



postnote

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COPYRIGHT & THE INTERNET

The internet has expanded electronic access to music, films, books and other digital content, challenging existing notions of copyright protection and enforcement. A recent EC Directive addresses the protection of intellectual property rights (IPR) on the internet; the UK patent office is consulting until 31 October 2002 on proposed changes to UK legislation. This note examines the technological, legal, and enforcement issues as the UK faces the December 2002 deadline for implementing the Directive.

Background

Technological developments have made it increasingly feasible for computer users to obtain and distribute copyrighted works:

- Digitalisation - unlike with analogue copies of media, which degrade with each copy, digital media allow perfect copies to be made indefinitely. Home computers are now routinely equipped with the drives and software needed to copy CDs.
- Digital compression technologies (such as mp3 for music) have made it possible for large media files to be compressed with little loss of quality. Files are reduced to less than one tenth of their original size, dramatically decreasing the time taken to send or receive them over the internet.
- Bandwidth - increasing availability of high speed internet connections further aids distribution of high quality digital files quickly and cheaply. A typical album of music can be downloaded in around 20 minutes using a broadband connection.

File copying and sharing

These advances mean that anyone with a home computer and internet access can copy and distribute large numbers of high quality digital files. In recent years, such activities have been made considerably easier by the advent of peer-to-peer file sharing programmes (box 1) that allow users to search for and download files from each others' computers. The centralised nature of early programmes like Napster made it relatively easy for

Box 1 – Peer to peer file sharing programmes Napster

Established in 1999, Napster was a peer-to-peer filing sharing programme that allowed users, once they had downloaded Napster software, to access Napster's centralised server and view music files offered by other users. They could then download mp3s directly from other users' hard drives. At its February 2001 peak, Napster boasted over 80 million registered users, and 2.79 billion downloads that month. This traffic in (often) copyrighted works led to a Recording Industry Association of America (RIAA) lawsuit. Following a settlement, Napster installed filtering software to prevent illegal trade in copyright files and now charges a monthly fee for access to music files. Since these actions, Napster use has dropped 87 percent.

Decentralised programmes

Following Napster's demise, a number of similar services emerged. Unlike Napster, which relied on centralised servers maintaining lists of all files available for sharing, these new services have a much more decentralised structure. Programmes like Gnutella, WinMX, Audiogalaxy and KazaA allow users to swap files, but have no obvious, central, presence that the recording industry can take action against. Over the last few years these programmes have become very widely used – for instance, the KazaA file-sharing software has been downloaded more than 100 million times.

the music industry to take legal action. However, more recent file sharing programmes (box 1) are de-centralised and thus harder to track down and put out of business. They also permit users to share different types of files – not only music but video, picture and document files. Industry estimates suggest that there are currently more than 40 million users of such software in the US alone, and that more than eight billion music files were exchanged by users world-wide during 2001. An increasing proportion of file swapping involves videos - estimates suggest that some half a million films were being swapped each day throughout the first half of 2002. Such activities have the potential to act to the detriment of the legitimate interests of copyright owners.

Preventing piracy

There are two primary ways to combat online piracy: technical protection measures and regulatory frameworks. Both approaches are discussed in more detail below. However, anti-piracy regimes must take account of exceptions to copyright law. In US copyright law there is a general exception allowing 'fair use' of copyright material. No general fair use exception exists in UK law; instead, there are exceptions allowing 'fair dealing' for the purposes of research or private study, criticism or review and news reporting. There are also 40 or so specific exceptions covering education, library and archive use, public administration and other areas.

Technical Measures

There are two main types of technical measures (box 2):

- Copy protection measures to limit access to copyrighted material or to inhibit the copy process itself. To be fully effective these require the protection measures to be included not only in the media (CDs, DVDs, etc.) but also in the devices that read them (players, computer drives, etc.).
- Copyright protection - inserting copyright information into digital media. This information can be extracted to identify the rightful owner; such systems can only track unauthorised copying, they cannot prevent it.

Different sectors of industry are increasingly co-operating to try to ensure that the different types of media and the devices that play them comply with the latest protection measures. Examples of such cross-industry protection structures are given in box 2. Manufacturers may build in – or users may devise – ways of getting round the technical protection measures outlined in box 2.

Examples of some of these so-called **circumvention measures** are also given in box 2.

