



# After Napster



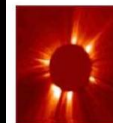
Assessing the Threats, Value and Survivability  
of Peer-to-Peer Networks

# *Napster: The File Sharing*



# Napster Overview

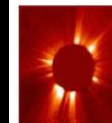
- ***Facts and figures about Napster***
- ***What happened to Napster?***



# Napster Subscription Base Can 98 Million Users All be Wrong?

- The Numbers Game

- • *18,000,000 people have broadband at home now (IBID)*
- • *34% of U.S. population regularly streams music today (Arbitron/Edison Media)*
- • *Napster enlisted more users in 1 year than AOL did in 15 years. (Arbitron/Edison Media)*
- • *34% of U.S. population regularly streams music today (Arbitron/Edison Media)*
- • *40% of U.S. population will be listening to Internet radio by 2003 (Webnoize)*
- • *Digital downloads will grow from 3% of online music sales in 2001 to 30% in 2006 (Jupiter Media Metrix)*

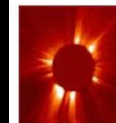


# *Napster Subscription Base Can 98 Million Users All be Wrong?*

- *The Napster Server Architecture*

*Napster enlisted and served more users  
in 1 year than AOL did in 15 years.  
(Arbitron/Edison Media)*

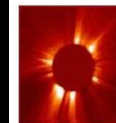
*118 servers served the entire globe.*



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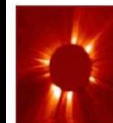
# *From Doom to Tombs to Tunes Online Gaming and MMOG to*

- *In the beginning there were games*  
**Music**
- *The global demand for music*
  - *Economic forces*
  - *The recording industry*
  - *RIAA and other interested parties*
  - *DMCA and copyright law*



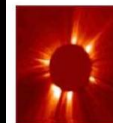
# *It's the Primal App, Stupid*

- *Napster as a Killer App*
- *Why some peer-to-peer systems fail*
- *How will peer-to-peer survive the attacks on filesharing and privacy?*



# Building Secure and Successful Peer-to-Peer Systems

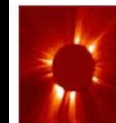
- *If I build it, will they come?*
- *If they come, will I be able to handle them?*
- *If I can handle it, will I be arrested?*





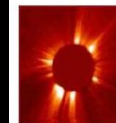
# *The Three Laws of Survivability in Fractal Networks*

- *Let the system architecture do the heavy lifting*
- *If you believe in it, and build it right, let it go*
- *How to manage chaos and herding cats*



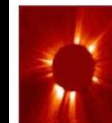
# *Napster's Paradox to the Three Laws of Thermodynamics*

- *You Can Win*
- *You can Break Even*
- *And you Never Want to Get Out of the Game*



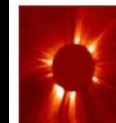
# *Napster Nosferatu*

- *The Architecture of the Second Coming of Napster*
  - *Fingerprinting*
  - *Subscribers*
  - *Royalties*



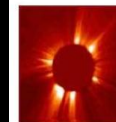
# *Do You Want to Know a Secret? Napster and Shawn Fanning's Vision*

- *Napster file-sharing utility created in 1998*
- *Napster was written to share files with friends on campus*
- *Popularity of the Napster service and software grew exponentially*



# *Do You Want to Know a Secret? Napster and Shawn Fanning's Vision*

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# *From Me to You*

*June 1, 1999: Napster begins operations, allowing people to swap music files.*

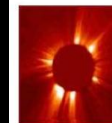
*August, 1999: Shawn's uncle, John Fanning, invested initial seed money*

*Napster appoints the first CEO, Eileen Richardson*

*First negotiations with major record companies fall through*

*December 7, 1999: RIAA sues on the basis of copyright infringement asking for damages of \$100,000 each time a song is copied.*

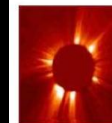
*March, 2000: Scores of universities ban Napster because heavy student use is overwhelming their computer systems. Students circulate online petitions, urging administrators to lift their Napster bans.*



