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A Comment.

Librarian: I seek to comment on questions 1-29 (inclusive) posed in
DOCID:fr24no99-23, "Exemption to Prohibition on Circumvention of Copyright
Protection Systems for Access Control Technologies" with regard specifically to the
class of copyrighted works known as DVD (digital versatile disc), CD (compact disc),
computer software, and VHS videotape. The answers to these questions are primarily
intended to address the state of copy protection technologies and its affects on
noninfringing use at the present time. Where projections are made, they are clearly
delineated.

1. Technological measures employed to restrict access to copyrighted works today
   include password protection of computer executable files, Macrovision copy
   protection for VHS tapes and DVD output, CSS encryption of DVD discs, among
   others. Password protection restricts the use of a computer executable file to a
   single user who owns the password. Macrovision degrades copies made of VHS
   tapes so that the resulting copy is of very poor quality and difficult to view. CSS
   restricts the playback of DVD discs to players that can decode the CSS
   encryption— it should be noted, however, that CSS does not protect DVD discs
   from being copied in any way. More recently, a new form of CD music copy
   protection has appeared that prevents digital copying of CD-audio music to a
   computer.

2. Different measures do indeed have different effects on a user's ability to make
   noninfringing uses of the media. Password protection prevents the user from
   making illegal copies of the software by requiring that the password given to the
   user be entered in order to use or install the software. If the user should give his
   password away for the purpose of making illegal copies, it is easily traced back to
   the user who gave the password out. This provides an effective means of
   enforcement without restricting the user from any noninfringing use. The user is

free to install, reinstall, and make archival backup copies of the software without the need to circumvent anything. Macrovision primarily impedes the production of noninfringing archival backup copies of VHS tapes or making backup copies of DVDs to VHS tape, by degrading the copy severely when a copy is made. (Copies produced this way are unwatchable.) Additionally, although Macrovision is claimed to be a "transparent" copy protection scheme that does not affect playback, there is indeed a noticeable degradation in picture quality on some VCRs even when playing an original tape. While this is a minor issue, it does affect the user's ability to achieve a quality playback of the media. Finally, Macrovision prevents the connection of a DVD player to a VCR, even when such an arrangement is not for the purpose of copying the DVD disc to VHS tape. For example: many older or less expensive televisions have only a coaxial cable input for connecting other appliances. (i.e. antennas, VCRs, DVD players, video games, etc…) VCRs commonly have a coaxial cable output for connecting to such a television, as well as an RCA input for connecting another appliance to the VCR so that it can be "passed through" to the television. DVD players do not have coaxial outputs, and thus cannot be connected directly to such a television. A simple solution would be to connect it to the VCR to "pass through" to the TV, but because of the Macrovision copy protection, the image is unwatchable on the TV. An additional device to convert the DVD's signal to one the TV understands and a switch to select between the VCR and DVD are then necessary. This effectively people with low budgets from connecting their DVD players to older TVs through the VCR they already own, infringing on their right to play back the DVD. The last of the mentioned copy protection methods is DVD CSS encryption. This is, in fact, not a copy protection method at all. It does prevent playback, unless you are using a player that can decode the encryption. This can be easily understood by considering a simple written code on paper—you cannot read the message, but if you copy it by hand, someone else who understands the code can read your copy just like the original. While providing no protection against making perfect digital copies of a DVD, this encryption scheme presents several problems for users trying to use DVDs. First, there exists no software DVD player system for many computer operating systems, the most recognizeable of which is Linux. This prevents many users from playing back media they legally own on the equipment of their choice. Second, it allows the DVD CCA, which controls the decryption keys, to set arbitrary rules for playback that must be obeyed if you wish to build a player. For example, a DVD player purchased in the USA cannot play DVDs from a country in a different "region" (as defined by the DVD CCA) such as Japan. This additionally prevents the owners of discs from outside their own country to play back their media. The new CD-audio protection prevents playback of the protected CDs on a computer at all, leaving users whose only playback mechanism is a computer CD-ROM drive unable to play CDs they legally own. Additionally, it renders it impossible to make a legitimate archival backup copy of the CD using a computer (the only reasonable way to currently make such a copy). Finally this CD-music copy protection makes new CDs unplayable in older standalone CD players—some manufactured as recently as

two years. This again directly prevents a user from playing back a CD that has been legally acquired on his existing equipment, requiring the purchase of another piece of equipment for these newer media.

