



# HYPERSCALERS CLOUD MONITOR IN BELGIUM

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Research Report

November 23







# I. Introduction

Over the last decade, the technological landscape of many organisations has seen a transformative shift. Cloud computing delivered by hyperscalers has emerged as a driving force to enhance the IT value proposition. This has triggered larger transformations from both a technological and a governance perspective, enabling ground-breaking business digital transformation.

While Cloud technologies are increasingly becoming mainstream, the journey to adopt and operate an enterprise-grade Cloud platform is not without its challenges. It requires capabilities that are still in development for many organisations.

This study aims to present a barometer of Cloud adoption from hyperscalers (i.e., IaaS and PaaS Cloud, with solutions such as Amazon Web Services, Microsoft Azure, and Google Cloud Platform), it is therefore not covering SaaS Cloud, which has a different approach and set of challenges. The study analyses Cloud adoption within Belgian organisations, outlining their journeys, understanding their drivers and challenges, and sharing the lessons learned to help other organisations in their Cloud journey.

## II. Demographics and methodology

We opted for an interview-based approach as it enables us to capture the specific nuances and insights acquired during each organisation's Cloud journey.

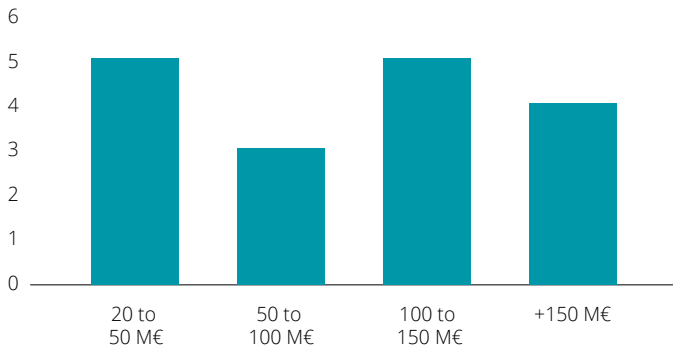
We interviewed 17 Belgian organisations, from a range of industries, all of which embarked on their Cloud journey at least two years ago, allowing enough time for them to bring their experiences and insights to the study.

We retained mid-sized to large organisations to ensure relatable context, opportunities and challenges. While Cloud solutions encompass IaaS, PaaS and SaaS, our focus was on IaaS and PaaS solutions: therefore, when we refer to "Cloud" in this study, we mean Cloud solutions from hyperscalers.

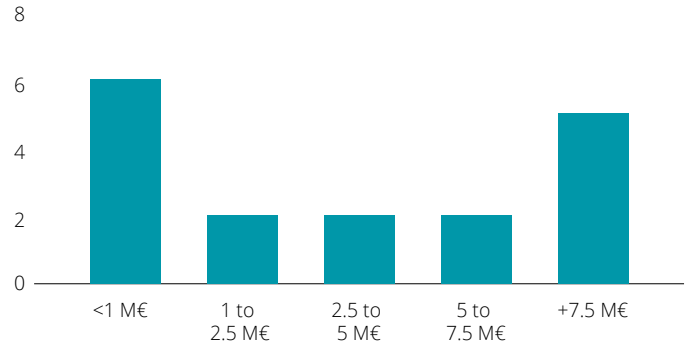


# Respondents profile

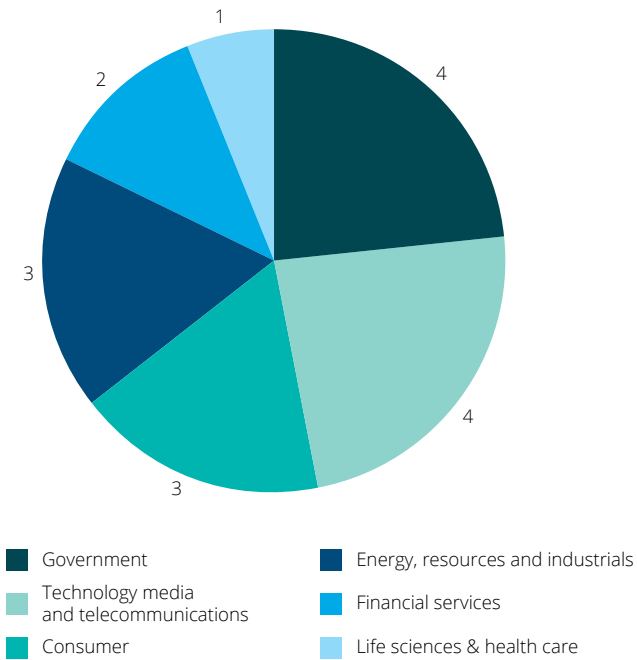
**Respondents yearly IT Budget (M€)**



**Respondents yearly cloud consumption (M€)**

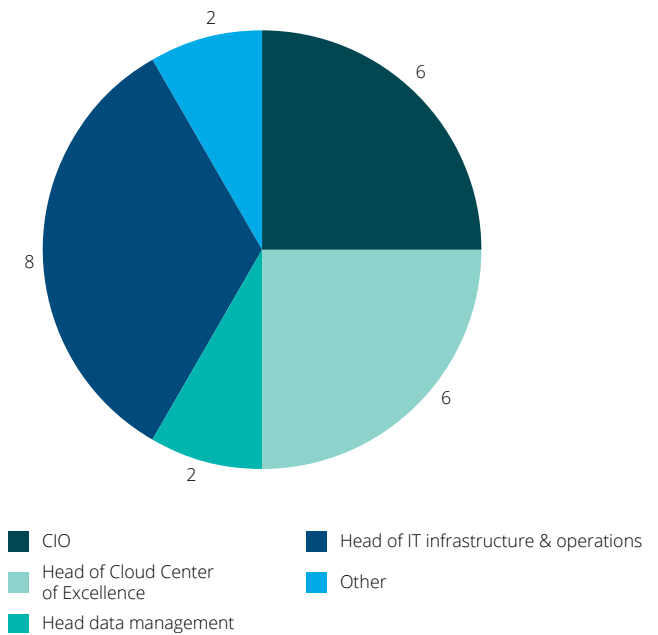


**Respondents industry**








**Respondents role**

(Total is higher than 17 as some organisations had multiple interviewees)



