Novel Criminal Copyright Infringement Issues Related to the Internet

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Copyright law is based on a simple premise enshrined in Anglo-American legal tradition: For a limited time, an original work in fixed form may not be copied (or otherwise infringed) without the permission of the copyright holder. The basis of copyright in federal law is as old as the Constitution, U.S. Const. art. I, § 8, cl. 8; infringement of a copyright has been a federal crime since 1909. *See* Act of March 4, 1909, ch. 28, 35 Stat. 1082. The legal right of control over a creative work has long been recognized as an essential incentive for authors to create such works.

Congress has distilled the crime of felony copyright infringement to four essential elements: (1) a copyright exists; (2) it was infringed by the defendant, specifically by reproduction or distribution of the copyrighted work; (3) the defendant acted "willfully"; and (4) the defendant infringed at least 10 copies of one or more copyrighted works with a total retail value of more than $2,500 within a 180-day period. *See* 17 U.S.C. § 506(a)(2); 18 U.S.C. § 2319(a), (c)(1). Further elaboration on these elements, if necessary, can be found in the recently published manual, Prosecuting Intellectual Property Crimes (2001) [2006 edition available at http://www.cybercrime.gov/ipmanual.] Criminal copyright infringement is discussed in depth in chapter III of the manual. [2006 edition: Chapter II.]

The recent development of computer technology -- most notably the Internet -- has had a complex and profound effect on the dissemination of copyrighted works, by the copyright holder and by infringers alike. Both the supply of, and the demand for, copyrighted works have escalated dramatically because of the Internet's success as a communications medium, the large number of people worldwide who use it, and the ease with which materials may be made available for copying. Media products produced today, including software and music, are often in a digital format, which permits fast, cheap, and easy production of copies (legitimate or infringing) identical in quality to the original. The digital nature of today's media products also makes them much easier to distribute in large scale over the Internet. Some so-called "warez" Web sites are dedicated, either entirely or in part, to providing widespread access to copyrighted materials. In addition, people have developed new technologies that facilitate copying via the Internet. One fact is clear: the Internet, computers, and related developments in technology have altered, and will continue to profoundly alter, the ease with which people may reproduce and distribute copyrighted works.

In Internet-based copyright cases, experience has shown that certain issues arise regularly: (1) large scale infringement without profit motive; (2) disclaimers; (3) unusual proof issues for quantity, loss, and identity; and (4) sympathetic defendants including juveniles. Moreover, Internet-based copyright cases often involve complex, emerging technologies, which raise unique legal and technical issues that require additional background, including: (1) novel means of infringement; (2) facilitation; (3) audio compression technology such as MP3; and (4) file sharing technologies. Each of these subjects is discussed below.

In addition, defendants in Internet copyright cases are especially prone to raise First Amendment claims in preliminary discussions. No such claim has ever been discussed in a published criminal case, perhaps because criminal copyright infringement requires proof of the defendant's willfulness. Nevertheless, it has long been recognized that civil enforcement of copyright laws in America can sometimes be at tension with the constraints of the First Amendment. *See, e.g.*, Paul Goldstein, *Copyright and the First Amendment*, 70 Colum. L. Rev. 983 (1970); Melville B. Nimmer, *Does Copyright Abridge the First*

Amendment Guarantees of Free Speech and Press?, 17 UCLA L. Rev. 1180 (1970). New technologies such as the Internet provide fertile ground for revisiting these conflicts. *See, e.g.*, John Gladstone Mills III, *Entertainment on the Internet: First Amendment and Copyright Issues*, 79 J. Pat. & Trademark Off. Soc'y 461 (1997). Prosecutors should be aware of the potential First Amendment limitations when charging cases under novel theories of copyright law.

I. Common Issues in Internet Copyright Cases

A. Large Scale Infringement Without Profit Motive

Infringement without profit motive is far more common in cases of Internet-based copyright infringement than it is in the physical world. Until recently, the prosecution was required to prove that copyright infringement was done willfully and for commercial advantage or private financial gain. Now the law provides for prosecution in the absence of these monetary considerations. Specifically, the current statute, as codified at 17 U.S.C. § 506(a)(2), allows for prosecution in cases involving large scale illegal reproduction or distribution of copyrighted works where the infringers act willfully, but without a discernible profit motive. Congress specifically made this change as part of the No Electronic Theft (NET) Act of 1997, Pub. L. No. 105-147, 111 Stat. 2678. This statutory amendment was enacted as a response to *United States v. LaMacchia*, 871 F. Supp. 535 (D. Mass. 1994), in which a Massachusetts District Court held that electronic piracy of copyrighted works, which could not be prosecuted under then-existing copyright infringement laws if the defendant did not realize a commercial advantage or financial gain, could not be charged as a wire fraud. For a more extended discussion of charging mail or wire fraud in infringement cases, see *Prosecuting Intellectual Property Crimes* § VI.B.1. (2001) [2006 edition: see II.E.]

