



# GENERATION CLOUD

A social study into the impact of cloud-based  
services on everyday UK life

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## Foreword

*The research team at the centre for Creative and Social Technology (CAST), University of London, quite literally “lived in the cloud” for two weeks, insightfully bringing together online and offline qualitative research alongside trend analysis to elaborate just how many ways we interact and store in the cloud.*

*The technologies we engage with everyday connect us in ways that we are only beginning to understand. More and more of our data is stored in the cloud; our music, contacts, files, emails, photos and videos we pull down for use and return for safekeeping. Many people don’t even know how much storage space they have, or how much they rely upon access to their data, services and social networks. People are talking to each other about their activities, concerns, and hopes for digital realities.*

*“We need to harness the everyday connectivity that the cloud offers to extend the cloud value proposition to sustainability, transparency, credibility and public interest.”*

*We need to harness the everyday connectivity that the cloud offers to extend the cloud value proposition to sustainability, transparency, credibility and public interest. The cloud is currently somewhat fluid in definition meaning many different things to many different people. Our research indicates it is starting to take shape and now is the time to take hold of ‘the cloud’ in the public consciousness, helping people to understand the possibilities and the future.*



# Introduction

We already have masses of information digitally stored and this amount is only going to increase. Many people's worlds are online, or soon will be – we are the cloud generation. Our work and personal lives are more 'connected' than ever through devices like smartphones, tablets, Wi-Fi, broadband, social media, e-readers, emails and cloud-based services like Spotify, Flickr, Facebook, Gmail and Hotmail\*.

*"In collaboration with experts in the field of social studies and technology at CAST and supported by quantitative research among 2,000 UK adults, Rackspace analysed the 'connected' lives of 15 everyday people."*

*\* When referring to 'the cloud', 'cloud-based services' and so on, we're talking about the management and provision of applications, information and data – i.e. computing power – as a service. Cloud services are usually accessed and provided over the Internet, often at no cost in the case of consumer cloud services.*

Every day we're using 'the cloud' more and more – often unknowingly – as we transition and deposit our lives online – music, movies, emails, photos, family videos, and even work data – using cloud services.

Just how reliant are we on these online services? How much of our information is held in or shared via the cloud. What are we typically sharing and hosting in the cloud every day? And could we be exposing ourselves and our 'digital treasures' to significant risks?

In collaboration with experts in the field of social studies and technology at CAST and supported by quantitative research among 2,000 UK adults, Rackspace analysed the 'connected' lives of 15 everyday people.

The result is a social study, Generation Cloud, which reveals the extent to which we have become reliant on cloud-based services.

## The report outlines:

- The scale of our life lived in the cloud – the value of our personal clouds and digital inheritance
- Emergence of four distinct social profiles of cloud users
- 2020: How the cloud will make physical books, CDs and DVDs a thing of the past

The report concludes with suggested hints and tips on how users can stay safe in the cloud, and how businesses can address issues raised in the study.



# Key finding #1: Britain stashes £2.3bn worth of digital possessions in the cloud

*“The cloud is becoming more and more a part of our everyday work and personal lives. With an estimated £2.3 bn invested in ‘digital treasures’, it is imperative that people consider the associated security and legacy implications associated with cloud computing usage. Businesses have a great opportunity now to shape consumer understanding of cloud computing and build trust. It’s important to remember also that cloud computing is for everyone, but it’s not for ‘everything’, ” said Fabio Torlini, VP of Cloud at Rackspace.*

Although we are living in a cloud era, the majority of cloud users are yet unaware that they are using cloud services. The study revealed that three quarters of Brits (74 per cent) either don’t know if, or don’t think they are, using cloud services. Yet, 93 per cent said they regularly use cloud-based services such as Facebook, YouTube, Hotmail, Spotify, Dropbox and iPlayer.

The research also found almost 3 out of 10 (29 per cent) UK adults surveyed use cloud services for more than 2 hours on average each day.

More than 1 in 10 (11 per cent) uses them for more than 5 hours each day – that’s more than 76 days in total over a year\*.

## The UK’s £2.3bn worth of digital treasures

The majority of UK adults (53.5 per cent) have treasured possessions stored online in cloud services. These digital treasures include special videos (such as wedding videos), photos and emails, as well as passwords and valuable documents, such as wills.

