FORM3

FROM CLOUD TO MULTICLOUD, PATHWAY TO RESILIENCE

Finextra®

01
Foreword

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The term "multicloud" has various interpretations, each offering different levels of resilience and reliability for bank payment platforms. Financial institutions may believe they have implemented a true multicloud model, but discrepancies in definitions can lead to confusion. This summary compares four cloud approaches—Single Cloud, Multi-cloud (procurement), Multi-cloud - Active/Passive, and Multi-cloud - Active/Active—to clarify the differences and determine the most resilient and reliable options for financial institutions in their journey to the cloud.

Single Cloud

A single cloud provider offers benefits over traditional data centres, such as running applications across multiple Availability Zones and regions. However, managing a single platform across regions is challenging due to data consistency and latency concerns. Sole reliance on one provider also poses a risk of vendor lock-in.

Multi-cloud (procurement)

This approach allows teams to select the best-priced or technically suited infrastructure from multiple cloud providers. However, interfacing services built in different clouds can be difficult, potentially leading to a complex architecture and reduced resilience if issues arise in any of the cloud providers.
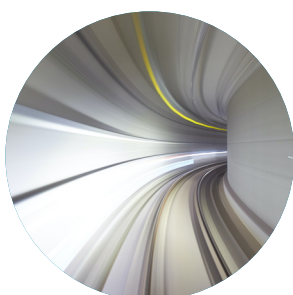
Multi-cloud - Active/Passive

The Active/Passive model involves a standby platform in an alternative cloud, which can result in longer recovery times and increased downtime during failures. The idle nature of the passive environment can be inefficient and risky, as it may not function as expected during a disaster. Data consistency and application configuration across providers can also be challenging.

Multi-cloud - Active/Active

An Active/Active model deploys services in a single cluster across cloud providers, ensuring consistent operation. Customers can load balance requests at all times, eliminating uncertainty around infrastructure state. The platform can withstand the loss of a full cloud region or provider, with failed requests automatically re-sent to an alternative cloud. Real-time data consistency is maintained across providers, ensuring data state remains unaffected by cloud disruptions.

The Active/Active Multi-cloud approach is the most resilient option for financial institutions, offering robust data consistency and the ability to withstand cloud provider or region loss.

CLOUD MODEL RANKINGS

Single Cloud   -   Resiliency Rating ★

- *Single cloud provider offers benefits over traditional data centres*
- *Achieving data consistency and managing latency is challenging in single platform across multiple regions*
- *Sole reliance on one cloud provider presents risk of provider lock-in*

Multi-cloud (Procurement)   -   Resiliency Rating ★★

- *Multi-vendor strategy empowers tech teams to choose best price or technical fit*
- *Resilience may be compromised if service flows rely on components from multiple providers*
- *Issues with any one cloud provider could impact overall service*

Multi-cloud (Active/Passive)   -   Resiliency Rating ★★★

- *Longer recovery times and increased downtime may result in case of primary failure*
- *Standby service in alternative cloud often idle, leading to higher costs and inefficient resource usage*
- *Real-time data consistency difficult to achieve in this model*

Multi-cloud (Active/Active)   -   Resiliency Rating ★★★★

- *Single cluster deployment across cloud providers from a common code base*
- *Platform can withstand loss of full cloud region or provider*
- *Real-time data consistency across cloud providers maintained*

02
Survey methodology

This survey by Finextra in association with Form3 was designed to glean the general attitude and approach multi-cloud infrastructure, perceived benefits and perceived challenges around implementation. Notably, it sought to establish the general awareness of various new and incoming regulations around resilience and systemic risk, of how cloud and cloud providers can navigate this and how much, if any, business opportunity firms see in resilience and risk compliance. We surveyed 150 senior financial services professionals and experts globally, with the following segmentation:

Survey Respondents

WHICH OF THE FOLLOWING BEST DESCRIBES YOUR ORGANISATION?
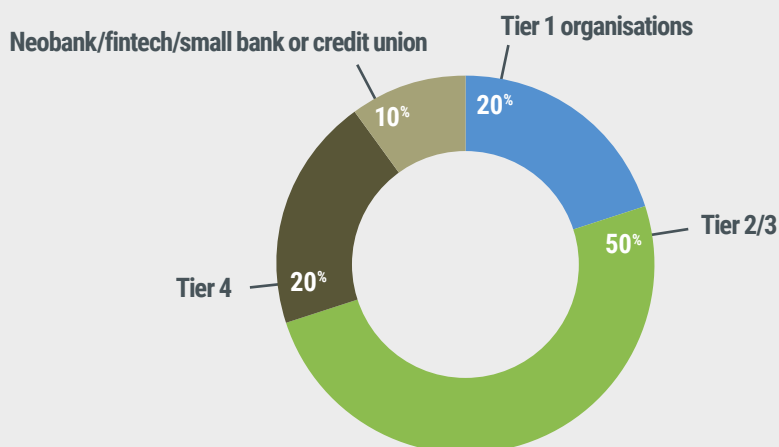
Neobank/fintech/small bank or credit union

Tier 1 organisations

10%

20%

50%

Tier 2/3

Tier 4

20%

Survey Respondents

WHICH OF THE FOLLOWING BEST DESCRIBES YOUR CURRENT ROLE?