# III. Themes

-  01 When and how the Cloud journey started
-  02 Cloud adoption drivers and strategy
-  03 Cloud adoption inhibitors and mitigations
-  04 Workloads and usage
-  05 Operating model

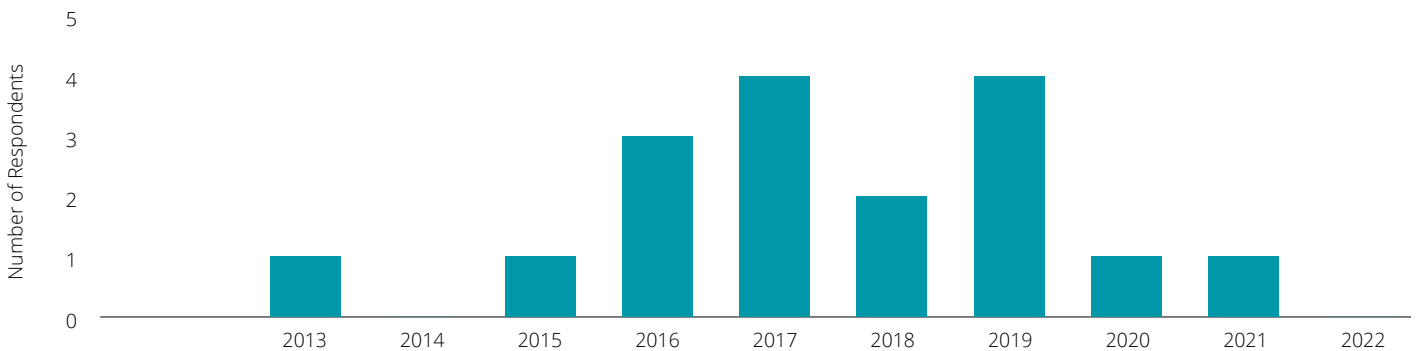




## Theme 01: When and how the Cloud journey started

While most companies embarked on their Software as a Service (SaaS) adoption more than a decade ago, their leap towards hyperscalers' Public Cloud such as AWS, Azure, and GCP came notably later. The move towards SaaS solutions was predominantly driven by business needs, on the other hand, hyperscalers adoption with Infrastructure and Platform Services (IaaS and PaaS) were largely led by the IT departments within organisations.

### Hyperscaler cloud adoption starting year



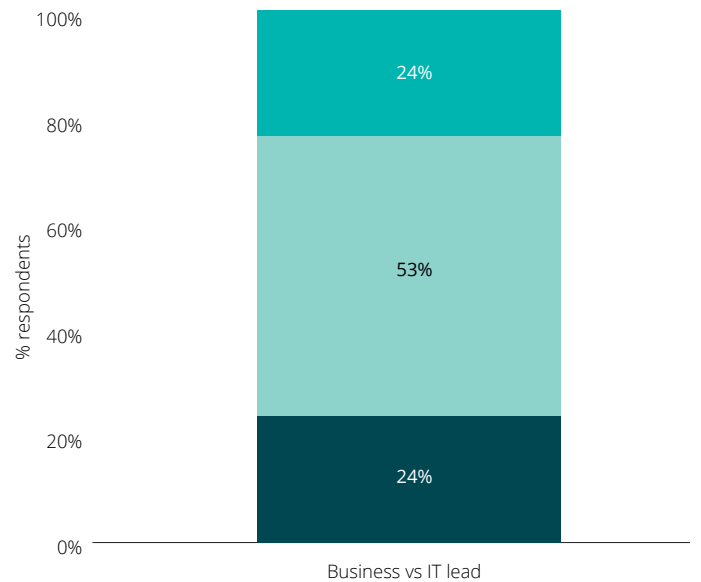
For most interviewees the Cloud journey began as an innovation project. Governance and operating model discussions were kept to a minimum, if not completely overlooked.

In larger, more structured Cloud journeys – that were mostly IT-led – the need for an adequate Cloud Operating Model, while understood, was often underestimated.

This was mostly because:

- The impacts of the Cloud on IT departments were often initially seen as an extension of the data centre. Many organisations failed to grasp that tangible efforts are needed to build an enterprise-grade Cloud platform (i.e., this does not come out-of-the-box from the hyperscalers).
- To leverage the Cloud technology capabilities, it is often required to rethink how applications are designed, built and operated.
- Many underestimated the opportunity to enable product-oriented organisations and to adopt a “you build it, you run it” approach facilitated and sometimes enforced by Cloud-native applications.

### Cloud journey initial lead



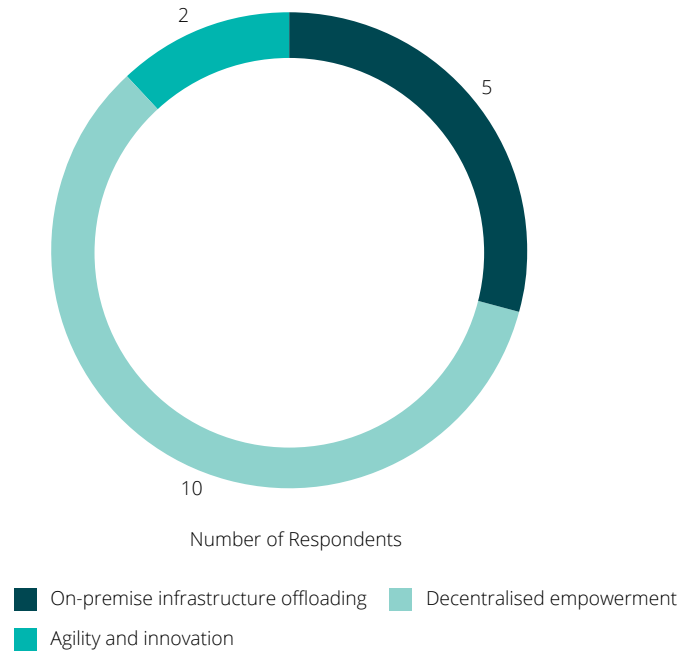
Business-led IT-led Co-led by IT and Business