Emerging Legal Frameworks

World Intellectual Property Organisation (WIPO)

In response to calls for greater legal provisions against online piracy, WIPO adopted the Copyright Treaty and the Performances and Phonographs Treaty in 1996. These prohibit circumvention measures and the trafficking of such technologies. They are aimed at supporting technical protection measures by providing both a means to prosecute creators/distributors of circumvention devices and a deterrent to their use. The US was one of the first countries to implement the WIPO treaties with the passage of the Digital Millennium Copyright Act (DMCA) in 1998.

EC Copyright Directive and UK implementation

The EC Copyright Directive (box 3) is intended to implement the WIPO treaties. Adopted in May 2001, the Directive gives copyright owners exclusive rights such as reproduction and distribution of their works and allows Member States to adopt certain copyright exceptions if they so wish. It also provides against the circumvention of technical protection measures and devices and lays down obligations concerning rights management information. The UK is already in compliance with most major aspects of the Copyright Directive, but revisions to the Copyright, Designs and Patents Act 1988 are needed

Box 2 – Protection and circumvention measures

Copy protection

Encryption - digital content is encoded to prevent it from being viewed until it reaches a user possessing a decryption key(s). Encryption does not prevent an authorised user from making unauthorised copies. Content Scrambling System (CSS) is an example of an encryption system that uses a series of different keys to prevent DVDs from being copied and to enforce region-specific coding (DVDs bought in one world region will play only on players bought in that region).

Copy Control Flags - digital flags inserted into content that indicate whether copying is authorised, how many copies can be made, the duration of viewing etc.

CD Copy Protection: An additional track is inserted into an audio CD to prevent it from being played/copied on a CD-ROM. Early versions were relatively easy to circumvent.

Copyright protection

Digital watermarking - digital signals are embedded into content so that they are undetectable audibly or visually, but can be used to determine authenticity/ownership of content.

Digital fingerprinting - fingerprinting embeds a digital signal in text, image, audio or video files, which generally contains information on the buyer. This is similar to a serial number.

Cross-industry protection structures

Secure Digital Music Initiative (SDMI) - developed by a consortium of music and technology companies, SDMI uses watermarking and copy protection. SDMI compliant mp3 players will only play mp3s made from a SDMI compliant CD; they will not play copies of non-compliant CDs.

Copy Protection Technical Working Group - developed the CSS encryption system for DVD in 1996 (see above).

Microsoft Palladium - a 'trusted' computing system developed by Microsoft and chipmakers that will access only approved files, protecting personal data and defending against viruses. Media files may not be playable on Palladium machines unless approved by the rights holder.

Circumvention measures

It is possible to devise both software and hardware to get round the range of technical protection measures described above. Such systems are known as circumvention technologies. Software approaches include computer programmes that allow encrypted files to be decrypted or translated from one format to another. One example is DeCSS and similar programmes that allow users to decrypt DVD files and thus copy and distribute them. Another is a programme designed to remove the copyright protection from Adobe Acrobat's e-Book Reader, allowing users to copy books and read them on devices (such as personal organisers). The programme's creator (Dmitry Skryalov) became the first person to be prosecuted under the DMCA. There are also a number of examples of hardware that allows circumvention. For instance, many professional digital recording devices (e.g. DAT and mini-disc recorders) contain chips that allow circumvention of copy protection measures, and mod-chips can be fitted to DVD players and games computers to circumvent region specific coding.

to comply with provisions dealing with exemptions, circumvention and rights management information (see box 3). The Patent Office is consulting on implementation¹ until 31 October 2002. Issues raised by the proposed changes to UK legislation are discussed below.

Issues

UK implementation of the Directive

Exceptions to copyright law

Internet rights groups² have raised a number of concerns over the Patent Office's proposals to implement the Directive. For instance, they are worried that the

proposed changes may lead to more restricted access to copyright material through libraries. The Patent Office agrees that one of the proposed changes limits the types of research for which libraries can copy copyright material for individuals, restricting it to research for non-commercial purposes. But it points out that it is required to do this under the terms of the Directive, and that there is provision for the government to intervene if protection measures frustrate research or library exceptions.

