

IP and the cloud



Cloud computing looks set to revolutionise the way that companies operating in the IT sector develop and manage copyrights, patents, trademarks and other rights – so says the man in charge of IP at Microsoft

By **Horacio Gutierrez**

We are embarking on a major technological shift in computing: the transition to “the cloud”.

In simple terms, cloud computing involves providing software functionality over a network from remotely located servers. These servers may be located down the street, across the country or on the other side of the globe. The cloud has the potential to decrease costs, increase functionality, make collaboration and communication easier, and provide access to users’ data and applications from any computer connected to the network. Many in the IT industry believe that this will lead to a transformation similar in scale to the personal computer and internet revolutions. I believe that this shift will usher in a new era of technologically driven evolution in IP law, during which courts, legislatures, technology companies and consumers will face a growing number of complex legal, commercial and policy issues presented by cloud computing.

Recently, Gartner analyst Brian Prentice underscored the need for analysis, warning enterprise IT organisations: “If you think the cloud computing phenomenon is strictly about IT

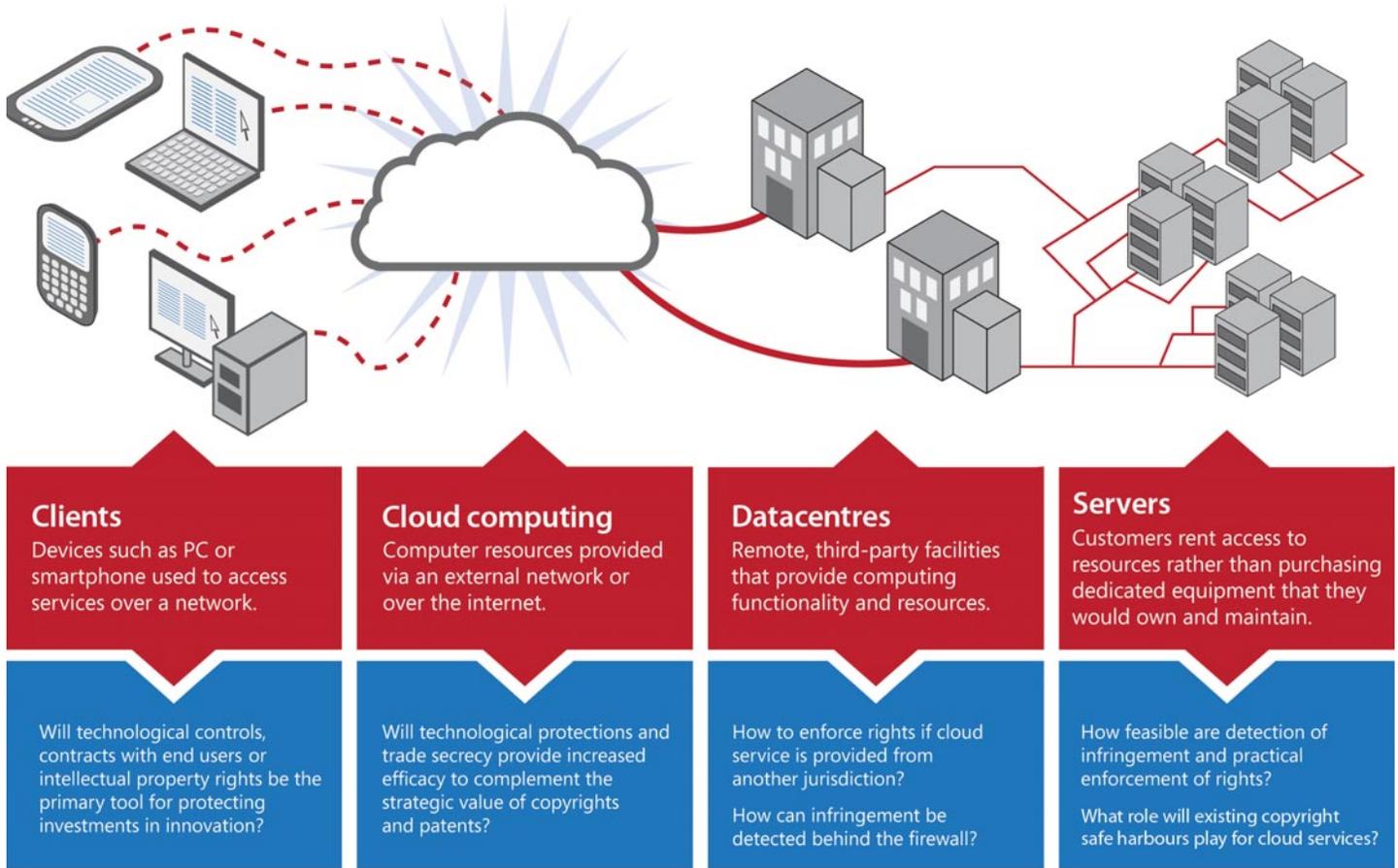
vendors delivering infrastructure, platform and software services to you, then you’d be missing a key part of its disruptive potential. Cloud computing enables every company – whether they’re IT providers or not – the ability to deliver their own IT-enabled capabilities. IT-enabled supply chain services, for example, might just as readily be consumed from supply chain management companies as they will be from SCM application providers that offer a cloud computing option.”

