

Sony BMG Records' Copy Protection Practice
A Recommendation Report
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Executive Summary

The need to protect digital media has been exponentially growing since the mid 1970s. The first computer programs did not contain software that was designed to prevent illegal distribution because such software was unnecessary. In contrast, today's digital music, movies, and software are constantly being bombarded by people who seek to make and distribute illegal copies.

Producers and distributors of digital media almost always include some form of copy protection, or digital rights management software with their product. The popular music program and online store Itunes contains a program called 'Fairplay,' which restricts the types of music a consumer can use with it. The new Microsoft Zune implements '3-day-or-3-play,' which allows users who transfer music from one device to another to only use it for three days, or until it has been played three times. Sony has implemented several different types of digital rights management software.

The advantage to digital rights management software is that it prevents the average person from copying CDs or downloaded music. Copy protection software needs to be constantly updated and revised. Computer experts or hackers seem to always be one step ahead of copy protection software. It has been, and probably will always be a cat and mouse game between digital media producers, and those who seek to illegally distribute this media.

The major disadvantage to digital rights management software is that it is often too restrictive for those consumers who have legally purchased the rights to use the media. This can be highly frustrating for the consumer. Most companies understand this, and have made the restrictions user friendly. The company who has come under the most fire recently is Sony BMG records.

In late 2005, Sony included a program with its CDs called 'Extended Copy Protection,' which installed a controversial piece of software onto customers' computers. This software, called a *rootkit*, installed behind the scenes, and exploited the operating system. When this was discovered, Sony was forced into a corner. Their response was condescending toward the customer; the president is quoted as saying: "most people, I think, don't even know what a rootkit is, so why should they care about it"?

This report was designed to provide some recommendations which are both feasible and prudent. In order for Sony BMG to remain a leader in media production, they must focus on providing the consumer with the best experience possible. This cannot be done with their current condescending attitude, and controversial restrictions on media. Many customers are highly frustrated by the digital rights management software that Sony BMG has chosen to include on their compact discs; it is highly restrictive, and often does not allow customers to use music that they have legally purchased.

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Introduction

A Brief History of Sony Corporation

Sony is one of the leading manufacturers and producers of electronics, video games, computer software, music, and movies. It is an international media conglomerate that is based in Japan, but has strong presences in the United States, and in Europe. Sony traces its roots to post World War II, when a Japanese engineer started a radio repair shop in an old building in Tokyo. The company he formed later built Japan's first tape recorder. During the 1950s, Sony manufactured transistor radios, and exported them to North America. A decade later, Sony came to the realization that "color television [was] where the future lies" (www.sony.com). Shortly thereafter, arguably the greatest advance in color television was developed, called Sony Trinitron. The Trinitron changed how televisions displayed images; it made them sharper and made the colors more vibrant. In the 1970s, Sony was a major player in the development and implementation of the video cassette recorder, VHS tape, and its own proprietary version, the Betamax. Later, Sony unveiled one of the brands they have been most associated with: the Walkman. The Walkman was the first portable cassette player, and was an international favorite. In 1988, Sony acquired CBS Records, Inc., and in 2004 acquired BMG, to become one of the largest record companies in the world. Sony BMG quickly became part of the 'big four' record companies, which also includes EMI records, Warner Music Group, and Universal Music Group. The creation of this new record company has given Sony BMG the responsibility to produce a quality product; but recently, Sony BMG has brought this responsibility into question with their highly controversial CD copy protection methods. Sony BMG records' copy protection practice has succeeded reducing the amount of illegally copied CDs, but it has also frustrated customers by installing damaging software onto their computers.

