

Culture as code – why cloud transformation is a people matter

A successful cloud transformation is about mindsets, processes and cultural behaviour, as much as technology.

Introduction



Cloud migration has become mainstream. Companies in all sectors have cloud strategies and many papers have already been published. So why another?



In our experience, the transformational potential of cloud is often misunderstood and universally underrated. Cloud is not a destination – it is about **how** you do computing, not **where** you do computing. A ‘lift and shift’ cloud migration may deliver short-term benefits, such as scale and elasticity but, if it is not accompanied by a business transformation, it will engender a complex IT estate in the short term and result in the legacy system of tomorrow. Why?

A people business

Moving to the cloud is about doing different things, but, more importantly, it is also about doing things differently. Technology is a people business – it is people who develop technology and people who use it. Cloud heralds a new dawn in the way technology is designed, managed and deployed. Modern technology is no longer confined to back-office processing but is at the beating heart of everything a business does. In some sectors, such as financial services, technology **is** the business.

Many companies have yet to understand the transformational potential of cloud and the benefits of ‘evergreen’ technology that are enabled by Agile methods, DevOps and continuous delivery. This is because the people involved are wedded to the past – they have established ways of working which they find difficult to change and old habits die hard.

Mindsets, processes and culture

A successful cloud transformation is about mindsets, processes and cultural behaviour as much as technology. Legacy thinking cannot and will not realise the potential benefits of a cloud-native culture. This fundamental truth is often lost in the wider discussion about cloud deployment, such as private, public or hybrid models. While these are important, they are not fundamental to a successful transformation, but adopting the right people and mindset are.

This paper explores the potential of cloud as a driver of business and culture transformation. It endorses the view that the innovative potential of cloud is limited only by the imagination of people. However, the imagination itself may be blinkered if not open to new ideas or new ways of working.

We believe it is hard to overstate the need for fresh thinking at the start of a cloud transformation. A mindset that is entrenched in a world of waterfall methods and on-premise hardware may not be able to grasp the benefits of ‘culture as code.’

We hope you find our paper interesting and you will be encouraged to discuss your cloud strategy with GFT before you progress.

“Cloud is about how you do computing, not where you do computing”

Paul Maritz, CEO of VMWare

Cloud – a driver of business transformation



After a slow start and some concerns about regulation and security, cloud is becoming mainstream. Many companies already use cloud – sometimes unknowingly – for peripheral applications, such as customer relationship management and content management. As the benefits of cloud become known, most organisations are developing strategies that include cloud but there is a yawning gap between theory and practice.

Much has been written about the benefits of cloud and how to plan a smooth migration. While commendable, many of these reports, documents and papers are limited in scope and understate the transformational potential of cloud. In reality, cloud is a journey, not a destination. Regarding cloud as an end in itself puts limits on what can be achieved. As Paul Maritz, CEO of VMWare tells us, 'Cloud is about how you do computing, not where you do computing.'

So, the term 'migration' may be a misnomer that understates the cloud's potential. Adopting cloud properly is about across-the-board business transformation. Of course, most organisations already understand the benefits that cloud technology offers. These include significantly improved productivity and efficiency across the business, alongside the ability to realise cost benefits and competitive advantages not previously possible.

Scale



Cloud is a business enabler that empowers organisations to benefit from scale. Any business processing that is resident on the cloud can be scaled quickly and easily whenever more capacity or compute power is needed. This in itself is good for

most businesses and brings an end to the need for large speculative investment in on-premise hardware and technology, which often needs to be duplicated to ensure business continuity. But cloud offers a whole lot more.

Elasticity



While related to scale, elasticity is not the same thing and there are distinct differences. Scale can refer to scaling up (vertical) or scaling out (horizontal). In practice, scaling in either direction (or both) means adding or reducing resources to meet applications' demands from within the confines of the infrastructure. In this respect, scaling can be granular but is inherently static.

Cloud elasticity is the ability to grow or shrink infrastructure resources **dynamically** to manage a changing workload. This is achieved automatically to maximise resource utilisation. The business benefits of elasticity are significant and enduring. The need to plan infrastructure is removed, resource utilisation optimised, and processing costs reduced.

Cloud elasticity is particularly relevant in businesses that have processing peaks and troughs, such as e-commerce and financial services. For example, online retailers can harness cloud elasticity to

manage a Black Friday surge and financial institutions can do so to perform complex calculations, such as bank stress testing or other regulatory compliance initiatives.