## Theme 02: Cloud adoption drivers and strategy

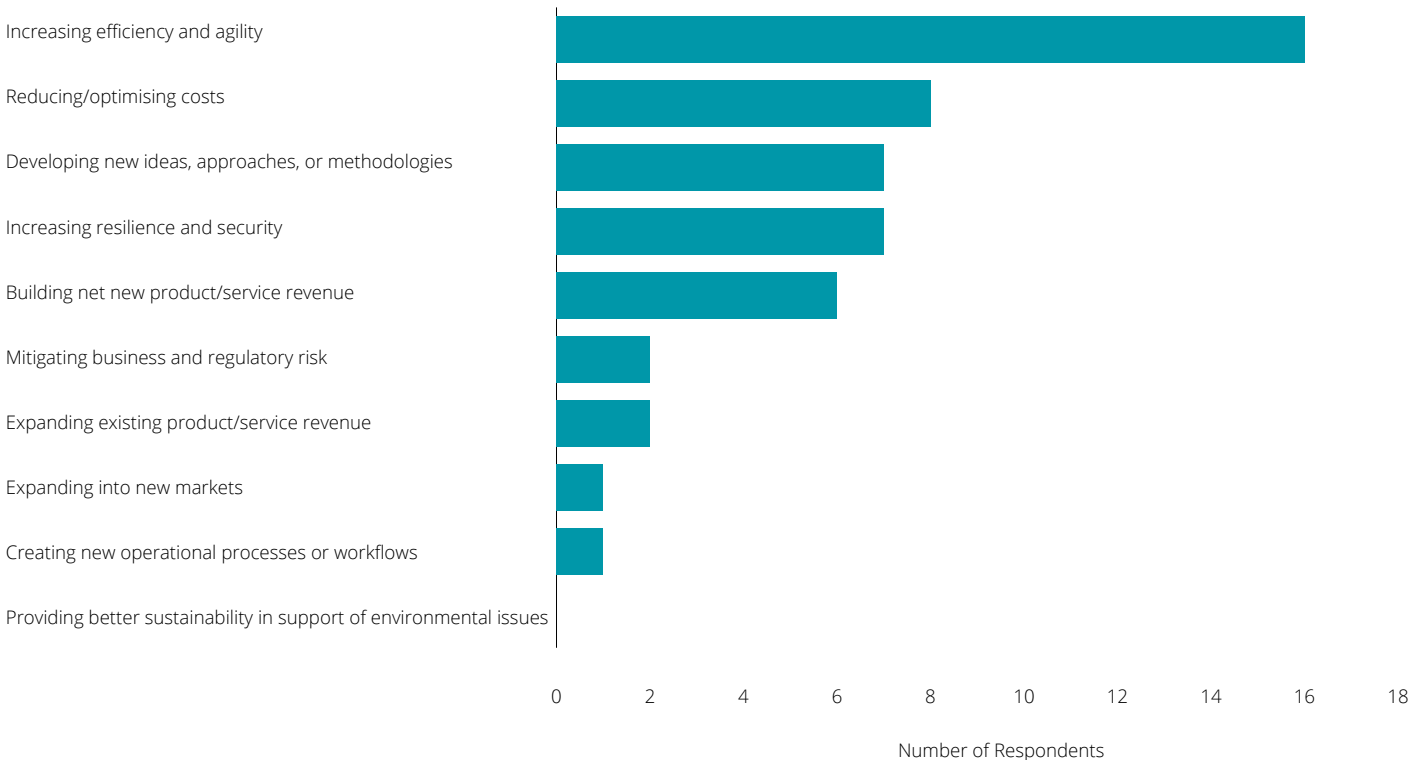
Our survey unveiled three distinct archetypes in the underlying drivers and strategies for Cloud adoption:

1. **On-premise infrastructure offloading:** organisations aiming to offload their on-premise infrastructure, driven by objectives such as partially delegating non-core infrastructure capabilities, better resilience and more robust security. This 'lift & shift' approach primarily leverages IaaS rather than PaaS, and often comes with the clear ambition to fully decommission data centres to remove associated fixed costs and specific skill requirements.
2. **Agility and innovation:** organisations adopting Cloud technology to increase agility and drive innovation. This typically focuses on the usage of PaaS (and less IaaS) for the development of new applications, while also selectively transitioning and modernising existing applications when deemed beneficial. This is often done alongside other application changes, such as upgrades.
3. **Decentralised empowerment:** organisations with limited central Cloud strategy are giving significant freedom to application development and product teams on their Cloud adoption. This approach fosters autonomy at the team level.

Cloud adoption archetypes



### Cloud adoption key drivers



## Case example

One notable success story from these interviews revolves around a company grappling with challenges in its data centre which led to delays in provisioning, outages, and scalability issues. In response to these obstacles, the organisation underwent a comprehensive IT-led transformation, relocating the entire data centre to the Cloud. This strategic move not only resolved ongoing outages and scalability challenges but also initiated a new path wherein development teams assumed accountability for both their applications and the underlying infrastructure, embodying the ethos of “you build it, you run it.”

As a result, the development pace was expedited, catalysing business growth through the introduction of new products and services facilitated by Cloud capabilities. This growth highlighted the need for additional central governance and control to strengthen security and resilience. Consequently, the organisation is currently in the process of implementing an enhanced governance framework reinforced by well-defined Cloud guardrails, all while striving to maintain a balance between autonomy and control.