How will this affect intellectual property? At this point, there are more questions than answers. However, the past is prologue; the evolution of IP laws in response to past technological change provides the best clues to what is likely to happen in response to the cloud.

From that perspective, the transition to cloud computing seems likely to increase the strategic utilisation of trademarks, designs, trade secrecy and technological protections, with patents and copyrights continuing to play a prominent role. These changes could meaningfully alter the mix of IP strategies and extra-legal tactics on which technology providers rely. This, of course, is nothing new; although IP law has existed for centuries, it has evolved and changed at an ever-increasing pace in recent years, as we can see from the somewhat tumultuous early developments.

IP protection for software

For centuries, authors and artists have used copyrights, and inventors have used patents, to protect the fruits of their intellectual efforts. Historically, these systems rarely intersected. Copyright protection was for expressive, aesthetic and artistic works, and patent protection for functional or “useful” inventions. But in the 1970s, software began to blur the lines separating the patent and



copyright regimes, challenging some traditional assumptions about the scope and respective roles of the copyright and patent systems. This has led to ongoing debates about whether software should benefit from protection under either, neither or both of these regimes.

Nevertheless, over time it became clear that computer programs would be treated as literary works under copyright law, despite their functional aspects, and this was eventually codified in the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs). However, in most jurisdictions copyright offers little or no protection for functional aspects of software and is used primarily to deter piracy and other forms of verbatim copying.

The major evolution in copyright law since the 1970s is illustrated by the World Intellectual Property Organisation internet treaties of 1996. The implementation of these treaties – the Digital Millennium Copyright Act in the United States and the EU Copyright and E-commerce Directives – did two things relevant to cloud computing: first, it created safe harbours for internet services; and second, it created a new form

of liability for the circumvention of technological protections. Importantly, both provisions relate primarily to the regulation of technology rather than of copyrighted content itself.

Recall Charles Clark’s famous comment about how copyright industries would survive in the internet age: “The answer to the machine is the machine.” Increasingly, effective protection lies not in the legal right to control content, but in either the practical or legal control over technology. This trend is evident in the graduated response procedures of the recently enacted HADOPI law in France and the Digital Economy Act in the United Kingdom.

Patents and software

In the early days of the computer age, software was commonly considered to fall within broad exceptions to patent eligibility both in the United States and in Europe. In the United States, there was the famous trilogy of Supreme Court cases addressing the patent eligibility of computer-implemented inventions: *Gottschalk v Benson*, *Parker v Flook* and *Diamond v Diehr*. In practical terms, the analyses from *Benson*

and *Flook* narrowly limited the patentability of software. However, three years later, the Supreme Court decided *Diehr*, which had very similar facts to *Flook*, but came to the opposite result without explicitly overruling the earlier cases. Due to this apparent conflict – and the lack of any clear basis upon which to distinguish the cases – confusion over the scope of patent eligibility of computer programs continued through the 1980s.