VP

Senior Manager

Senior Director, or SVP, or EVP

12%

4%

37%

21%

26%

COO / CIO / CTO / SVP / EVP / CFO / COO

Director
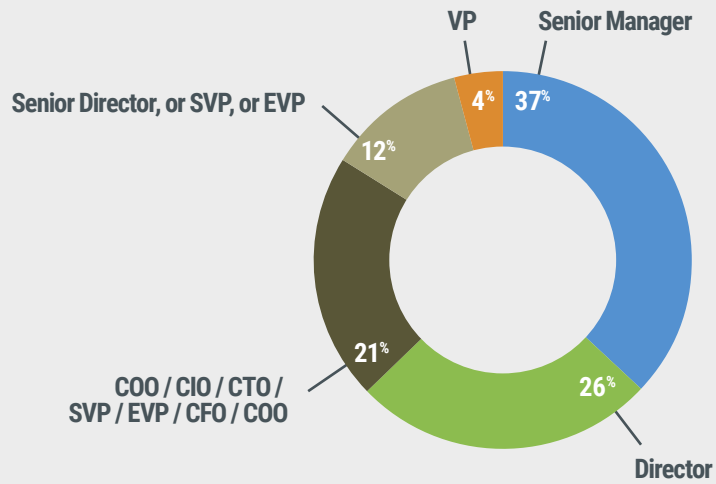
Survey Respondents

WHICH OF THE FOLLOWING BEST DESCRIBES THE BUSINESS FUNCTION OF YOUR DEPARTMENT?

Corporate transaction banking	39%
Consumer retail banking	32%
Technology / Systems	15%
Corporate SME banking	7%
Retail SME banking	6%
Other	1%

0%   10%   20%   30%   40%
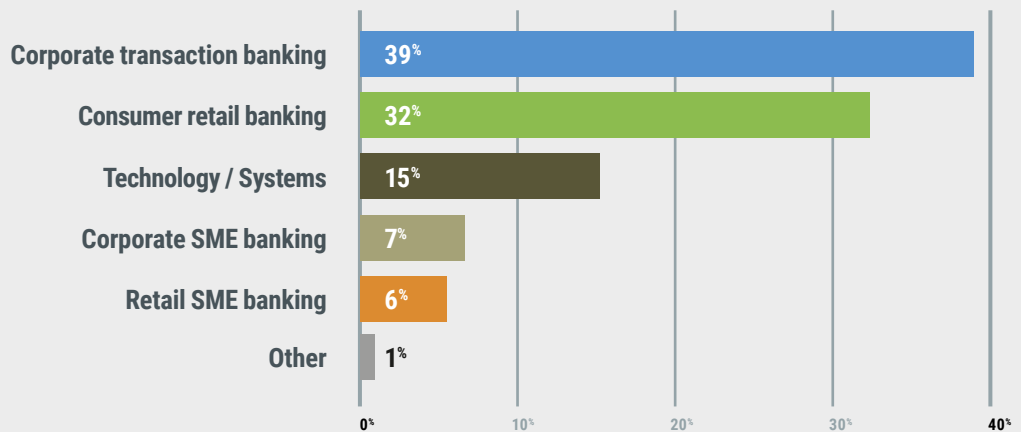
03
Key insights

- There is a healthy adoption of multicloud structures from respondents, which can be taken as an industry microcosm. Plans are largely well advanced and implementations in the majority already started, nearly finished or completed.

- This, however, also highlights likely discrepancies in the understanding and interpretation of multicloud at various organisations and across the industry.

- Regulations- in particular DORA are to be seen as a key driver for current plans and responses demonstrate a certain lack of understanding of potential business benefits around low latency and resource-light systems, with the cost burden instead at the forefront of their minds. There is strong awareness of a multicloud set-up providing a spread of risk.

- That being said, investment in multicloud is in the main wholeheartedly green-lit and it represents an enterprise-wide transition, be it a wholesale project shifting fully away from on-prem or a more piecemeal approach. "Keeping the lights on" is non-negotiable.

- Resilience, Throughput and Scaling for future growth were the top three perceived benefits, which together highlight a keen awareness of vulnerabilities as organisations transform, as well as the accompanying ambition to survive and thrive.

- There is a burgeoning awareness of the support different cloud providers can bring, and as this grows, firms will be better equipped to exploit multicloud infrastructure to further their growth.
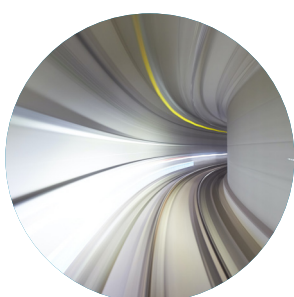
04
Multicloud featuring in plans, not yet ubiquitous

Current cloud set-up

Question 1

WHICH OF THE FOLLOWING BEST DESCRIBES YOUR CURRENT CLOUD SET-UP?