Cloud elasticity can accommodate horizontal and vertical scaling, or both, simultaneously and is a unique attribute of cloud processing. In many cases, additional infrastructure is available on a pay-as-you-go basis and can be shrunk back to normal once the surge is over.

For many businesses, particularly those operating in an uncertain environment, cloud elasticity enables processing costs to be aligned to business needs. With the right vendor agreement, spending more on cloud processing becomes a welcome indicator of business success. Large lump sum capital spending is replaced by smooth revenue expenditure and all parties benefit.



A prime driver of digital transformation



Digital transformation is about doing different things, but also about doing things differently. In many industries, particularly financial services, cloud heralds a new dawn for technology at the heart of the business.

In many sectors, technology has moved quickly from the back office to be at the back, middle and front of everything an organisation does. In banking, technology is about much more than processing – it is the digital manifestation of a bank's brand and a touchstone of its core values. It is hard to overstate the importance of this evolving role of technology and the need to do things differently. The role of cloud as an agent of change is gaining wide recognition but it was not always this way.

Early cloud migrations, such as Salesforce.com, were simply that. Many early adopters of cloud simply migrated

what they had on-premise to the cloud in order to realise the benefits of scale and elasticity. In many cases, a software fee was replaced by a subscription model and software suppliers became service providers. Customers welcomed the benefits of smooth, predictable costs and continual updates; suppliers benefited from predictable costs and improved customer loyalty, reflecting more frequent upgrades. But a simple cloud migration is just a hint of cloud's potential.

Sooner or later, a technology stack that is simply migrated to cloud will encounter the limitations of that technology in its previous on-premise environment. All 'lift and shift' cloud migrations eventually run out of steam. Time spent exploring the transformational potential of cloud will be well rewarded. So, what else can cloud provide?



DevOps, NoOps, Microservices, Continuous Delivery



Although not synonymous, these elements of modern methods can combine to deliver a business transformation that is sustainable and future proof.

While each can be considered independently, the whole is invariably greater than the sum of its parts.



DevOps comprises a modern set of practices that combines software development (Dev) and IT operations (Ops). When carefully implemented, DevOps transforms software delivery by shortening the development lifecycle and delivering a continuous stream of high-quality software. DevOps is highly complementary to Agile delivery methods that embrace automated build and test, continuous integration and continuous testing. Agile methods bridge the gap between customers and developers, while DevOps methods address the gaps that have historically existed between developers and IT operations. DevOps enables better software to be delivered into the production environment more quickly.



NoOps, the 'no operations' concept has been around for more than a decade – the idea being a completely automated software environment which does not require an operations team to manage it. NoOps is not a single technology play, nor is it the same as serverless technology, containers, Kubernetes or microservices – although these all play roles in moving an IT organisation to a NoOps environment.

Adopting this approach is not without its challenges as it requires multiple technologies and more importantly a reworking of IT processes and workflows where automation, machine learning and even artificial intelligence remove not only repetitive and mundane tasks but higher-level tasks that workers now handle. While many senior executives find the NoOps concept very appealing from an overall efficiency and cost benefit perspective, others consider this to be an aspirational objective rather than a practical deliverable. IT leaders are sceptical about NoOps, citing the utopian notion that IT can fully eliminate manual operations for lifecycle management from either its own internal processes or from its providers' workings as not being a realistic expectation.



Microservices is an architecture that contrasts with the traditional monolithic technology stack. It enables new features to be launched into the production environment faster and more safely. Microservices can be defined as a loosely coupled services architecture with bounded context. In this way, individual service components can be updated independently and frequently.

By moving to microservices, an organisation can deliver more value, faster and companies like Netflix harness the power of microservices to deliver an ever-evolving customer experience. However, microservices is not for everyone and is

really ideal for organisations handling large numbers of requests or when large teams can be divided into smaller groups working on different aspects of an application.



Continuous delivery. A microservices architecture enables a project to be broken into individual modules that can be broken on and deployed as individual services. A robust continuous integration/continuous delivery (CI/CD) process allows new blended features to be tested, integrated and deployed into the production environment.

Continuous delivery seeks to remove friction that is inherent in any software release process. In a typical implementation, automation plays an important role in building a deployment that is manageable and safe. Continuous delivery replaces the traditional software release window and means that software can be released at any time. Over time, continuous delivery can be automated to enable a continuous deployment pipeline, where major changes are built and deployed automatically.

