INDUSTRY FOCUS

CLOUD SOFTWARE

2021

Challenges to Intellectual Property Rights

Aalbun
Innovation & IP PaaS

Contents

Executive Summary

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In this new world of remote working, cloud-based services are now the go-to model for companies of all shapes and sizes looking to utilise the convenience and ease of use that cloud computing offers. This spike in businesses moving to the cloud has opened up a can of worms when it comes to intellectual property (IP) management as the issue of ownership of IP within the cloud is far from clear.

In this report, Aalbun will attempt to explain some of the challenges cloud service platforms present for IP owners while also providing some solutions and ways of mitigating these risks.

Cloud computing is hardly a new trend, but the events of the previous 18 months or so have put rocket boosters under an industry that was already seeing growth in terms of importance as well as financially.

With the overall cloud software market projected to grow to $555 billion by 2025, there is now a rush to spot the trends that will shape the next decade of cloud computing.

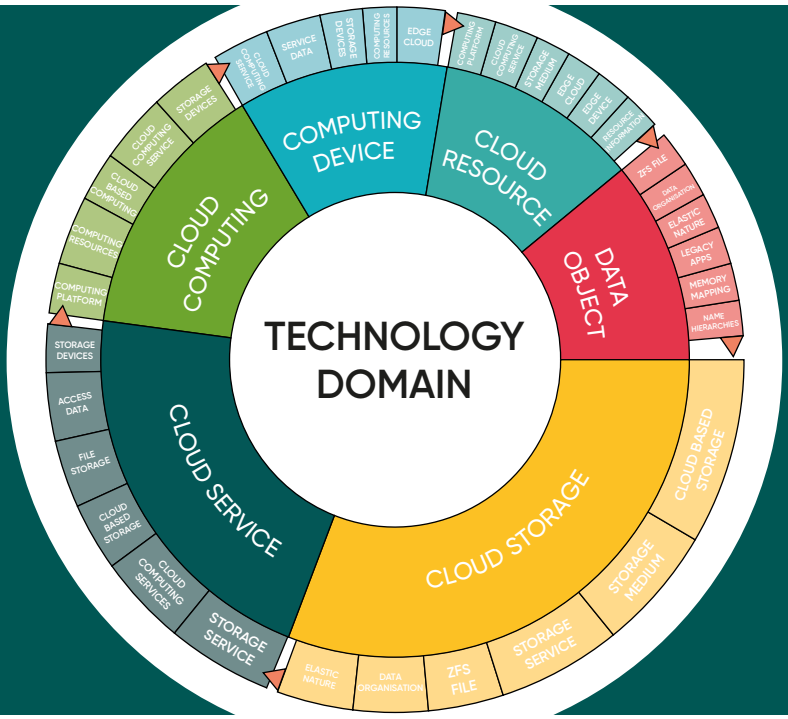
Cloud services are now seen as not only useful for the running of day-to-day business operations, but also as an instrument for comprehensive digital change of the way business is done.

Whether that next big trend will be cloud-hosted communication software used by the likes of Zoom, or the next generation of multi-cloud offerings from the big players like Amazon Web Services (AWS) or Microsoft Azure, there is huge demand and scope for innovation in cloud technology.

But the push to innovate in a fast-moving market such as cloud technology means legal and intellectual property considerations are often changing on a rapid basis, meaning legal and IP teams must be vigilant to the constantly changing landscape of rules.