Response	Percentage
We have already migrated our business to a multi-cloud set-up	48%
We have or want to migrate some systems to two or more cloud providers, with on-premise primary core systems in a hybrid approach	20%
We have already put some non-core applications in a single public cloud provider in order to familiarise and test the pros and cons	12%
We plan to fully embrace the cloud, ultimately shifting from on-prem infrastructure to a multi-cloud approach	8%
Our business was born in the cloud	6%
We are not planning a move to or strategy based on cloud	6%

Why not? Please choose one

Respondents: 9

Response	Percentage
No obvious benefits to our business	55%
Complexity (timing, in-house expertise)	33%
Other priorities	12%
Cost	0%
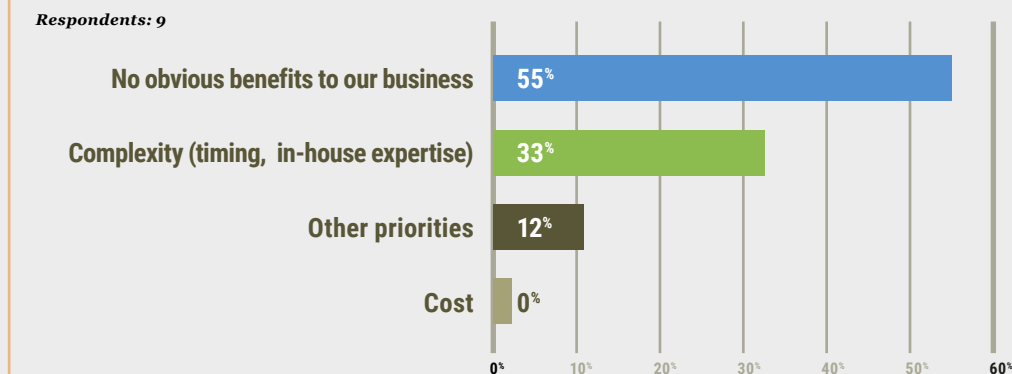
When asked about the current cloud set-up, just under half (48%, the top answer) said they have already migrated their business to a multicloud set up. This was followed closely by those having already or wanting to migrate some systems to two or more cloud providers, with on-premise primary core systems in a hybrid approach (20%).

Fewer, but importantly to note, still some, are slower to act on plans, but multicloud was still very much in the planning- 8% said they planned to fully embrace the cloud, ultimately shifting from on-prem infrastructure to a multicloud approach. A multicloud approach could of course be one of several interpretations. Firms could mean having different apps in different clouds, or simply having a cloud back-up or recovery service. For some it could simply mean different availability zones within one cloud provider and for the most cloud-native or cloud astute, it would mean multiple availability zones across multiple providers.

This is likely the case for the 6% of businesses "born in the cloud", as well as the 8% who plan to fully embrace cloud, shifting from on-prem infrastructure to a multicloud approach.

For the 6% who had no plans in place based on cloud, the main reason given was there being no obvious benefit to the business. This minority did not complete the rest of the survey. This is an interesting equilibrium to be noted at either end of the multicloud adoption scale- there is an exact balance at the moment of those with no plans and those who built and commenced their business in the cloud.

Timescale of completion of cloud plans

The vast majority (89%) have already completed or are due to complete imminently- within the next 12 months. And considering 8% plan to fully embrace the cloud, only 1% said plans will complete in the next five years, hence even those with very nascent multicloud ambitions are confident it will be achieved in a short timescale.

Question 2
IN WHAT TIMESCALE WILL YOUR CLOUD PLANS COMPLETE

Already complete	32%
Within the next 12 months	57%
Within the next 2 years	10%
Within the next 5 years	1%

0% 10% 20% 30% 40% 50% 60%
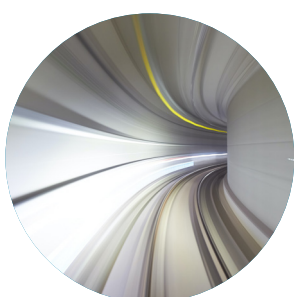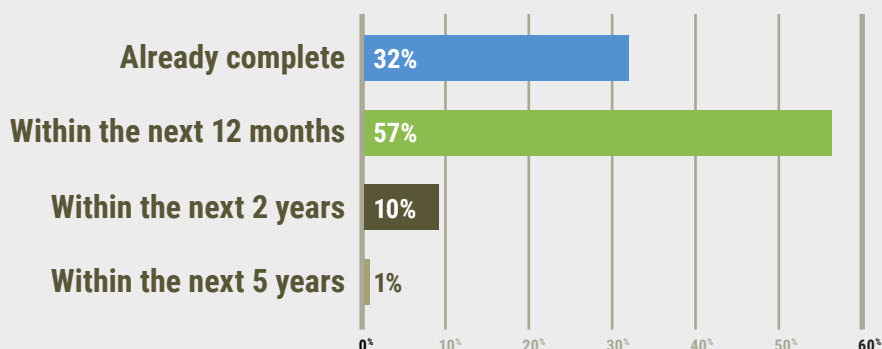
05
Perceived benefits and drivers

