

# We all use the cloud without knowing it ...



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In an age where we use cloud services in our everyday lives without even thinking about it, it is hard to imagine that the mere idea of cloud computing was unthinkable just a few decades ago.

Today, we store photos and music in the cloud, collaborate simultaneously on documents, watch videos on demand, and connect with people around the world via social networks. All of these are services that rely on cloud technologies and are deeply embedded in our personal and business lives.

## But when did cloud computing become a “thing”?

The definition of Cloud computing is “*the on-demand availability of computing resources (such as storage and infrastructure), as services over the internet. It eliminates the need for individuals and businesses to self-manage physical resources themselves, and only pay for what they use.*”

Cloud computing would simply not have been possible without the rapid expansion of the internet, which started back in 1969, but it took another 27 years before the term “cloud computing” was used by the IT company Compaq in an internal document, referring to the concept of “distributed

computing” and then another 10 years before Amazon launched the very first true Cloud computing services worldwide. Amazon Web Services (AWS) offered virtual computers for rent and allowed people to use their own programs and applications online.

What followed was a very rapid expansion of the services offering with Google entering the market in 2008, followed by players like Microsoft, IBM and Oracle. Today, the public cloud market is split up between a few big players, with only four companies sharing over two thirds of the cloud market in 2022. AWS, Azure, Google Cloud, and Alibaba Cloud make up for 70% of cloud infrastructure.

## Everything happens for a reason

When I joined Abacus 10 years ago, one of my first tasks as CTO was to look at how we built and hosted all our gateway environments for the entire business. The option on the table at the time was physical hardware hosted in a data centre supplied and managed by one of our existing partners. Two weeks into the job, the partner pulled out and we were left with no way forward to manage our infrastructure.

Everything happens for a reason, and a quick phone call to a former colleague meant I was on a train the next day travelling into London to start the discussion on the move to cloud computing. I sketched out the initial idea of our cloud computing environment architecture on the back of an envelope during that journey and now wish I had kept that original infrastructure sketch as part of Abacus history. With the help of our new partners the first contract to go live with the Abacus Gateway platform was based on a pure private cloud system, all based around that original sketch on a train.

## Why did we move to cloud hosted platforms?

For Abacus the move to a cloud hosted solution was an easy one to make. It gave us the power and flexibility in a hosted environment at a fraction of the cost we would have had to spend to get the physical hardware in place to host our solution, and the managed services fees for the platform gave us access to a wealth of industry experience across a wide range of disciplines without the need to hire permanent infrastructure specialists. There are many advantages to moving to a cloud infrastructure, and each business is different. Ten years ago, we laid down some ground rules on what we expected to achieve from cloud computing and that ethos still stands today.

### Flexibility

As a business our resources are finite and with so many different areas of responsibility, flexibility is key. The ability to call on on-demand managed service expertise along with the ability to scale resources such as extra bandwidth was a critical factor in our decision. The cloud-based service we built can meet that demand instantly, rather than undergoing a complex (and expensive) update to an on-premise IT infrastructure.

### Security

All organisations have security concerns, and the lottery industry (just like the finance industry) is very sensitive to these concerns. However, the move to cloud hosted solutions allowed us to increase our security footprint by leveraging the power of many of the powerful and flexible components available to us in the cloud environment. We are also

utilising additional machine learning to prevent potential attacks on our platforms, with constant updates based on the latest vulnerabilities without impacting the overall infrastructure.

### ■ Containerisation

The move to cloud computing has provided the ability to containerise our platform, making it much easier to manage and control. We can segregate all our various customers within the environment to ensure data does not cross boundaries, giving us much better control over auditing of the platforms. This segregation allows better resilience across shared security components which will benefit lottery operators. We have also started the move to granular containerisation of the applications themselves, giving us a much quicker build time and maintenance footprint.

### ■ Scalability

As we bring on more and more customers to the Abacus platform, any environment we build will have the ability to scale easily with zero impact on the existing customer base. The cloud environment we now have in place allows for additional environments to be built and bolted to the current architecture. Our move to Infrastructure as a Service (IaaS) 3 years ago has simplified our entire solution, allowing the build of new platforms virtually with the push of a button.

### ■ Sustainability

Given the current state of the environment, it's no longer enough for organizations to place a recycling bin in the breakroom and claim that they're doing their part to help the planet. Abacus is a carbon neutral company, and our move to cloud computing helps reduce our carbon footprint. Cloud infrastructures support environmental proactivity, powering virtual services rather than physical products and hardware, improving energy efficiency.

### Embrace the cloud

It hasn't always been an easy ride. When we first started working with the US market it became clear there was a problem around audit and control of the environment as laid out in the MUSL rule 2 guidelines. Part of the audit process required visits to review the security of our data centre, and with a cloud environment this is simply not possible. Additional wording and amendments had to be made to rule 2 to allow cloud computing to be used in the processing of lottery transactions.

As a business we are constantly learning and the infrastructure we have in place today looks nothing like that original sketch on the train. That learning and improvement will never stop as we move forward, and additional monitoring and controls are constantly being added to the platform. For example, we have new machine learning in place to monitor our environment, allowing us to light up test environments when needed and take them offline when not, giving us greater control over our costs. This AI learning is also helping the monitoring of the security footprint of the entire hosted platform, giving us proactive control and reports on all aspects of security.

As an industry we should always look to continually move with the times and embrace any technology that enhances scalability, security, and control of our environments to offer our customers the best solutions possible. Abacus have been quietly leading this charge for many years now and have a wealth of experience in embracing the cloud. ■