Cases alleging illegal distribution of copyrighted materials without commercial gain have been charged all over the country. In August 1999, the first person was convicted for illegally posting computer software programs, musical recordings, and digitally-recorded movies on his Web site, and allowing the general public to download and copy these products free of charge. The Oregon defendant pleaded guilty to a felony. *See* United States Attorney's Office, District of Oregon, *First Criminal Copyright Conviction Under the "No Electronic Theft" (NET) Act for Unlawful Distribution of Software on the Internet*, August 20, 1999 (http://www.cybercrime.gov/netconv.htm). In addition to Oregon, other significant cases have been charged in the Northern District of California, the District of Columbia, the Northern District of Illinois, and the Eastern District of Michigan without allegation of commercial gain. For additional information about cases charged under the NET Act, see http://www.cybercrime.gov/iplaws.html.

Prosecutors should not hesitate to utilize this avenue of enforcement. In many cases the damage to the victim may be enormous although the infringer is not profiting financially. In fact, because the copyrighted materials are provided without charge to the entire Internet-using public, the demand for the infringing goods provided for free may increase dramatically and result in great potential loss to the rights holder.

B. Disclaimers

Internet sites offering copies of infringing materials frequently provide so-called "disclaimers" in an attempt to immunize their operators from criminal liability by establishing a good faith defense. Although such disclaimers could conceivably be evidence of the operator's good faith, in many cases they can actually be helpful evidence of the defendant's awareness of the law, and thus be used to establish willfulness. For example, in *United States v. Gardner*, 860 F.2d 1391, 1396 (7th Cir. 1988), the Seventh Circuit rejected the defendants assertions that his disclaimer shifted responsibility to the purchaser and concluded that "such statements establish that he was well aware that his actions were unlawful." *See United States v. Knox*, 32 F.3d 733, 753 (3d Cir. 1994) (rejecting defendant's argument that disclaimers in brochure stating that child pornography videos were legal disproves the *mens rea* element and concluding that "[i]f anything, the need to profess legality should have alerted Knox to the films' dubious legality"); *see also Rice v. Palladin Enters., Inc.*, 128 F.3d 233, 254 (4th Cir. 1997) (observing that a jury could readily find the "For academic study only!" disclaimer in promotional sales catalogue for *Hit Man*

book "to be transparent sarcasm designed to intrigue and entice"); *ON/TV of Chicago v. Julien*, 763 F.2d 839, 844 (7th Cir. 1985) ("Whatever the attempted legal effect of the defendant's disclaimer, the ultimate trier of fact could easily find that it was a transparent attempt to deny the patent illegality of the defendant's acts. . . ."); *Time Warner Entertainment/Advance-Newhouse Partnership v. Worldwide Elecs., L.C.*, 50 F. Supp. 2d 1288, 1296-97 (S.D. Fla. 1999) ("[C]ourts have found that a pirate decoder seller's use of such disclaimers reflects their awareness of the illegality of their business." (citing cases)); *cf. Direct Sales v. United States*, 319 U.S. 703, 712-13 (1943) (holding that jury may infer intent to assist a criminal operation based upon a drug distributor's marketing strategy). For a discussion of proving willfulness in copyright cases, see *Prosecuting Intellectual Property Crimes* § III.B.3 (2001). [2006 edition: II.B.2.]

C. Proof Issues: Quantity, Loss, and Identity

A few proof issues commonly arise in Internet copyright cases. One challenge for Internet cases can be to accurately determine the identity and quantity of the infringing items (pirated copyrighted works) that were distributed. While it may be relatively easy to determine the identity of the pirated works made available on a site, it can be a challenge to determine the identity and quantity of the works actually downloaded or distributed. For example, in order to initiate a felony copyright prosecution under 18 U.S.C. § 2319, the government must establish that at least ten illegal copies were made during a 180-day period, with a total value exceeding $2,500. In developing the required proof, it can be quite helpful if the entity hosting the Web site keeps specific logs.