Cloud – gateway to new business opportunities



Exploiting data. In the digital age, data emerges as the new universal currency. Companies across all sectors wish to harness the power of data to eliminate guesswork and become data-driven. Only cloud offers a practical solution to the challenge of collecting, collating, analysing and storing unprecedented volumes of data from multiple sources and in different formats.

Many companies are using data to boost innovation and competitive advantage. Data is increasingly viewed as a strategic asset that must be properly valued and accounted for. All companies need a data-on-cloud strategy that considers how the organisation can use data to become more agile, customer-centric and responsive to change.

Harnessing modern tech. With the right cloud strategy, cloud can enable an organisation to use modern technologies, such as artificial intelligence, machine

learning and advanced analytics to understand customers better and do more for them. In a world that's increasingly 24/7, cloud is the only way to source, sort and analyse huge data volumes in real time. Companies can also use cloud to 'spin up' new business models and test new ideas in a safe sandbox environment.

Cloud – limited only by the imagination. With the right strategy, the potential of cloud is essentially unlimited. Companies with well-crafted cloud strategies will be able to redefine their markets, get closer to customers and boost operational efficiency. Although this may be a source of competitive advantage today, it will be the hygiene factor of tomorrow. Those without a coherent cloud strategy will be left behind and risk becoming booksellers in the Amazon age.

So, the question is not whether to move to the cloud but how and when?

Public, private and hybrid cloud



There has been much debate about cloud deployment models. Options include public, private and hybrid and all three provide similar business benefits, including cost-effectiveness, performance, reliability and scale. Ultimately, the deployment method will come down to individual company needs, goals and business objectives. However, some of the advantages of each approach are summarised here.

Public cloud is the most common way to deploy cloud and offers the advantages of lower costs (pay-as-you-go pricing), unlimited scale, no maintenance and high reliability.

Private cloud consists of computing resources used exclusively by one organisation and may be physically located in its own on-premise data centre

or hosted by a third party. In a private cloud arrangement, all services and infrastructure are maintained on a private network and the hardware and software are dedicated to one customer. Private clouds habitually offer greater flexibility and better security while offering the same benefits of scale and efficiency.

Hybrid clouds combine on-premise infrastructure, or private clouds, with public clouds to offer a best-of-both-worlds solution. Under a hybrid arrangement, an organisation can choose which applications to run on which cloud according to processing and security requirements. In addition, an organisation can 'burst' into the public cloud when there is a spike in processing requirements.

Some challenges of cloud



Although there are many options for a cloud deployment, the choice of cloud is of secondary importance for the need to get the thinking right. In practice, there are many pitfalls for the unwary and 51%¹ of IT transformations fail or are abandoned. Why?

Many organisations fail to grasp the transformational potential of cloud. As mentioned, a 'lift and shift' migration puts a ceiling on what can be achieved but is just as much work as a 'move and improve' transformation. However, many organisations fail to get the most out of cloud. Why?



A boardroom agenda



Although cloud technology is complex and evolving, the biggest barrier to transformation is organisational culture.

So, although cloud is now firmly on the board agenda this does not mean the journey to a successful cloud migration outcome will be plain sailing. The impact of COVID-19 notwithstanding, escalating costs due to complex, legacy-laden IT estates, protracted, unsuccessful POCs, siloed teams, skills shortages alongside compliance and security concerns must be urgently addressed, otherwise future sustainability of the business will be in question.

A major challenge is how to manage the expectations of the management teams who often approach the subject of the cloud with different mindsets and differing needs and are competing for access to limited budgets and stretched resources. To remain competitive in today's highly volatile environment, technology is proven to be a key enabler and requires a radical step change in thinking and attitude to this important subject. Senior leaders must set aside personal agendas and lead by example. This means adopting a more collaborative, highly coordinated approach, and empowering their teams

to work together for the common good of the business. Any organisation formulating a cloud strategy runs the serious risk of replicating what worked in the past. And in the digital age, a proud heritage does not ensure a successful future.

A cloud strategy must begin with a sound business case to establish the real reasons to transform and some quantifiable business benefits. Cloud adoption requires an open mind and a willingness to do things radically differently. This contrasts starkly with the traditional IT mindset that tends to favour incremental change. To make a success of cloud, an organisation needs to think big and beyond the current business parameters.