Tier 1 Cloud Software Players: Patent Analysis

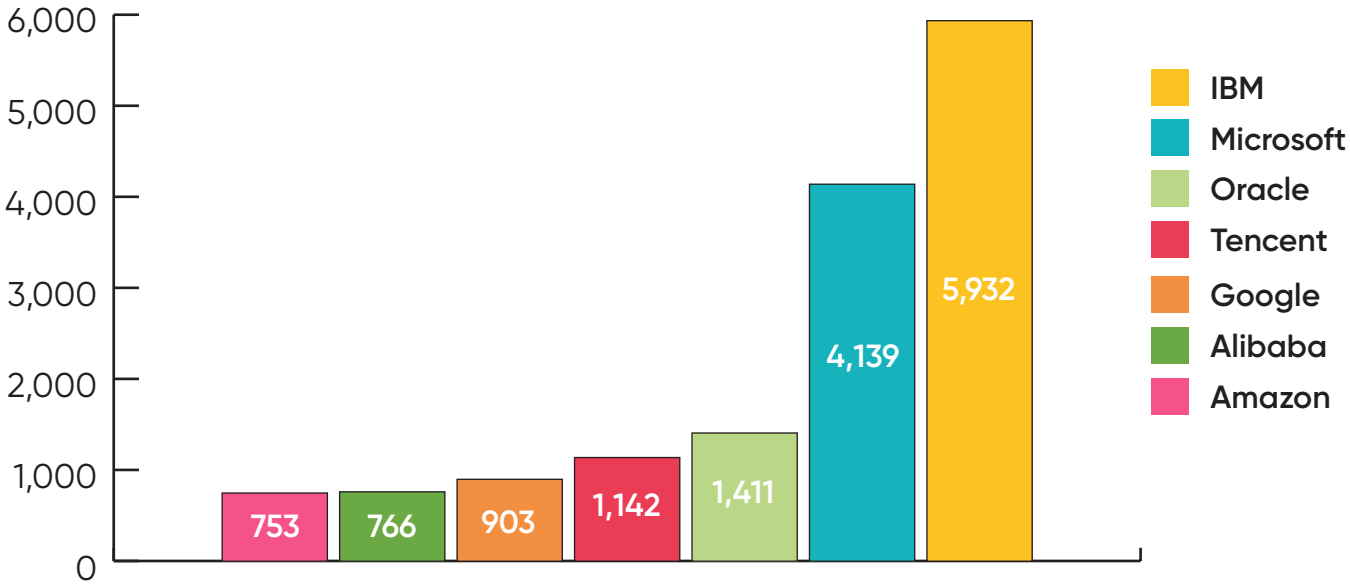
Tier 1 - Cloud based technology IP Filings



Top 7 (Tier 1) revenue-generating Cloud Service companies

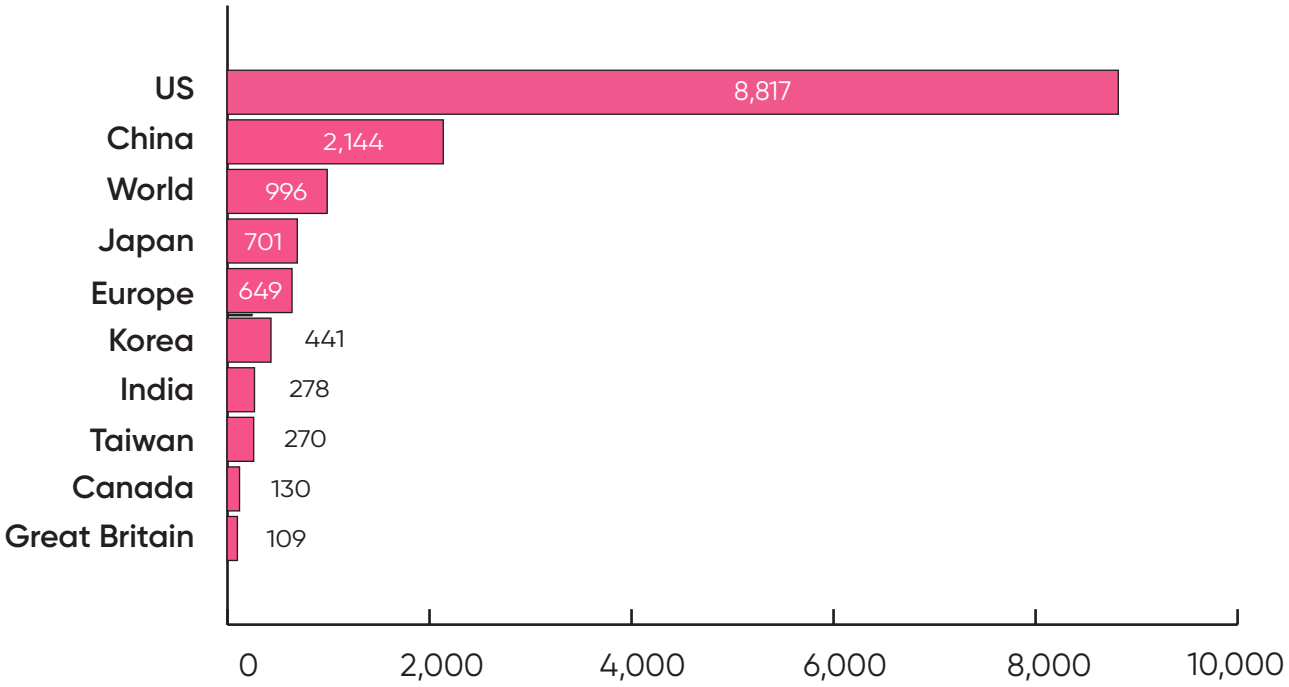
1. Amazon Web Services
2. Microsoft Azure
3. Google Cloud
4. Alibaba Cloud
5. Oracle Cloud
6. IBM Cloud
7. Tencent Cloud