Establishing the quantity of specific copied works is important to accurately establish a loss figure for sentencing as well. The Sentencing Guidelines were recently amended to take into account some of these difficulties. For example, effective May 1, 2000, a sentencing enhancement is applicable if the defendant uploads a copyrighted work to an Internet site with the intent to allow others to download or otherwise access the infringing item. Moreover, under the new guideline, where the infringing item is a digital or electronic reproduction of the infringing item (as is typical in Internet copyright cases), the "infringement amount" is based on the retail value of the *infringed* (*i.e.*, legitimate) item, multiplied by the number of infringing items. *See* U.S. Sentencing Commission, *Guidelines Manual* § 2B5.3 (Nov. 1998 & Supp. 2000); *See also Prosecuting Intellectual Property Crimes* § VII.A (2001). [2006 edition: II.E.] Even under this new guideline, presenting evidence of the number of infringing items is an important part of the government's case.

While each investigation may employ different techniques, law enforcement agencies should utilize all available resources in identifying victims and determining loss. In certain circumstances, assistance might be sought from the private sector. Certain private industry business associations, such as the Business Software Alliance, the Interactive Digital Software Association, the Motion Picture Association of America, the Recording Industry Association of America, and the Software Information Industry Association, have provided significant assistance in previous investigations. For a listing of industry contacts, see *Prosecuting Intellectual Property Crimes* App. A. (2001). [2006 edition: Appendix G.]

Assuming an investigation establishes that a particular Web site is a significant source of copyright infringement, effective prosecution will also require that the government link the defendant to that Web site. Although each Web site will have a domain name, and arguably a corresponding domain name registration, it is possible and perhaps probable that much of that information will be falsified in order to shield the criminal's identity. Care must be taken to meet the burden of showing that the defendant is in fact responsible for the infringement taking place. With regard to an Internet infringement case, this will likely require a showing that the defendant maintained some form of knowing control over the content and maintenance of the subject Web site.

D. Sympathetic Defendants, Including Juveniles

In online infringement cases, the defendant may be young, have no criminal record, or otherwise be sympathetic to a jury. In such cases, the government should be able to provide a basis for a determination that the defendant was, in fact, acting egregiously and was not merely engaged in technical violations of the law. While the means of overcoming this hurdle will vary from case-to-case, some factors to show that the defendant was acting egregiously include establishing: (1) a significant amount of infringement; (2) the infringing activity occurred repeatedly over a lengthy period of time; (3) the defendant was so involved in the infringement as to lead, unavoidably, to the conclusion that his or her actions were willful; (4) the defendant in some way profited from the conduct; (5) communications reflecting malice or other criminal intent; and (6) if applicable, some of the copyrighted works belonged to smaller companies, whose profitability may be jeopardized by the defendant's conduct.

If the defendant is a juvenile, options for federal prosecutors are limited. The Federal Government may proceed against juveniles in federal court for acts of juvenile delinquency other than a crime of violence or a crime involving a controlled substance only if the Attorney General, or his or her designee for these purposes, certifies that the applicable juvenile or state court has declined prosecution of the juvenile, or the state does not have available programs and services adequate for the needs of juveniles. *See* 18 U.S.C. § 5032. Prosecutors confronted with juvenile defendants are encouraged to review the *United States Attorneys' Manual* § 9-8.00. They should also consult any experts on juvenile prosecutions in their office. Transferring a person from juvenile status to adult status requires consultation with the Terrorism and Violent Crime Section of the Criminal Division, which can be reached by calling (202) 514- 0849. Prosecutors may want to consult with attorneys from that section even if they do not seek a transfer. In appropriate circumstances, prosecutors should fully consider the option of federal prosecution. Otherwise, prosecutors should consider referring a case involving a juvenile to state authorities. See *Prosecuting Intellectual Property Crimes* § VI.A.2 (2001) for additional discussion of state prosecution issues. A listing of state IP laws is provided at Appendix F (2001).

II. Challenges of Emerging Technology

Increasingly advanced software enables criminals to violate intellectual property rights more quickly, more frequently, and with better quality than in the past. Prosecutors may consider investigating some of the individuals who develop, utilize, and distribute these technologies. In so doing, it is essential that prosecutors understand the underlying technologies in order to appropriately differentiate lawful from unlawful conduct and to address potentially novel challenges that these technologies may present. Because the legal treatment of certain advanced reproduction technologies may be unsettled, consultation with the Computer Crime and Intellectual Property Section is strongly encouraged when evaluating these cases.