Digital Copy Protection is Not a New Practice

In the 1980s, personal computers became widely popular. Thousands of software companies created business applications and computer games. Copy protection, at first, was not implemented, because it was not thought of or needed. Copying programs from one disk to another was very simple, and could usually be performed by novice users. Wordstar, the most popular word processor in the early 1980s, soon became a target of illegal copying. Something needed to be done in order to protect their digital assets. Wordstar released a popular study that showed that for every legally purchased copy of their program, there were four illegal copies being distributed (Zisman, 2000). In later years, many different types of software and digital media were illegally distributed, which was not limited to just games and business applications.

Music has been copied and shared illegally since the dawn of magnetic recording technologies, such as the cassette tape (we cannot find any evidence of phonograph records being targets for illegal distribution). It is very difficult to implement copy protection on an analog device such as this, so it was very common to find people 'dubbing' tapes.

When digital music emerged onto the internet in the 1990s, there were no laws to govern it, so it was freely available (Coyle, 2006). Instead of purchasing a CD from a record company, music listeners could use Internet search engines like Lycos to find digital copies of the music that was on that CD. Later, the Recording Industry Association of America (RIAA) was able to shut down most of these operations.

In 1999, Napster developed a popular program for transferring digital music files illegally. Napster worked because it was very difficult to track those who were 'sharing' these files, since they were shared by individual users from their homes. Once downloaded from Napster, music files were stored on a user's computer, or simply copied onto a CD. Following Napster, a wave of similar peer-sharing networks emerged. This was obviously a problem for those who made and distributed music for a profit, like Sony BMG, and other record companies. Several music publishers attempted to digitally protect their media, and it has usually worked for a short time. But it has always been a cat and mouse game between the security measures, and those who seek to thwart them.

Sony BMG went after the root of their problem which they believed to be 'casual copying': people who bought CDs and copied the music from them onto their computers, and then shared them via Napster and other file sharing networks. To counteract this, Sony BMG placed controversial copy protection software directly onto their CDs.

Major Players in Digital Copy Protection

There are four major players in copy protection and digital rights management (DRM). They are Apple, Microsoft, Yahoo Music, and Sony BMG. Each company has their own proprietary digital rights management software, and most are not interoperable (Graham, 2005). Each of these companies has a great interest in retaining their profits through software which restricts illegal distribution.

Perhaps the best known digital music player is Apple's Ipod. The Ipod is a device which allows a customer to purchase music from Apple's online music store, and it works only with Apple's music software Itunes, which is a user-friendly piece of software that allows a customer to purchase, categorize, and transfer music to and from their Ipod. But Itunes is restricting content behind the scenes, using Fairplay, Apple's DRM software. A customer can only use music which was purchased from Apple's online store. Music purchased from other online music stores cannot be transferred to an Ipod by a novice user. This works well for Apple because it 'encourages' consumers to purchase and use only their products.

Microsoft's answer to the Ipod is the Microsoft Zune. It is very similar to the Ipod, but users can transfer music from one Zune to another. Because of Microsoft's digital rights management software, called 3-day-or-3-play, music transferred from one Zune to another expires in three days, or after it has been played three times. Microsoft's intention is to allow customers to experience music, which will increase their probability of

purchasing it. The advantage to this method of protection is that customers can still ‘sample’ the music.

Another company that regularly uses copy protection is Real Networks, which began as a streaming audio service. In 2003 Real Networks purchased the online music service Rhapsody. All music downloaded or streamed from Rhapsody is encoded with DRM software called Helix. In its 2003 press release, Real Networks explains that Helix is a “platform and a community for the standardization and expansion of digital media” (Real Networks press release, 2003). In short, they hope that Helix will become the standard way of protecting digital media. This philosophy would be highly beneficial to the consumer, because they would be able to purchase and transfer music from a variety of sources and devices. Essentially Helix would be interoperable. As of 2007, there is no standard.

The third major player in digital rights management is Yahoo Music, which offers a subscription service much like Rhapsody’s streaming audio service. Users can sign up, pay a small monthly fee, and have streaming audio sent to their computer. Yahoo uses its own version of digital rights management software called Janus. Once a customer’s subscription runs out, they are no longer allowed to access their music.

