

**BEFORE THE U.S. COPYRIGHT OFFICE  
LIBRARY OF CONGRESS  
IN THE MATTER OF EXEMPTION  
TO PROHIBITION ON CIRCUMVENTION OF  
COPYRIGHT PROTECTION SYSTEMS  
FOR ACCESS CONTROL TECHNOLOGIES**

**Docket No. RM 2008-8**

**RESPONSE FROM  
THE AMERICAN ASSOCIATION OF LAW LIBRARIES,  
THE MEDICAL LIBRARY ASSOCIATION  
THE SPECIAL LIBRARIES ASSOCIATION**

**July 10, 2009**

Following are our reply comments for questions relating to various aspects of screen capture software being considered as part of the 2008 rulemaking on Exemption of Copyright Protection Systems for Access Control Technologies in the area of a proposed exemption for the use of DVD clips in the instructional setting.

**Please explain whether the legal consequences of using capture software differ from the legal consequences of using a digital video camera (with particular reference to 17 U.S.C. § 1201).**

We believe there is no appreciable legal difference between using a digital video camera and using screen capture software to create video clips from DVD-based movies and videos played back on a computer screen. With a video camera, a user points *hardware* at a screen playing content from a DVD, while screen capture programs are used to point *software* at a screen playing content from a DVD. In both cases the content is ‘in the clear’ when it is copied.

**Is it a violation of § 1201(a)(1) to use screen or video capture software (hereinafter “capture software”) to reproduce clips from copyrighted motion pictures or audiovisual works?**

In our opinion, no. Other responders, such as the Organization for Transformative Works (OTW), have provided you with additional technical detail, and we endorse that description.

**Is there particular capture software that decrypts the Content Scrambling System on DVDs? Is there particular capture software that does not decrypt the Content Scrambling System on DVDs?**

The specific technical operation of capture software is best assessed by the software companies who make these programs. Before getting to the question of whether any particular capture software does or does not decrypt the Content Scramble System (“CSS”), there is a more fundamental question to ask: **Do these programs work?** As our research shows, several capture software programs *do not work* to create functional clips from DVDs played back on computers under default configurations. Most did not produce clips of usable quality, even with significant adjustments to the settings.

We conducted independent tests of several capture software programs, and our results are summarized below as Figure 1. In addition, we are submitting electronic files with versions of our test clips, including the clips that did not work.

**Figure 1. Summary of Screen Capture Test Results**

File No.	Program	Operating System	Testing Environment	Notes and Results
1	Captivate (Adobe)	Windows XP	Tested with and without hardware acceleration turned on	Was unable to produce a clip with any audio. This software is meant to capture full-motion screen images and interaction, but video capture functions are inconsistent at best and unworkable at worst.
2, 3	SnagIt (TechSmith)	Windows XP	Tested with and without hardware acceleration turned on	Had difficulty producing a clip with audio AND video. Test files show choppy video with no sound.
4	VLC Media Player + Fraps	Windows XP	Tested with and without hardware acceleration turned on	Created a viewable clip. However, file requires proprietary codec for playback, which is only playable on equipment with Fraps software installed.
5	Snapz Pro X (Ambrosia Software, Inc.)	Mac OS X	Used demonstration version of software with default playback settings on an iMac	Output contains audio and video, which is pixilated and not fluid. Video looks decent at low screen resolutions, but would be distorted on a large projection screen.
6,7	Replay Video Capture (Applian Technologies Inc.)	Windows XP	Tested with and without hardware acceleration turned on	Several attempts were unsuccessful at getting any audio. Second clip (file 7) has video with audio track that is out of sync with video. Video content on both clips is jittery.

***Other Tested Software***

A much easier alternative to using screen capture software is to use software that allows file copying at the chapter level of an individual DVD. For the limited purpose of preparing our response, we created a clip from a DVD using Handbrake for Mac (<http://handbrake.fr/>) and then cutting it down to the specific sequence desired using AVIDemux (downloaded from CNET). This appears on the submitted data disc as File Number 8.