*Almost a quarter (24 per cent) of UK adults estimate that they have digital treasures worth more than £200 per person in the cloud, which amounts to at least £2.3bn across the nation.\*\**

### UK adults are hosting & sharing all manner of “things” in cloud

- Almost 3 quarters of adults (69 per cent) store photos in the cloud
- 13 per cent store more than 500 photos
- 86 per cent store emails
- 12 per cent store more than 1,000 emails
- Nearly half (48 per cent) store music tracks
- 10 per cent store more than 500 tracks
- More than one third (36%) store movies and videos
- 9 per cent store more than 50 videos/movies
- 44 per cent store financial or legal documents
- 6 per cent store more than 50 documents

## Safeguarding our digital inheritance

Gone are the days when old photographs, vinyl record collections and other analogue artefacts were the only things to be split amongst siblings when parents passed away. The idea that one will pass down a digital inheritance through generations is becoming a reality.

- 30 per cent of Brits have considered our digital possessions as potential 'digital inheritance'
- 11 per cent either have passwords to their digital treasures in their will, or plan to do so

*"A very real danger is that the valuable contents of private cloud accounts will simply be lost upon the owner's death either because the accounts are not known about by others or because access is not possible without the user and password details," said Steven Thorpe, Partner at Gardner Thorpe Solicitors.*

*Steven Thorpe, Partner at Gardner Thorpe Solicitors (traditional law firm in Haslemere and Petworth Sussex), says: "Those people that aren't already thinking, or doing something, about digital inheritance, should do so. It's an area that will become increasingly important given, for instance, the monetary value of music collections and sentimental value of photograph collections - fewer people now keep hard copies of either. A very real danger is that the valuable contents of private cloud accounts will simply be lost upon the owner's death either because the accounts are not known about by others or because access is not possible without the user and password details. The good news is that drafting wills and including provision for digital inheritance is relatively cheap and straightforward."*

\* 5 hours / 24 hours \* 365 days in a year = 76 days

\*\* UK adult population over 18 in 2009 according to ONS = 48.2m; 24% of this population = 11,568,000; 11,568,000 \* £200 = £2.3bn



## Risky business

With so much to lose in the cloud, it's important that the burgeoning awareness of what the cloud is, what it can and can't do, continues to grow. The study reveals potentially risky behaviour amongst cloud users, indicating a need for education regarding safe behaviour in the cloud - especially amongst younger people. Importantly, while the cloud is for everyone, it's not for everything.

*"The study reveals potentially risky behaviour amongst cloud users, indicating a need for education regarding safe behaviour in the cloud - especially amongst younger people."*

- 38 per cent of us have sent valuable or confidential personal information via cloud email or messaging services (61 per cent of 18-24 year-olds, compared to 24 per cent of the 55+ year-old age group).
- 9.5 per cent of Brits have sent their or someone else's credit card details (14 per cent of 18-24 year-olds, compared to only 5.5 per cent of the 55+ group).
- 37.5 per cent of those surveyed said they didn't realise that information sent via cloud email could be stored by a service provider in another country.



# Key finding #2: Four distinct social profiles of cloud users

## 1. Head in the Clouds

The first profile identified in the study was a 'digital immigrant'. Typically, this person is a regular cloud service user, deeply connected and immersed every day without understanding how or what the cloud is and without a distinction between the cloud and their life.

This group accounts for two-thirds (66 per cent) of the UK adults surveyed – i.e. those who don't think they use cloud services, or don't know if they do, but in fact regularly do use them.

### Key characteristics:

A typical 'Head in the Clouds' user has:

- Many online profiles e.g. in Facebook, LinkedIn, Twitter, Tumblr, Flickr
- Signed up for different services and streams, such as Spotify, LivingSocial, Groupon, and e-newsletters
- Frequently downloads, creates and shares information such as video; e.g. comedy shows from YouTube
- Often mid-career professionals, students or busy multi-taskers

This audience does not yet realise the vast expanse, storage possibilities, and future potential as they live and transform with the cloud. While some are concerned about this 'thing' that they did not understand, many are quite excited about the possibilities.

Head in the Clouds people represent a significant opportunity to raise awareness of and define the cloud in a way that unites disparate understandings. Importantly, this profile can quickly migrate into an e-Hoarder or Cloud Sceptic depending on their reaction to this new found awareness.