Sony BMG records’ Copy Protection Methods

CD Digital Rights Management Software is not Uniform

In 2005, Sony BMG records implemented Extended Copy Protection, which was a DRM software made for compact discs by the British firm First 4 Internet. This software was included on the actual compact disc, and automatically installed onto a customer’s computer once they inserted it into their CD drive. At that point, the ‘autoplay’ feature of Microsoft Windows would install Sony’s DRM software. Digital rights management software has become increasingly popular in recent years. It is widely used on CDs, DVDs, and other types of digital media. Perhaps the earliest and most common form of DRM software is found on DVDs. The first copy protection for DVDs were region codes, allowing a DVD to be played only in that region of the world (the U.S. has a region code of 1). DVD copy protection is standard, and the same software is used on all discs. Unlike the digital rights management software contained in DVDs, Sony and other music companies rely on non-standard independent software. This damages the economic resiliency of the digital media by discouraging consumers from purchasing their product because it may not work properly on their specific equipment (National Bureau of Economics research, 2005). It frustrates consumers because it is entirely too restrictive.

Copy protected CDs can cause many problems. Because of the non-standard methods (like exceeding the discs physical space, or containing “dummy sectors”), CDs with DRM software are unable to be played on older CD players, and often cause errors on newer ones. A legally purchased CD often cannot be transferred to the popular iPod, because the digital rights management software included on that CD is designed to prevent this (Graham, 2005).

The Rootkit fiasco

Sony's Extended Copy Protection installed a piece of software called a rootkit onto customer's computers. "The term *rootkit* comes from the Unix world and refers to software tools that give an intruder full, or root access to a computer's operating system. That access can be used to hide other software code from all but the most technically adept users" (Gale, 2005). The most common use of a rootkit is to hide files, processes, programs, and network resources from a user. In recent years, rootkits have been used to compromise a user's computer. This would allow people to install 'spy ware' onto a computer without the user knowing about it. The rootkit installation was never meant to be discovered by Sony's customers, but it was, and Sony was forced to respond. Thomas Hess, president of Sony BMG is quoted as saying, "Most people, I think, don't even know what a rootkit is, so why should they care about it" (Berkeley Technology Law Journal, 2006). This condescending phrase, along with the radical copy protection method caused a legal uproar which would later bring a lawsuit between 39 states and Sony BMG for over \$321,000 (Commweb, 2006).

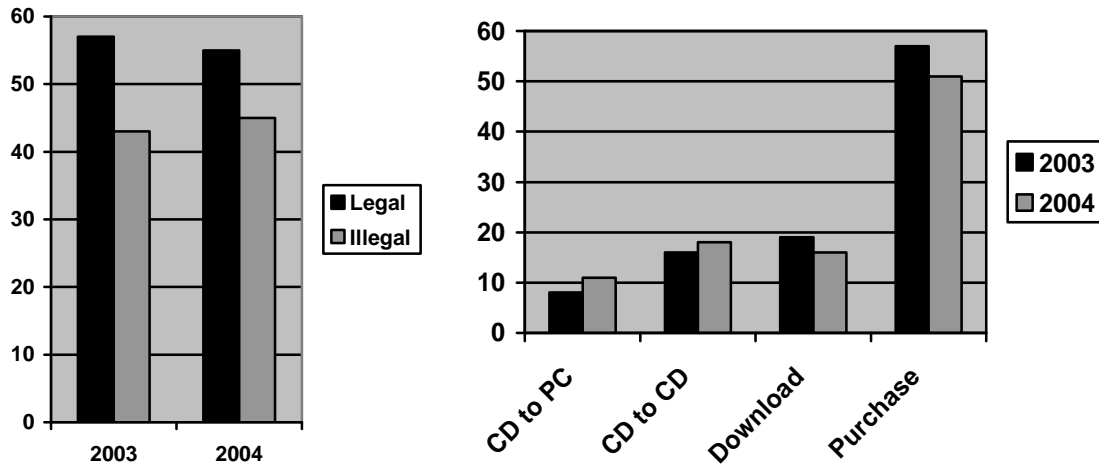
Sony later issued a program which was designed to uninstall the rootkit from customers computers. But this software utility only unmasked the hidden files of the rootkit; it did not uninstall anything. In addition, Mark Russinovich, a Microsoft Software engineer, discovered that this removal kit installed *additional* hidden software (Russinovich, 2006). Once this was brought to the media's attention, Sony issued a new and improved software tool which removed the rootkit entirely.