Top two benefits (Q3) were perceived as being resilience and managing throughput in a multicloud environment- at 29.6% and 17.6% respectively. (However the perceived benefit of resilience may only be in the sense of not fielding repercussions from the regulators, and merely ticking a compliance box, as we will discover.)
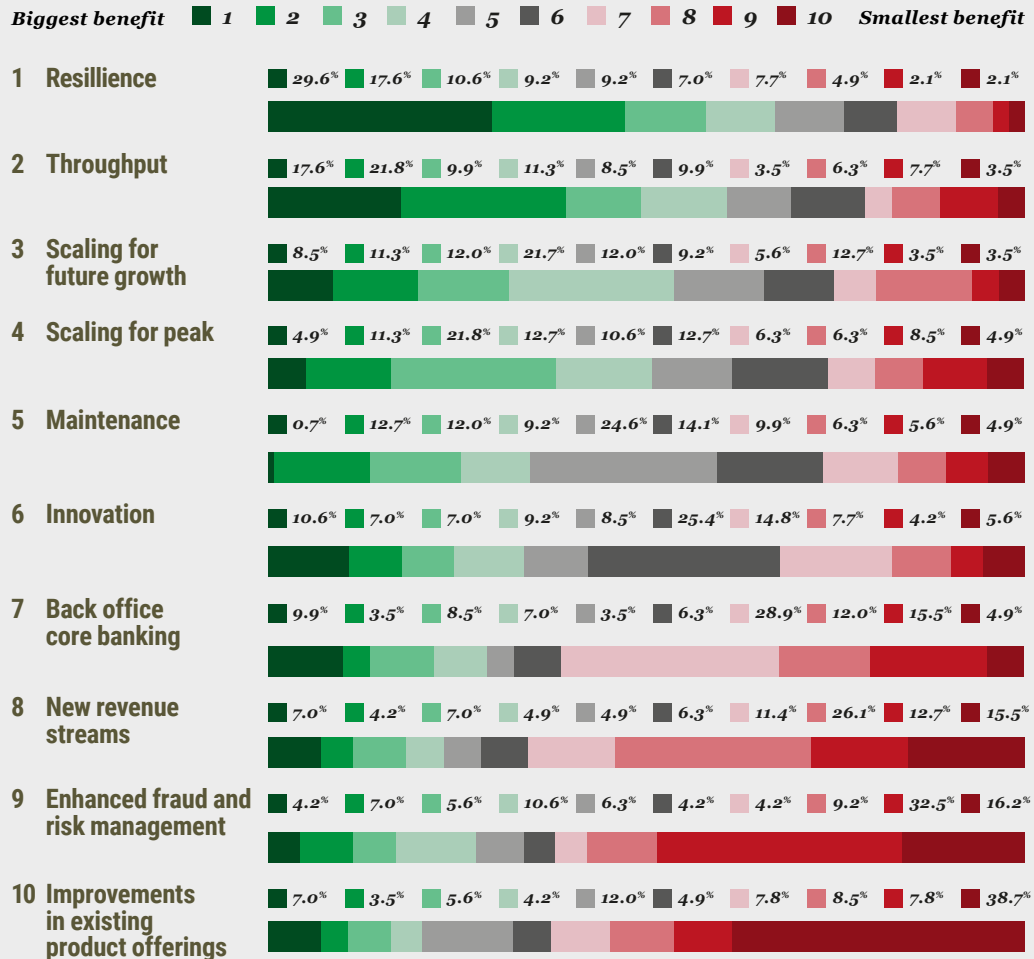
Question 3

PERCEIVED BENEFITS: RANK IN ORDER OF BENEFIT IN SHIFTING THE FOLLOWING PROCESSES OR SYSTEMS TO A MULTICLOUD ENVIRONMENT.

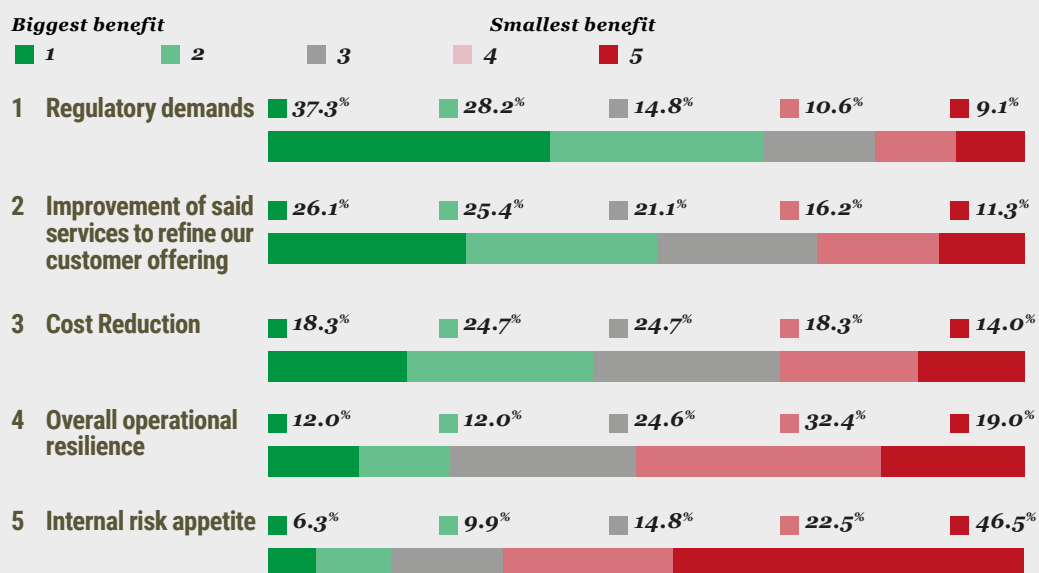|	Biggest benefit 1	2	3	4	5	6	7	8	9	10 Smallest benefit
1 Resilience	29.6%	17.6%	10.6%	9.2%	9.2%	7.0%	7.7%	4.9%	2.1%	2.1%
2 Throughput	17.6%	21.8%	9.9%	11.3%	8.5%	9.9%	3.5%	6.3%	7.7%	3.5%
3 Scaling for future growth	8.5%	11.3%	12.0%	21.7%	12.0%	9.2%	5.6%	12.7%	3.5%	3.5%
4 Scaling for peak	4.9%	11.3%	21.8%	12.7%	10.6%	12.7%	6.3%	6.3%	8.5%	4.9%
5 Maintenance	0.7%	12.7%	12.0%	9.2%	24.6%	14.1%	9.9%	6.3%	5.6%	4.9%
6 Innovation	10.6%	7.0%	7.0%	9.2%	8.5%	25.4%	14.8%	7.7%	4.2%	5.6%
7 Back office core banking	9.9%	3.5%	8.5%	7.0%	3.5%	6.3%	28.9%	12.0%	15.5%	4.9%
8 New revenue streams	7.0%	4.2%	7.0%	4.9%	4.9%	6.3%	11.4%	26.1%	12.7%	15.5%
9 Enhanced fraud and risk management	4.2%	7.0%	5.6%	10.6%	6.3%	4.2%	4.2%	9.2%	32.5%	16.2%
10 Improvements in existing product offerings	7.0%	3.5%	5.6%	4.2%	12.0%	4.9%	7.8%	8.5%	7.8%	38.7%

