Key Considerations for Designing and Implementing a Successful Cloud Strategy

Part of the Future Technology series from Zenitech

Peter Ekler

Péter Ekler
Global Head of Future Tech

Introduction

For our third piece in Zenitech's Future Technology series, we focus on Future Cloud - the cloud technologies which significantly impact software design and development.

This guide will look at the basics of cloud computing, the latest trends and developments in the cloud, what the big cloud providers offer us, and what to be aware of when creating a cloud strategy.

What is cloud computing?

At its core, cloud computing is basically the provision of IT services over the internet. The provider manages the servers, and the client uses the servers for a fee.

But, it also means different things and provides different advantages, depending on the kind of business using the technology. For some companies, cloud computing means moving the whole operation to the cloud – including document management, authentication, and instant messaging. For others, it means one or a few tools are moved from being hosted on-site to the cloud.

Why and when to switch to cloud?

Traditional on-premise systems are hard to scale. Infrastructure costs are expensive, and they require skilled operators to maintain them. Changes, such as increasing capacity, can be slow and costly.

Cloud was designed to be flexible and scalable. Users get the resources they need when they need them. The organisation doesn't need to maintain any servers and can pay for their services using a pay-as-you-go business model.

There are three types of cloud service that organisations can choose from:

- private cloud (which is owned and operated by your organisation – and how Microsoft got started in cloud services)
- public cloud (owned by a third-party provider, like Amazon or Google)
- hybrid cloud (a combination where, for example, customer data is held in private cloud and less sensitive data is hosted in the public cloud)

When you start exploring cloud computing, you may also hear about serverless and edge computing.

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> *Cloud computing can bring many benefits to organisations, including:*
> - *Saving on overhead*
> - *Creating efficiencies*
> - *Faster turnaround*
> - *Increased data security*

Serverless computing is where the cloud services provider manages both the cloud infrastructure and the scaling of apps. They're easier to scale, make it quicker to launch applications hosted on the system, and are more flexible (as well as more cost-effective).

As for **edge computing**, it acts as a sort of bridge between the core of the network – the servers that host the cloud – and the tech that the client is using. It sits on the edge of the network – closer to where data is generated, which makes response times quicker. It could be used with autonomous vehicles, for example, and speed up data processing when it comes to traffic and the location of the vehicle.

One of the key benefits of edge computing is that it allows businesses to process their data where it's collected, rather than off-site, which can help them control data security and remain compliant.

Cloud Service providers

There are many cloud service providers. The top three in terms of size of business and number of services provided are:

1. **Amazon Web Services (AWS)**. AWS launched in 2006 and provides more than 200 services in 26 regions. It's used by businesses like Netflix, Samsung and Unilever. It has the largest geographic coverage and market share. AWS specialises in areas like machine learning, artificial intelligence and serverless services provision. It has a reputation for being the easiest to use. But it has a pricing structure that can be difficult to get to grips with.
2. **Microsoft Azure**. Azure launched in 2010 and has more than 200 data centres in 60 regions. It works with brands like Apple and HP. Azure started with a focus on on-premise services and now specialises in areas like machine learning and artificial intelligence. It provides big discounts to customers on service contracts, but can be more complicated to use than GCP or AWS.
3. **Google Cloud Platform (GCP)**. GCP launched in 2011 and is in 34 regions. Brands like Domino's Pizza, PayPal and HSBC use GCP. Google is the leader in artificial intelligence and natural language processing. It's easy to scale services with GCP; it's still playing catch up to AWS and Azure but is growing rapidly and has a pricing model that's very easy to understand.

Each vendor offers products like Infrastructure-as-a-Service (IaaS), serverless functions, Platform-as-a-Service, networking, database and data storage services.

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Optimise the cost of cloud services by selecting and configuring the right tools and environments with proper and dynamic scalability settings.

Avoiding vendor lock-in

While vendors often make it easy to transfer data to them when you set up, it can be much more expensive and difficult to move your data from them to a different vendor if you want to switch supplier (especially things like networking, security and governance).

Zenitech uses an Infrastructure-as-a-code (IaaC) approach in most cases. This means that we can provide solutions that can be easily installed on different cloud environments to avoid vendor lock-in. It therefore supports our clients' ability to move freely between cloud providers.