A. Novel Means of Infringement Generally

The Internet facilitates infringement, particularly reproduction and distribution, in a variety of novel ways. Unauthorized copies of works may be published or posted on Web sites, or made available through other technological means. For example, they may be uploaded ("posted") to the Usenet, a group of separate bulletin boards allowing users to carry on discussions by posting questions, comments, files, and information on various topics. It is possible to copy the work to numerous Usenet bulletin boards at once ("cross-posting"). Other technological means of distributing works are sites designed merely to transfer files by means of the file transfer protocol ("FTP sites") or chat rooms for those interested in copying files, most commonly occurring on chat rooms run under the Internet Relay Chat ("IRC") protocol.

Making unauthorized copies of works available to the public for reproduction and distribution can be infringement even if it is done through a cutting edge medium such as an Internet Web site. *See, e.g.*, *Michaels v. Internet Entertainment Group, Inc.*, 5 F. Supp.2d 823, 834 (C.D. Cal. 1998) (publishing copyrighted videotape on Internet Web site constitutes infringement of plaintiff's right to distribute work). To show distribution, it is not necessary to prove that others actually copied or used the work, only that the defendant knowingly made it available to the public. *See Hotaling v. Church of Jesus Christ of Latter-*

Day Saints, 118 F.3d 199, 203 (4th Cir. 1997) (distribution occurs when all steps necessary to make a work available to the public have been completed, regardless of whether persons actually used the work).

In criminal cases, of course, copyright liability against service providers for transmitting infringing materials is limited by the government's burden of proving that the infringement was done "willfully." *See Prosecuting Intellectual Property Crimes* § III.B.3 (2001) (discussing "wilfulness" requirement under criminal copyright infringement) [2006 edition: II.B.2.] Even in civil cases, courts have examined whether a bulletin board service or Internet Service Provider (ISP) can be liable for infringement -- whether under theories of direct or contributory infringement or, alternatively, vicarious liability -- if it merely provides the means to store or transmit files that other parties upload and subsequently download. *See, e.g.*, *Playboy Enters., Inc. v. Chuckleberry Publishing, Inc.*, 939 F. Supp. 1032, 1040, 1044-45 (S.D.N.Y. 1996) (requiring bulletin board system based in Italy that contained infringing images to shut down or to refrain from accepting subscriptions from customers living in the United States); *Religious Tech. Ctr. v. Netcom On-Line Communication Servs., Inc.*, 907 F. Supp. 1361 (N.D. Cal. 1995) (granting defendant's motion for summary judgment as to direct and vicarious copyright infringement, but not as to contributory copyright infringement for provision of access to Usenet newsgroup system and Internet access server that facilitated dissemination of infringing works over the Internet where the plaintiff's raised a genuine issue of fact regarding whether the defendant had adequate knowledge after receiving a notice letter from plaintiffs). In these and similar cases, courts have attempted to differentiate between passive and active providers. Passive providers generally facilitate transfers without human intervention and without looking at the content of files which users transfer. Active providers have taken some affirmative action, such as attempting to control content of user uploads, and are therefore considered more responsible for infringement than passive providers.

Any assessment of service provider liability should also be considered in light of Congress' reaction to the issue -- the enactment of the Online Copyright Infringement Liability Limitation Act, Pub. L. No. 105-304, 112 Stat. 2877 (1998), which significantly circumscribes the conditions under which online service providers might incur liability. *See* 17 U.S.C. § 512. This section provides limitation for infringement in four different scenarios:

* Transmissions. Automatically transmitted communications (such as electronic mail messages) that are not modified or edited by the service provider and that are not maintained any longer than reasonably necessary, 17 U.S.C. § 512(a);

* Caching. System caching of materials requested by users (such as popular Web pages) on behalf of subsequent users as long as the service provider complies with industry standard data protocols, 17 U.S.C. § 512(b);

* Storage. Information residing on systems at the direction of users (such as a hosted Web site) as long as the service provider does not have knowledge of the infringement or financial benefit directly attributable to the infringing activity and where the service provider, upon notification, removes the infringing materials, 17 U.S.C. § 512(c); and

* Linking. Information location tools (such as a hypertext link) referring or linking users to an online location containing infringing material or infringing activity as long as the service provider does not have knowledge of the infringement or financial benefit directly attributable to the infringing activity and where the service provider, upon notification, removes the infringing materials or the access to them, 17 U.S.C. § 512(d).

