

# P2P: Power to the People

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Sooner or later the Napster story will hit the big screen. Copyright-Catfight, orchestrated by Hollywood. It will be the story of Shawn Fanning, Napster's founder, painted in rich cinematic colours. Born as a result of quick sex at a birthday party, raised without a father, money or any strong family ties. Escaping into the world of cyberspace, setting out on a mission to change the way we consume music. We'll see him getting into the music industry's radar, fighting in court, mobilising the masses. He'll lose battle after battle, face showdowns with Metallica, and finally see his creation die, wrangled by lawyers. What a story.

After ninety minutes we will get up from our comfortable cinema seats, feel good, reminiscent. Napster, after all, was our story too. We made it possible, together with millions of other users. We'll think about the rush we felt when we downloaded our first mp3s with Napster – and that unexpected excitement when a total stranger with a funny nickname downloaded something from our own hard disk. Back home, we will – instead of turning on the TV as usual – grab our notebook or settle in front of that fancy iMac. We'll go online and do something we haven't done in a while – download a file-sharing application. It might be Kazaa [<http://www.kazaa.com>], some Gnutella [<http://www.gnutella.com>] client or something new we read about recently on Wired.com [<http://www.wired.com>].

We'll install it, start it, and wait some magical seconds for the client to make contact with its network. And then they'll be there again, as if they had never gone: thousands and thousands of users, engaged in a restless exchange of bits and bytes. Music, films, programs, books – everything seems to be available, provided by individuals like you and me, and everything will be free. Maybe we'll search for the soundtrack of that movie we just watched, or maybe for the movie itself. Something of interest to us will be there for sure. We'll suddenly feel this rush again, and then we'll understand: Napster's story is by no means finished. Not after the company's demise, and certainly not after ninety minutes of Hollywood fun. It's really just beginning now.

Free Install  
**Napster 2.0** *Click Here!*

### **Napster's Rise**

When Shawn Fanning was eighteen, he used to spend lots of time on the IRC [<http://www.irchelp.org>], an internet chat network used by tech-savvy people who avoid the main trails of the data highway, with its paved roads and corporate communities. There he met up with friends from a group called w00w00 [<http://www.w00w00.org>], which dubs itself a security team but is really one of the many hacking crews of the internet. Mind you, being a hacker doesn't necessarily mean that you are showing destructive behaviour. It's just a sign of curiosity combined with technical skills. w00w00's members had very different backgrounds and came virtually from all over the world, connected only by email and their regular chats. The group earned some respect in the global hacker and security community by documenting program vulnerabilities, such as a serious security flaw in the AOL instant messaging program. But its members also worked on little tricks in order to gain extended rights on the servers of their favourite chat network.

Shawn Fanning's role in the whole group remains unclear. He didn't seem to be involved in too many of the group's exploits. But in 1998 he started a project that would earn him lots of respect from his fellow w00w00 members – and cause some serious trouble for the music industry. Fanning noticed that his friends at Boston University's dorm rooms had started downloading lots of mp3 music files from the web. At that time, most popular for that purpose were the Lycos mp3 site [<http://music.lycos.com/downloads/>] and the music website Scour.com. Both were classical search engines, and both left their users fighting with some serious problems. Most of the websites that hosted mp3s were shut down after a few weeks – either due to a demand from the phonographic industry, or, more likely, because they simply caused too much traffic.

Fanning wanted to circumvent that problem by skipping the intermediaries – the web servers and search engines – and directly connecting mp3 fans. This structure is called peer to peer, because it brings together equal programs (peers) instead of letting them all connect to a central entity. Fanning started programming in autumn 1998 and very soon got the feeling that he was about to create something really important. It was his first major programming project, and it became so time-consuming that he decided to drop out of school and work full time on the application that soon would become Napster.

In summer 1999 Shawn Fanning finished the first version of Napster, uploaded it to a web server and gave the address to a few of his IRC friends, asking them to try it out but refrain from forwarding the download location. His friends tried, were seduced and couldn't resist sharing the software. After only a few days, thousands of people were using Napster. Soon Shawn Fanning had to ask some people from w00w00 to help him set up a better



scalable version of the file-sharing service.

