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## **The Legitimacy of DRM**

### **Brief History**

In this modern day and age we as humans have made great strides in the field of communications. Communication with anyone in the world would have been impossible a century ago but has now become a trivial matter with the advent of the personal computer. The computer is so pervasive in our society today that the even the average individual has access to one. The means to copy a digital document and to send those copies to any part of the globe is not only available to anyone with computer access, but the cost to perform such a feat is nearly nonexistent. This much power in the hands of so many is frightening to those who make a living off of selling intellectual property. Selling products that are distributed in a digital format opens the opportunity for others to copy and also pirate them. This fear has led to the proliferation of technology that can restrict what the common consumer can and cannot do with digital information. There is some debate on whether these measures are effective and although these measures might protect the distributor, is the cost of consumer rights an even trade.

In the analog days of home audio, the average person wasn't able to make a copy of a vinyl recording. Even after the introduction of tape decks and tape recorders it was not possible to make a perfect copy. Copying of media meant a degradation of the signal so when Sony brought its tape recording standard, Betamax, to market, the ability for consumers to record programs and watch them at a later date, or "timeshift," unsettled

many in the film industry. In a court case brought against Sony, it was ruled that recording a program for personal use was not copyright infringement.

With the progression to digital media the circumstances changed. Digital media is not restricted by signal degradation. It is now a simple task to obtain a perfect reproduction of a copyrighted work. Before the Internet, the copying of a CD wasn't seen as a large threat. For most consumers CD burners and CDs were too expensive and the copied CD would be for personal use or in the worst case scenario, for a close friend. As technology progressed and the Internet caught on, sharing files over a network became more widely used. Although this can fall under fair use, the file can be easily and quickly shared with many others all over the globe. Peer to peer file sharing networks, such as Napster, began to spring up and offer copyrighted material.

To protect their interests many distributors of intellectual property have begun implementing ways to prevent users from copying their products. They have coined a term for these measures and are referred to as Digital Rights Management. DRM is technology that limits what users can do with their digital copyrighted materials. It can come in many forms and is usually some type of encryption. Although the main goal of DRM is to protect the rights of the intellectual property owner, it can infringe on the rights of consumers in the process.

### **Current Examples Of DRM**

DRM comes in many forms but it is most ubiquitous with the entertainment industry. As the technology to overcome DRM progresses so too does DRM. One example is a relatively new Content Scrambling System (CSS) employed by the DVD

Forum. This system encrypts the audio and video of the disk and any device required a key to play the disk. Manufacturers had to sign a license agreement to exclude features, such as digital playback, to reduce the chance of the content being copied. A similar system was implemented in the current high definition disk formats, Blu-ray and HD-DVD, called Advanced Access Content System (AACS). These new disk formats also include the option to require High-bandwidth Digital Content Protection (HDCP). HDCP encrypts digital signals sent over DVI or HDMI cables. Playback requires that both the disk player as well as the device receiving the signal be HDCP compatible. To build an HDCP device a manufacturer is required to sign a license and restrict features of the device, similar to CSS and AACS agreements. If a Blu-ray or HD-DVD player is connected through an analog connection such as VGA or component the video is down sampled. If a digital connection without HDCP is used then only a black screen or error message is displayed. This ensures that it is impossible to make a perfect copy of the media. Although these disk formats can require HDCP, neither does. This is most likely due to the desire to stay competitive.

Different types of DRM have been used on CDs but due to problems caused by the software most audio CDs do not have DRM. One failed attempt to secure audio CDs was in 2005. Sony BMG included software that would automatically install on the user's computer. This installation was not immediately known by the user. Beyond the obviously questionable ethics of this process, the software disrupted how windows would normally play a CD and left security holes open to viruses.

In light of the failures of CD audio encryption, most music download services now only offer music in formats that contain DRM. Many use the Window Media Audio

(WMA) format. The WMA music format restricts playback to only products that are marked with a Microsoft PlaysForSure logo. This means that every time a licensed file is played, it verifies with a central server before allowing playback.

Beyond the entertainment industry many programs use some form of DRM as well. This can range from authentication keys to only allowing one version of the program to run on a network of computers, such as Apple's Final Cut Studio. Some programs, like Apple's Logic Pro, require a physical key be connected to the computer for the program to function.