# *300,000 Fans Can't Be Wrong*

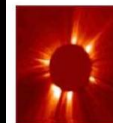
*APR. 13, 2000: Rock band Metallica sues Napster for copyright infringement.*

*MAY 9, 2000: Napster, in order to show concern over copyright infringements, removes over 300,000 members from its service for downloading Metallica songs.*



# *With A Little Help From My Friends*

*May 21, 2000: Hummer Winblad invests \$15 million in Napster.*



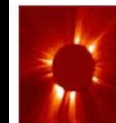


# *HELP! The RIAA Wars Begin*

*JUNE 13, 2000 The RIAA files a motion for a preliminary injunction to block all major-label content from being traded through Napster. Napster hires former A&M Records exec Milton Olin*

*JUNE 13, 2000 The RIAA files a motion for a preliminary injunction to block all major-label content from being traded through Napster.*

*JULY 24, 2000 Napster announces plans to work with digital-rights technology company Liquid Audio to try to make its music downloads safe for copyright holders.*



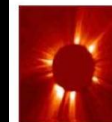
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# *HELP! The RIAA Wars Begin*

*JULY 26, 2000 U.S. District Judge Marilyn Patel rules in favor of the record industry and orders Napster to stop allowing copyrighted material to be swapped over its network by midnight two days later.*

*JULY 28, 2000 Hours before Napster would have had to shut down, the Ninth U.S. Circuit Court of Appeals rules that the company should be allowed to continue its operations.*

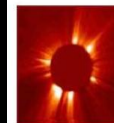
*OCTOBER 2, 2000 Appeals court hears oral arguments regarding the injunction.*



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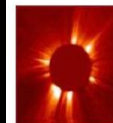
# Come Together

*OCTOBER 31, 2000 Napster announces partnership with German media company, Bertelsmann AG, to develop a membership-based distribution system that would guarantee payments to artists.*



# I'm Down

*FEBRUARY 12, 2001 Federal appeals court rules that Napster must stop trading in copyrighted material and may be held liable for copyright infringement.*

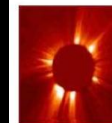


# *We Can Work It Out*

*MARCH, 2001 Napster puts in place a file filtering system designed to block users from downloading specific music files specified by an initial list provided by record company attorneys.*

*MARCH, 2001 Judge Patel rules that the burden of notification is on the recording industry, thus lessening the legal burden on Napster.*

*JULY, 2001 In response to the court's demands, Napster begins to utilize Playmedia systems' secure encoding and playback technology in its new membership service.*

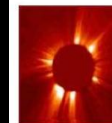


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# Let It Be

*JULY 11, 2001 Despite a 99% effectiveness rate by Napster's security technology in identifying and screening out noticed music copying abuses, a district court judge issues an order prohibiting Napster from enabling file transfers unless it reaches a 100% success rate. This order essentially shuts the Napster file sharing service down*

*SEPTEMBER 25, 2001 Napster reaches a deal with songwriters and music publishers. The settlement says that Napster will pay 26 million to them as well as a percentage of the money it takes in when it begins its paying service scheduled to begin in the first part of 2002.*



# *Hello Goodbye*

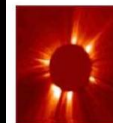
*MAY 2002-July 2002, Internal lawsuits bring Napster to bankruptcy court.*

*NOVEMBER 2002: Roxio buys the Napster brand, trademark, and all remaining intellectual property.*



# *Imagine: The Future of Filesharing*

- *Current filesharing services*
- *Whither the recording industry?*
- *Utopian visions*