Tier 1 – Patent filing count



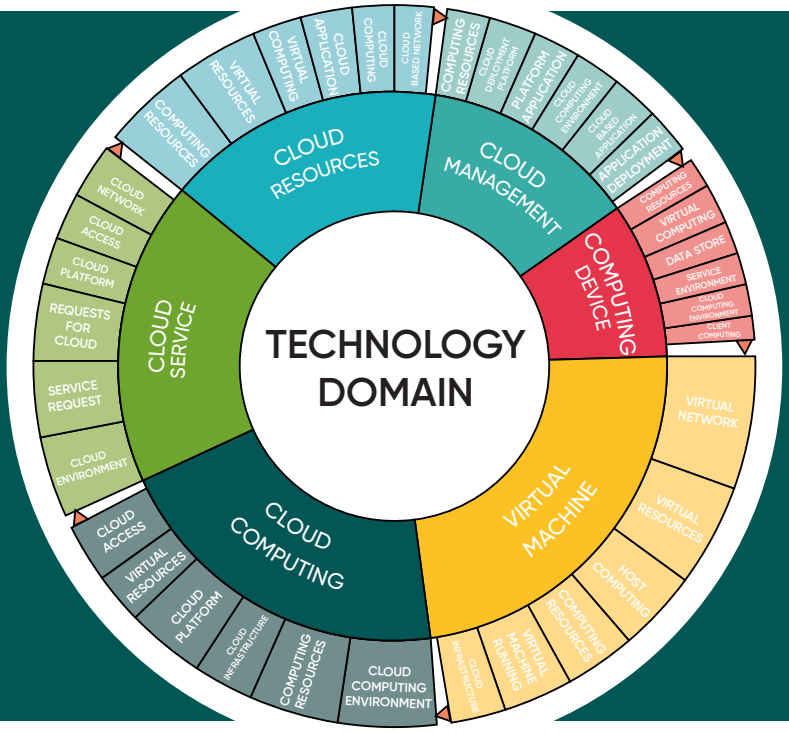
Tier 1 Patent Analysis continued

Tier 1 – Patent publications by publication office



Tier 2 Cloud Software Players: Patent Analysis

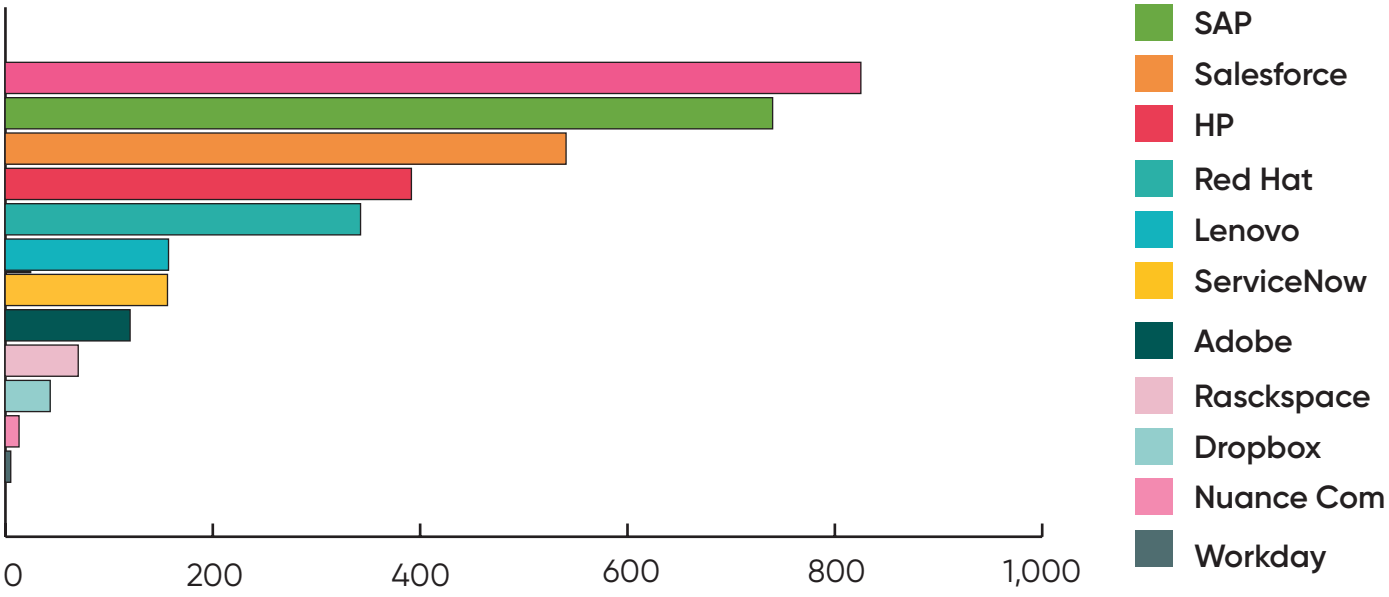
Tier 2 - Cloud based technology IP Filings