### **Motivations behind DRM**

With such an enormous amount effort put into the research and development of DRM, the underlying motivations should be examined. In theory, restricting full access reduces the ability of a malicious individual to 'pirate' and sell intellectual property as their own. Although this might be true to some extent, most professional software pirates will still have the means to overcome any form of DRM. This leaves DRM only as a deterrent to lay-users wishing to share copyrighted content with one another. The final result of current implementations of DRM is that it ultimately infringes upon fair use rights of the user.

### **Effectiveness of DRM**

With all this discussion of DRM, one question needs to be addressed. Simply put, is DRM an effective way to prevent copyright infringements? The answer, of course, is that DRM is a fallible security system. It is not only an ineffective method of protection,

but for some companies and industries, it is also detrimental to customer relations - causing the company more harm than good.

One of the big reasons for the ineffectiveness of DRM is that it protects property in the digital realm. The nature of digital information allows it to be easily transmitted and copied with the Internet being the preferred channel of distribution. The Internet has become a very cost-effective way of transferring information and anyone with a computer can connect to it. As a result, DRM is constantly being circumvented. New forms of DRM are cracked as fast as companies begin using them. For example, the decryption key for AAC3 was discovered only one day after the AAC3 Licensing Authority released the key as a fix to previously discovered vulnerabilities<sup>[1]</sup>. This basically nullifies the AAC3 DRM and allows users to copy and backup their HD movies.

The fundamental problem with DRM is that it makes the product it's embedded in inferior to its open counterpart. Given a choice between an MP3 with no copy protection and a proprietary format with DRM, the user will most likely pick the former. In essence, music labels want consumers to purchase crippled versions of products that could be obtained for free and used without restriction. This reasoning is part of why so many users, despite the efforts of the creative media industries, still engage in copyright infringement.

### **Ethics of DRM**

Certainly the concept of DRM is valid and is a legal form of protection, but organizations such as the Record Industry Association of America (RIAA) and the Motion Picture Association of America (MPAA) have taken the issue of copyright

infringements too far and have resorted to lawsuits against offenders. At the University of Davis, there were 712 DMCA violations served for the 2006 – 2007 academic year; and for 2007 – 2008 the rate has been double that of the previous year<sup>[4]</sup>. The lawsuits served usually demand compensation of \$500-\$10,000 per song. The RIAA and MPAA focus much of their efforts on college students because universities have fast internet connections. These connections allow for faster file sharing. The lawsuits aren't just limited to college students, however, in August, 2005, the RIAA served Tanya Andersen of Oregon with a lawsuit for “hundreds of thousands of dollars<sup>[7]</sup>” for illegally distributing songs. They even attempted to interrogate her 10 year old daughter Kaylee before the judge presiding over the case barred them. The catch – Tanya had never shared or downloaded music before in her life.

As of July 2006, over 20,000 people have been sued by the RIAA alone<sup>[8]</sup>. Home users and college students aren't the only ones that have been targeted by these organizations, dozens of peer to peer software companies and music download sites have been victims as well. In 2006, the RIAA filed a lawsuit against AllOfMP3.com, a Russian online music store, for \$1.65 trillion. The credit card company Visa also refused to accept payments for that store<sup>[10]</sup> and later was temporarily shut down. The U.S. Government even threatened to deny Russia entrance into the World Trade Organization. However, Russian courts ruled that AllOfMP3.com was a legitimate business and is still in operation as of this writing<sup>[3]</sup>. These uses of controvertible tactics bring into question the real motives of the RIAA and MPAA.