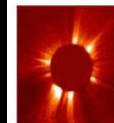


# *Presenter*

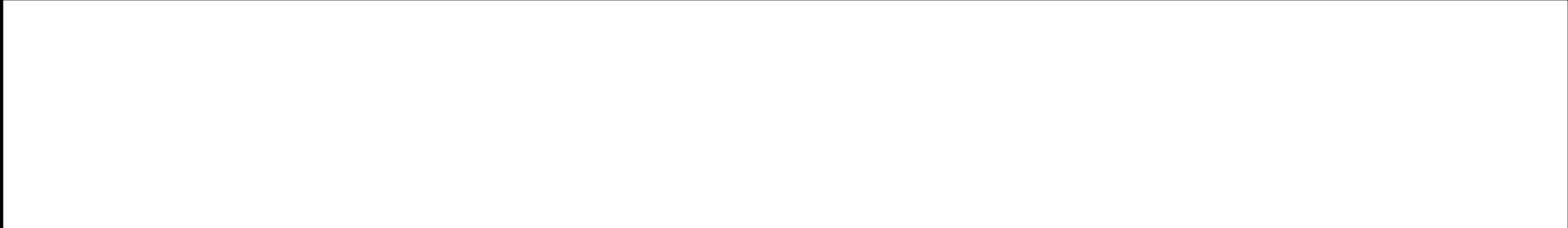
***Omar Ahmed***

***V.P. of Operations, Napster***

***Founder: Logictier  
Madscientist Foundation***



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**Omar Ahmad**  
**VP of Operations**  
**Napster, Inc.**





# *Snowcrash USA*

- **Music**
- **Movies**
- **Microcode**
- **High-speed pizza delivery**



# *When Music Was Young...*

- People ***played*** music for themselves on musical instruments
- Music was purchased in the form of sheet music
- Then came the Player Piano
  - Piano Rolls**
- Music publishers sued for violation of copyright, among their claims:
  - Piano players would be put out of work**
  - No one would ever buy sheet music again**
- Supreme court determined piano rolls were ***NOT*** a violation of copyright



# *The Publisher's Next Move...*

- Lobby congress
- Amended the copyright law to include:  
    **“Mechanical rights”**
- License rate set at 2 cents



# *The Rights of the Record Company*

- Typical deals: *vs the Artist*  
**Record company own right to produce “recordings”**  
**Record company will produce, market and distribute**
- 1996-7 the deals changed  
**Broader rights were part of the deal:**  
**ARAMWIP,A**
- What does the record company do with these rights?



# *The Ancillary Market & The Movie Industry*

- Jack Valenti – President MPAA  
**Betamax case**
- Home video is a critical portion of movie revenue
- Film industry has become fully engaged across all market fronts  
**“Windowing”**
- FLASHDANCE for the music industry



# *What is an MP3?*

- Motion Picture Engineering Group
- MPEG-1
  - 1.54Mbs**
- MPEG-2
  - Higher – 4–45Mbs**
- MPEG-4
  - ISDN**
  
- The boom came in 1997
  - Pentium processing was strong**
  - Off-the-shelf compression was good**





# *The Napster Start*

- Shawn wanted to swap files
- Chess Server
- Real-time index
- Damn ugly interface
- Hacker community input...



# *The Record Company “Back Catalog”*

- Records are out for a small period of time
- Recordings move to “out of print”
- Record companies are reticent to release rights to anyone



# *The Hidden Napster*

- 80% of Napster traffic was:
  - Back catalog**
  - International**
  - Bootlegs**
- The trial twist:  
*PROVE you own the copyrights...*



# *The Deals on the Table*

- Record Companies offered:  
**Full download license**  
**No indemnification**
- Napster countered...  
**Lower the prices**  
**What do you mean no indemnification?**
- The end game:  
**No one knows where the rights are**

# 1893

- 1893 Chicago World Fair
  - ~~First electric powered World Fair~~
  - Edison and GE vs Tesla and Westinghouse**
  - The lightbulb blockade**
  - The court decision**
  - Westinghouse response**
- 1893 Mildred J and Patty Smith Hill wrote a series of songs
  - Happy Birthday to you
  - Happy Birthday to you
  - Happy Birthday dear XXXXX
  - Happy Birthday to you

The lightbulb is in the public domain.