Scalability ranked quite highly here as well- in terms of both future growth and peak operations scalability- these were the third and fourth highest responses.

Innovation and enhanced fraud and risk management came further down the list of perceived benefits, which suggests that these had already been shifted, given that a great portion of responses had already completed an implementation and these are usually the first priorities. Therefore it follows that the current priorities are about growth and resilience, the latter being pushed by industry authorities, and both perceptions being generally reflective of a reasonably mature cloud journey, regardless of the perceived meaning of multicloud.

Indeed, the shifting of services or applications to a multicloud environment (Q4) is largely driven by regulatory demands, 27.3% of respondents giving this as their top answer over refining the customer offering through improved services (26.1%), reducing costs (18.3%), and only 9.1% listing regulatory demands as least important.

Question 4

WHAT DRIVES THE IMPLEMENTATION OF MULTICLOUD INFRASTRUCTURE? RANK THESE STATEMENTS IN ORDER OF AGREEMENT.

Biggest benefit   *Smallest benefit*

	1	2	3	4	5

#	Statement	1	2	3	4	5
1	Regulatory demands	37.3%	28.2%	14.8%	10.6%	9.1%
2	Improvement of said services to refine our customer offering	26.1%	25.4%	21.1%	16.2%	11.3%
3	Cost Reduction	18.3%	24.7%	24.7%	18.3%	14.0%
4	Overall operational resilience	12.0%	12.0%	24.6%	32.4%	19.0%
5	Internal risk appetite	6.3%	9.9%	14.8%	22.5%	46.5%

Achieving operational resilience was only rated by 12% as being the greatest driver. This suggests a lack of understanding about or full appreciation of the benefits operational resilience can bring, over and above ticking a regulatory checklist. It is clearly not a business driver for all at this point in time. This is

likely to be the case for those whose understanding of multicloud is perhaps more limited, i.e. having two availability zones within one cloud provider, or one provider for production and another as 'back-up' should the first fail (the invocation of which can be cumbersome and lengthy, hence presenting its own precariousness and risk factors)- both of these options are valid interpretations of a multicloud set-up and yet they are limited in scope and go only so far to provide a robust and resilient infrastructure.