Tier 2 revenue-generating Cloud Service Providers

1. VMWare
2. Salesforce
3. SAP
4. HP
5. Red Hat
6. ServiceNow
7. Adobe
8. Rasckspace
9. Lenovo
10. Dropbox
11. Nuance Communication
12. Workday

Tier 2 – Patent filing count



Market Overview

With a compound annual growth rate of 18% up to 2027, cloud computing is attracting investors and innovators alike who see the recent shift to remote working as the catalyst that will usher in a golden era of cloud technology.

But what does the current market look like?

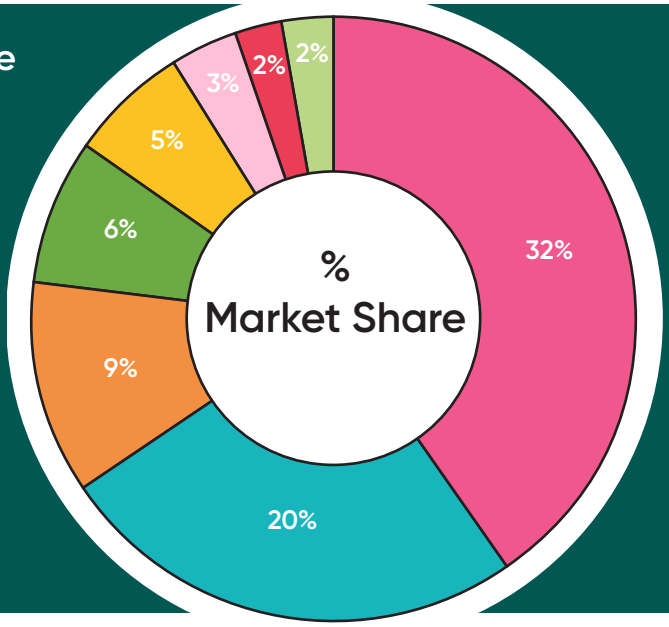
The answer is unbalanced. Cloud service providers are dominated by a few household names – Microsoft Azure, AWS, Google Cloud – with the top 5 companies accounting for 75% of the market share. This is partly driven by their dominance in terms of R&D expenditure and capability which has led to them dominating the multi-cloud market which makes them more appealing to those users who prioritise a flexible approach and avoiding vendor lock-in.

Beneath these giants, there is a layer of more traditional hybrid cloud/data centre vendors such as Dell, IBM, HP among others who have cornered the market of those companies who value the ability to maximise their data storage options as well as the flexibility to respond to changing business needs.

Beyond that, there are niche players who despite their big names and large market shares, only dabble in very specific cloud services. For example, Tencent cloud specialises in social networking, gaming, and digital e-commerce. Being niche does have its drawbacks, with Tencent's lack of appeal outside of China leaving it firmly in the challenger category as opposed to market leader.

Leading Cloud Providers Market Share 2021

- Amazon Web Services
- Microsoft Azure
- Google Cloud
- Alibaba Cloud
- IBM Cloud
- Salesforce
- Tencent Cloud
- Oracle Cloud