To conclude, any method that directly impairs a user's ability to play back legally obtained media should be legally circumventable for the purposes of playback. Additionally, any method that prevents a user from making a legitimate archival backup copy should also be circumventable for the purpose of creating such an archival backup copy of their media. The class of media that should be exempted from the anticircumvention provisions of section 1201 include all media where the technological copy protection mechanism prevents playback by the user on the user's chosen equipment or where the technological copy protection mechanism prevents the making of legitimate archival backup copies of the media.

3. Technological copy protection measures have affected legitimate use in several ways. DVD CSS encryption prevents the playback of DVDs from a country in a different "region" (as defined by the DVD CCA), prevents playback on equipment such as a Linux computer where there is no player, and effectively prevents a user from creating his own player (either as software or as a standalone piece of equipment) without circumventing the CSS encryption. Macrovision prevents the legal creation of legitimate archival copies of VHS tapes and legitimate archival copies of DVDs on VHS tape, as well as slightly degrading the picture quality of the orignal media and preventing certain configurations of playback setup (a DVD player connected in a "pass through" fashion to a VCR). CD-audio copy protection prevents playback on older CD players and computer CD-ROMs, and prevents the making of legitimate archival backup copies.

4. Specific classes of users to whom media have become unavailable due to copy protection measures include, but are not limited to:
    a. A professor in America who wants to show his class a DVD from another "region" for study. DVDs from other regions are unplayable on DVD players sold in the US, due to restrictions made by the DVD CCA on player design (specifically, including a system for limiting the "region" from which discs may be played) as requirements for obtaining a decryption key for DVD CSS.
    b. A professor in America who wishes his students to be able to view DVDs that the University owns on Linux computer systems. (Purdue University, for example, has many available Linux computer stations which could be used IF there existed a legal software DVD player for Linux) Since the DVD CCA has not made a CSS decryption key available for those users who wish to construct their own player, CSS encryption prevents playback in such an environment.
    c. Any person who owns a Linux computer who wishes to play legitimate DVDs on that computer is prevented from doing so since the DVD CCA

has not made a CSS decryption key available for those users who wish to construct their own player.

    d. Any person who purchases a protected audio CD but owns only an older CD player will be unable to play the media. (i.e. a professor teaching a music appreciation class who wishes students to purchase a CD for playback during class on University-owned older CD players)

    e. Any person who purchases a protected audio CD but owns only a computer with a CD-ROM will be unable to play the media. (i.e. a professor teaching a music appreciation class who wishes students to purchase a CD for playback during class on University-owned older computer CD-ROM drives)

5. Specific classes of users to whom media have become less available due to copy protection measures include, but are not limited to:

    a. An individual who wishes to purchase DVDs from a country in another "region" for legitimate viewing in addition to DVDs from the user's own region is prevented from doing so, due to restrictions made by the DVD CCA on player design as requirements (specifically, including a system for limiting the "region" from which discs may be played) for obtaining a decryption key for DVD CSS.

    b. An individual who wishes to play DVDs on a piece of software or hardware that does not have the approval of the DVD CCA (such as a self-built Linux software player, or a self-built hardware player) in addition to playing DVDs on a legitimate player since the DVD CCA has not made a CSS decryption key available for those users who wish to construct their own player.

    c. An individual who wishes to purchase DVDs from a country in another "region" for legitimate viewing in the user's own country when such DVDs are available at an earlier date than in the user's country or at a lower price than in the user's country is prevented from doing so, due to restrictions made by the DVD CCA on player design as requirements (specifically, including a system for limiting the "region" from which discs may be played) for obtaining a decryption key for DVD CSS.

    d. An individual who purchases a DVD in his "region" may find that it has fewer features (such as additional footage, audio formats, and video formats) that a DVD of the same title from another region has. For example, UK DVDs often do not have the additional footage that USA DVDs have. This is due to restrictions made by the DVD CCA on player design as requirements (specifically, including a system for limiting the "region" from which discs may be played) for obtaining a decryption key for DVD CSS.

    e. Any person who purchases a protected audio CD who owns both an older CD player (for example, in his car) and a newer CD player (in his home) will be unable to play the media in his car.

f. Any person who purchases a protected audio CD who owns both a computer with a CD-ROM (in his study) and a standalone player (in his living room) will be unable to play the media on his computer.