Advantages of DRM and Digital Copy Protection

Copy protection is an old practice that dates back hundreds of years. Because of the advent of the printing press in the 15th century, unauthorized copies of books and other literary works could be easily produced. This was economically bad for the authors and their publishers. Because they needed protection for their works, the copyright was implemented. This gave authors certain rights, and made it illegal to produce a work without authorization. Copyrights and copy protections are as much needed today, in the digital world, as they were then. The rationale behind digital copy protection is that it will increase a company's revenues by stopping the illegal distribution of their product to people who have not paid for it. This seems like a logical course of action, and has often been successful.

Digital copy protection is absolutely necessary. It will be necessary as long as there are people who seek to obtain digital media illegally. According to the Recording Industry Association of America, quoted in USA Today, music sales have declined ten percent from 2000 to 2004 (Graham, 2005). Sony is within their rights as a company to protect their assets. According to the New York Times, teenage and adult Internet users say they only purchase about half of their music. The other half is acquired by illegal methods.

The visual below shows the results from the New York Times survey.



The above visual shows the following: Eight percent of the people surveyed said that they most often borrowed a friend's CD and transferred it onto a PC in 2003. In 2004, it increased to eleven percent. Sixteen percent said that they preferred borrowing and copying a CD directly to another CD. In 2004, that number increased to eighteen percent. Nineteen percent admitted that their preferred method was to freely download music on a peer file sharing network like Napster. Surprisingly, this number decreased in 2004 to sixteen percent (Zeller, 2005). As the above visual illustrates, purchased music is declining every year, and copied music is becoming more and more common. In 2004, legally purchased music declined from fifty seven percent to fifty five percent, while illegally acquired music rose from forty three percent to forty five percent.

Disadvantages of DRM and Digital Copy Protection

Opponents of digital copy protection make the claim that it is too restrictive (Berlind, 2007). It often does not allow legal owners of digital rights to use them in the way that they were intended. CDs containing "dummy sectors" (a popular copy protection method), for example, can have difficulty playing on older CD players. Customers do not like copy protected CDs, and often return them as defective products (Graham, 2005). Steve Jobs, CEO of Apple, Inc. (the makers of the most popular digital music player in the world, the iPod) very recently called for an abolishment of DRM (Jobs, 2007).

There is a cat and mouse game of copy protection, and copy protection "fixes." There will always be a way to circumvent copy protection; for every lock there is a pick. When new copy protection or DRM is implemented, hackers take it as a challenge to attempt to thwart it. It is only a matter of time before they are successful. One popular example is simply the inking of the edge of a CD with a Sharpie. This was found to circumvent Sony's former attempt at copy protection (Zeller, 2005).

Disadvantages of Sony's Method

Although Sony is within their rights to protect their assets, it is the method by which Sony does it that is disadvantageous to them. They are seen as condescending to their customers. The statement made by the president of Sony BMG (quoted above) is an example of the condescending way in which Sony views its customers. One reviewer on Amazon writes, "Boycott Sony! It looks like it's now safer to download pirated copies than to buy CDs!" (Zeller, 2005).