Patent Market Overview

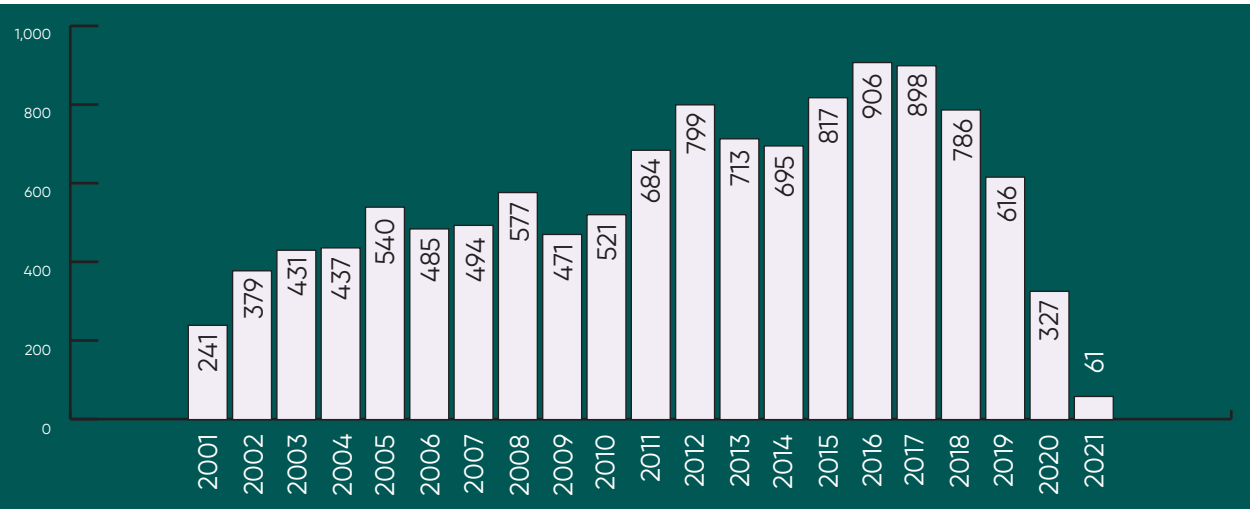
Despite a slight dip in the cloud patent market in the past couple of years, the trend from the past two decades points to the consistent growth in the number of patents being granted in the sector. However, this growth has reversed in the past few years due to incumbents now having established large IP portfolios – a trend that afflicts most sectors.

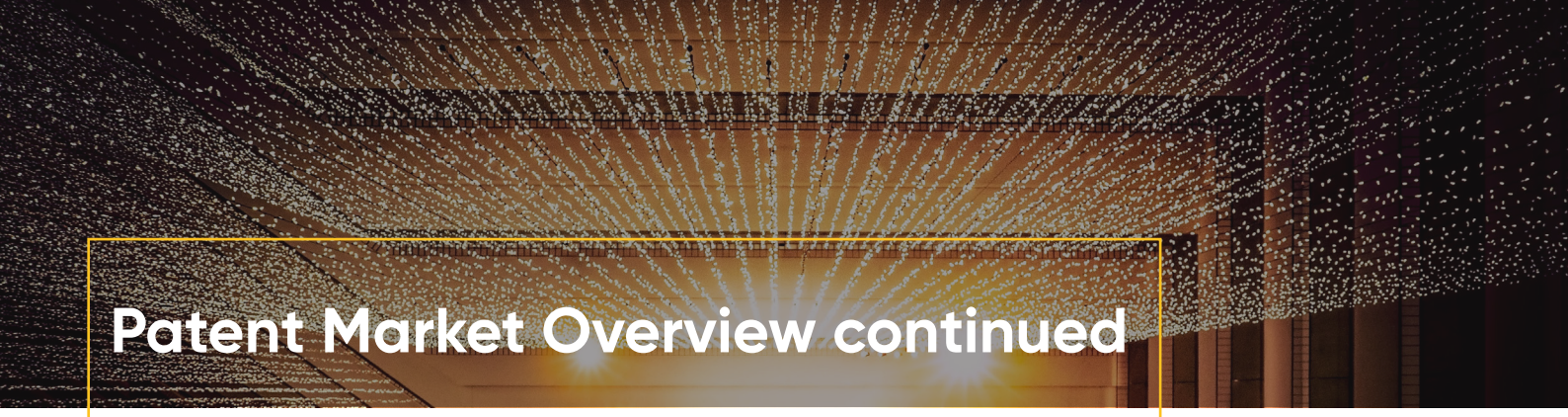
That said, it will be interesting to see how new niche players entering the market will start to file their own patents, and more importantly, handle IP strategy. From an IP point of view the location, jurisdiction, access to data by who and when, as well as newly generated IP from data on the cloud are all highly relevant topics to be discussed in coming years. In the patent filing numbers below, it is worth noting that the last 18 months are not the full annual numbers due to the patent publication rules.

In terms of the entities with the most patents filed in the space, the biggest players in the wider cloud market make up the majority of the top patent filers. And despite the top two spots being occupied by IBM and Microsoft, it is interesting to note that challengers such as Oracle and Tencent are ahead of bigger cloud service providers such as Amazon and Google. Arguably this is due to the challengers recognising they need to innovate faster and more often than their more established competitors in an attempt to eat into their market share.

What is less surprising is where the patents are being filed. As the home of the leading cloud players, the US is overwhelmingly the jurisdiction where the most cloud-related patents are being filed – to the extent that there are more cloud patents being filed in the US than the other jurisdictions combined. The US is the overwhelmingly preferred jurisdiction where any patent disputes are settled as a result of having a highly efficient and, if handled correctly, cost-effective IP system for the largest global market.