Section 512 also provides a process by which copyright holders may notify service providers of allegedly infringing activities and service providers have certain duties to respond and by which injunctive or other relief may be sought. *See* 17 U.S.C. § 512(g)-(j). *See also A&M Records, Inc. v. Napster, Inc.*, No. C99-05183 MHP, 2000 WL 573136, at *10 (N.D. Cal. May 12, 2000) (holding that Internet-based file sharing service does not meet requirements of "safe harbor" under 17 U.S.C. § 512(a)).

It is common that certain forms of intellectual property, such as computer software, are sold pursuant to a license that governs the use, including reproduction and distribution, of the intellectual property itself. Copyright law expressly provides that the exclusive rights of ownership may be transferred in whole or in part by conveyance. 17 U.S.C. § 201(d). Where a valid license is provided, activities such as reproduction and distribution within the scope of that license are not infringing.

B. Facilitation

One aspect of potential copyright infringement on the Internet is acting as a facilitator for copying. Because of the apparently seamless nature of the Internet, a facilitator of infringement who actively encourages it can cause much more infringement than the party that provides the unprotected work for copying. Facilitation can be exemplified by "linking," or "deep linking." A link is a reference on one web page to a different web page. Often, the link takes the viewer directly to the other web page when the viewer clicks on the link. In terms of copyright infringement, the primary concern for prosecutors will be links to sites conducting illegal activity, particularly sites that allow copying of copyrighted materials ("warez sites").

One question for prosecutors will be how to address an individual who, while not illegally offering the software on his or her site, establishes a direct link to a "warez site" that is offering illegal software. While a target who illegally offers copyrighted software on a "warez site" is engaging in infringement, criminality is less clear if the copyrighted software is on another site to which the target simply links.

In these instances, the facts surrounding the activity will be critical. For example, is the target's "warez site" effectively encouraging the infringement? Is there independent evidence, in addition to or aside from the "warez site," which suggests intent to infringe? Is there evidence of some illicit relationship between the target or the target's "warez site" and the site containing the copyrighted work to be downloaded? Further, what if the target links not to the beginning of the secondary site, but further or deeper into the site, directly to the downloadable software? This is known as "deep linking," when the link bypasses initial portions of a Web site and takes the user to a specific place within the targeted Web site. Prosecutors should consider the relative culpability of an individual who links a user directly to a copyrighted work and one who links the user to a site that offers the illegal software, possibly in addition to other legal information or services.

These questions illustrate the prosecutorial challenges posed by infringers' skillful use of links. The activity may be more analogous to the theories of contributory, or, if the requisite level of control exists, vicarious infringement (developed civilly), than direct infringement. Accordingly, given the appropriate facts and circumstances, prosecutors may wish to pursue prosecution, if at all, under an aiding and abetting theory rather than as simple infringement.

Online service providers may have potential civil liability as facilitators as well. Courts have found that service providers have infringed by reproduction if the provider knowingly copied protected works without authorization. *See, e.g.*, *Playboy Enters., Inc. v. Webbworld, Inc.*, 991 F. Supp. 543 (N.D. Tex. 1997) (defendant infringed by copying images from other Internet locations, creating smaller "thumbnail" versions of the images, and charging a fee to view these thumbnail images via the defendant's Web site), *aff'd*, 168 F.3d 486 (5th Cir. 1999); *Religious Tech. Ctr v. Netcom On-Line Communication Servs., Inc.*, 907 F. Supp. 1361 (N.D. Cal. 1995) (finding possible liability depending on defendant's knowledge, for contributory copyright infringement for provision of access to Usenet newsgroup system and Internet access server that facilitated dissemination of infringing works over the Internet).

In order to address online service provider liability and to remove it under certain circumstances, the Online Copyright Infringement Liability Limitation Act was signed into law in 1998. As outlined above, it limits, in a number of online contexts, liability of service providers. Pub. L. No. 105- 304, 112 Stat. 2877 (codified at 17 U.S.C. § 512). Prosecutors should be cognizant of this provision when the conduct of an online service provider is at issue. For facilitation issues, prosecutors should give special attention to 17

U.S.C. § 512(d) which limits the circumstances under which a service provider may be liable for infringement because it utilizes technologies or tools to link users to copyrighted works.