6. Works in unprotected formats can sometimes be substituted for works in protected formats, but not without the purchase of additional equipment and software, and in most instances not without sacrificing quality. For example-- VHS tapes from a different country may be viewed instead of DVDs from another country, which cannot be viewed without circumventing copy protection. However, VHS tapes are of significantly lower quality than DVDs and degrade over time, while DVD discs do not. Additionally, separate players are required to play VHS tapes and DVDs. DVDs have additional useful features, such as menus for accessing content and space for additional data that VHS tapes do not have. Many media do not have a viable alternative—for example, protected audio CDs will most likely never be released as unprotected audio CDs, or any other older format (tape, LP) that is no longer commonly used. Thus, it is not often practical to substitute an unprotected media for a protected one.

7. There exists at least one example of a class of work available only with copy protection in place—computer software. Computer software almost always includes some sort of password protection, typically preventing installation but occasionally preventing use without the password.

8. Works such as videotapes that cannot be easily copied are difficult to keep in an archive. A nonprofit organization (such as a library) who wishes to make available a VHS videotape for checkout but retain a backup copy in case the checked out tape is damaged is unable to do so because of the Macrovision copy protection on VHS tapes. Media are typically available in several formats (for example a video on both VHS and DVD), with quality tradeoffs and different equipment requirements. It is impractical to archive every type of media, so you would naturally choose to archive either the media that matches the most common equipment (VHS) or the media of the highest quality (DVD). VHS cannot be copied for backup, and DVD cannot be played in some players depending on the "region" codes on the DVD. Additionally, a library who wishes to make available DVDs from other countries for checkout is unable to, due to restrictions made by the DVD CCA on player design as requirements (specifically, including a system for limiting the "region" from which discs may be played) for obtaining a decryption key for DVD CSS. Protected audio CDs prevent the user from making a copy to another CD for legitimate archival backup purposes.

9. As described in the response to question 8, it is impossible to make a legitimate archival backup copy of a VHS tape due to the Macrovision copy protection system. Since VHS tapes degrade with each playback, users concerned with preserving their media will naturally wish to make archival backup copies so that when the original is no longer playable, they have a way to view the media that

they have purchased. Libraries and other nonprofit organizations who similarly wish to preserve videotapes for future viewing (much like saving old books from decay) are prevented from doing so unless they break the copy protection. Libraries and nonprofit organizations who wish to preserve protected audio CDs are unable to do so without circumventing the copy protection.

10. There are several examples of cases where copy protection schemes prevent use for nonprofit educational purposes, including but not limited to:
    a. A professor in America who wants to show his class a DVD from another "region" for study. DVDs from other regions are unplayable on DVD players sold in the US, due to restrictions made by the DVD CCA on player design (specifically, including a system for limiting the "region" from which discs may be played) as requirements for obtaining a decryption key for DVD CSS.
    b. A professor in America who wishes his students to be able to view DVDs that the University owns on Linux computer systems. (Purdue University, for example, has many available Linux computer stations which could be used IF there existed a legal software DVD player for Linux) Since the DVD CCA has not made a CSS decryption key available for those users who wish to construct their own player, CSS encryption prevents playback in such an environment.
    c. A professor at a university anywhere who wishes his students to purchase and listen to protected audio CDs on university CD players that are too old to recognize the format for a music appreciation class will be unable to do so because older players cannot play the protected CDs.
    d. A professor at a university who wishes students to listen to university-owned protected audio CDs on computers (commonly used in modern musical composition classes) will be unable to do so since the computer CD-ROM drives will be unable to play the protected CDs.
    DVD videos are typically available on VHS tapes as well, but are of significantly higher quality on DVD. Additionally, in the case described in (b) above, VHS tapes are not playable on computer systems, while DVDs are. Thus, the copy protection prevents the use of the highest-quality format by individuals in these situations. Additionally, since DVDs do not degrade when they are played, (since they are a digital media) they are more suited to repeated viewing in a class at a university than VHS tapes. Protected audio CDs are currently not available in other formats, and although it is technically possible, it is unlikely that such CDs will become available in unprotected formats.

11. There is very little worthwhile distinction between works used for various purposes in determining what types of works to exempt from the anticircumvention provisions of section 1201. It is, however, useful to make the distinction between the use of a work in determining what is a legitimate use. For example, it is unnecessary to say that it is legal to break Macrovision protection for the purposes of archival copies, but not for making illegal duplicates for sale.