However, it clearly suggests organisations see the move to cloud as a priority mainly because of incoming regulation, so in this sense it will be an imposed benefit. The fact that cost of implementation is a concern further emphasises the fact that potential cost-savings brought about by resilience have not yet been fully understood or recognised. Cost reduction scored a middling ranking as a driver for multicloud implementation
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To go further, organisations which embrace a more holistic multicloud approach, i.e. being able to shift systems and processes in real time across multiple availability zones within multiple cloud providers, would be more likely to rank resilience highly, understanding that many other benefits are reaped within this kind of environment, including cost savings.
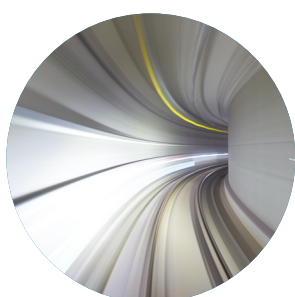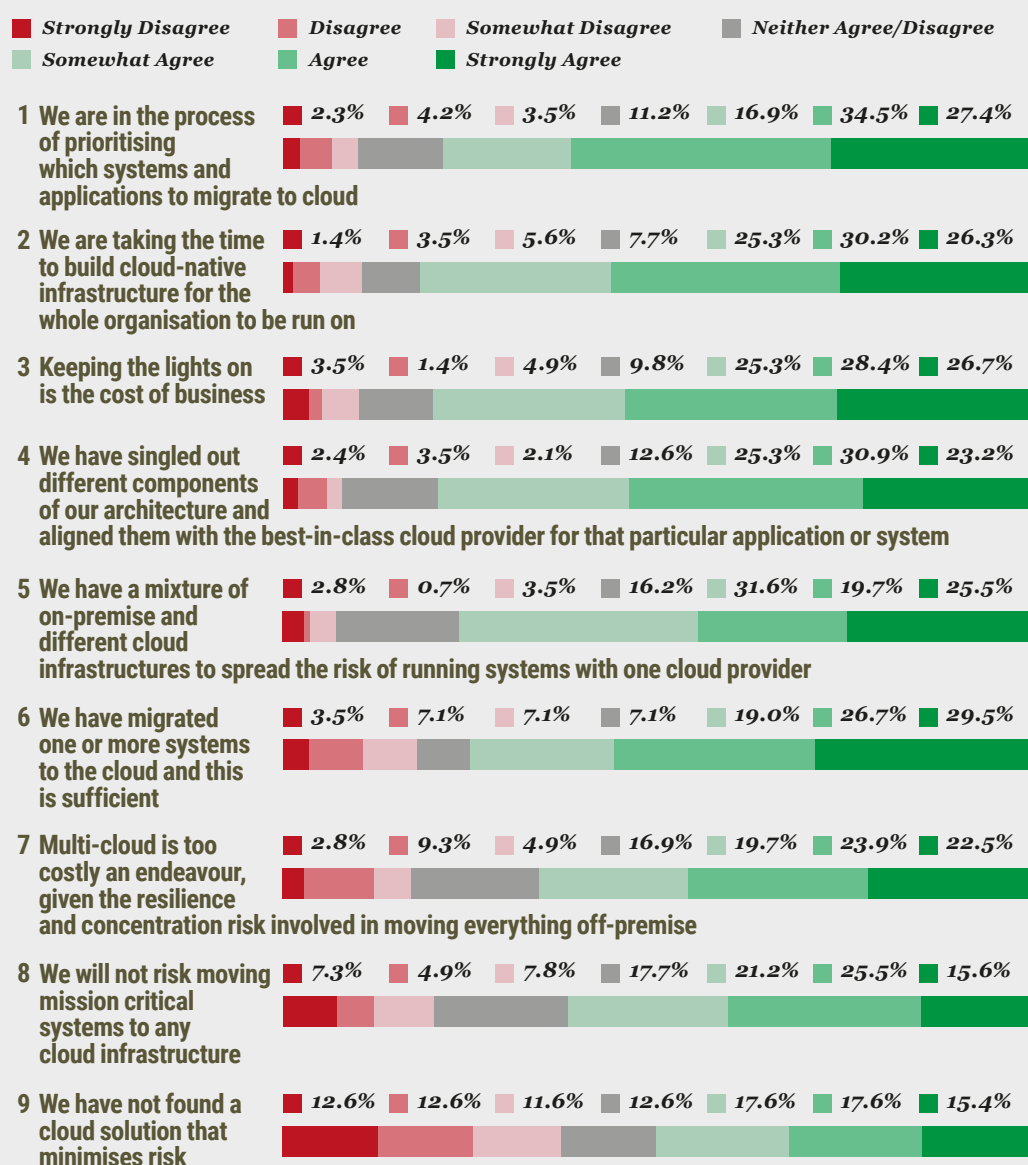
Responses reveal mixed perceptions of cloud, multicloud, indicating a strong learning curve to come

Regarding overall attitude (Q5) towards cloud migration, an overwhelming majority (75.2%) "have migrated one or more systems to the cloud and this is sufficient" but this could mean simply having migrated one or more applications to a different cloud and therefore could be further evidence of a lack of understanding of the full extent of what multicloud could represent and bring. An even larger majority (81.8%) said they were "taking the time to build cloud-native infrastructure for the whole organisation to run on.

Question 5
RESPONDENTS LEVEL OF AGREEMENT WITH THE FOLLOWING STATEMENTS

Legend: ■ *Strongly Disagree* ■ *Disagree* ■ *Somewhat Disagree* ■ *Neither Agree/Disagree* ■ *Somewhat Agree* ■ *Agree* ■ *Strongly Agree*

#	Statement	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree/Disagree	Somewhat Agree	Agree	Strongly Agree
1	We are in the process of prioritising which systems and applications to migrate to cloud	2.3%	4.2%	3.5%	11.2%	16.9%	34.5%	27.4%
2	We are taking the time to build cloud-native infrastructure for the whole organisation to be run on	1.4%	3.5%	5.6%	7.7%	25.3%	30.2%	26.3%
3	Keeping the lights on is the cost of business	3.5%	1.4%	4.9%	9.8%	25.3%	28.4%	26.7%
4	We have singled out different components of our architecture and aligned them with the best-in-class cloud provider for that particular application or system	2.4%	3.5%	2.1%	12.6%	25.3%	30.9%	23.2%
5	We have a mixture of on-premise and different cloud infrastructures to spread the risk of running systems with one cloud provider	2.8%	0.7%	3.5%	16.2%	31.6%	19.7%	25.5%
6	We have migrated one or more systems to the cloud and this is sufficient	3.5%	7.1%	7.1%	7.1%	19.0%	26.7%	29.5%
7	Multi-cloud is too costly an endeavour, given the resilience and concentration risk involved in moving everything off-premise	2.8%	9.3%	4.9%	16.9%	19.7%	23.9%	22.5%
8	We will not risk moving mission critical systems to any cloud infrastructure	7.3%	4.9%	7.8%	17.7%	21.2%	25.5%	15.6%
9	We have not found a cloud solution that minimises risk	12.6%	12.6%	11.6%	12.6%	17.6%	17.6%	15.4%

Yet respondents still felt in the main that cloud is too costly given the resilience and concentration risk involved in moving everything off-premise. And yet there is resounding recognition of the imperative of "keeping the lights on", hence we can deduce organisations view the transition to cloud as the kind of cost worth undertaking and, in fact, non-negotiable.