Alongside the centrally managed guardrails, platform teams are being structured to ensure the provision of secure and standardised Cloud services in a self-service mode for development teams. This multifaceted approach aims to combine the benefits of streamlined autonomy with the necessary safeguards and controls, fostering a resilient and secure Cloud infrastructure.



## Theme 03: Cloud adoption inhibitors and mitigations

During their Cloud journey, organisations faced several challenges that depend on the current maturity level. Typically, at the start of the journey, organisations faced 2 main inhibitors: Security & compliance, and vendor lock-in.

### Security and compliance

Security and compliance ranked high in the concerns voiced by the interviewees when they started their Cloud journey and it encompasses the following points:

- Cybersecurity: risk of data breaches, unauthorised access, and service disruptions
- Regulatory compliance: violating legal and industry-specific regulations when handling data and applications in the Cloud (e.g., GDPR, NIS2, ...)
- Data custody risk: threat of losing control and access data stored in the Cloud, whether due to government intervention, provider's financial instability, or other factors beyond the client's control

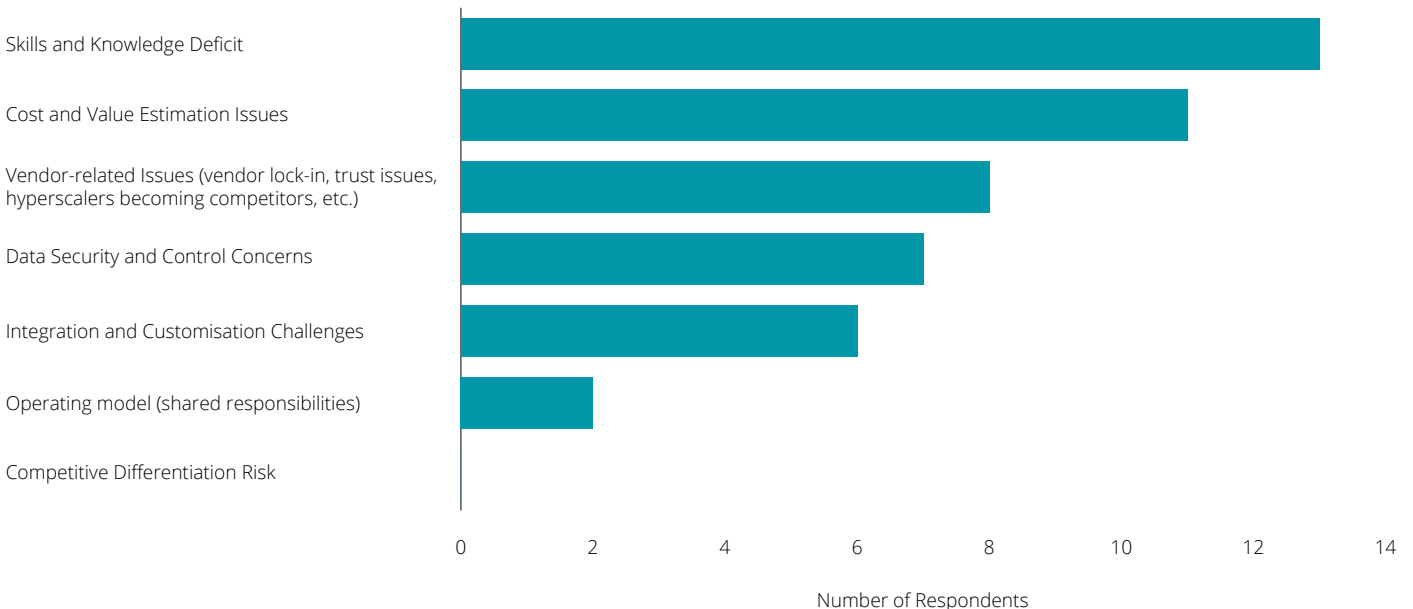
Cybersecurity was mainly seen as a Cloud skills-related risk (e.g., wrong setup of Cloud architecture), which was often being mitigated through the setup of a Cloud Centre of Excellence (CCoE) working in close relationship with the CISO organisation.

Regulatory compliance risks were the most predominant, where the recent adoption (in July 2023) by the European Commission of the EU-US Data Privacy Framework has been perceived as a key lever. This is also being addressed through the implementation of Cloud Control Frameworks whereby the Cloud architecture and guardrails are aligned with the data classification.

Data custody risks are seen as very low probability and potentially already existing with today's on-premise data centres. Some (rare) respondents are mitigating this by copying their data on a second Cloud provider (they would, however, incur a significant time to recover, as the application environments would have to be rebuilt).

From a general standpoint, the security-related inhibitors are less prominent thanks to improved risk management enabled by a better understanding of the risks, and traceability towards technology and governance-related measures. Consequently, most respondents estimate that the residual risks is similar or lower end up being similar or lower compared to on-premises ones.

### Cloud adoption key Inhibitors



### Vendor lock-in

As often, when onboarding a new strategic technology into a landscape, concerns over vendor lock-in was expressed by most of the interviewees. This is reinforced in the case of cloud solutions, given the large share of IT budget these platforms can potentially capture.

From a technology perspective, several mitigations have been observed among the interviewed organisations:

- Adoption of cross-platform technologies such as Terraform for automation of the infrastructure deployment.
- Adoption of guidelines to only leverage technologies with a higher degree of portability, such as virtual machines, for more critical applications. This approach has however the downside of restricting the Cloud benefits to mainly IaaS and limited PaaS services.
- Elaboration of exit strategy to maintain a viable option to migrate applications and data out of the Cloud platform, based on the ability to restore applications on another platform (typically achieved by leveraging Infrastructure-as-Code) and the ability to retrieve data from another platform (achieved through backup strategies – e.g., third copy).