The intentions of employing DRM to protect the intellectual property produced by creative artists are justified, but such is not the case with the music industry and the

movie industry. In December 2006, Felix Oberholzer-Gee and Koleman Strumpf of Harvard University and University of Kansas published a study “The Effect of File Sharing on Record Sales”<sup>[9]</sup> and found that there is in fact, little correlation between increased music piracy and decreases in music sales. This is in direct contradiction with the statement the RIAA made about file sharing costing the industry billions of dollars. Add to this the fact that artists and bands that are signed to the major labels don’t make much, if any, money; we must question just exactly what interests the RIAA and its members are looking to protect. Consider this, in November of 2000, the RIAA tried to amend the Satellite Home Viewer Improvement Act of 1999 by adding “a sound recording” to the list of works that could be considered works for hire<sup>[11]</sup>. A work for hire is when a producer is commissioned to produce a work (under the list of categories that could be considered a work for hire) and then the commissioner retains the copyrights to the work produced. By adding “a sound recording” to the list, music labels can now claim permanent ownership of the master copies of songs created by artists instead of the 35 year limit delineated by law. Knowing all this, it seems that DRM is used under the guise of protecting the artists work as another way to generate revenue for media companies while still denying artists the money that they deserve.

DRM also goes against “Fair Use”. Fair use, as described by US Copyright Law Section 107, is “the fair use of a copyrighted work, including such use by reproduction in copies or phonorecords or by any other means specified by that section, for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research, is not an infringement of copyright.”<sup>[12]</sup> DRM prevents users from copying or transferring protected content on to other forms of media, whether

for personal use or otherwise. Fair use states that an individual that has non-commercial interests could do just that. It is unlikely that there will ever be a form of DRM that can accommodate all the rights given by the Fair Use clause.

### **Alternatives to DRM**

If DRM is ineffective, what are some ways corporations and artists can turn a profit? A few bands have already begun experimenting with free releases of their music. The British band Radiohead has recently released a full length album on the internet - absolutely free. Listeners and fans were encouraged to donate money based on how much they thought the album was worth, but that was purely optional. Yahoo! News reports that of the people who downloaded the album, about 38% opted to donate some amount of money with the majority of the donors paying between \$0.01 and \$4.00<sup>[2]</sup>. This cuts out the middle man (in this case the music labels) and the artist makes more off one song than they ever did before – all the while retaining their rights to the songs. If anything, releasing songs on the Internet can be beneficial for beginning artists looking to get their name out for the same reasons the Internet makes piracy easy. Companies such as Apple have already started moving away from DRM. iTunes now offers select songs dubbed iTunes Plus where it is encoded in very high quality (256 Kbps) and comes without any form of DRM. Another online store eMusic<sup>[13]</sup>, has also seen tremendous growth and they offer MP3's without DRM at 192 variable bitrate.

### **Conclusion**

Ultimately, DRM, when viewed objectively, is a legitimate form of protection of creative media (though one must note the irony in what it stands for: Digital Rights Management); Given the current existence of working, open models and their success is it possible that DRM is not the final answer to copyright management. In the context of the RIAA and MPAA as well as the large consumer opposition to it, it certainly is questionable whether DRM should be used at all.

## Sources

- [1] <http://arstechnica.com/news.ars/post/20070531-new-aacs-fix-hacked-in-a-day.html>
- [2] [http://news.yahoo.com/s/nf/20071106/bs\\_nf/56540](http://news.yahoo.com/s/nf/20071106/bs_nf/56540)
- [3] [http://www.nypost.com/seven/12212006/business/music\\_labels\\_nyet\\_to\\_russian\\_pirates\\_business\\_peter\\_lauria.htm](http://www.nypost.com/seven/12212006/business/music_labels_nyet_to_russian_pirates_business_peter_lauria.htm)
- [4] UC Davis IET DMCA Statistics
- [5] <http://www.cciacnet.org/artmanager/uploads/1/FairUseStudy-Sep12.pdf>
- [6] <http://info.riaalawsuits.us/documents.htm>
- [7] <http://p2pnet.net/story/8273>
- [8] <http://www.eff.org/wp/how-not-get-sued-file-sharing>
- [9] <http://www.unc.edu/~cigar/papers/JPE%2031618%20FileSharing%202006-12-12.pdf>
- [10] <http://arstechnica.com/news.ars/post/20061019-8029.html?rel>
- [11] [http://weeklywire.com/ww/08-28-00/austin\\_music\\_feature.html](http://weeklywire.com/ww/08-28-00/austin_music_feature.html)
- [12] <http://www.copyright.gov/title17/92chap1.html#107>
- [13] <http://www.emusic.com>

## Notes

The information presented in sources has been cross referenced to a certain extent, so that they should be valid.