Spurred on by the overwhelming success, Shawn incorporated Napster with the help of his uncle. The young company raised venture capital and relocated to California. But with gaining hundreds of thousands of users in only a few months, Napster showed up on the radar of the music industry sooner rather than later. On December 7, 1999, the Recording Industry Association of America (RIAA) [<http://www.riaa.org>] sued Napster for copyright infringement, demanding \$10,000 for every song that was traded over the system. What would follow was a long legal battle with lots of setbacks and a few temporary victories. For now, we'll leave the showdown with Metallica and other juicy parts to Hollywood and concentrate on the technology and its social impact instead.

Napster's problem was one of its main features: in order to serve its users with community functions such as a chatroom and a big, searchable index of all songs available for trade, the system relied on a farm of servers. Although the users exchanged their MP3s directly, the servers were still a crucial part of Napster's architecture. No servers, no Napster – that was the logical approach of the legal attacks.

### **Like the Telephone Game**

In early 2000, Justin Frankel wanted to prove that file sharing was possible without any central entity – be it a server or an upstart company like Napster, who had just raised another \$15 million of venture capital. So he worked out a complete server-less system and called it Gnutella. Frankel's system worked in a similar way to the telephone game: instead of querying a central database for a file, a user simply asked a handful of other participants. They looked for the file in their own collection and passed the request down to some more users. If the request was successful, the owner of the requested file would contact the search initiator directly and allow him or her to download it. Frankel published a first version of Gnutella on March 14 on the web. Soon the notorious geek news website Slashdot reported on the program, and again thousands of people were willing to give it a try immediately.

The punchline: Frankel was an AOL employee. The media giant had bought his company Nullsoft [<http://www.nullsoft.com>] about half a year earlier. AOL was not so pleased with the idea that one of its programmers would release something that was soon dubbed 'the future of Napster'. Within days it forced Nullsoft to pull the plug. But it was already too late: Gnutella was up and running, offering free exchange of all kinds of files. After some reverse engineering and a little undercover help from Nullsoft, Gnutella's protocol – the set of rules that make the network work – was documented by some tech-savvy file-sharing fans. Only days later, the first third-party programs showed up on the Internet. Soon file-sharing fans would learn that Gnutella at that time was far from perfect. In July 2000 the music industry won a first round in its attempts to shut Napster down. A judge granted a preliminary injunction against the company and demanded that all illegal file transfers be stopped within two days. Thousands of soon-to-be-homeless file traders downloaded Gnutella to keep on downloading – and brought the whole network down immediately.

Jordan Ritter, a co-founder of Napster, had a valid explanation for this network beha-

viour. "Gnutella is truly a 'broadband killer app' in the most literal of senses", Ritter wrote [<http://www.darkridge.com/~jpr5/doc/gnutella.html>]. "It can easily bring the Internet infrastructure to its knees". The problem was something like this: if every user forwarded his or her search requests to a handful of other users and these users kept forwarding them, then the number of recipients grew exponentially. And while this didn't really bring the internet infrastructure to its knees, it was enough to make Gnutella unusable as soon as a certain amount of users were connected.

### **7 Million Users. Right Now**

Niklas Zennstrom and Janus Friis knew about this problem fairly early and thought they had a key to its solution. The day Napster was hit with its injunction, Friis and Zennstrom announced the launch of a new file-sharing network called Kazaa [<http://www.kazaa.com>]. About a month later Kazaa was finally ready, and it seemed to overcome Gnutella's obstacles. Instead of just passing messages from equal peer to equal peer, Kazaa introduced network layers. Regular users would connect to so-called ultrapeers – strong computers with a fast Internet connection that could serve as a form of temporary server.

In March 2001, Napster was ordered to filter all content from the major music labels. This gave Kazaa a big boost, and when Napster had to shut down four months later, Zennstrom and Friis's system was ready to take over all those mp3 fans. With Kazaa, people used to Napster experienced a whole new dimension of file sharing. This was not just about music any more. Programs, ebooks and even films were easily accessible. And because the Kazaa-like programs download from various sources at once, getting even big files was no problem any more. Soon Hollywood blockbusters started showing up – some even before their initial release date.