*"When Katie Poole, a 22 year-old photographer and journalist, was introduced to the term she searched the web for inspiration, asked friends and attended an event where everyone was talking about it. She says: "It was really interesting to see how there is this cloud concept that I didn't know about – and that it's such a huge part of my life."*

## 2. The e-Hoarder

The second profile identified was the e-Hoarder. These are people whose entire world is online. They are completely immersed, almost too comfortably, in cloud services.

e-Hoarders are as digitally disorganised as one imagines hoarders to be in their homes: cluttered, confused and in disarray. They never properly name files, folders and data, have thousands of emails and rely on search software to retrieve items and often forget how many profile usernames and passwords they have.

For e-Hoarders, the cloud is the perfect place to stash everything, even to scan hard documents for safekeeping and for clean-up of physical spaces. That their digital attics are getting cluttered is not a problem as there is perpetual storage space in the cloud. Anything might be needed at any time so it remains there for future use.

### Britain's cyber attics

- 21 per cent of UK adults have between 2-50GB of cloud storage space
- 17.5 per cent have more than 50GB
- 6 per cent have so much they can't even count

**Defined in our survey by the amount they store and their fear of the delete button, this group accounts for 8% of online Brits.**

### Key characteristics of a typical e-Hoarder:

- Is digitally disorganised, stashing everything in the cloud
- Values things in the cloud beyond physical artefacts
- Is an early adopter of new online services such as music streaming services MixCloud, Turntable.fm
- Prefers the cloud to offline



## Fear of the delete button

Fear of the delete button is felt by more than just the e-Hoarder group, and is exacerbating the volume of cyber clutter Brits have.

- 44 per cent of people surveyed who store things online said that they worry about deleting files, in case they might need them in the future.
- Almost 3 in 10 (29 per cent) of people who have something stored online never or rarely delete anything.

As a result, many people are using a huge amount of cloud storage space; often more than they can keep track of.

One e-Hoarder, Sam Page, a student in his mid-20s, describes his approach to cloud storage: “I have trouble deleting things both physically and online. I was given a bar of soviet soap, and I still have it. I have no idea what to do with it, no idea if it still works, but it’s quite like my files. I don’t know if I can delete things in case I will need them.”

Explaining the reasons behind the hoarding habit and the emerging fear of the delete button, Professor Cary L. Cooper, Distinguished Professor of Organisational Psychology and Health at Lancaster University, says: “People hoard things and fear throwing things away for three main reasons. For some, it makes them feel secure; others do it simply because they are disorganised, and don’t know how to store things in an orderly way; and hoarding gives certain people a sense of belonging or involvement. An e-Hoarder is like any other hoarder; they are just moving this habit from the physical world to the cloud, taking advantage of the limitless storage space it offers to store things and then often to forget about them. As usage of cloud services grows, I’d expect to see more people becoming e-Hoarders.”

*“As one e-Hoarder notes: “I guess I could start deleting but why would I? I’d probably buy more space.”*

## Face the facts

- Almost half of Brits (48 per cent) are concerned about losing important or valuable information stored in cloud services
- Almost half (49.5 per cent) are uncomfortable with storing valuable or confidential information online, yet 32.5 per cent say they do it in spite of this
- 44 per cent are concerned that information sent via cloud email could be stored by a service provider in another country

## 3. Cloud Sceptics

### The Cloud Sceptic

Often a freelance worker or self-employed person needs to be mobile.

There is a sense that they have to be connected simply because everyone else is connected, but this is said with some discomfort. Cloud Sceptic, Mark Anthony Brown, a 28 year-old artist, says he feels less comfortable the more he uses cloud services. So his position is one of feeling concerned about control as he wonders who, or what, has his digital assets.

The Cloud Sceptic position is contrary but important. They tend to be influential in their networks and are critical consumers. As a potential detractor they are a threat to cloud service providers. They will be quick to identify a lack of transparency or credibility in cloud service offerings and are able to communicate this effectively.

The third profile identified was the Cloud Sceptic. These are people who are deeply reliant on cloud services, with a tinge of mistrust or regret. They are unable to distance themselves from the cloud because of the ease of access. They have extensive social networks but deny that their personal life is enabled and informed online. They are confused about how much of their data is stored in the cloud.