While opting for a multi-Cloud approach may appear to be a straightforward solution to mitigate the risk of vendor lock-in, enhance negotiation leverage, and bolster resilience, the practical implementation is considerably challenging. This complexity arises due to the substantial investments and dedicated focus necessary to establish a robust foundation in the Cloud environment. Our observations indicate that a majority of respondents have chosen to concentrate their efforts on a single Cloud platform initially. The adoption of a multi-Cloud strategy at scale is typically deferred until a level of organisational and technological maturity is achieved.



As these first hurdles of Security & compliance and Vendor lock-in were overcome and Cloud adoption increased, the next set of key challenges were mainly Cloud skills & knowledge, value and cost control:

**Cloud skills and knowledge**

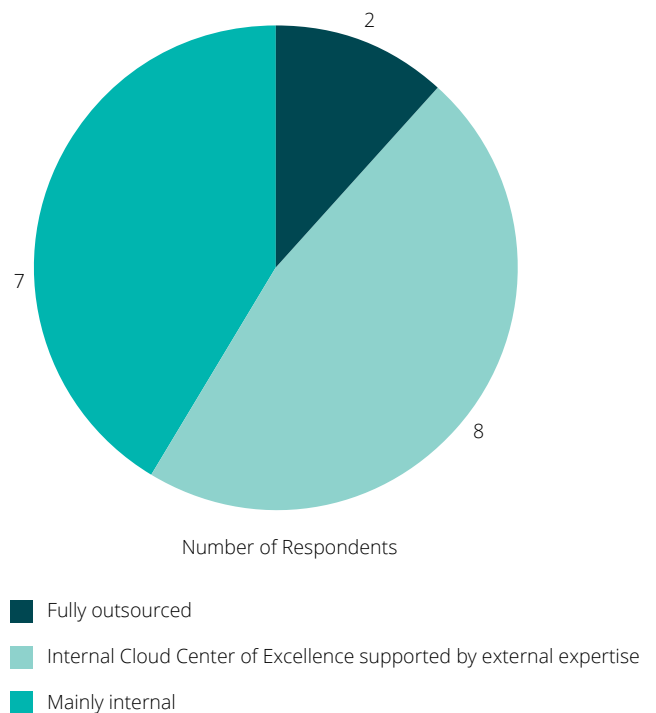
The majority of the respondents mentioned difficulty finding the right skills and knowledge required to design, build and operate their Cloud environment with enterprise-grade expectations. We observe this generally in Belgium, where the demand is significant, but the skills are still nascent. As a result, it creates tension in the job market.

The respondents combine various strategies to overcome this challenge:

- The setup of a Cloud Centre of Excellence allows a dedicated team to focus on the Cloud and build knowledge and expertise without being disrupted by non-Cloud related issues. The skills building relies upon training, augmented by hands-on responsibilities.
- Organisations often leverage external source of talent. It helps overcome capacity issues especially with larger workloads in phases such as foundation design and building. The most observed sourcing options are staff augmentation or project-based engagements.

- The way of engaging with external talent sources also plays a role into building the Cloud skills:
  - Organisations rely upon the external parties to take responsibility for some activities, but also expect their internal resources to contribute closely to the project. Through such collaboration, the internal teams benefit from the external expertise to grow and become more autonomous and less dependable on external talent.
  - Some organisations decided to fully outsource their Cloud management services, thereby reducing the need of internal skills, although there is increasingly a realisation that some capabilities need to remain inhouse such as Cloud FinOps and Cloud architecture.

**Cloud platform build & run sourcing**



**Case example**

One of the respondents began their Cloud journey with the adoption of IaaS services to achieve elasticity for their compute services using a traditional governance model. After a few years, adoption of PaaS services increased and a new governance model was required to secure usage of the latter while providing the right level of autonomy to application teams. Therefore, the respondent adopted a new and more robust risk-controlled approach to Cloud where key risks were identified and mitigation actions and controls were implemented before the use of related Cloud services.

One such key action was the creation of a Cloud Center of Excellence (CCoE) with a strong internal control on key capabilities and reinforced with external support for capacity and expertise. This CCoE is accountable for not only building a secure and compliant Cloud platform foundation, but also the creation and maintenance of the self-service catalog, where each Cloud service offered to the organisation is first reviewed and then provided with the appropriate security policies (security guardrails implemented as code). This is done through a standardised “service onboarding” process, ensuring an enterprise-grade Cloud security and compliance.

Although this approach required a 9 month lead time to build the first foundations, it then helped accelerate the usage of Cloud as the services could be deployed in minutes for all projects while ensuring security and compliance.

### Value estimation and cost control

When moving to the Cloud, the consumption-based model brings a set of challenges and uncertainties.

Firstly, the design of applications in the Cloud can significantly impact the related Cloud costs, and therefore Cloud consumption must be a key consideration from the start. This applies when an application is built on or migrated to the Cloud, but also during its entire life cycle, as the consumption is expected to continuously evolve as business activities trigger storage of new data, potential increase in compute needs, etc.

When migrating applications to the Cloud, most respondents implemented basic FinOps capabilities such as:

- Create cost visibility per application, creating accountability with the application or product teams
- Centralised optimisations such as reserved instances or commitment plans, and rightsizing

Secondly, the shift from a Capex model to an Opex model triggered some challenges in organisations' budgets (while this was very present in public sector given their budgeting approach, it was also present in other industries where, for instance, shareholders value Capex vs Opex differently).

Some respondents highlighted the challenge to compare Cloud costs against on-premise infrastructure given the difficulty to fully grasp on-premise costs (with shared resources, depreciated assets, etc.) but also due to the broader impact of Cloud which can not be limited to bare-metal value (e.g.: accountability delegation to the Cloud provider, agility and innovation acceleration, security, etc.).

This is one of the key reasons why we observed a limited number of respondents incorporating detailed cost comparison as a key criteria to decide on Cloud migrations.

### Case example

One of the more mature FinOps approach was performed by an organisation that established a dedicated FinOps team. This team not only created advanced dashboards to closely monitor the Cloud usage of all applications, but it also had the mandate to question application owners when there are discrepancies or unexplained variations in Cloud consumption compared to the planned budgets. However, despite the remarkable visibility into costs provided by this model, it falls short in controlling the escalating Cloud expenses.