Another concern is that the proposed amendments could hinder research into cryptography. Internet rights groups cite a recent case in the US where a researcher was threatened with action under the DMCA for announcing his intention to publish research on the weaknesses in a protection measure as evidence that cryptographic research is under threat. The Patent Office points out that while the Directive includes a recital stating such research should not be hindered, it gives member states no indication of how to achieve this. It is currently considering whether further measures are required.

Internet rights groups have also suggested that the amended UK law will be more restrictive than necessary, because the UK does not propose to implement some of the optional exceptions allowed by the Directive. For instance, UK law does not currently allow people to make copies of music or films on CDs or DVDs. The Directive allows member states to make wider exceptions for private use copying but requires rights owners to be given fair compensation in return (e.g. by imposing a levy on recording media or equipment). The Patent Office does not intend to introduce such an exception in the UK. It argues that any move to introduce wider exceptions for private use would facilitate wider copying and dissemination of copyrighted material and sees the imposition of a levy on recording media/equipment as unfair on those not wishing to copy protected material. Overall, the Government's stance has been to maintain the existing exceptions regime, thereby preserving the present balance of interests. Internet rights groups see this balance as weighing too heavily on the side of protecting commercial interests, although not all agree with this assessment.

Circumvention of protection measures

In practice it is very difficult to make a distinction between devices and systems that can be used (or have been specifically designed) only to circumvent copyright protection such as decryption tools. And those that could be used both for legitimate and circumvention purposes ('dual use' tools) such as filters that allow digital files to be transferred from one format to another. There are concerns that the definition of circumvention is too wide, encompassing many 'dual use' tools that are currently used for legitimate purposes. In particular:

- Fears that the amendments enable prosecution merely for possessing 'dual use' tools. The Patent Office points out that the Directive requires it to implement this provision, that the proposed changes do not deal with possession for personal purposes, and that in any event, provide a civil (rather than criminal) remedy.

Box 3 – EC Copyright Directive provisions

The Directive allows originator(s) of copyright work rights over the reproduction, communication and distribution of their work and allows specific rights for works transmitted electronically by any means. It also contains certain exemptions to these rights. These include a compulsory exemption to the reproduction right for temporary acts that are transient or incidental. This is designed to cover activities such as using the internet, to allow browsers to make temporary copies of copyright work for caching purposes. There are also some 20 permitted (but not compulsory) exemptions allowing reproduction for private (non-commercial) use, by publicly accessible libraries or archives, by the press for communication to the public on current economic, political, or religious topics, and use for the purpose of illustration or scientific research.

The Directive also requires member states to provide "*adequate legal protection against the circumvention*" of technological methods to allow rights holders to protect work against copyright infringement/reproduction. It bans devices that: are primarily designed or produced for the purpose of circumventing a technical protection measure; have only limited purpose or use other than to circumvent a protection measure; or are intentionally marketed for use in circumventing a technical protection measure. Finally, it provides protection against the removal or alteration of the digital marks that allow rights holders to track their work.

- The Royal National Institute of the Blind is worried that widespread introduction of protection measures could prevent visually impaired people accessing documents (e.g. by making large print copies), and seeks refinements to the proposals. The Government is currently supporting a Private Member's Bill to introduce an exception to allow conversion of copyright material into Braille or other formats.
- UK software developers are concerned that they may no longer be able to develop software that is interoperable with that produced by large US companies. Developers are presently allowed to examine copyright software to develop new products that are interoperable with it (e.g. that can handle different file formats). There is concern that software companies could seek to use anti-circumvention provisions to prevent others writing software interoperable with their own thereby creating a monopoly on use of a particular file format.
- Prohibition of tools that allow software to be examined could also prevent companies' checking to see if rivals' products infringe their copyright or contain viruses.
- Concerns over the possibility that technical protection measures may prevent people legitimately benefiting from exceptions to copyright. The Patent Office has proposed a mechanism for resolving such conflicts by which complaints are considered by the Secretary of State for Trade and Industry. Internet rights groups consider this mechanism to be impractical and would prefer to see any disputes resolved directly, without involving the Secretary of State.

Tracking intellectual property

Other provisions in the Directive facilitate rights holders tracking the use of their works (box 3). This involves collecting data on who is using what information via

electronic networks so that rights holders can check if their rights are being respected. Concerns have been expressed that the data may be used for other purposes such as profiling or marketing. This would be permitted under the Data Protection Act only if an individual had consented, although such consent could be built into the process of accepting a licence agreement. Other concerns centre on how the tracking measures will operate with security features such as firewalls, which are designed to prevent information being disclosed. Those operating secure firewalls might find themselves infringing copyright protection laws. Alternatively, disabling firewalls to allow the tracking measures to relay data to rights holders could increase the vulnerability of computer networks to viruses.