Cloud Sceptics are defined in our survey by how much they use cloud services – more than 2 hours each day – and their mistrust of cloud service providers to ensure the security and privacy of their digital assets or data. We found that 1 in 5 (20 per cent) UK adults surveyed are Cloud Sceptics.

#### Key characteristics:

A typical Cloud Sceptic:

- Enjoys ease of access and the way cloud services makes their life easier
- Extensive social networker but laments the loss of interpersonal interaction and physical artefacts
- Worries about control of data and wants to see more transparency of cloud services

#### In the cloud we trust – kind of

In their concern about access and control of data in the cloud, Cloud Sceptics echo the worries of a wider group:

- There is at least some lack of trust of cloud service providers amongst almost 70% of respondents regarding the privacy or security of their information
- Almost 1 in 10 (9%) don't trust cloud service providers at all

There is clearly a balance to be struck regarding usability and access on one hand, and security and privacy on the other:

- The main reasons people use cloud services all relate to ease: the top three are that they are easy to use, they are easy to access and they just make life easier.
- People's top three concerns regarding using cloud services: security, privacy and transparency regarding where information is and what's done with it

## 4. 2020 Teenager

### Cloud concerns

It is no surprise that people voice concerns about the transparency, reliability and security of online data.

The fourth and final profile identified by the study (but not involved in the survey) was the 2020 Teenager. The pre-teens interviewed by CAST will be teenagers in 2020. This group are 'digital natives' - cloud is simply life as they know it. They reveal much about the future direction of cloud services and usage.

Unlike many of us, who have crossed the offline to the online experience and still straddle both worlds, this group does not distinguish between hardware, software or data - all of it is disposable. They presume innovation in the cloud services they use.

### Key characteristics:

A typical 2020 Teenager is:

- More interested in the interface and the interaction – the controller, the touchpad or the display – than the data.
- Think that data is disposable, although valued digital memories such as special digital photos and mementos.
- Think storage should be seamless and limitless – just there.
- Cloud services come naturally for this group having never known a pre-digital world where physical artifacts are stored and valued – cloud is simply life as they know it.

While they don't yet fully understand the concept of digital inheritance, it's clear that, when prompted, they have a burgeoning awareness of things they might deem digital treasures.

### Treasured memories

We asked a group of pre-teens what they would want to keep if they no longer had access to their computer and online services. One 9-year old described the importance of treasured memories he keeps online, such as his first day at school or when his sister was born:

*"I'd [want to] email my special pictures to me, like my little brother when he was a baby and my little sister when she was first born. [Even] Pictures of me at home in my school clothes getting ready for my first day at Peckham Park. Those pictures are really special."*



# 2020 Future Forecast

Looking to the future, 7% of the UK adults surveyed would be willing to move everything that could be moved to the cloud.

Regarding the world 2020 teenagers will inherit, survey participants also gave their views on what things will be like in the future:

- 3 in 10 (31.5%) UK adults think that all their music will be stored and/or accessed online, and they won't own any CDs, etc (41% of 18-24 year-olds think this, compared to 24% of the 55+ year-olds surveyed)
- 38% said that the CD would be a collector's item (Interestingly, 43% of the 55+ age group agreed with this, while only 32% of the 18-24 year-olds did – maybe reflecting the attachment older people have to CDs?)
- 17% believe they won't own any DVDs or other physical video formats.
- 28.5% said the DVD would be a collector's item (Similar to their views on CDs, 35.5% of the 55s and over agreed with this, while only 20.5% of 18-24 year-olds did).
- 25% believe they will no longer print photos
- 14.5% said they wouldn't own any physical books
- 11% believe they won't own a TV, using their computer or similar to access programmes
- 16% believe their household appliances, e.g. their fridge, will access the Internet and automatically order more essentials when they are running low



# Rackspace advice for cloud consumers and (business) cloud customers

## Conscientious cloud consumers

- **BE SELECTIVE:** The cloud offers convenience, immediacy, and low costs, and is the natural next step on from many of the shared services (myspace, gmail, facebook) that we've come to take for granted. Just be sure that your chosen cloud provider is big enough to have a reputation to lose so that when problems arise, they will make a genuine effort to fix things. Equally, check that they're doing well financially, so that you can rely on them for some years to come.
- **TREASURES:** Almost a quarter (24%) of UK adults estimate that they have 'digital treasures' worth more than £200 per person in the cloud. Make sure your digital assets are adequately protected with strong passwords – or better, passphrases. Store your most precious treasures in more than one cloud, as a belt-and-braces protection against failure of any one service.
- **PRIVACY:** Be aware that cloud services are inherently accessible, so consider how you would feel if your cloud content became public. If your content is private, consider using encryption software to make it secure before you store it in the cloud. And read the small print – some providers deploy so-called “social advertising” which uses your content to drive their adverts – content you may think of as private.