In response, the organisation is further maturing its FinOps approach in several areas:

- Enhancing the architecture function to embed Cloud cost considerations from the early stages of the application lifecycle.
- Appointing specialised roles, either within the architecture team or in a dedicated team, to provide ongoing support to application teams in optimising Cloud consumption.
- Integrating FinOps metrics into a broader IT and business dashboarding initiative, enabling a better grasp of how Cloud costs align with business growth, among other factors.



## Theme 04: Workloads and usage

While almost all interviewed companies are running Web and Data warehousing workloads in the Cloud, some of the other workloads, such as IoT, machine-learning and AI are also very strong candidates for the Cloud, but are driven on a use-case basis.

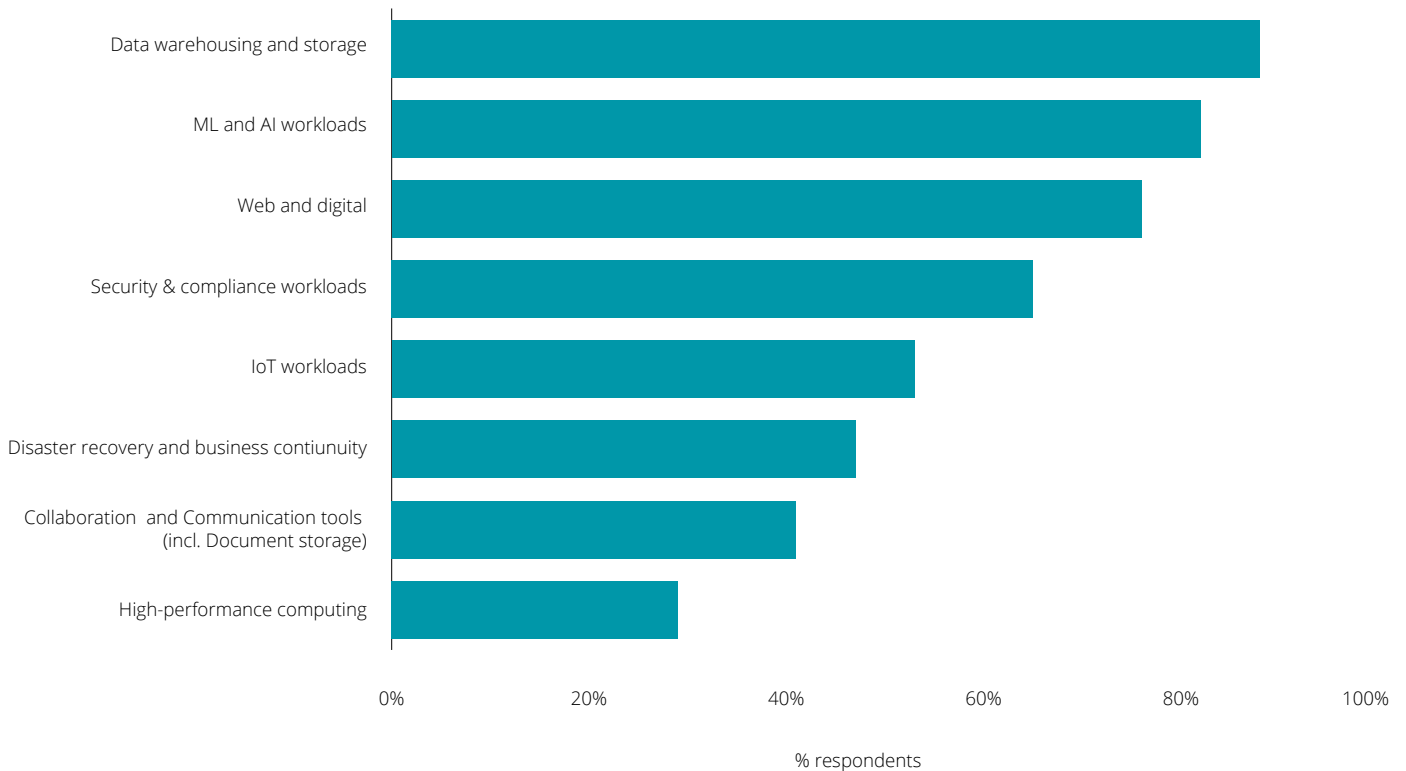
When it comes to web applications, Cloud adoption is primarily driven by its user-friendly setup and scalability. PaaS solutions allow web development teams to concentrate solely on the application layer while leaving the management of the underlying infrastructure to the hyperscale Cloud providers.

For IoT, ML and AI, the Cloud enables organisations to adopt these technologies at a favorable price-point as building similar on-premise capabilities would require significant investments for use-cases that are often still nascent.

A particular workload is high-performance compute, where we see the Cloud being adopted for compute bursts while keeping the base load on-premise for cost efficiency. Among the interviewees, the identified use cases for high-performance compute are mostly related to complex calculation in engineering and R&D contexts, or to media production.