Patent filing trend

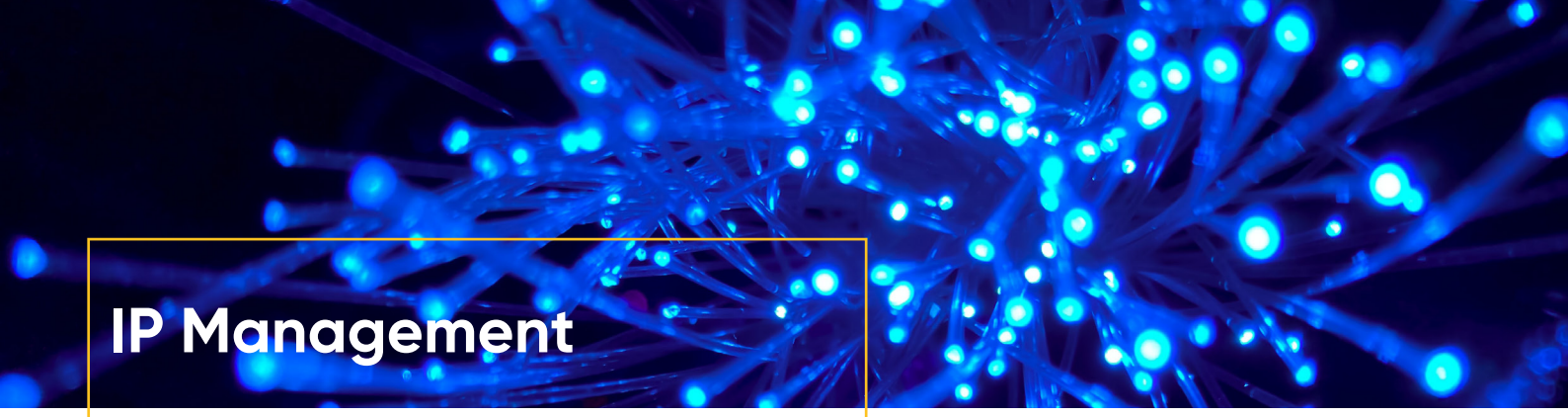




Patent Market Overview continued

The other noticeable trend in the cloud software patent market is the stabilizing and even slight decline in recent years in the number of patent families. Following 15 or so years of year on year growth and with a peak in 2016, there has been a slight decline as per the graph below. The accessible numbers of patent filings for 2020 and 2021 are incomplete as most patents are still confidential.

We did not see any big impact on patent families filed globally due to the pandemic and the cloud software patenting activity which is likely a product of the complexities that define the relationship between software and patents (more on that later) and perhaps even the acceptance that filing patents in a constantly-evolving space with competitors springing up all the time is a fool's errand.



IP Management

Cloud service providers, as with other software companies, operate in somewhat of a grey area when it comes to intellectual property and this can make the process of managing it complex.

The difficulties begin with the enforcement of patent rights. A global cloud service provider will know that their patent is only enforceable in certain jurisdictions – a big problem for a service that is sold on its ability to operate on a global basis. Then there is the added consideration that in order to successfully claim that their patent has been infringed, a cloud service provider must prove that every element of the claimed system or process has been infringed upon. For those who operate in multiple jurisdictions, proving that every claim has been met is a tricky task to say the least.

In a globalised world, operating across multiple jurisdictions with different rules and interpretations of IP is unavoidable. For example, a company that is headquartered in one country but may have other entities involved in the supply chain (data controller, processing, sub-processing) could be at risk of falling victim to theft of data if it is hosted in another jurisdiction with different rules that do not provide the same degree of intellectual property protection that the host country does. Providers who have successfully avoided this trap usually set up entities in the relevant jurisdictions so that customers within that jurisdiction know where the data is stored and the regulations the provider must adhere to.

This is why when selecting a cloud provider, it is vital that companies understand in which jurisdictions their data is stored as well as selecting a trusted provider who can assuage any fears.

Returning to patents, before the patent is even granted, cloud providers have to negotiate the hurdle of determining ownership of the many parts that can make up a cloud provider's ecosystem. For example, the servers that store the masses of data may be owned by one company, while the processing of the data is handled by another party altogether. Establishing who owns the relevant intellectual property and who is the party infringed is a non-negotiable for effective IP management. Further, the location of any servers needs to be considered and also what jurisdiction even a SaaS or PaaS provider occupies should be taken into consideration as this could otherwise jeopardise any future IP.