In Europe, the same issue arose at the Luxembourg and Munich conferences that led to the European Patent Convention in 1977. There, the debate was over the proposed computer program exemption, but revolved around the same issue left unresolved in the United States: where to draw the line between unpatentable algorithms and patent-eligible computer-implemented processes. The result was a narrow exclusion of computer programs *per se*, but without any definition of “computer program”, leaving Europe in a position similar to that of the United States. It was clear that some computer-implemented inventions were patentable, but unclear where the line that established what was patentable was drawn.

This convergence did not last. A gap between the two jurisdictions began to emerge over time, as the US Court of Appeals for the Federal Circuit embarked on a path that would lead not only to broad patent protection for software-related inventions, but also to broad protection for business methods and other subject matter that had historically been considered outside the scope of patentability. This culminated in *State Street Bank*, decided in 1998, in which the Federal Circuit strongly rejected the contention that business methods were categorically excluded. This reignited the battles over patentable subject matter, but refocused the debate on the growth of patents covering business processes.

Over the past four decades, patent protection for software has been debated in Europe, the United States and across the globe. As illustrated by the recent proceedings before the European Patent Office’s (EPO) Enlarged Board of Appeal and *Bilski v Kappos* in the United States, these debates show no signs of abating. The first of these cases involved a referral to the EPO’s Enlarged Board of Appeal, which alleged inconsistencies in the board’s case law in this area. This referral threatened to reignite the heated debates that surrounded the proposed directive on the patentability of computer-implemented inventions in 2005. Happily, this was avoided and the Enlarged Board

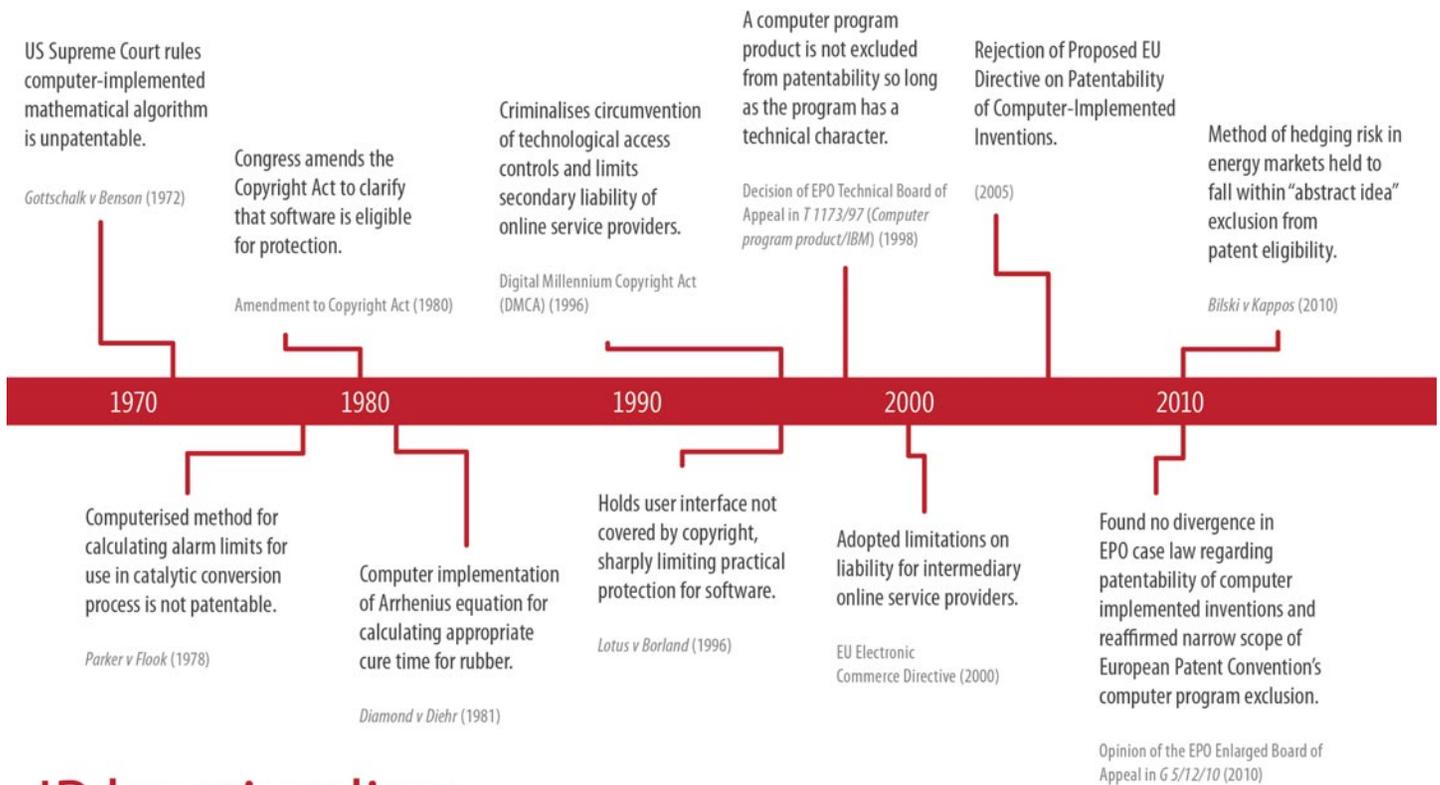
reaffirmed its prior precedents.