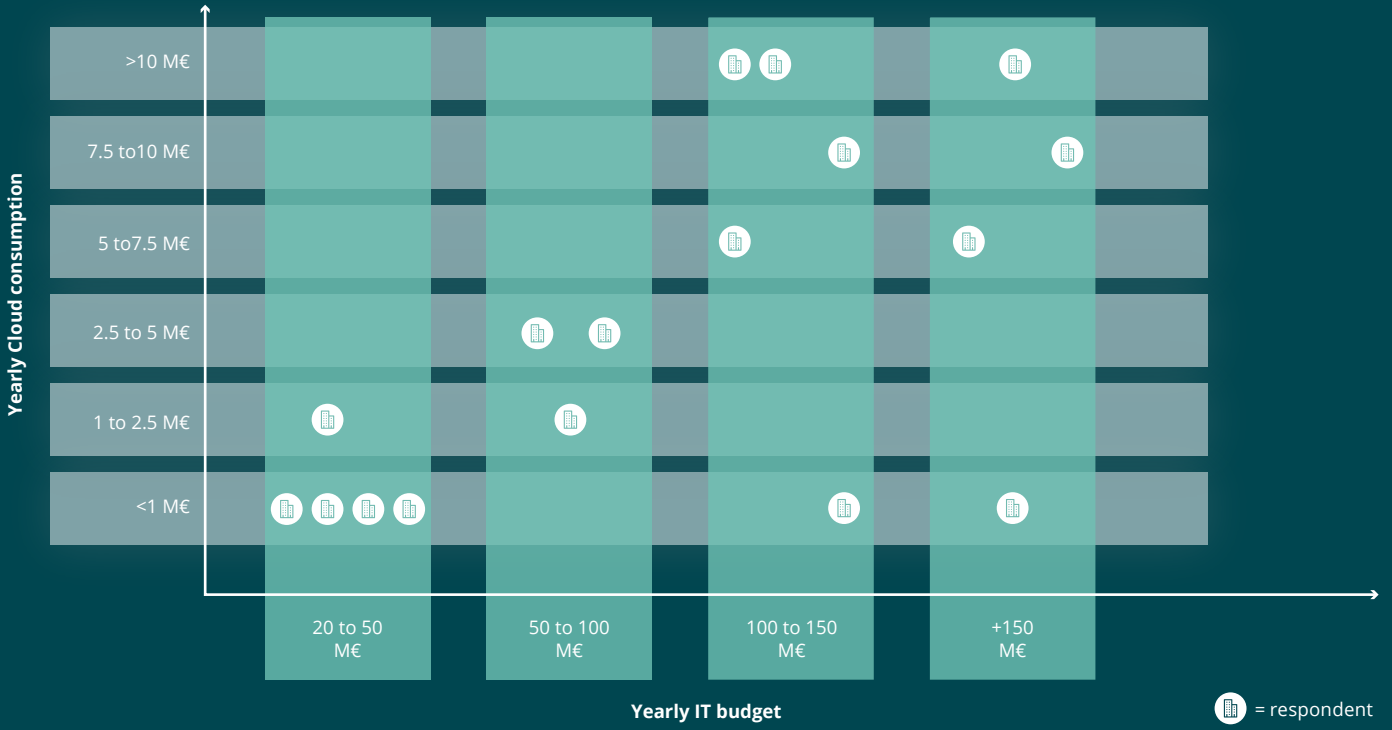
While several respondents initially had a de facto multi-Cloud environment in place, often with an organic or fragmented set up, a significant majority opted to streamline operations by focusing on a single Cloud to accelerate maturity growth. Prioritising this single Cloud was typically driven by the existing platform footprint and affinity, signalling a shift from experimentation to mainstream adoption. This is anticipated as a sustained growth trajectory with approximately half of the respondents foreseeing a cloud consumption growth exceeding 15% per year in the next few years.

