

Building Trust in the Security of Cloud

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Contents

Aims and objectives of this paper.....	04
Introduction.....	04
What is cloud?.....	05
How cloud can be used?.....	06
How comfortable are you to share your information with the cloud?.....	06
Taking the next step - use the cloud ABC.....	08
Are cloud services secure and safe?.....	09
Your cloud experience.....	10

Aims and objectives of this paper

Despite many years of raising awareness of the benefits offered by cloud computing some negative perceptions remain about the security of cloud services that are holding back cloud adoption and its benefits. Given the importance of cloud computing to the UK's digital future it is vital that the cloud security messages and advice being delivered today are relevant to how cloud services have evolved, address the concerns being raised by cloud users and are communicated to, and understood by, the right audiences.

To ensure this happens techUK has brought together cloud computing industry leaders and cyber security experts to develop this paper. It aims to provide information and advice for those looking to get the most out of cloud computing and start to address trust and security concerns as well as misconceptions surrounding cloud services.

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Introduction

Cloud computing is fundamental to the UK's digital future.

The next wave of the digital revolution is being powered by the Internet of Things (IoT), mobile applications, big data analytics and Artificial Intelligence (AI). Cloud computing underpins all of these developments. It provides the capability to store, process and manage the vast volumes of real-time information being created through digital innovation.

The volume of information now being created on a daily basis means that cloud is fast becoming the easiest solution to adopt for organisations and consumers. Cloud provides the ability to access computing platforms and resources on an 'on-demand' basis, increasing organisational efficiency and often cost savings. This flexibility drives innovation, productivity and business competitiveness.

Too often customers hold back from harnessing cloud benefits due to concerns about the security of cloud computing services.

However, the reality is that cloud services can offer much greater levels of security and resilience as required by users. With the cyber security tools and solutions and educational initiatives available today cloud computing services can be as secure as users require.

This document aims to build greater trust in the security of cloud computing with those that may be looking to use cloud services. It provides information and advice for those who are deciding whether to transition to the cloud.

What is cloud?

The chances are you have already interacted with a cloud service today as part of using an online service. Using cloud computing can be as simple as downloading an app, sending an instant message to a friend, checking your email on the go or streaming your favourite movie via your mobile device. The cloud enables you to share, store and send information when using online services.

A significant proportion of UK adults are already benefiting from using the cloud to access online services to store and protect their documents, pictures, music and information. The following are examples of common cloud based services:

Dropbox

Dropbox is a secure file sharing, storage and collaboration platform with 500 million registered users. It is a home for your photos, videos, documents and other files. Your stuff is safe, accessible and easily shared no matter where you are. Any file you save to your Dropbox is automatically saved to all your computers, phones or tablets, and can also be accessed via the Dropbox website. Dropbox secures your files with AES-256 bit encryption and two step verification.

Samsung Smart TV

Samsung uses multiple cloud infrastructure services for its Smart TV platform. They use multiple cloud platforms to deliver these services direct to its customers.¹

Netflix

“Our journey to the cloud at Netflix began in August of 2008, when we experienced a major database corruption and for three days could not ship DVDs to our members”. “The majority of our systems, including all customer-facing services, had been migrated to the cloud prior to 2015. Since then, we’ve been taking the time necessary to figure out a secure and durable cloud path for our billing infrastructure as well as all aspects of our customer and employee data management.”²

PayPal

PayPal is the most trusted, widely used digital wallet in the world – offering its customers a faster, safer way to pay and get paid. PayPal is payment and technology agnostic, which means you can use PayPal to make payments with credit and debit cards, digital payment methods like Apple Pay and Android Pay, and digital currencies like bitcoin. It’s also platform agnostic – so works across iOS, Android, Windows and web - and enables payments in-stores, online and on mobile. PayPal has 200 million active customer accounts around the world and they processed 6.1 billion transactions last year. These transactions are made possible by using cloud computing.

Spotify

If you have used your mobile phone to stream music from Spotify today then you have been using a cloud service. The fact that you can use Spotify to access the music you want anytime, anywhere around the world is thanks to cloud computing.³

1 <http://www.zdnet.com/article/samsung-enters-the-cloud-fray-with-joyent-purchase/>

2 <https://media.netflix.com/en/company-blog/completing-the-netflix-cloud-migration>

3 <http://www.geekwire.com/2016/spotify-turns-to-google-for-cloud-computing-power-in-a-huge-upset-for-amazon/>

How cloud can be used?

Cloud service providers offer a range of free to use and paid for cloud storage services which provide the ability to store, manage and secure digital information in one place and access this information when it is needed from any internet connected device.