C. Audio Compression Technology Such as MP3

One well-known technology which has enhanced the public's ability to copy music is a compression technology known as "MP3." Short for MPEG-1 Audio Layer 3, MP3 uses a format originally designed for video to compress audio files at a ratio of 12:1. The MP3 technology takes audio signals from the original recording and compresses them into a smaller, more easily transferable format without sacrificing the quality of the sound. Because MP3 preserves the high quality of the sound recording, and is increasingly popular among the public, portable MP3 players are being marketed for personal use. While many people utilize MP3 technology lawfully, individuals can also use this technology to sell or distribute a high volume of illegally obtained sound recordings with relative ease. *See, e.g.*, *Recording Indus. Ass'n of Am. v. Diamond Multimedia Sys., Inc.*, 180 F.3d 1072, 1073 (9th Cir. 1999) (describing advent of MP3 digital technology and holding that hand- held audio device that receives, stores, and plays MP3 audio files, but does not record them directly from digital music recordings, does not violate prohibitions of the Audio Home Recording Act). Moreover, applications have developed utilizing technologies such as MP3 to provide greater access to audio files on the Internet. One online service, which made MP3 files of copyrighted audio recordings available via the Internet, was sued for copyright infringement. In ongoing litigation, the court has found that the defendant's conduct violated the copyright laws, that it had done so "willfully," and that its activities did not constitute "fair use." *See, e.g.*, *UMG Recordings, Inc. v. MP3.COM, Inc.*, No. 00 CIV. 472 (JSR), 56 U.S.P.Q.2d 1376 (S.D.N.Y. Sept. 6, 2000); *UMG Recordings, Inc. v. MP3.COM, Inc.*, 92 F. Supp. 2d 349, 351-52 (S.D.N.Y. 2000).

D. File Sharing Technologies

Increasingly, software-based technologies have been developed to facilitate the sharing of files with ease. For example, Napster (http://www.napster.com) is a well-known online service which allows individuals to access and share files, such as MP3 files, belonging to other people via the Internet. Essentially, Napster creates a community of users with files -- the size of the community depends upon who is signed on at a given time. The files are not located on the Napster server, but rather on the computers of the individual users. Napster provides software to link these users together. Amid allegations of contributory and vicarious copyright infringement, Napster has been sued civilly by the recording industry. *See A&M Records, Inc. v. Napster, Inc.*, No. C99-05183 MHP, 2001 WL 227083 (N.D. Cal. March 5, 2001) (issuing order enjoining Napster "from engaging in, or facilitating others in, copying, downloading, uploading, transmitting, or distributing copyrighted sound recordings in accordance with this Order"), *on remand from, A&M Records, Inc. v. Napster, Inc.* 239 F.3d 2004 (9th Cir. 2001).

Other technological means can provide for file sharing as well. While Napster allows user searches for MP3 files to go through a central server, another application, Gnutella, directly links individual computers utilizing the software. This direct linking software allows one to reach hundreds of Gnutella users very quickly. *See, e.g.*, Lee Gomes, *Gnutella, New Music-Sharing Software, Rattles the CD Industry*, Wall St. J., May 4, 2000, at B10 (reporting that on one evening there were over 1.5 million MP3 music recordings, computer programs, and other multimedia offerings available for free via Gnutella software). Gnutella and other analogous programs continue to evolve and improve as programmers develop the software and are generally available for free via the Internet.

Critics argue that these types of services and software compromise intellectual property rights and result in widespread infringement, be it directly or as a contributor. Supporters argue that the services may be used constructively to share many kinds of materials that are not copyrighted or are shared with the consent of the copyright holder. Moreover, supporters argue that creators of file-sharing programs such as Napster and Gnutella do not control or have no control over how the public utilizes them. While critics challenge the sufficiency of efforts to minimize liability, prosecutors must be aware of the often difficult questions raised by these types of programs.

III. Conclusion: Keeping Pace with Changing Technology

The examples highlighted here represent but a few of the many new software applications and services that greatly improve the public's ability to locate and copy protected materials online. There seems little question that over time, these technologies will not only improve, but will be surpassed by more efficient, faster, perhaps more discreet applications that further enhance the ability to copy online. Some of these applications may be designed to operate at the margin of what is proper under the copyright law, or just beyond it. A key question in these developing criminal cases under these circumstances is evidence of willfulness. As these examples illustrate, however, prosecutors will need to think critically about emerging technologies, and how they operate and are used, in order to keep pace with online infringers.þ

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