Hollywood and the music industry reacted in the same way they had when they targeted Napster: they sued Friis and Zennstrom. But instead of defending themselves in a long and costly legal battle, the Kazaa creators simply sold their software to an unknown company with headquarters in the tax-haven of Vanuatu. Since then, copyright holders have been trying to get their hands on Kazaa and its allies around the globe. But whenever they seem to get hold of someone, new links show up on a different continent, and local jurisdiction doesn't always go along with the requests of the US record companies.

More important than this legal showdown is the technological impact that Friis and Zennstrom had: Since their network is capable of serving millions of users, other peer-to-peer developers have been adopting ultrapeer structures as well. This is the most remarkable when it comes to the Gnutella developer community. Since 2001, various small companies and hobbyists have helped to modernise Justin Frankel's original Gnutella protocol, connected only loosely by informal contacts and an open mailing list [[http://groups.yahoo.com/group/the\\_gdf/](http://groups.yahoo.com/group/the_gdf/)]. They have created a modern network that is able to deal with thousands of users, but almost impossible to stop by court orders: because different programs form the network by using an open protocol, there is no single entity that could pull the plug. And because it is decentralised, content filtering isn't possible either.

Meanwhile the user bases of various file-sharing systems are growing and growing. The overall number of P2P users is hard to estimate, but Kazaa and its allies alone serve

more than 4 million people at any given time. The number of casual users might well be ten or twenty times higher: possibly three million people are downloading the Kazaa client every week. Soon the program will have been downloaded more than 200 million times from the company's web server. Overnet [<http://www.overnet.com>] and Edonkey [<http://www.edonkey2000.com>], both well known as film-trading networks, combine about 800,000 simultaneous users. DirectConnect [<http://www.neo-modus.com>], used by hardcore users who tend to lock out everyone who doesn't share at least a few gigabytes, combines up to 150,000 file traders. Gnutella's user base is estimated to be around 100,000.

Then there are various smaller networks with a few thousand users each. Some stay that size, some might become much bigger. And finally there is a loose network of so-called 'Open Napster' servers [<http://www.napigator.com/servers/>] – people who use Napster's technology by setting up small servers out of their living rooms – with an additional 200,000 users. All together, there might be between six and seven million people from all over the world involved in file sharing right at this moment. And there is a good chance that this number might double in a year or two.

### **It's all about control**

But even more important than these sheer numbers is the change that file sharing has brought about in public opinion. Despite the legal and public relations battle, file sharing is no longer seen as controversial. It's part of everyday life for millions of computer users. More and more people are getting used to having an always-on connection to popular culture. After all, no record store beats the amount of music available in various P2P networks. And soon Blockbuster [<http://www.blockbuster.com>] will look deserted in comparison to your favourite film-swapping network.

All this is happening at a time when the future of intellectual property, as we know, it is at stake. Facing the obstacles as well as the opportunities of the digital world, the content industry decided to extend its control. Music, films, texts and databases are increasingly becoming restricted by per-use licenses. Traditional usage rights such as the personal copy are defeated by copy protection technologies. Public institutions such as libraries are already facing severe problems in fulfilling their mission – how can they possibly provide knowledge to the public if the public is divided into country zones and user bases and billing is done on a per-click basis? Developing countries that need public access to knowledge more than anything else are forced to adopt restrictive intellectual property policies such as the WIPO treaty [<http://www.wipo.int/treaties/ip/wct/index.html>], which makes circumvention of copy protection measures illegal.

The public may not be aware of all the consequences of these conflicts, but it has already taken a stance: Empowered by peer-to-peer applications, it chose to leave the empire of corporate control and enter the kingdom of piracy [<http://bigboy.spc.org/kop/>].

Too bad all this won't make it into Hollywood's Napster tale. It surely sounds like a good plot, doesn't it?

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