Benefits and considerations of cloud computing

Cloud computing can bring many benefits to organisations, including:

- **Saving on overheads.** Cloud computing eliminates the need for businesses to purchase, install, and maintain physical hardware and software. It's also easier to manage costs, as cloud services can be scaled up and down to meet demand.
- **Creating efficiencies.** Cloud computing allows employees to access data wherever they are and on any device connected to the network. It means organisations don't have the expense and resource drain of installing and maintaining software on individual computers. It also helps streamline processes and to eliminate redundant tasks. Cloud computing can be a fast way to implement digital products such as accounting, HR or logistics systems.
- **Faster turnaround.** Systems hosted in the cloud are updated much faster by developers, and updates arrive instantly to the companies using them. This removes the cost of having in-house IT teams do mundane tasks such as updates, and maintenance costs are reduced as backup management, monitoring and scaling are handled in the cloud.

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> *Using an IaaC approach supports our clients' ability to move freely between cloud providers.*

- **Increased data security.** If you're using a trusted, secure cloud service, you might minimise the risk of a security breach, as those systems are tested better than local on-premise installations (where a patch might be installed six months after it's released). Cloud services can help businesses keep their data secure by using industry-standard security measures such as encryption and access control - helping protect businesses from malicious attacks and other data breaches.

By using cloud services, organisations can be much more agile and flexible when creating their strategy. Cloud services also provide better access to data, which can be shared across the organisation and analysed much more quickly to provide the latest insights and predictions.

Using this information, organisations can develop and refine their products and services at a fast pace and quickly understand what marketing and sales strategies they need to support them for maximum impact.

Getting your strategy right

It can be tricky to get your cloud strategy right.

In the case of complex digitalisation processes, it's always worth finding the right experts to work with. The best partners can optimise the cost of cloud services by selecting and configuring the right tools and environments with proper and dynamic scalability settings.

Security: managing risk in the cloud

Cloud security is constantly evolving as new technologies are developed and new threats are identified.

Securing the cloud involves a combination of technical and administrative controls such as encryption, access controls, data backup, disaster recovery, regular security assessments, user education and generating awareness.

In the UK, the National Cyber Security Centre published 14 cloud security principles that set out the technical and organisational aspects of managing risks when using cloud such as data in transit protection, asset protection and resilience.

These principles also cover critical areas such as how to create a secure governance framework, securing your supply chain; and access control.

The European Union Agency for Cybersecurity also has a draft version of its European Cybersecurity Certification Scheme for Cloud Services. It's aiming to provide three levels of security certification from basic to high level security, most organisations will probably suffice with a standard level of assurance.

But, again, we can expect security standards to constantly evolve to keep pace with the latest developments in cloud computing.

The future of cloud

We expect cloud computing to mature in several directions, but, at its core, cloud will develop in ways to make organisations more flexible, agile and scalable. We'll see a greater use of automation and an increased adoption of emerging technologies like artificial intelligence, machine learning and blockchain.

We believe the next generation of cloud computing will focus on:

- **AI-driven cloud services like automation and analytics.** Organisations will use AI for things like autonomously discovering why the website is losing users and provide recommendations on how to remedy that.
- We'll see **autonomous databases** - that can almost run themselves.
- **Quantum computing cloud services.** Quantum computing will be available on cloud platforms soon and have huge potential to create efficiencies in business processes.
- **Cloud gaming.** Soon, gamers won't need to buy dedicated hardware to enjoy games - if their internet connections are strong enough they'll be able to take part in cloud gaming.
- **Virtual reality and augmented reality** are coming to the cloud as they support more graphic compute features; there will be no longer be a need for strong local graphical processing units when using using complex VR/AR solutions.
- **Cloud system design with generative AI.** Soon, artificial intelligence will be able to construct part of the cloud computing system.

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Cloud will develop in ways to make organisations more flexible, agile and scalable.

The Zenitech approach

At Zenitech, we live and breathe new technologies. It's why we formed our Future Technology division. We start with a laser focus on the business outcome you need. The introduction of new technologies - whether that's AR/VR, Cloud or AI - can contribute to revenue growth, business scaling, cost reduction, improved customer experience, or competitive edge.

We give you advice to create the outcomes you need for your business using new technology, collaborating closely with you to create the very best technical solutions to address your business challenges.

If you want to explore how cloud computing could revolutionise your business, contact us to see how we can help.

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Connect with us

🌐 www.zenitech.co.uk

✉ info@zenitech.co.uk

in linkedin.com/company/zenitechteam

f facebook.com/zenitechteam

🅾 instagram.com/zenitech