This distinction is already made by existing law. The right to circumvent copy protection to play back a media or to make a legitimate archival backup copy of a media does not affect what is already legal or illegal to do with the media. It does not grant users the right to make copies of copyrighted works for the purpose of selling or public rebroadcast. It simply allows users to view the media in the manner of their choosing and to protect their investment with backup copies. This right must be protected if users are to be able to purchase and view media without any restrictions imposed by an entity other than the government. Giving everyone the right to circumvent copy protection for any reason at all does not make it legal to distribute copies of copyrighted works, due to existing law. Thus, the distinction between what reasons the copy protection was circumvented for are not useful for determining what should be exempted from the anticircumvention provisions of section 1201. Everything should be exempted, since laws are already in place to prevent the illegal use of such a right.

12. Users who cannot play back a media cannot comment on it, criticize it, report about it, teach about it, learn about it, or conduct research involving it. Users in such a situation include owners of DVD players who wish to play a DVD from another "region", owners of DVD players whose only option to connect their DVD player to their TV is to connect it through a VCR, owners of computer systems for which there exists no DVD player who wish to use their computer to play DVDs, owners of computer systems for which there exists no DVD player who wish to write their own software to play DVDs on their computer, owners of older standalone CD players that cannot play protected audio CDs and owners of computer CD-ROM drives, which cannot play protected audio CDs. This immediately and drastically affects the rights of users to use media as they are intended—for playback. If playback is impossible due to copy protection, as it is in many cases, whole classes of users are left unable to conduct the activities described in this question.

13. Fair use includes the right to play back the media you have purchased, and the right to make archival backup copies. These things are in many cases directly impaired by copy protection mechanisms. See the responses to questions 2, 3, 4, 5, 8, 9, 10, and 12 for detailed examples of situations where a user's right to play back legally acquired media is directly prevented or impaired, and where a user's right to make a legitimate archival backup copy of the media is directly prevented or impaired.

14. The ability to engage in the activities described requires at the very least the ability to play back the media. There are many examples of situations where copy protection mechanisms prevent a legitimately acquired media from being played back by the user. See the responses to questions 2, 3, 4, 5, 8, 9, 10, and 12 for detailed examples of situations where a user's right to play back legally acquired media is directly prevented or impaired. The availability of alternate formats with no copy protection is extremely low, with the alternatives being limited typically

to significantly lower-quality formats (i.e. using VHS instead of the much higher-quality DVD format) or no alternative at all. See the response to question 6 for more details on the specific alternatives available for DVD, VHS, and protected audio CD.

15. Noninfringing use is prevented or infringed in many cases due to the copy protection used in DVD, VHS, and protected CD audio formats. For examples of situations where noninfringing use (to play back the media and to make legitimate archival backup copies of the media) is directly prevented or impaired, see the answers to questions 2, 3, 4, 5, 8, 9, 10, and 12. The availability of alternate formats with no copy protection is extremely low, with the alternatives being limited typically to significantly lower-quality formats (i.e. using VHS instead of the much higher-quality DVD format) or no alternative at all. See the response to question 6 for more details on the specific alternatives available for DVD, VHS, and protected audio CD.

16. All works should be exempted from the anticircumvention prohibition, regardless of usage, if the work is purchased legally by the user and the use is legal (such as playback or making archival copies). Copy protection directly interferes with a user's most basic right to play back media the user has purchased, and also interferes directly with a user's right to make archival backup copies. These rights, as set forth in existing law, apply to any legally acquired media. Any media where copy protection prevents legitimate use of any sort should be exempted from the anticircumvention prohibition, on the grounds that the copy protection prevents fair use. Examples of media where copy protection presents playback, availability, and backup problems are DVD, VHS, and copy protected CD-audio. See the answers to questions 2, 3, 4, 5, 8, 9, 10, and 12 for details on specific situations where a user's ability to engage in the activities described in this question are prevented or hindered. In all cases I have been able to locate in research for this document, copy protection will interfere with the user's ability to make legitimate archival backup copies. Prevention of copying is the intent of copy protection, and thus directly interferes with fair use of a media. Thus, all copy protected media should be exempted from the anticircumvention problem.

17. The distinction set forth in this question is a reasonable one. Although it is already illegal, and existing laws provide adequate recourse for companies to protect copyrighted material, new laws can agree with them without creating any additional restrictions. The circumvention of copy protection in order to achieve any form of legal fair use (playback, archival backup) should be allowed. But it is acceptable to make illegal the use of copy protection circumvention for the purpose of making illegal copies. Since the making of illegal copies is already illegal, this does not affect user's rights in any way.