**To the best of your ability, please explain how screen capture software operates, e.g., does reproduction take place after the work is lawfully decrypted?, Does the capture software reproduce the digital output from the computer, or does the capture software reproduce the analog output from the computer? Does this analog/digital distinction matter for determining whether a violation of § 1201(a)(1) is taking place?**

The technical specifications of individual screen capture programs will vary, but there is a two-step process. The DVD must first be decrypted, and then the decrypted output may be recorded. Although the two steps may be tightly integrated, it is clear that decryption occurs first. Whether the output of the decryption process is in digital or analog form does not seem to be legally significant.

**Is the output *encrypted* at the time of capture by the software or is the output *decrypted* at the time of capture?**

In order to play a DVD so it can be viewed on the screen, a computer must decrypt the CSS to read information on the DVD disc. Once decrypted, DVD contents are viewable on the computer screen in a DVD playback software program. Content from a DVD must be decrypted in order for playback to work. At the time a DVD is viewable to be recorded by capture software, it must be decrypted.

We believe that output is decrypted at the time of capture, and that capture software has no direct interaction with the decrypted content. For instance, capture software does not require a license for CSS interaction, as it merely functions as software pointed at an image after decryption has taken place.

**Do different screen capture programs involve significantly different methods of capturing screen and/or audio output?**

Different screen capture programs differ greatly as to the features available for capturing movement on the computer screen. As shown in the test results listed in Figure 1, most screen capture programs require complicated configuration to get any kind of image with sound. Some will never work to capture video and audio simultaneously.

For capturing audio, some programs provide no option to record audio as played back through the computer operating system, whether it is through an internal sound card or other

method. For instance, Adobe Captivate, very sophisticated capture software, allows only narration as a source of audio for recordings it produces. Audio must come from a microphone or line input on the computer.

**There was an example of screen capture software at the § 1201 hearings and some witnesses pointed out that the example presented revealed quality degradation, e.g., pixelation. Can capture software be adjusted in order to affect the quality of the reproduction of the video or audio captured? If so, how?**

Based on tests performed for this response, no capture software can faithfully reproduce DVD content with the quality desired in a classroom setting.

Within each screen capture program, the quality of the clip will depend on settings such as capture frame rate and the size of the overall captured image. In addition, computers with more RAM and fewer applications running will perform better during DVD playback and image capture.

Although clip quality can be influenced with some settings, no clip can be displayed in better resolution than it was when captured. For instance, if capture software is used to record a clip played back on a monitor with 800x600 pixel resolution, then this image cannot be increased in size on a larger monitor without significant quality degradation.

**Can the computer on which the capture software resides be adjusted to affect the quality of the output, i.e., by adjusting the settings of the operating system, video card or sound card software rather than the settings within the capture software itself?**

Adjustments to hardware settings require a level of technical expertise not usually held by instructors in a classroom setting. Any process requiring such skill would necessarily exclude most faculty from using DVD clips effectively in their teaching.

On computers running a version of Windows, the act of turning off hardware acceleration at the operating system level increases the likelihood that capture software will actually capture *something* from a DVD played back on the computer. Hardware acceleration is typically turned on by default, as it improves system performance and allows users to efficiently run multiple applications simultaneously.

## **Conclusion**

To reiterate the request from our hearing statement, we ask that the exemption granted to faculty in media and film studies programs after the 2006 rulemaking proceeding be broadened to faculty of law and the health sciences, and that the exemption be extended to include lawfully-acquired copies from any source permitted by 17 U.S.C. § 110 (1). Our library associations welcome the possibility of finding a workable solution to meet the needs of our members for educational aids, while ensuring predictable and efficient access to DVDs for the purpose of preparing short, focused clips.

No capture software even approximates the quality of the material extracted directly from a DVD. Absent an expansion of the current exemption for film and media studies faculty, we will not be able to make high quality clips from DVDs for law and health sciences instruction. Further, capture software requires a specific combination of technical settings that do not perform uniformly well. Even technology-savvy users have difficulty creating clips with capture software. Requiring procedures that demand extensive technical expertise would deny faculty from resource-challenged campuses and schools the benefit of the exemption. Our request is for an exemption that would allow a law or health sciences faculty member of average technical ability to reproduce short clips of good quality using moderate effort.

We hope to find a workable solution that is easy to understand and based on flexible technical solutions, and that this request can be granted without being restricted to the use of capture software, which does not provide high quality clips for classroom use.

Respectively submitted,



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