Imagine you are working from home. Cloud computing can allow you to access the same applications, information and services at home as you can in the office, giving the flexibility to work effectively from wherever you are.

We are each producing an increasing amount of digital information that is being created and stored on a range of devices. Imagine if your smartphone or tablet was lost or stolen. What would happen to all the information stored on or accessible from that device? Cloud back up services provide the ability for consumers to store, manage and secure their digital information in one place and access this information when it is needed across multiple internet connected devices. The cloud enables consumers to gain a degree of information resilience that wouldn't have been possible before.

How comfortable are you to share your information with the cloud?

The cloud enables you to send and share your personal information online via an external provider. However, that doesn't mean you don't have control over your information.

Your willingness to start exploring cloud should be based on what your needs are (for example do you want to back up your information, or share access to information) and an understanding of the risks involved.

Everyone is different and there may be information or files that you care more about than others. The decision about whether information should be moved to the cloud should be based on:

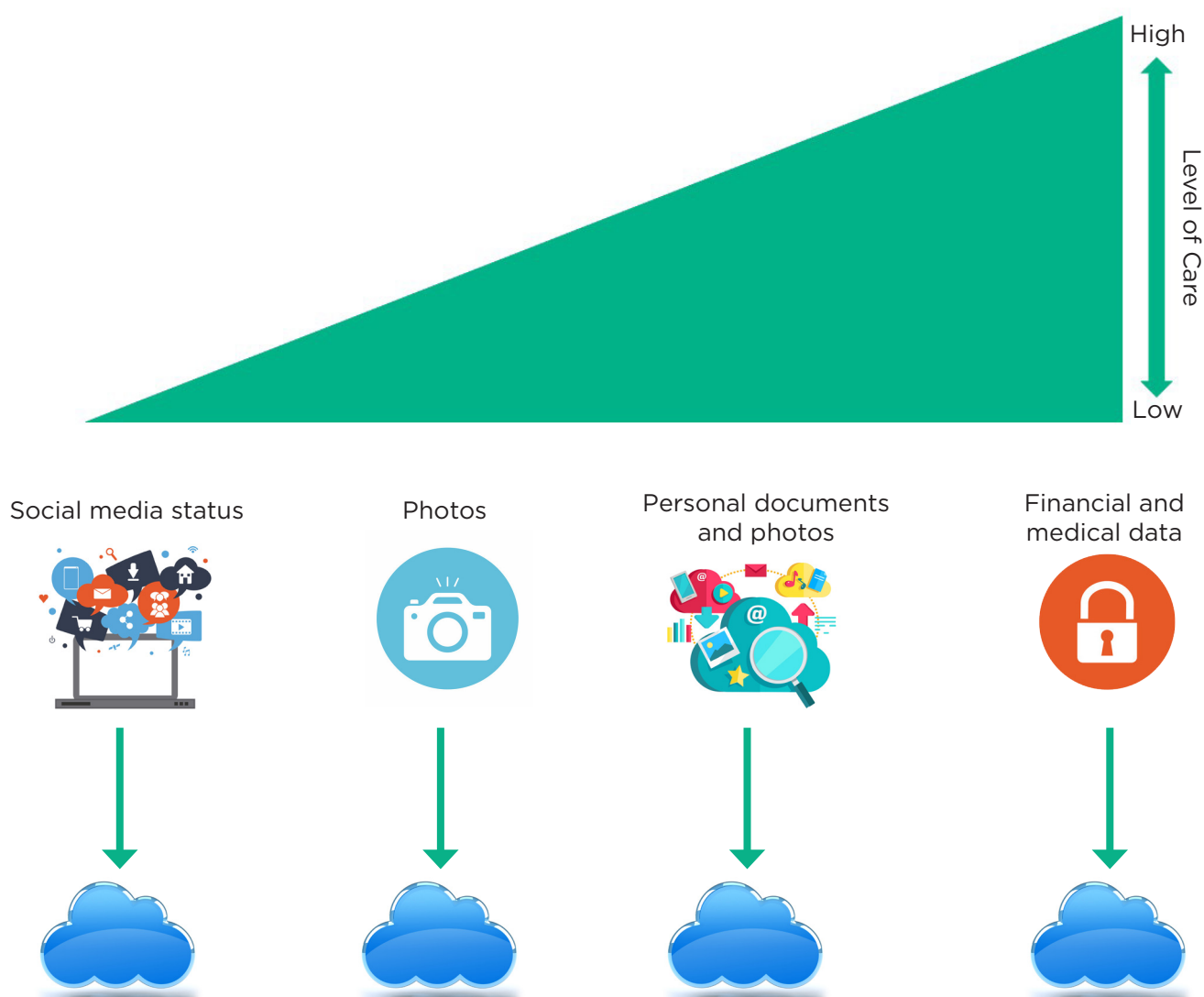
- whether the cloud service meets your storage needs
- the security protections offered by the cloud provider

Before deciding whether to move to the cloud you should think about how you want to use cloud services and what information you are happy to send to the cloud, as well as which provider meets your needs. Not all cloud services will be the same.