In the United States, the debate is likely to continue. In *Bilski*, the Federal Circuit proposed a new test for patent eligibility, which would require that a method be “tied to a particular machine” or transform a particular article or substance. Although the Supreme Court later rejected this as an exclusive standard, it characterised the test as a useful analytical tool, which ensures that machine or transformation will not be entirely abandoned by the US Patent and Trademark Office and the courts. This test has raised many issues, with some taking an extreme view and questioning whether a general-purpose computer programmed with software instructions can ever constitute a “particular machine” under *Bilski*. Such a misguided conclusion would reverse decades of jurisprudence in this area. Similarly, the Federal Circuit’s discussion of the transformation prong of its test has reignited debate about whether the transformation (ie, processing) of data can qualify for patent protection. Moreover, by relying on the original trilogy of *Benson*, *Flook* and *Diehr*, the Supreme Court has, to some extent, transported us back to the uncertainty of the 1980s.

Efficacy and enforcement

In addition to these questions regarding the availability of IP protection, the internet has raised issues regarding its efficacy in a networked environment. Anyone who has followed the high-profile battles waged by the music and movie industries against online infringement will be well aware of the copyright enforcement challenges, so I will refrain from discussing these in detail. However, it is probably worth mentioning similar (but less frequently discussed) issues with respect to patents.

For example, in *NTP v Research In Motion*, the Federal Circuit held that infringement of a method patent requires that each step of the process be performed within the territorial United States. For IT services provided over a network (eg, the BlackBerry email service at issue), this poses obvious challenges. Robust, high-bandwidth networks allow IT providers in one country to serve customers in another, greatly complicating enforcement and potentially defeating any infringement claim. In this case the Federal Circuit also confirmed its previous holding that because provision of IT services does not involve the importation of physical products, no infringement can occur under Section 271(g), which is used in the United States to exclude infringing products from the market. This decision illustrates the importance of ensuring that



IP law timeline

patent claims are properly crafted to capture infringing activity in a single geography, rather than drafting patent claims from multiple viewpoints where the processes or systems are spread across two or more jurisdictions.