18. Different technological means can be used to circumvent different copy protection mechanisms. For example, equipment to eliminate the Macrovision

copyright protection on VHS video tapes is available to facilitate viewing of the tapes without the distortion introduced by Macrovision and the making of legitimate archival backup copies. Despite the easy availability of Macrovision removing devices, they are not common. This also allows DVDs to be copied to video tape. DVDs can be copied perfectly to another DVD without even attempting to break the copy protection, since it only prevents playback. However, software tools exist for the decoding of DVD media, allowing playback on computer systems for which a player previously did not exist. This software is extremely rare and difficult to find due to current and ongoing lawsuits regarding it. CD audio copy protection (used only in a few CDs by BMG) has yet to be circumvented, as far as I can determine in my research for this document.

19. VHS videotape prices have remained stable and even fallen somewhat since the introduction of the format, despite the ability of people to make copies of the media. If there were any serious loss of money from the format, production of media in this format would have ceased long ago. Yet it continues to be very profitable for companies selling VHS tapes. DVD CSS encryption circumvention has no impact on the price of DVDs, since the discs have been capable of being perfectly copied since the inception of the format. DVD CSS encryption circumvention will likely encourage the purchase of more DVDs by people who previously could not play DVDs because their computer did not have a software player available, and by people who wish to purchase DVDs from another "region". As stated in the response to question 18, CD audio copy protection has yet to be circumvented.

20. VHS copy protection circumvention has had no affect on availability. Videos continute to be equally available before and after the ability to circumvent Macrovision copy protection. The ability to make archival backup copies, however, will allow VHS tape owners to preserve their media for a much longer time, increasing availability somewhat. DVD CSS circumvention will make DVDs more available to users. Users with computers that do not have an official DVD player will be able to purchase and play DVDs. Users who wish to play DVDs from another region will be able to do so.

21. Media continues to be sold despite circumvention, and marketing is much the same for DVDs, where the CSS encryption divides the discs by "region", and VHS tapes, where different tapes are made for different countries and languages. The only real difference is that the import market for media from another country is eliminated by the DVD "region" restrictions imposed by CSS copy protection, and becomes a viable market again once DVD CSS is circumvented.

22. The answers depend on the type of encryption method and how it is used. For example: DVD CSS is used not to restrict copying, but to restrict viewing. VHS Macrovision protection is used to prevent copying.

23. There is no need for a distinction between classes of copyrighted works. The right to play back and make archival backup copies of a legally acquired media even where circumvention of copy protection is required to do so should be protected across all forms of media, existing and future. All media can be considered a single "class".

24. In all the examples I have cited, the impediments to legitimate viewing, use, and copying for archival backup purposes are present only because they are side effects of the copy protection measures, and not for any other reason.

25. In every example I have found, availability of media decreases when copy protection is implemented as users are prevented from using the media in legitimate ways.

26. In every example I have found, copy protection hinders lawful use of media in a significantly larger fashion than it prevents illegal use. People who desire to make large numbers of illegal copies for resale will always have enough money available to find a way around copy protection, while individual users who wish only to make a legal use will be unable to do so because they cannot afford a complex method for circumventing copy protection or lack the ability to do so themselves. Illegal copying is rarely prevented by copy protection, while legal use is frequently prevented.

27. No other factors currently known at the writing of this document.

28. At the start of the research process for this document, I believed that copy protection was being legitimately used by companies to protect their copyrighted works, but that there were some minor problems with the way such copy protection was implemented. I believed that these implementation problems had small adverse affects on users' capabilities to make noninfringing uses of media they have purchased. After thorough reading on the subject, I have concluded that most copy protection schemes (i.e. DVD, Macrovision, CD audio copy protection) do nothing to prevent serious criminals from making illegal uses of media, but frequently prevent legitimate use by individual users. In fact, some groups (such as the DVD CCA) are using copy protection as a means to deny people the ability to play legally purchased media from other countries on their legally purchased DVD players, forcing users to purchase additional equipment. I firmly believe, after having looked at so many examples of legitimate use being squashed, that copy protection that in any way hampers a users' ability to make legal, noninfringing use of media should be illegal. Circumvention of such detrimental copy protection schemes should most definitely be protected by law. A simple system (like the computer software password scheme commonly in use described in my answer to question 1) that tracks where copies came from provides more than enough capability for tracking illegal copies back to the person who made them. Existing laws already make copying media without permssion unlawful,

and no further protection is needed, unless it can be done with absolutely no interference with a user's right to play back and make archival backup copies of the media.

29. Unfortunately, as a full time software engineer for an Indianapolis based development firm, a full-time student at Purdue University, and a network technician for Purdue University, I will be unable to attend such a hearing. If written comments or testimony are requested, I will be happy to provide them, IF my schedule allows at the time of request.