As the diagram below outlines, as the type of information you move to the cloud becomes more sensitive to you, the level of data privacy and security you should expect from your cloud provider should increase.

For example, you may have non sensitive information (a social media status) that you are happy to share with the public via a cloud service such as a social media provider. You may also have information that you are happy to share with others using the cloud through a closed group (e.g. photos). There may also be information you only want to access yourself using the cloud (personal documents) and then information that is most sensitive (such as bank details, media information) where a higher level of security (for example two factor authentication to access a service) may be required to access your data.

Remember the information security and data privacy requirements you might expect, or should be looking for, from your cloud service provider will depend on the sensitivity of the information you are moving to the cloud and how important that information is to you.



Taking the next step – Use the Cloud ABC

Before deciding whether to move to the cloud, consider your Cloud ABC. The checklist below offers some points and questions to consider about the cloud service you are looking to use:

	Points to consider	Questions to consider
A	Always think about the type of information you are moving to the cloud. Not all information is the same. The Data Protection Act covers four types of information⁴ including personal data and sensitive personal data.	How sensitive is the data to you? Is this the type of data that you would want to access regularly as if it was on your hard drive? Is this the type of data that you would want to share with others, from friends to the wider public? Is it safe to be stored away from your device?
B	Be aware of the security provided. Consider how secure is the service being offered. As the type of information you move to the cloud becomes more sensitive, the level of data privacy and security controls you should expect from your cloud provider should become more complex.	Do they provide security information? What are the security measures provided? For example, do they offer two factor authentication? What are the data security and privacy policies for the service and how accessible are they? Does the site have a data breach notification system to alert you if this happens? Does the cloud provider offer different security levels depending on the sensitivity of your data? Does the provider make clear the customers' and suppliers' responsibilities for information security? How do they access my information and when?
C	Choose the best cloud service for your information. The selection of which cloud provider is best for you is up to you. It is your choice.	What happens to your information once the contract comes to an end? How and in what format will your information be returned? What happens if the cloud service is disrupted and you cannot access your information? What support will you have?

⁴ https://ico.org.uk/media/for-organisations/documents/1549/determining_what_is_personal_data_quick_reference_guide.pdf

Are cloud services secure and safe?

In the current online threat environment, your information may be a target for cyber criminals whether cloud-based or not. Reputable cloud providers continue to invest significantly in the latest cyber security technology to ensure consumer's information, wherever it is being stored, is protected against a wide range of cyber threats. Reputable cloud providers ensure policies and procedures are put in place to keep information secure and to prevent disruptions to the access consumers have to their information if a security incident occurs.

You also have a role to play

You also have a role to play in ensuring that the information you have shared with cloud services is kept both safe and secure. Think about the following:

Passwords to access your cloud services	Have a strong password. Use different passwords for different sites. Don't use a common password across all your services If the service offers additional security measures such as two factor authentication, use them. Where do you store your passwords? Could they be found by others? Check out Get Safe Online⁵ and the Cyber Aware⁶ campaign for more advice on password security and setting access controls.
Accessing cloud services away from home	Are you aware of the security of wireless networks and public Wi-Fi hotspots? Check out Get Safe Online⁷ for more advice on protection when using wireless networks and hot spots.
Do you know everyone that has access or is using your cloud services?	Do you use shared devices in your household with access to the cloud? Do they have access to your information?

⁵ <https://www.getsafeonline.org/>

⁶ <http://www.cyberaware.gov.uk/>

⁷ <https://www.getsafeonline.org/>

Your cloud experience

The UK has a vibrant, fast moving and ever evolving cloud computing market. In the UK there are multiple cloud providers, of all size and shape, offering a range of innovative cloud services, both as a free to use and paid for service, for you to use and enjoy.

Not all cloud services will be the same. So, it's important to remember to read the providers' Terms and Conditions (T&Cs) and consider the different levels of services that might be offered between a paid and free cloud service. Remember, it's your choice!

techUK hopes this paper will help you to benefit from the cloud and take advantage of the opportunities that cloud services have to offer.

techUK represents the companies and technologies that are defining today the world that we will live in tomorrow.

The tech industry is creating jobs and growth across the UK. 900 companies are members of techUK.

Collectively they employ more than 700,000 people. These companies range from leading FTSE 100 companies to new innovative start-ups. The majority of our members are small and medium sized businesses.

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