
| 40 to 80 |
| 80 to 120 |
| 120 to ??? |
| NONE |
| 9) How often do you use it? |
| Daily |
| Weekly |
| 10) What kind of Internet connection do you have? |
| DSL/Cable |
| T1/LAN |
| Dial-up |
| NO Comment |
| 11) Rate your Computer literacy (1=very low; 10=very high) |
| 1 |
| 2 |
| 3 |
| 4 |
| 5 |
| 6 |
| 7 |
| 8 |
| 9 |
| 10 |
| 12) What is your opinion about downloading files off the Internet? (Comment) |

**Survey Design**

The survey was created and administered in an attempt to gain further understanding on the whole peer-to-peer file-sharing concept from the standpoint of the everyday user.

The specific focus of the survey was to gather and analyze the responses of the survey participants in terms of their demographic characteristics, age, gender, etc. The survey also focused on the objectives and attitudes of on-line file-sharers.

Because we anticipated that the users of P2P file downloading software would not be very amenable to answering a long survey, or reveal too many details about themselves, a conscious attempt was made to make the survey as non-intimidating and as short as possible. The participants were met in small groups and the survey was distributed by hand.

The sample size obtained consisted of 67 randomly selected individuals (38 male, 26 female, 3 unspecified) ranging in age from 18 to 45. While a majority of the participants were college students, the group also included working and sometimes, experienced computer professionals.

The participants were asked to answer 11 questions pertaining to the nature of their P2P and file-sharing experiences. Table 1 below shows the survey.

While questions 1 through 11 were straightforward, question 12 allowed the participants to freely express their opinions, comments and attitudes about P2P file sharing.

Notable Survey Results:

1) Of the current file-sharing applications available to the public, participants of the survey listed Napster and Kazaa as the most popular P2P applications used. However upon closer inspection of the survey results, it was seen that many Kazaa users had also downloaded Napster (and used it) at one time.

2) Despite the popular use of applications such as Kazaa, Napster, and Morpheus, 55% of the respondents stated that they did not even know what P2P actually stood for.

3) Of the respondents who claimed to have an above average/ advanced computer literacy (7+) only 37% claimed that they knew it stood for peer-to-peer. This, coupled with result#2 above would suggest that many people who participate in the file-sharing subculture do not necessarily understand the nature or background of the technology that they have used. Rather these people are merely hoping aboard a bandwagon because it allows them access to free material via a simple medium.

4) The survey results also indicated a high use of P2P applications via broad band connections (DSL/Cable: 34, T1/LAN: 14, or approximately 65%) suggesting that there might be a direct correlation with the recent popularity of high-speed internet connections and the use of P2P applications. This in turn may have ramifications for the providers of broadband connectivity, such as ISPs and college networks.

5) When asked to share their comments on what they thought about downloading material off the Internet, 73% of the respondents. Reacted positively to the concept of on-line file sharing.

6) 73% of the respondents indicated that they will not be willing to pay for on-line file sharing.

7) However, 14% of the respondents stated that they sympathized with the media industry, recording artists and entertainers saying that they do indeed need to make money for their craft. Most of the others couldn't care less about the RIAA and its famous clients, stating they believed artists make enough money already, "A few songs here and there won't hurt them a bit" stated one respondent. A few indicated neutrality on the issue.

8) One respondent indicated that he/she was heavily involved with the P2P craze and was actually one of Kazaa Media Desktop's "SUPERNODES" for the greater New Haven County area. When asked on his/her comment about the RIAA and MPAA, the response was negative towards these organizations.

9) The vast majority of the respondents deemed the use of P2P applications as merely a tool for enjoyment and personal gain. However, one individual stated that much of his involvement with

P2P applications were primarily for educational and awareness purposes only.

10) A large majority used their preferred software for personal gain and enjoyment with not a care as to what may or may not happen to them.

## IV. CONCLUSIONS AND FUTURE RESEARCH DIRECTIONS

In this paper we have attempted to study the mind of the users involved in file sharing. The results of our study point to the following conclusions:

- P2P on-line file sharing has experienced a meteoric rise in popularity since it first came into being in 1999.
- It has become a part of popular culture, and is here to stay.
- A large percentage of the users of P2P file sharing are likely to be students in colleges and schools, though more and more disparate users such as working professionals and home users are beginning to participate in P2P file sharing.
- P2P file sharing is considered to be detrimental by the RIAA, MPAA and some in the music and entertainment industry who consider this phenomenon to be a gross violation of copyright laws and therefore illegal.
- The RIAA and MPAA plan to pursue offenders staring from the developers and distributors of P2P file sharing software to the Internet Service Providers (ISPs) who provide a vehicle and platform for what they deem as illegal activities.
- P2P file sharing software are getting very sophisticated.
- New P2P business models are emerging.
- The users of P2P file sharing software are ambivalent about the legal and ethical issues.
- P2P file sharers are not necessarily very "tech-savvy."
- P2P file sharers use P2P software for the convenience, and are not particularly interested in the underlying technology.

**Limitations of our survey of P2P file sharers**

. This study was limited to the east coast of the US, in the geographical region extending from Boston to New York City.

. We have not looked at the effects of age, ethnicity, and gender differences. A future study currently underway will survey a larger group, and an ANOVA will be performed on the effects of age, sex and computer literacy.