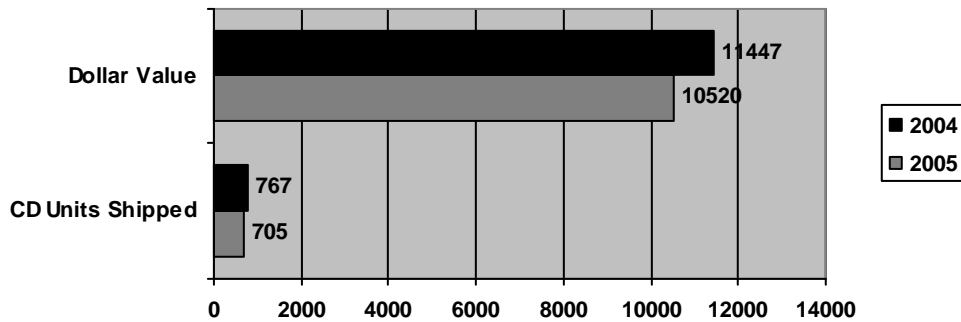
Sony's rootkit software is damaging to consumer's computers. It is essentially a virus — a computer program which is capable of causing great harm to files or other programs, and Sony is purposely installing this virus onto the systems of their own customers. It seems as though Sony makes the assumption that every customer is a criminal. Obviously this does not make Sony look like a reputable company.

Summary of Analysis

Sony has built itself from the ground up. Once a small electronics repair shop in old Tokyo, Sony grew to be one of the largest media conglomerates today. They are one of the world's biggest producers of electronics, video games, music, movies, and technology. With their merging of BMG records, they have become one of the four most influential record companies in the world. The company has had its ups and downs throughout the years, like all companies do. But Sony is very resilient, and has managed to remain on top of the electronics and entertainment industry. Their responsibility to the consumer is both immense and important.

Apple, Inc., Yahoo Music, and Microsoft, being the other three major players in digital rights management, also have a responsibility to their consumers. Each company provides downloadable music on their online stores, and each company uses a form of digital right management software. Apple's 'Fairplay', Yahoo Music's 'Janus', and Microsoft's '3-day-or-3-play', are all utilized with the intention of stopping unauthorized duplication.

As is the case with any company that produces digital media, Sony BMG has had to implement technology to protect their assets. Copy protection and digital rights management is necessary. It has been necessary since computer software has been available to the average consumer. With the growing popularity of online peer file trading networks like Napster, it has never been more prudent for companies like Apple, Yahoo Music, and Sony to include the most sophisticated digital rights management schemes onto their products. Software and music thieves will always find a way around the newest technologies, and music companies will always have a need to develop new and better software to protect their assets. It is a virtual cat and mouse game, and always has been. The Recording Industry Association of America reports some interesting statistics about downloaded music and its affect on the industry, which is illustrated in the visual below.



The above visual shows that, in 2004, revenue was 11447 million dollars. That number decreased to 10520 million dollars in 2005. In 2004, 767 CD units were shipped, and that number decreased to 705 in 2005. This data is provided by the Recording Industry Association of America, and according to the RIAA, this decrease in sales and value is due to illegal music downloading and distribution (www.riaa.org).

The highly controversial rootkit copy protection software that has been included on Sony BMG's compact discs is a disadvantage to the company. It frustrated consumers by being too restrictive, and by installing hidden software onto their computers without their consent or knowledge. Perhaps more importantly, it caused a great deal of unsightly media coverage, and forced Sony BMG to take responsibility for a virtual virus. The response of the president did not help: "Most people, I think, don't even know what a rootkit is, so why should they care about it." This condescending phrase illustrated the viewpoint of Sony BMG regarding their customers. Clearly, this policy needs rethinking.

Recommendations

In the purest economic definition, a company produces goods or services for which there is a need or want. The consumer, who has the need or want, purchases the goods or services. It is a symbiotic relationship in which one entity cannot exist without the other. This is the primary reason Sony BMG records must reevaluate their responsibility and attitude towards their consumers. Sony constantly displays a condescending attitude, and seems to have a desire to restrict and lock down their media to a point that is far beyond what is necessary. This report is designed to make two recommendations that would be highly beneficial to Sony: specifically their music company Sony BMG records.