IP in the cloud

The history summarised above suggests several trends with respect to the cloud:

- Technology providers are likely to shift reliance from copyright to extralegal strategies, such as technological protections, access controls, secrecy and vertical integration.
- Challenges will need to be addressed relating to the availability and focus of patent and copyright protection, and with issues in practical enforcement in some contexts.
- The importance of designs and trademarks will increase.

Copyright in the cloud

Software developers have always relied on a complex mix of strategies to allow them to recoup their investment in producing the software. Migration of computing to the cloud will not eliminate any of these, but it is likely to alter the mix by changing how

much technology providers rely on individual strategies.

Despite enjoying the protection of copyright law, software companies have historically taken great pains to prevent unauthorised disclosure of source code and often rely on secrecy – supplemented by contracts – to protect source code. With cloud services, the need to distribute code broadly to end users is vastly reduced. Instead, most of the software runs on servers that are secured behind firewalls and other technological protections, reducing the risk of piracy as well as the appropriation of innovative functionality or the copying of specific software methods. Moreover, even where the distribution of software to end users is necessary, the increased control available to providers in networked environments will often provide an effective means of ensuring that users pay for the service without resorting to copyright law.

As a result, it seems likely that providers will have reduced need for traditional copyright protection and will rely more on end-user licensing, secrecy, technological protections and business models. This increased reliance on access controls and other technological protections

means that disputes involving cloud services are more likely to be resolved by reference to the licences and terms of service than through the application of copyright rules. One might summarise all of this by saying that contract is the new copyright in the cloud environment.

In some contexts, this trend will go far beyond simply increasing reliance on contracts; it has the potential to change the traditional balance between consumers and providers in key areas. Consider vertically integrated device and services providers. With its iPhone business, Apple has already moved a long way towards evolving an ecosystem that operates almost independently of traditional IP rules. Because the company controls the user device (the phone), and the network services needed to get content and applications onto that phone (iTunes and the Apple App Store), it can conduct its business relationships with both developers and consumers under business terms and conditions, without recourse to copyright law. The company can exercise end-to-end control – over which applications are sold in the App Store, what applications are allowed on the phone and, to a large extent, how consumers are allowed to use the phone.

I certainly don't mean to suggest that there is anything wrong with this. Microsoft employs a similar strategy for Xbox. We produce the game console, embed

technological controls so that only approved game disks will play and regulate online use through control of the Xbox LIVE services and the online store.

Increasing numbers of providers are employing this type of end-to-end vertical integration, allowing for the regulation of user behaviour directly through technological means or through enforcement of licensing or contractual restrictions. The additional control enabled by the cloud model is already leading to business ecosystems built around closed platforms in which copyright is playing a decreased role, with rules and norms coming not from traditional IP law, but from privately negotiated agreements.

None of this means that copyright will become irrelevant. In fact, it will continue to provide a critical backstop, but there will be less focus as a practical matter on using copyright to prevent piracy.

Patents in the cloud

This same trend regarding possible increased reliance on secrecy, licensing and technology may also have an impact on the focus of patent protection for software in the cloud computing context. Because the software at issue will be running on remote servers that employ firewalls, access controls and other technological protection measures, there will be little visibility into precisely what software methods are being implemented on those

The dual nature of software

Copyright

Copyright protection available for artistic expression and aesthetic creations, but traditionally excludes subject matter that is functional or utilitarian in nature.



Patent

Patent protection traditionally granted for inventions that have practical utility or application, but not for mere idea, concept or expression.

Expressive, functional, or both?

Inherently, software code is expressive, but its primary purpose is functional and utilitarian.

When executed by a computer, software produces practical, real-world results, but software code itself is conceptual expression.

servers. This has the potential to make it challenging to detect and prove infringement.