. We have also not looked at the effects of cultural differences and digital divide issues.

## REFERENCES

1. Alderman, John. "Sonic Boom: Napster, P2P and the battle for the future of music," Fourth Estate, London 2001.

2. Applegate, Linda, et al. "Corporate Information Strategy and Management: Text and Cases," Sixth Edition, McGraw-Hill Irwin, 2003.

3. Bai, Matt "Hating Hilary." Wired Magazine, February 2003. Available on-line at http://www.wired.com/wired/archive/11.02/hating.html

4. Graham, Jefferson. "File-sharing is a hit, Despite legal setbacks." USA Today, May 13, 2002 Gannet Company Inc. Available on-line at http://www.usatoday.com/tech/news/2002/05/14/music-sharing.htm.

5. Grow, Brian. "Netherlands Court Ruling offer Haven to File-Sharing Services." Wall Street Journal, December 18, 2002. Available on-line at http://www.acm.org/technews/articles/2002-4/1218w.html#item5.

6. Jones, Christopher. "Metallica Rips Napster" in Wired News, April 13, 2002. Available online at http://www.wired.com/news/politics/0,1283,35670,00.html.

7. Kahney, Leander. "Coder Finds New Way to Swap Tunes." Wired Magazine, January 31, 2003. Available on-line at http://www.wired.com/news/technology/0,1282,57482,00.html.

8.   King, Brad, "The day Napster died." Wired News, May 15, 2002. Available online at http://www.wired.com/news/exec/0,1370,52540,00.html

9.   King, Brad. "The Kazaa Ruling: What It Means." Wired Magazine, April 2, 2003. Available on-line at http://www.wired.com/news/politics/0,1283,51457,00.html.

10.   Lyman, Jay. "Report: Future Bright for Online File-Sharing." Newsfactor, August 14, 2002. Available on-line at http://www.newsfactor.com/perl/story/19025.html.

11.   Mann, Chris C. "The Year the Music Dies" Wired Magazine, February 2003. Available on-line at http://www.wired.com/wired/archive/11.02/dirge.html.

12.   Subramanian, Ramesh and Goodman, Brian. "Peer-to-Peer Corporate Resource Sharing and Distribution with Mesh," *In the Proceedings of the 14th IRMA International Conference, 2003*.

13.   Thomas, Karen. "File Swapping Invades the Home Computer" USA Today, October 15, 2002. Available on-line at http://www.usatoday.com/tech/webguide/internetlife/2002-10-14-p2p-swapping_x.htm.

14.   Trounson, Rebecca. "Pirated files clog college networks." Los Angeles Times, December 2, 2002. Available on-line at http://www.chicagotribune.com/technology/local/chi-021202college,0,3286066.story.

15.   Warner, Melanie. "The New Napsters." Fortune, August 12, 2002. Available on-line at http://www.fortune.com/fortune/personalfortune/articles/0,15114,370121,00.html.

16.   Woody, Todd. "The Race to Kill Kazaa." Wired Magazine, February 2003. Available on-line at http://www.wired.com/wired/archive/11.02/kazaa.html.

Websites:

1.   Kazaa Media Desktop Website: http://www.kazaa.com

2.   The Recording Industry Association of America Website: http://www.RIAA.org

## APPENDIX: PEER-TO-PEER (P2P) SURVEY RESULTS

| Survey Results: | |
| --- | --- |
| | |
| **Total Sample Size** | 67 |
| **1)Gender** | |
| male | 38 |
| female | 26 |
| No Comment | 3 |
| | |
| **2) Do you know what P2P stands for?** | |
| Yes | 31 |
| No | 36 |
| | |
| **3) Do you share files off your computer** | |
| Yes | 42 |
| No | 25 |
| | |
| **4) Have you ever downloaded the following software?** | |
| Kazaa | 42 |
| Napster | 46 |
| WinMX | 9 |
| Bearshare | 4 |
| Morpheus | 24 |
| Other | 20 |
| None | 11 |
| ALL | 3 |
| | |
| **5) If you downloaded the software, what did you use it for?** | 1) Music |
| | 2) Movies |
| | 3) Software |
| | |
| **6) Did you pay for these files?** | |
| **If not would you?** | |
| yes/yes | 1 |
| yes/no | 0 |
| no/yes | 8 |
| no/no | 51 |
| No comment | 3 |
| Yes/no comment | 2 |
| no/no comment | 2 |
| | |
| **7) How many files have you gotten through this software?** | |
| 1 to 40 | 11 |
| 40 to 80 | 6 |
| 80 to 120 | 5 |
| 120 to ??? | 37 |
| NONE | 8 |
| | |
| **8) How often do you use it?** | Most popular answer: Once a day or Daily |
| | Second most popular answer: Weekly |
| | |
| **9) what kind of Internet connection do you have?** | |
| DSL/Cable | 34 |
| T1/LAN | 14 |
| Dial-up | 15 |
| NO Comment | 4 |
| | |
| **10) Rate your Computer literacy** | |
| 1 | 1 |
| 2 | 0 |
| 3 | 1 |
| 4 | 5 |
| 5 | 15 |
| 6 | 9 |
| 7 | 17 |
| 8 | 15 |
| 9 | 1 |
| 10 | 6 |

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