Given almost three quarters have already completed or are in the final stages of completion, it is also clear that organisations are fully prepared and have budget clearance from the top down to forge ahead.

There is significant awareness also of the reasons for implementing a multicloud approach (whatever that approach is deemed to be), with the most compellingly positive agreement result of the whole survey saying that they have a mixture of on-premise and different cloud infrastructures to spread the risk of running systems with one cloud provider: a mere 3.5% disagreed or strongly disagreed that this was the case, and this contingent could include cloud-based organisations with no on-prem infrastructure.

There are, despite clear strategy being applied, strong responses indicating this tailored approach, as well as organisations very much in favour of "singling out different components of [their] architecture", aligning them with the "best in class" cloud provider for that particular application or system-79.4% were in greater or lesser agreement with this. It is clear that firms are building manageable plans and are being proactive about exploiting the technology and services available to them to do more than simply stay the right side of compliance. And 78.8% are currently prioritising which systems and applications to migrate to cloud.

The spread of agreement across the different strategies proposed clearly indicates differing approaches. And given the very apparent commitment towards resilience and protection of systems, what this really seems to reveal is an element of confusion and lack of understanding or awareness as to different types of cloud and multicloud set-ups and what they all entail. Incoming regulation will both catalyse the learning curve as well as perhaps temporarily fuel uncertainty as to what is expected of organisations and what kind of accountability checks each player needs to be making.

06
Regulatory considerations are a huge factor

The European Commission proposed the DORA regulation in 2020 with the aim of maintaining and ensuring financial stability while supporting technological advancement. In short, this is a recognition of the expanding network of partners that financial services organisations constitute in an ecosystem that remains increasingly vulnerable to cyber attacks, and hence a new framework of liability and responsibility with regard to systemic risk. It creates a democratic approach to resilience, holding all participating parties accountable for being able to sustain severe disruption and maintain resilient operations.

It follows that DORA (Digital Operational Resilience Act) is high on the list of important influential factors, with 46.1% respondents stating it is "strategically critical to our [multicloud] plans".

Critical Third Party legislation in the UK will bring third parties under the watchdog's eye, making them accountable. The majority found it strongly relevant (55.3%) as opposed to strategically critical (34.8%).

Question 6
DO THE FOLLOWING REGULATIONS FEATURE IN YOUR CLOUD PLANS?

Not critically relevant to plans ▪ Critically relevant to plans ▪
Strategically critical ▪ N/A ▪

1 Dora   ▪ *9.9%*   ▪ *40.4%*   ▪ *46.1%*   ▪ *3.6%*

2 Critical third party legislation   ▪ *6.4%*   ▪ *55.3%*   ▪ *34.8%*   ▪ *3.5%*

3 SYSC8   ▪ *12.1%*   ▪ *39.0%*   ▪ *44.0%*   ▪ *4.9%*

4 Other   ▪ *12.6%*   ▪ *36.1%*   ▪ *26.1%*   ▪ *25.2%*

The FCA's SYSC8 was the least important for firms, compared to DORA and Critical Third Party legislation. Yet there isn't a great skew towards one or the other, and relevance and criticality was high across all of them, including other regulations, which would likely be overseas equivalents.

For those stating 'not applicable' or even 'critically relevant' to plans, we can infer that this is likely to be the portion whose plans are well advanced, hence consideration of such resilience requirements is something absolutely core to and inherent in their operations and infrastructure hence not impacting the current plans.

07

Perceived importance of resilience and cloud strategy in IT estate

Operational resilience was found to be more important across all services equally (52%) as opposed to over one core service (47%). Albeit there is almost parity here, it is affirmation of the fact that there are of course core services that require greater robustness and protection, they can't be isolated from the resilience of the organisation as a whole.

Question 7

IN WHICH OF THE FOLLOWING IS OPERATIONAL RESILIENCE MOST IMPORTANT?

All services equally	52%
Core services	47%
Other	1%
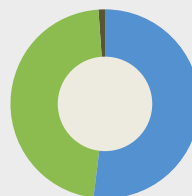
Question 8

DOES A CLOUD STRATEGY FEATURE IN YOUR IT ESTATE?

Yes	No
95%	5%

If yes, in which areas?