Additional enforcement issues arise out of the distributed and multi-jurisdictional nature of new network-based services. The migration to the cloud will significantly increase the computing resources available for lease globally, making it easier and cheaper to provide a service on a third-party infrastructure that is distributed across the globe. And with the growth in network bandwidth, it may be increasingly practicable to provide services using cloud infrastructure located in a different country from the service's users. As illustrated by *NTP v Research In Motion*, in addition to presenting practical enforcement issues, this has the potential to insulate infringing services from liability under current patent law if appropriately scoped patent protection is not put in place. After all, patent law is territorial in nature, while these services are global in both their scope and their backbone. We see this already playing out in the areas of data privacy and data retention, as countries struggle to impose national laws on services offered to their residents from elsewhere. It is therefore critically important to confront these potential challenges by formulating strategically focused patent protection to capture appropriately innovations in cloud-based services that span geographies.

While new issues and challenges may exist with respect to patents in the cloud, to be clear, patents will continue to retain significant strategic value and will continue to have substantial strategic importance. For example, one may be able to detect infringement indirectly, even without access to the code or the actual device on which the code is running. However, alternative forms of protection, such as trade secrecy, technology protections and access controls, may find increased attractiveness and efficacy that will positively complement patent protection in the cloud.

Trademarks and designs in the cloud

In the cloud, trademarks and designs are likely to have increased strategic importance going forward. In part, this is because the online world will continue to be semantically organised. We find what we want online either through text-based searches or by typing a domain name (which is often also a trade name). In addition, the absence of transactions involving physical goods – and the resulting lack of any packaging, trade dress, physical branding and display in brick-and-mortar stores – significantly narrow the mechanisms available to businesses to

Action plan



Understand how cloud computing will impact on your business and your IP portfolio. Focus on:

- **Detection of infringement** – will the shift to the cloud affect your ability to detect patent and copyright violations? Some may face increased disclosure of source code and technical details to third-party infrastructure providers or other partners, and may wish to increase reliance on patent or copyright protection.
- **Risk of appropriation** – is appropriation of your company's innovations more or less likely in the cloud? The transition to the cloud may decrease the need to provide software code to end users, potentially decreasing the risk of piracy and direct copying.
- **Efficacy of alternatives** – carefully consider and take advantage of the full range of IP and technological protection based on your line of business and business model. For some, the increased efficacy of trade secrets or technological protections may be attractive alternatives to

traditional IP protection.

With regard to specific IP rights:

- **Patents** – careful claim drafting will be more important than ever. Focus on claiming innovations that could span two or more jurisdictions in a manner that allows a single-actor infringement claim in each of the jurisdictions at issue.
- **Trademarks** – both the importance and difficulty of effective branding are likely to increase in the cloud, suggesting increased emphasis on securing appropriate trademark protection.
- **Copyrights** – carefully consider the impact of contract and licence terms, social and community norms, and technological measures on the business environment in which you operate. Increasingly, these factors – rather than statutory copyright law – will have an impact on business norms and rules.
- **Design patents** – given the increased importance of user interfaces and end-user experience, consider whether design patent protection might be a useful addition to your IP strategy.

ensure that consumers strongly associate them with the products and services they provide. This is likely to increase businesses' focus on trademark protection, as essential to their branding efforts and as a means for their customers to identify them and find them in the online world.

The perils of predicting

During the early stages of any major technological shift, it is almost impossible to foresee the new uses that will emerge, let alone their long-term implications. As a consequence, technological predictions are notoriously risky and often wrong. After all, Ken Olsen, chairman and founder of Digital Equipment Corp, a pioneering company in early computing, opined in 1977: "There is no reason for any individual to have a computer in his home." I'm sure that, looking back in 10 or 15 years, some of our early assumptions regarding the implications of cloud technology will have turned out to be equally wrong. Nevertheless, I hope that this article has been useful in identifying some of the emerging issues relating to intellectual property and cloud technology, provides a glimpse into how we at Microsoft are thinking through these issues and gets you to start thinking about how they will affect you and your business. *iam*

Horacio Gutierrez is global head of IP and licensing at Microsoft Corp