First, it would be beneficial to Sony to convert their current customer relations attitude to a more respectful and trusting one. Assuming that every customer is a potential criminal, and thereby acting on that assumption is not helpful to a company who relies on people buying their product. Sony must realize that the consumer is the reason that they exist.

Second, Sony will benefit by discontinuing the use of digital rights management software all together. There is a small but powerful group of companies and leaders in the business world who see this philosophy as becoming more popular and profitable in the future; and some credible statistics support this.

The Consumer: The Reason Sony Exists

Sony BMG records

Sony BMG's current attitude towards their consumers is bleak: the customer is untrustworthy, and a problem which needs to be controlled. They are criminals who, at any chance they get, will steal Sony's product. This attitude is reinforced by the now famous statement made by the president of Sony BMG (quoted above), and by the highly secretive and damaging software that was included on their CDs in 2005. Two years later, Sony BMG is in the process of developing more digital rights management software which will no doubt be highly restrictive, and may be damaging (like their previous rootkit). This customer relations problem does not only exist in Sony's music branch, however.

Sony Computers

Last year, Sony produced laptop batteries that literally caught on fire. These batteries were installed in their popular Viao laptop computers, Dell computers, and Toshiba computers. This caused a massive recall in laptop batteries. When Sony was interviewed by a popular newspaper in England, they placed the responsibility solely on Dell and Toshiba, indicating that it was no fault of Sony's. A Sony spokeswoman said: "this is an issue specifically down to Dell's battery-charging system" (The Guardian, 2006). In addition, it is highly difficult for a customer to have a recalled or defective part replaced by Sony. In a Techweb article dated February 1st, 2007, Alice Taylor documents:

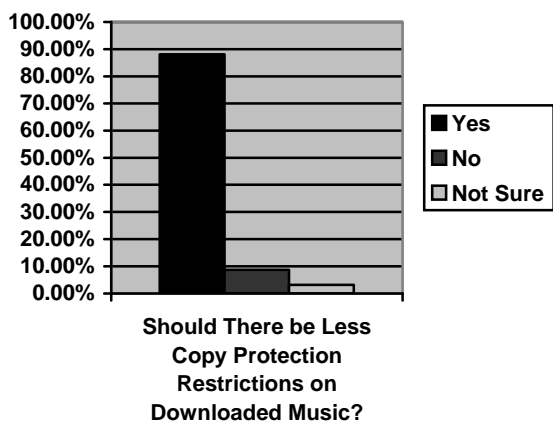
My laptop had HD failure and shipped with its Bluetooth chip missing, and my PC died horribly after a restart.

Long story short: Sony sent out an engineer who replaced the parts, but didn't put my machine back together properly, and now won't send out someone again because I've had my quota of home visits. Yep, even though their work was shoddy, and even though I paid an extra 300 bucks for an extended policy. I also had to bribe the engineer to let me keep my dead HD, because otherwise Sony's policy is to keep it (and all the data!); because a customer shouldn't get a replacement drive for free. (Techweb, 2007)

It is very clear that Sony must establish a clear understanding of their relationship with their customers. They must have an attitude of trustworthiness and respect for the entity that keeps them in business. Instead of causing frustration and discontent because a product doesn't work the way it was intended, Sony should allow customer's to be pleased with their product, thereby rendering greater profits. This is the formula that every successful company has followed, and Sony should not be an exception.

DRM is Unnecessary

As consumers become more frustrated with DRM restrictions, they are purchasing less and less restricted music. This is causing major players in digital rights management to rethink their philosophy. Apple, Yahoo, and even EMI records plan to remove DRM from their music in the future. This is a big step for these companies, and many believe that it will increase profits. These companies subscribe to the philosophy that the consumer does not like digital rights management software, and is frustrated enough with it to purchase less DRM restricted music. This philosophy is illustrated in the visual below, which is a recent poll conducted by the BBC.