### Workloads running in the Cloud (% of respondents)

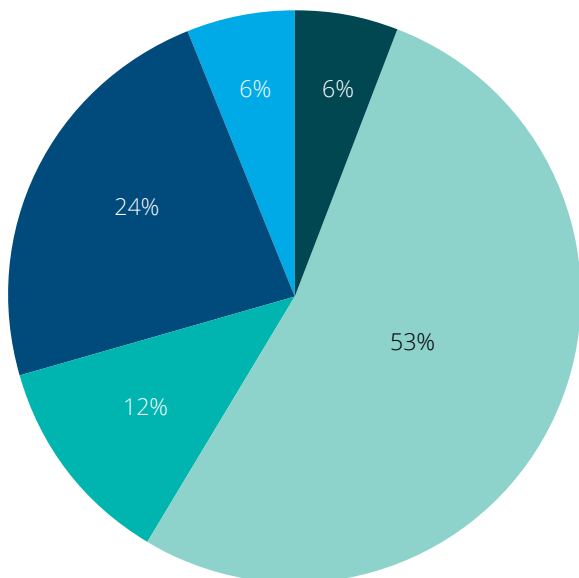




### Respondents' Cloud consumption and IT budget



### Respondents' retained standard Cloud platform



Number of Respondents

- AWS
- AWS & Azure
- AWS & GCP
- Azure
- AWS & Azure & GCP





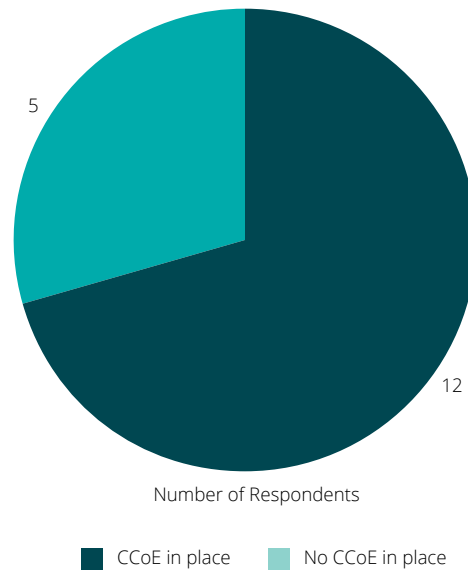


## Theme 05: Operating model

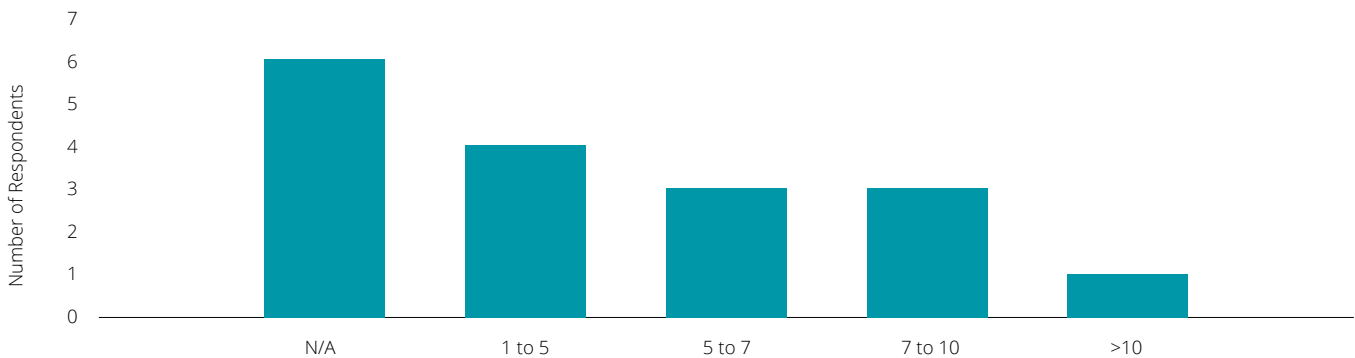
While most organisations adopted Cloud bottom-up, there is a strong trend to revisit the Cloud operating model and related architecture as maturity increases. This enables the organisation to provide an “enterprise-grade” Cloud platform which fulfills the security and compliance requirements while leveraging Cloud best-practices for agility and cost optimisation.

A first step in this journey is often the setup of a Cloud Centre of Excellence (CCoE), which enables focus and creates an embryo of Cloud expertise that not only leads the Cloud platform but also supports the IT change management across the organisation. This is reflected by 12 out of 17 respondents having a CCoE in place (although with a very varying range of capabilities and accountabilities). As the Cloud maturity of the organisation augments, an increasing number of responsibilities of the CCoE shift towards the ‘traditional’ IT teams.

Cloud Center of Excellence established



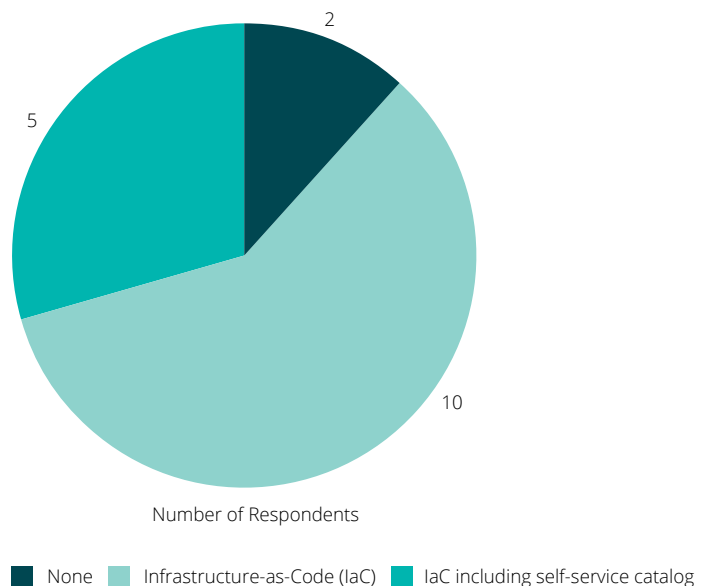
Number of FTEs in CCoE



We found that the days of building and operating a Cloud platform with manual operations are largely over, as 15 out of 17 respondents using infrastructure-as-code (IaC), thereby benefiting from increased productivity while ensuring stronger resilience and lower risk of manual errors.

The Cloud Service Catalogue, enabling application development and product teams to self-service pre-approved Cloud services, is another key milestone in the Cloud operating model journey. It ensures all Cloud services in use are as per compliance, security and architecture guidelines of the organisation (guardrails implemented in the platform) while keeping the near real-time agility that the Cloud offers. This is a strong best-practice that most respondents aspire to, but only 5 out of 17 respondents have in place today.

Level of Cloud platform automation



# Conclusion

Cloud best-practices have been evolving rapidly in recent years and as we are still in the early days of this paradigm change our survey respondents were keen to share and learn with other organisations.

In terms of drivers, adoption of Infrastructure and Platform Services (IaaS and PaaS) were largely led by the IT departments within organisations. However, the need for an adequate operating model, while understood, was often underestimated. The three distinct patterns in the underlying drivers and strategies for cloud adoption were on-premise infrastructure offloading, agility and innovation and decentralised empowerment. However, during their Cloud journey, organisations faced several challenges that typically depended on their current maturity level. Concerns of security and compliance, including cybersecurity, regulatory compliance and data custody risk while in existence, were less prominent thanks to improved risk management.

The perennial problem of vendor lock-in continues around Cloud adoption, with users continuing to weigh up the risk/benefit of answers such as cross platform and multi Cloud solutions.

Many organisations highlighted the war for talent, having difficulty finding the right skills and knowledge required to design, build and operate their Cloud environment with enterprise-grade expectations. To address this, many opted to set up a Cloud Centre of Excellence, often working with external talent.

Organisations face further challenges as they attempt to optimise their Cloud costs.

In conclusion, while we observed very different Cloud adoption drivers, approaches and velocity, there are several commonalities emerging across the respondents:

- Cloud is a fundamental shift: the question is no longer “if”, but rather “where and when”
- Enterprise-grade cloud foundations and operating models are not negotiable and require tangible effort
- Given this required investment, organisations typically adopt a single-cloud first approach which will be revisited once sufficient maturity and scale has been reached



# Key Contacts



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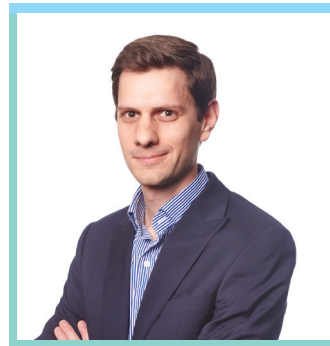
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# Word of thank

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Sincerely

**Lorem ipsum**

## **Interviewees in order of appearance:**

Name, Client

Name, Client

Name, Client

Name, Client

Name, Client



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