Because as we can see, detecting infringement is not a straightforward process in the world of software and cloud computing. Processes are often purposefully abstract to avoid replication. It becomes even harder when clients of a cloud service provider are unaware of the processes that sit behind the code meaning they are slow to pick up on any potential patent infringement. If a cloud service provider does take out a patent for client-facing elements of its software there is also the risk that by enforcing patent rights against users, they will put off those users ever becoming customers.

IP Management continued

Because the IP landscape for cloud computing is somewhat of a technical minefield, the contracts drawn up by cloud providers and their clients should be examined closely. Contractual IP indemnities come with a plethora of fine-point, technical legal requirements that raise questions such as: does protection cover any claim or just a successful one? Does protection extend to the legal fees for defending the claim? Or only cases where damages are due in a losing cause? Combing through these technical points in any contract with a cloud provider is therefore essential to ensure there are no nasty surprises down the line.

Moving slightly away from the patent market, licensing is one of the most common ways for cloud service providers to protect their intellectual property. This protects software by requiring a licence to use it, with failure to do so considered an act of infringement. Cloud service providers are not always the owners of the relevant intellectual property so they often sub-license their software to their customers or arrange a direct licensing agreement between customers and any relevant third-party licensors. However, these arrangements come with their own issues as they often require the sharing of personal data, the signing of confidentiality agreements and the treatment of intellectual property rights.

The Threat of Patent Trolls

Any fast-moving industry with a proliferation of patents such as cloud computing will naturally attract nefarious Non-Practising Entities (NPEs) or more commonly known as patent trolls. Patent trolls buy up patents with the explicit intention of using them as a source of revenue by claiming infringement and winning settlements in court. The fact that they often have no involvement in the industry, in terms of making or selling a product or service, only serves to highlight the contentious nature of such entities.

With cloud computing patents growing, this has provided an attractive breeding ground for these patent trolls. There has been a significant rise in recent years if NPEs acquiring more cloud-related patents and filing more cases, particularly in relation to the Internet of Things (IoT), an adjacent sector. The problems posed by patent trolls are numerous. They leave cloud providers in the unenviable position of choosing between pursuing a time-consuming and expensive litigation process or a potentially crippling settlement payment.

The risk to cloud companies is arguably heightened because of the commitment to open source software (OSS) that allow individual developers to power the cloud. OSS, for all its benefits, spreads responsibility across many developers, meaning the majority don't have the incentive to obtain patent protection and are unlikely to be in a position to pursue costly infringement lawsuits.

Unfortunately, this makes them sitting duck targets for patent trolls and is something cloud providers should consider when making their software open source.

Open Source Software

Staying on the subject of OSS, it has long been a hotly debated topic within the industry due to the problems, from an intellectual property perspective, that it poses.

In recent times, there has been a surge in competitor-based lawsuits, as well as those brought by patent trolls, against OSS cloud providers. These cases have come from all angles: from established players in the market going after younger competitors and vice versa.

The benefits of OSS are numerous and it's easy to see why many advocate it. Upfront costs are attractively low if not free, the code itself is highly reliable and tends to be bug-free due to the input of many developers as opposed to few, and the code evolves organically and gradually ensuring long-term potential.

Surprisingly, OSS's advocates also claim that it can be more secure than proprietary software because bugs and issues tend to be dealt with on a swifter basis thanks to a larger community of developers working on it. But arguably the reason OSS is growing in popularity is because of the flexibility it affords users and developers alike. The code can be adapted to suit the needs of the individual allowing more freedom to experiment and make improvements.

On the other hand, its detractors argue that OSS operates in a wild west where security is not the priority. The downside of allowing many developers to adapt the code is that some will inevitably have malicious intent and will insert malware that could have disastrous consequences for users as well as the vendor.

Additionally, the long-term costs and lack of support associated with OSS can be prohibitive if external help is needed to solve an issue – an issue not found with proprietary software. Then there is always the nagging doubt that developers will lose interest in the code and leave it 'orphaned'.

Cloud Terms & Conditions

With threats to cloud service providers seemingly everywhere, it is no surprise to learn that the established players have taken steps to negate and combat these growing threats.

Take Microsoft Azure, they have generously opened their entire portfolio of roughly 10,000 patents to their customers to use to protect themselves against patent trolls. The Azure IP Advantage program was launched in 2017 in response to the growing threat of patent trolls and was even extended to include any open source technology that powers Azure services.

And they did not stop there. Springing licenses were added to ensure any patents sold by Microsoft to an NPE cannot be used in any future case against an Azure customer which had the effect of forcing competitors to match Microsoft Azure's offering.