Customer accounts	73%
Payments	54%
CRM	50%
Lending	41%
Onboarding/products	40%

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
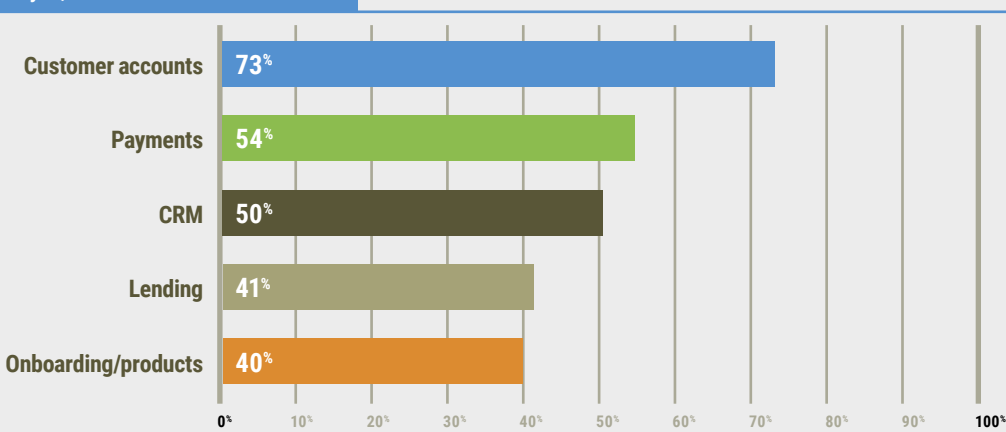
Furthermore, 95% stated a cloud strategy does feature in their IT estate (Q8), emphasising the enterprise-wide approach, with customer accounts the most popular answer as to where, 73% of respondents ticking this option (not exclusively).

Payments 54%; CRM 50%; Lending 41%; Onboarding/products 40% were the rest of the responses- a fairly equally meted spread.

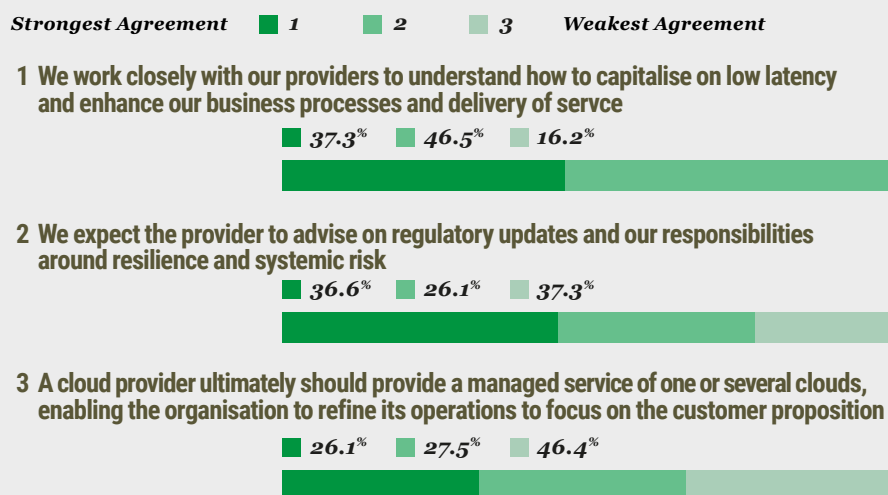On average, respondents chose either two or three responses each and customer accounts represented almost a third of all the respondents' choices, 28%.

08
Expectations of cloud providers

Responses here betray perhaps a lack of awareness of support firms can get from specialist cloud providers. It could also indicate an element of confusion around knowledge or expertise they feel they need to 'own' themselves, on account of incoming regulatory requirements- fairly equal number both expect and don't expect a cloud provider to advise on regulatory updates and the firms responsibilities therein. This is echoed in the statement about working closely with providers to understand how to capitalise on low latency and enhance business processes. The majority here was in the middle on this, on the fence, unsure. This reinforces the theme of organisations at this point not fully understanding the full suite of benefits in a business sense, which could ultimately go some distance to allaying reticence around cost implications.

Question 9
EXPECTATIONS OF CLOUD PROVIDER(S).
RANK IN ORDER OF AGREEMENT.

Strongest Agreement ■ *1* ■ *2* ■ *3* *Weakest Agreement*

1 We work closely with our providers to understand how to capitalise on low latency and enhance our business processes and delivery of servce

■ *37.3%* ■ *46.5%* ■ *16.2%*

2 We expect the provider to advise on regulatory updates and our responsibilities around resilience and systemic risk

■ *36.6%* ■ *26.1%* ■ *37.3%*

3 A cloud provider ultimately should provide a managed service of one or several clouds, enabling the organisation to refine its operations to focus on the customer proposition

■ *26.1%* ■ *27.5%* ■ *46.4%*

However, it should be noted that not insignificant portions, and largely around a third of respondents agree strongly on three points- that they do work closely with providers to understand business benefits, they do expect providers to advise on regulation and risk responsibilities, and that cloud providers should ultimately provide a managed service of one or several clouds, enabling the organisation to focus on its main goal- the customer proposition.

09
Conclusion

Incoming regulation is arguably the greatest driver for advancing cloud plans. Throughout the survey, responses reveal wide-reaching interpretation and articulation of the reasons to implement multicloud and ultimately of the benefits that such infrastructure can bring.

What is certain is that transition to the cloud is wholeheartedly approved and endorsed from the top down throughout most organisations, bar perhaps those who are cloud native, or 'born' in the cloud. The bottom line is that cloud is considered as fundamental as keeping the lights on.

Regulations such as DORA will catalyse the clear learning curve, bringing to the fore key resilience considerations. At the same time, expectations of and relationships with cloud providers will likely become more differentiated and involved.

10
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