## Business cloud customers.

- **ECONOMICS:** Cloud has huge economies of scale that get passed on to the consumer. In addition, cloud transfers what is typically CapEx (large upfront expenditures) into OpEx (ongoing operational costs) and enables pricing commensurate with usage. If pricing variability and budgeting is a concern, consider a pricing plan that offers a predictable price. Also, don't just look at raw cost. Generally, best value solutions are superior to lowest cost. Consider all the factors including support, customer service, reputation, reliability, etc. when measuring value.
- **SECURITY:** Data security, privacy and intellectual property protection in the cloud computing Software-as-a-Service (SaaS) model should be approached with exactly the same levels of exhaustive defences as traditional IT security provisioning. Be sure to ask potential cloud providers about security from technical, operational, and control perspectives, as well as what experience they have being stewards of customer systems and data. If the public cloud is fundamentally not secure enough, consider an on-premise cloud, virtual private cloud, or some sort of hybrid cloud solution.

- **AUDIT CONTROL:** First steps for any firm looking to initiate a migration to cloud computing are to undertake application and data audit procedures to determine an accurate point from which to start.
- **POLICY:** Policy controls are needed to manage what users do in the cloud -- almost 3 in 10 (29%) of users who have something stored online never or rarely delete anything. Typically, these users will also be sloppy when it comes to naming files and folders.
- **TRUST:** There is often a lack of trust of cloud service providers; almost 70% of respondents questioned regarding the privacy or security of their information mentioned lack of trust. There is much user education on the cloud still to be done.

## Contributors

Dr. Chris Brauer, Co-Director of CAST, Goldsmiths College is Senior Lecturer in Computing and the spirit behind the CAST initiative. He works with emergent technologies at the intersections of media, social science and computing.

Dr. Jennifer Barth is a social researcher and lecturer at CAST, Goldsmiths College. She is experienced in qualitative research methods and analytical assessment informing policy and practice on ethics and community impact.

Prof Robert Zimmer is Co-Director of CAST and Head of the Computing Department at Goldsmiths College. He has worked tirelessly to integrate core applied computing skills with creative and social disciplines. Richard Lewis, Yael Gerson and Marcus Gilroy-Ware all contributed to the project in key areas.

## Methodology

The CAST research team was immersed for two weeks in online and offline social spaces (digital ethnography) while using multiple and mixed methods to acquire data (Radial Research). As a method of digital ethnography, Radial Research is a unique approach designed by CAST researchers to rapidly obtain credible and transparent findings. Starting from an epicentre, in this case 'the cloud', the researchers follow lines of possibility found through crowdsourcing, interviews and online interactions to make visible spaces and subjects interacting with the cloud. Each site is distinct but interacts and intersects with others, such that, like the ubiquitous notion of the cloud, no site is ever completely without links to others.

15 participants were interviewed between 15 and 18 July and one year five class of nine and ten year olds. Three students were interviewed separately after the class.

## OnePoll

For the quantitative research, Rackspace commissioned research house OnePoll to survey 2,000 adults across the nation to provide a representative sample of UK adults aged 18 years and over.

# About Rackspace

Rackspace Hosting is the world's leading specialist in the hosting and cloud computing industry, and the founder of OpenStack, an open source cloud platform. Rackspace provides Fanatical Support® to its customers, across a portfolio of IT services, including Managed Hosting and Cloud Computing. Rackspace was recognised by the 2011 Sunday Times Best Places to Work and the 2010 Financial Times Top 50 Great Place to Work in the United Kingdom for the sixth year in a row. The company was also positioned in the Leaders Quadrant by Gartner Inc. in their 2010 Magic Quadrant for Cloud Infrastructure as a Service and Web Hosting. For more information, visit [www.rackspace.co.uk](http://www.rackspace.co.uk).

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