Amazon Web Services were forced to complete an about-turn having previously insisted that users could not assert their own patents against AWS – even in defence. This resulted in a mutual defence agreement being implemented that promised AWS would defend its users against any third-party infringement claims. In turn, Google Cloud adopted a similar policy in order to stay competitive.

Despite this added layer of security, relying completely on a cloud service provider's patent portfolio does carry its own risks. Because NPEs have no skin in the game, they are unlikely to fear a counterclaim case of patent infringement on a provider's patent. Additionally, if the customer does not own a patent outright, the customer's right to assert a provider's patent in their defence would be virtually non-existent unless a provider had given exclusive rights to the affected customer.

But arguably the greatest benefit to having a big name cloud provider in your corner is that it could deter NPEs from targeting you if they fear the provider could take up the defence which could force a smoother and quicker settlement.

Indemnification Coverage

As open-source software is becoming more and more prevalent in cloud computing, the risks to intellectual property are increasing and in response, cloud providers are attempting to offer more protection to customers who face lawsuits – but not without exclusions that can be hard to spot when signing any initial agreement.

Generally speaking, most agreements will exclude combination claims – where a cloud service is used with customer data or a customer's third-party application – which unfortunately means that full indemnification can only be provided to those cloud customers who are users only, which is an area highly unlikely to see many issues of patent infringement claims. This type of agreement cuts off the majority of cloud users who are subject to patent infringement claims and means full indemnification coverage is hard to come by.

Another caveat is that in instances where a claim is made, the cloud provider can seek to obtain the right for the customer to continue to use the product or a near equivalent which all sounds great for a user. That is until you consider that if the provider deems the equivalent service unreasonable for whatever reason, the provider can then terminate the existing agreement with the customer, ending the customer's right to use the product. This leaves a situation where the cloud provider holds all the cards over the customer and is something to consider before signing up to any agreement.

Mitigating Risks

Because cloud computing is a relatively young industry and has expanded at breakneck speed, there has been little time to fully understand and implement an agreed framework for intellectual property rights. This means that grey areas abound, leaving much open to interpretation. And it is because of these grey areas that there are risks and potential pitfalls for cloud newcomers and experts alike.

Most of these risks stem from a lack of clarity. In a cloud environment, it can be far from clear where data is being stored, who has access to it and how it is being used. In many cases, a cloud provider cannot even guarantee that if data is deleted on request by a user, that it has been deleted from all the locations it has been stored – a major concern for any end-user.

There is also the fact that in storing client data, a cloud service provider may actually create new intellectual property during the course of storing and or processing it. This only further confuses the issue of ownership which is already confusing enough for many of the parties involved.

Take this example: if a cloud customer builds a new application on a platform created by a cloud service provider, will the IP belong to the customer, the provider or both? The answer will lie in the contract between the two parties as well as the relative contributions to the new application of each. This generic example goes to show how there are few simple answers to managing IP risks in the cloud but that does not mean mitigation of said risks is impossible.

A good place to start is by arming yourself with IP experts who have experience or access to the experience of cloud software experts. They will perform the necessary due diligence before you enter into any agreement with a cloud service provider, giving you peace of mind that there won't be any surprises down the line. Even before contract negotiations begin, these experts will also be able to give advice on which cloud service provider has the best IP-related clauses and protection in their agreements. This will allow you to pick a provider that best suits your needs and should ensure compliance with global IP regulations.

When it comes to handling any sensitive data in the cloud, encryption of said data is vital and minimises the risk of it being mishandled or leaked, adding another level of security. It is also recommended that data processing be automated to minimise the chances of it being corrupted.

Next Steps

To find out more about how Aalbun can help your cloud company innovate faster and for less, request a free demo of our secure platform or speak to our team.

Speak to a cloud innovation specialists

Try our platform for free

About Aalbun

Aalbun is a leading legaltech company delivering IP & innovation services as a Platform as a Service (PaaS).

In essence, Aalbun is a single pane of glass to request and service all your intellectual property and innovation requirements through our secure digital platform.

Aalbun is powered by a global network of experts who, between them, can provide high-quality work, at pace, across any market.

Aalbun was founded in Cambridge, UK, in year 2014 and was incubated at ideaSpace, at the University of Cambridge. The joint experience of our three founders, Christian, Tim and Janne, amounts to over 65 years of working within intellectual property procurement, the creation of 250+ patent families as inventors, and the development of 11 new ventures.

Today, we have an outstanding team spread across the UK, USA, Australia, Brazil, Denmark, Finland, Sweden, Poland and India.

Learn how Aalbun can save you 20-30% on your IP & innovation costs while maintaining a superlative quality of service — visit aalbun.com today.

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