However, a cloud transformation must also consider where an organisation starts out from and many organisations encounter common challenges:

- A strong desire to transform that is inhibited by a need for business continuity that inevitably requires a mix of on-premise and cloud-based solutions
- A strategy that requires future apps to be cloud native, running in a multi-cloud environment and leveraging managed services
- A universal fear of lock-in to one proprietary system that restricts business potential and increases risk.

Inevitably, many companies, particularly those operating in heavily regulated industries – such as financial services – will have to design and build applications that are hybrid and multi-cloud enabled. This will be essential to progress a cloud strategy while meeting parallel business objectives, such as regulatory compliance and innovation.

- A complex legacy IT stack and mission-critical applications running on premise, managed by a legacy team with entrenched ways of working

Anthos – bringing cloud nearer



Any organisation considering a cloud strategy needs to cross the chasm between where it is now and its cloud destination. In practice, this requires more than a simple bridge – it needs a two-way highway that facilitates travelling back and forward.

With Anthos, from Google Cloud, an organisation can break away and move from its traditional way of doing things. Anthos provides the ability to streamline the way an organisation manages its hybrid and multi-cloud environment. Users no longer separate logins for the various different platforms; a single pane of glass is now the way forward. Again, this is technology acting as a catalyst to behavioural change.

Applications can be built, deployed and managed in a consistent manner across multiple environments: on premise, public

cloud, private cloud or hybrid. Anthos offers a roadmap to modernisation regardless of the starting point. As a packaged set of cloud-native tools and services, Anthos provides a consistent approach to managing applications in multiple environments and offers a single pane through which to view an organisation's technology stack.

Anthos ushers in a new era of cloud transformation and empowers organisations to modernise at their own pace and in line with their business objectives. As a 100% software-based solution, Anthos offers unlimited flexibility and choice. But it must be adopted as part of a bigger cultural transformation. So, what does a 'model' cloud transformation look like?



Towards a best-practice approach



Although cloud technology is constantly changing and every transformation is unique, some universal practices are emerging. Most organisations do not have the luxury of time and must transform without interrupting business as usual. But, in most cases the biggest barrier to change is not legacy technology but a legacy culture wedded to the past. Any organisation wishing to transform must consider how to:

- Develop a future-fit workforce that embraces new ways of working and a digital-first mindset that embraces Agile methods, DevOps and continuous delivery

- Re-evaluate 'process' for the digital business
- Embrace and adopt digital technology as the ultimate enabler throughout the business
- Source, manage, store and distribute data to drive innovation and business value.

A role for partners



In the age of digital Darwinism, it is not the largest companies that will survive, nor the most intelligent, but those most able to adapt. Companies across all sectors know they must transform, but for most this involves steering the business into uncharted territory.

Digital transformation is never easy, but it is a lot easier with an expert partner. With the right help, an organisation can find some common ground between the old and the new, and a cloud transformation path offers a two-way street between the two.

GFT can help



GFT has been driving digital transformation since its inception.

We can offer an expert, independent view of the business and technology landscape and the benefits of new ways of working. Our practical experience is unmatched in the fields of DevOps, microservices and continuous delivery, and datacentre as code.

We have open source business accelerators that help deliver value faster, but avoid vendor lock in. Our proven methods and world-class architecture offer a technology infrastructure that is secure, resilient and future-proof. New components can be added as required.





About GFT



World-class specialist in technology and innovation.

GFT is driving the digital transformation of the world's leading financial institutions. Other sectors, such as industry and insurance, also leverage GFT's strong consulting and implementation skills across all aspects of pioneering technologies, such as cloud engineering, artificial intelligence, the Internet of Things for Industry 4.0, and blockchain.

With its in-depth technological expertise, strong partnerships and scalable IT solutions, GFT increases productivity in software development. This provides clients with faster access to new IT applications and innovative business models, while also reducing risk.

Founded in 1987 and located in 15 countries to ensure close proximity to its clients, GFT employs over 6,000 people. GFT provides them with career opportunities in all areas of software engineering and innovation.

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Andrew Rossiter



Head of Technology Services – GFT



Andrew joined GFT in 2017 and brought with him a wealth of experience across financial services and technology spanning a 25 year career.

He joined from ADS Securities where he was Chief Technology Officer for the Abu Dhabi based financial services start-up. During this time, Andrew oversaw the 'build out' of their technology offering for institutional and retail clients during a period of significant growth that saw volumes doubling each year.

Prior to this, Andrew spent eight years at Barclays Capital, working within the Equities IT division. Part of his time there was spent working with GFT's nearshore teams in Poland, introducing agile development to Barclays on major projects.

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