“Happy Birthday” is still collecting royalties (2030 or later)



# *Your Issues*

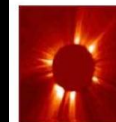
- In your career you will produce copyrights and patents
  - What rights will you retain and for how long?**
  - How will people use your IP?**
- Is there a public need for IP “greenspace”?
  - Patents are 17 years**
  - Copyright = lifetime + 75 years**

*Presenter*

*Harry Regan*

*Security Consultant to Napster*

*Founder and CEO  
SunStorm Security Group*



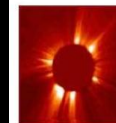
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# The Future of Freedom

*"I worry about my child and the Internet all the time, even though she's too young to have logged on yet.*

*"Here's what I worry about. I worry that 10 or 15 years from now, she will come to me and say 'Daddy, where were you when they took freedom of the press away from the Internet?'"*

--Mike Godwin, [Electronic Frontier Foundation](#)

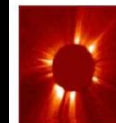


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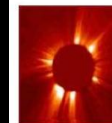
# Peer-to-Peer Filesharing Security

- *In the wake of Napster and other RIAA targeted file-sharing operations, systems like Freenet and Gnutella claim end-user anonymity. How real is that claim?*
- *Aren't there millions of P2P users? How can my activity be tracked down?*
- *Assuming "reasonable care" is taken to protect my computer, how safe is P2P from a security point of view?*



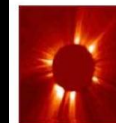
# *Gnutella and Security*

- *Gnutella Communication Architecture*
  - *Protocols*
  - *Ports*
  - *Messaging*
- *Vulnerabilities*
- *“Free Riders”*
- *Aren’t there millions of P2P users?*  
*How can my activity be tracked down?*



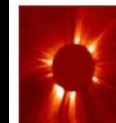
# About Freenet

- *What is Freenet?*
- *Who is behind Freenet?*
- *If authors are anonymous how can you trust information?*
- *Do I have to donate disk space and bandwidth?*
  - *I don't have to donate anything when using filesharing application X and I get to leech more*
  - *All my friends donate very little space and bandwidth. Why should I donate more?*
  - *If I donate a lot will my experience improve significantly?*
  - *What do I get from running a permanent node?*



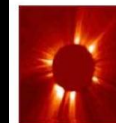
# About Freenet

- *Is Freenet legal?*
  - *Can I get trouble if I run a node?*
- *What about copyright?*
- *What about child porn, offensive content or terrorism?*
- *How about encryption export restrictions?*
- *I have nothing to hide and don't need anonymity.  
Is there anything else Freenet can offer?*



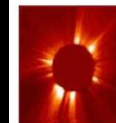
# Freenet Security

- *Won't attack X break Freenet's anonymity?*
- *Is Freenet vulnerable to flooding attacks?*
- *Why hash keys and encrypt data when a node operator could identify them (the data) anyway if he tried?*
- *What about hostile "cancer" nodes within the network?*
- *What about specific attack "Y?"*



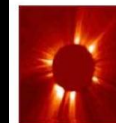
# *The Digital Millennium Copyright Act Amendments and Exceptions*

- *Circumvention of Copyright Protection Systems*
- *Reverse Engineering Exception*
- *Exception for Law Enforcement and Intelligence Activities*
- *Encryption Research Exception*
- *Security Testing Exception*
- *Exception Regarding Minors*
- *Protection of Personally Identifying Information*
- *Exemption for Nonprofit Libraries, Archives, and Educational Institutions*
- *Certain Analog Devices and Certain Technological Measures*



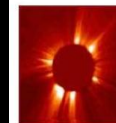
# *The Digital Millennium Copyright Act Safe Harbors*

- *System Storage and Information Locating Tools*
- *Safe Harbors for System Caching*
- *Transmission and Routing*



# *Guidelines for Peer-to-Peer Developers*

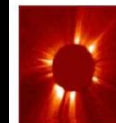
*A few general guidelines for P2P developers can be  
derived from an analysis of contributory and  
vicarious copyright infringement principles*





# Guidelines for Peer-to-Peer Developers

- *Your two options: total control or total anarchy.*
- *Better to sell stand-alone software products than on-going services.*
- *Can you plausibly deny knowing what your end-users are up to?*
- *What are your substantial non-infringing uses?*
- *Disaggregate functions.*