The visual shows the results of a poll in which three thousand people were asked this question: should there be less copy protection restrictions on downloaded music? The answer seems obvious, and the results are not surprising: 88.14% said yes, while only 8.69% said no, and 3.17% were not sure. Clearly these record labels and music distributors are realizing that the consumer is the entity that keeps them in business, and the happiness of the consumer should be taken more seriously.

Apple Wants to do Away With DRM

In the digital music industry, Apple, Inc. is the incumbent leader. They are the pioneer and producer of the beloved Ipod, and the popular music software iTunes. They established the current popularity of digital media and digital media players. Apple is also a pioneer in digital rights management. With their 'Fairplay' software, iTunes and the Ipod are restricted in such a way that they can only work together, and not with other devices.

Very recently, Steve Jobs, CEO of Apple, Inc. issued a surprising press release stating his personal views on digital music, digital copy protection, and the future of DRM. In it, he calls for an end to restrictive software:

Imagine a world where every online store sells DRM-free music encoded in open licensable formats. In such a world, any player can play music purchased from any store, and any store can sell music which is playable on all players. This is clearly the best alternative for consumers, and Apple would embrace it in a heartbeat. (Jobs, 2007)

EMI Records Joins Forces with Apple

Since the Apple, Inc. press release, one of the 'Big Four' record companies, EMI, has stated that they agree with Jobs, and plans to release unrestricted music on Apple's iTunes store (New York Times, 2007). This is a big step for these companies, and will no doubt increase profits by allowing consumers to utilize their purchases on any device, at any time. This will increase the profits of Apple's online music store for two main reasons: less technically savvy customers will no longer be apprehensive about purchasing online music; and those customers who own devices other than the Ipod will be able to purchase EMI music at Apple's store and use it on a device of their choosing, or copy it to a CD. This will, in turn, create more exposure for EMI music artists because more online music will be purchased (Nicoli, 2007).

Yahoo Music is in Agreement

According to the popular technology related newspaper, *Silicon Valley Watcher*, Dave Goldberg, CEO of Yahoo Music has "...long advocated removing DRM on music..." because it complicates things for the user (Foremski, 2007). Yahoo plans to explore ways it can get music from the PC to any device with ease. The easiest way to accomplish this is to remove DRM entirely.

Conclusion

Copy protection has existed for as long as original paper works have been produced. Authors of original works have had a need to protect those works since the advent of the printing press, which allowed mass-produced copies to be made with great ease. As the digital era has brought new challenges to the content protection world, media giants like Sony BMG have answered the call by implementing software copy protection.

In the 1980's, computer software became very easy to copy and illegally distribute. Software companies, in fear of losing profits, invented ways to protect their software from these threats. Early software copy protection, by today's standards, was primitive. It often consisted of a plastic tab which did not exist on the original diskette, or a few bad sectors at the beginning of the disk to verify its authenticity. Some software copy protection consisted of asking questions for which the answer could only be found in the software manual that came with the purchased program. As new technologies emerged, new and creative ways of protecting digital media were needed.

Digital copy protection is not only limited to computer software. In the late 1990s, digital music in the form of *MP3* was being distributed over the Internet and file sharing networks, like Napster. The endless cat and mouse game between MP3 file sharing and the Recording Industry is being played to this day. The Recording Industry and its major players release new versions of their digital rights management software, and someone always finds away around it. It is for this Reason that Sony BMG records has taken a more aggressive stance on digital rights management. In 2005, Sony implemented their controversial DRM software. This software installed a rootkit onto consumer's

computers, essentially bypassing the security of the operating system. The rootkit was also highly restrictive. Many consumers believe that Sony's methods are too deceiving. This report was created to make two recommendations to Sony: utilize a more respectful and customer oriented philosophy, and, discontinue use of DRM software.

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