Liability and notice and takedown (NTD)

A complementary approach to the measures outlined above is NTD, where rights holders finding unauthorised works online ask the content provider's ISP (internet service provider) to have the material removed, or links to it deleted. NTD is based on the liability of intermediaries such as ISPs, which was established by the e-commerce Directive (00/31/EC). It can be effective at closing down sites that infringe copyright, but a site closed down by one ISP can reappear within hours on another server hosted by a different ISP. To combat this, rights holders have asked ISPs to disclose customer identities so that criminal charges can be pressed against persistent offenders. To date, ISPs have generally refused, citing confidentiality issues. RightsWatch, an EU funded consortium of rights holders, telecoms, and academics is attempting to define a procedure for self-regulatory NTD; its recommendations are due in November 2002. Among the issues it will address are:

- The balance between statutory codes and self-regulation. Effective regulation may require a mix of the two.
- The liability of intermediaries such as ISPs for wrongful takedowns or non-takedowns. Some have suggested that the EU should implement a system similar to that in the US, where the DMCA provides ISPs with a 'safe harbour' from liability. ISPs cannot be prosecuted for content posted or transmitted by subscribers provided they quickly remove or disable access to any material identified as infringing copyright by the rights holder. In order to qualify for protection, an ISP must have no knowledge of infringement and must not benefit from it.

Copyright violation and sales

UK music industry estimates suggest that counterfeit CDs rose by 150% in 2000 to a total of 2.9 million units. Piracy is estimated to have lost the music industry worldwide some \$4 billion in the year 2000 alone, and has been cited as a major factor in the reported 7% fall in world sales of recorded music. There are also concerns over increasing piracy of films, leisure software and books. Not everyone accepts that piracy is a factor affecting sales. Some consumer groups argue that the drop in music sales can be attributed to economic weakness and a lack of appealing artists.

Device compliance

To be effective, copy protection regimes require all manufacturers to incorporate the protection measures in the media in question and in the devices that play them. This is difficult to achieve once a media has already been marketed in an unprotected form. For instance, audio CDs have been marketed for years in an unencrypted format. Attempts to market encrypted or copy protected audio CDs might meet consumer resistance, because the new discs might not play in existing CD players and/or be compatible with current mp3 players. This raises an issue of device compliance. While manufacturers are prohibited from producing devices that circumvent new protection measures such as SDMI (box 2), they are not required to produce devices that comply with them. Non-compliant mp3 players will play copies made from the huge existing back catalogue of unprotected CDs. Indeed, some manufacturers have been using non-compliance with SDMI as a marketing tool.

Civil liberties

Internet rights groups see the current debate as raising important civil liberty issues. For instance, many such groups see current copyright law as being too restrictive, and suggest that internet users should have a wider right to 'fair use' of copyright material. They are also concerned about NTD, arguing that there is a presumption of guilt against those accused of infringing copyright, that self-regulatory systems may lack transparency and accountability, and that NTD may be used unfairly to restrict freedom of expression. Finally, some see the emergence of technical protection measures as being too inflexible an approach. Not all agree with these concerns - an online debate on copyright issues is currently being hosted by 'spiked'³.

Overview

- Online protection of IPR has to balance protection for rights holders with fair exceptions and civil liberties.
- Technical advances have resulted in the widespread (unauthorised) copying/distribution of copyright works.
- Technical protection measures can curb this by deterring most users from unauthorised copying, but they are susceptible to circumvention.
- Because of this, recent years have seen international, EU and national moves to strengthen copyright law.
- Proposed amendments to UK copyright law are currently open to consultation.

¹ www.patent.gov.uk/about/consultations/eccopyright/index.htm

² Including the Campaign for Digital Rights (CDR), GreenNet, Eurorights, spiked and Internet Freedom

³ www.spiked-online.com/sections/technology/debates/copyright/

POST is an office of both Houses of Parliament, charged with providing independent and balanced analysis of public policy issues that have a basis in science and technology. POST wishes to thank Danielle Li for her assistance in preparing this note

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