# Guidelines for Peer-to-Peer Developers

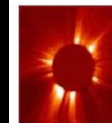
- *Don't make your money from the infringing activities of your users.*
- *Be open source.*
- *Do not be a direct infringer: make and store no copies.*
- *Do not build any "circumvention devices" into your product.*
- *Don't use someone else's trademark in your name.*



# *Strategies in Developing Peer-to-Peer Apps and Services*

## *Auto-Update*

**Does the use of "auto-update" functionality in peer-to-peer filesharing software increase the likelihood of copyright liability for the software vendor?**

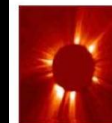




# *Strategies in Developing Peer-to-Peer Apps and Services*

## *Developer Liability*

**Can the individual developers involved in a peer-to-peer filesharing product be held personally liable for the copyright infringement of end users?**



# Potential Defenses

- **No Direct Infringer**  
**"All Users are Innocent Fair Users"**
- **The Sony Betamax Defense**  
**"Capable of substantial noninfringing uses"**
- **The DMCA Section 512 "Safe Harbors"**
- *Because basic architecture decisions may influence a system's eligibility for these defenses, a P2P developer would be wise to consider the limits of each defense in evaluating the legal risks posed by any particular system design.*



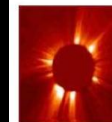
*Presenter*

*David McLeod*

*Tension Structure Films*

*Producer / Director*

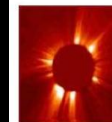
*LiveHives: theBuzz@theBarricades*



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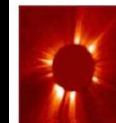
# LiveHives - theBuzz

- *Constant access to communication devices allows people to communicate more directly with more people*
- *Faster communications among groups of people*
- *Global scale of communication is greatly expanded*
- *Communication technologies are becoming more pervasive*
  - *More mobile telephones are being installed in the United States than land lines*
  - *High-speed internet access is becoming as common as television access*



# LiveHives - theBuzz

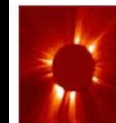
- *Communication is becoming decentralized*
- *The nature of the devices makes the nature of the communication more decentralized*
- *People are no longer so dependant on centralized government or broadcasting agencies*
- *People are able to organize in ways that they hadn't been able to before*
- *Desktop computers has have become considerably more powerful, and more networked, and therefore better tools for communications*





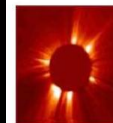
# *LiveHives - theBuzz*

- *Most computers now have Internet connections.*
- *Networking allows for collaborate on unprecedented scales*
- *Communications are now at higher speed and more reliable than ever before*



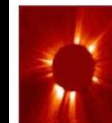
# *LiveHives: Collaboration Amperage*

- *A Compound Eye*
- *Total Information Awareness Reloaded*
- *Communities Online*
- *Organizing Chaos*
- *Sharing Visions*



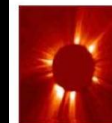
# *LiveHives: A Global Colony*

- *Impact on Political Reform*
- *Raising Environmental Awareness*
- *Efficiencies in Commercial and Humanitarian Aid Efforts*



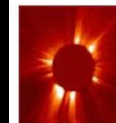
# *From Hive to Swarming Moving From Analog to the Network*

- *The Trajectory of Global Networking*
- *Electronic Pollinators*
- *Information's Supremacy over Machines*



# *The Waggle and the Planetary Mosh*

- *The Dancer at the Tower of Babble*
- *Dancing with Strangers*
- *Dangers of the Dance: A Cautionary Tale*

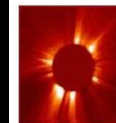


# *Presentation*

*An excerpt from a digital video in production*

## *LiveHives: theBuzz @theBarricades*

*Tension Structure Films*



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# Conclusion

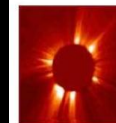
*Panel Discussion Q & A*

*LiveHive.org*

*LiveHive Participation*

*Invitation*

*Tchotchke Spree: Got*



**SUNSTORM SECURITY GROUP**

*Thank You...You May Go  
Now*

*Visit the LiveHive Site and  
Participate*

**[http:// frogstar.freenet.org / livehive](http://frogstar.freenet.org/livehive)**

