



Mitigating Cloud Challenges with AI-based Management

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FROST & SULLIVAN VIRTUAL THINK TANK

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In today's environment, the cloud is an essential investment for business success. In both good times and bad, businesses say it is the most important technology used to help achieve corporate goals like enhanced customer service and satisfaction, streamlined operations, and improved productivity.

Most businesses require multiple clouds to meet their needs, with 71% of companies surveyed by Frost & Sullivan having deployed a hybrid environment in 2022. That number is expected to rise in the coming years. To adequately meet corporate goals, most companies use an average of three public cloud providers to run their workloads, with a mix of legacy data centres and hosted infrastructure completing the environment. Public cloud providers are usually chosen intentionally because different providers offer different features and capabilities.

Effectively managing resources is paramount for businesses using hybrid IT environments. To address these issues and how some of today's large enterprises handle them, Frost & Sullivan convened a think tank, a group of high-level IT executives from different companies, to discuss hybrid and multi-cloud strategies, challenges, and key considerations for success. The following are highlights from that discussion.





Most Businesses Operating a Hybrid Environment

Our panellists opened by discussing their general experiences deploying hybrid or multi-cloud environments. Regardless of their migration speed to the cloud, they were all currently working in hybrid environments. Additionally, their rates of maturity varied. Very quickly, the conversation turned to management—not from a technology standpoint, but rather from a resource or headcount standpoint. It became apparent that most businesses struggle with a lack of skilled cloud resources. Geography hampers efforts to hire the right talent for some, whereas upskilling talent is a prime concern for others.

Nitin Khanna, head of digital transformation for receivable finance at HSBC, said his bank has been on a digital transformation journey for some time.

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We started off [our cloud journey] with AWS, and we also use Microsoft Azure. We also have a strategic partnership with Google for Cloud Platform. But I think the question we should be asking one another is, ‘What is the purpose of bringing a cloud partner in? Is it for data and analytics, or is it for your transactional processing, or is it for your operational efficiencies?’ For HSBC, we have tiering of applications like any larger organisation might. Certain infrastructures are considered Tier I, where we can process customer transactions. Other infrastructures are Tier Two only, meaning we will never process client-facing transactions on them.”





Like HSBC, Lloyds Banking Group is well along the journey to hybrid cloud. However, it is challenging for the company to balance the technical debt of legacy infrastructure and the temporary disruption that modernisation might entail.

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We've got on-prem infrastructure, off-prem infrastructure ... we've got every hosting option available. In the cloud, we are using Azure, AWS, GCP [Google Cloud Platform], and IBM,” said Mark Rawcliffe, head of digital transformation for Lloyds Banking Group. “There's a multiplicity of providers. Part of that has been driven by historical strategy, but some [of that multiplicity] has been driven by having different leaders leaning toward one option over another. I think we are partway into the journey, but we're facing the issue at the moment of the impact of legacy infrastructure and technical debt versus the drive for modernisation whilst also providing good service and being able to move at pace. Our hope is that within three years, our cost to change and our ability to move in an agile way will be much faster than using the historical business release cycle.”





Christopher Taggert, engineering lead and solutions architect for Tesco Bank, described his bank's environment as being "at the start of being mature" in its hybrid cloud deployment, but notes the management problem that has plagued businesses for the last few years—skilled expertise in cloud engineering and related technologies are difficult to find for direct hire.

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We have effectively been trialling new technologies as we go; we started with the basics of cloud terraform, cloud formation, and similar technologies. We then moved into containers and we're starting to look at serverless now. Our goal is to be at the forefront of what other banks are doing. It's a long journey, but we're not at the beginning of it. I think we have spent the last five years upskilling our infrastructure engineers and hiring new headcount and talent across the UK to allow us to move from our traditional infrastructure sort of approach to infrastructure as code approach. Skill sets have dramatically changed across the board, to the point where we have to have separate teams to manage the infrastructure across the business and to manage the cloud infrastructure across the business. We've successfully upskilled and have a lot of talent in the business for it now.”

A global retail IT professional represented the least mature business in terms of hybrid IT. He discussed the low margins in retail, the ethos of keeping technology until end-of-life, and the challenges of transforming technology in retail locations at the edge. While his business had started migrating selected workloads to the public cloud, the lift and shift migration is slow not to impact daily operations.

One surprising challenge our IT leaders discussed was managing IT with limited human resources or skill sets. Taggert touched on this when describing where his company was in terms of digital transformation. His peers echoed his sentiments when asked about their experiences and challenges in managing across the hybrid environment.



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“We don’t necessarily have the capability in terms of permanent colleagues to do that [handle ongoing management across a hybrid environment],” said Rawcliffe. “We use a number of partners ... where we’ve got shortfalls or where we need to transform faster. So at the moment we are looking at the correct mix of permanent resources and external partners ... The marketplace has been very difficult to recruit permanent engineers in. I think we’ve seen a shift in the last year, however, and now the market offers many more competent and capable individuals that want to join [our team].”

Taggart noted that they’ve had to expand their search for IT talent outside their immediate region, forcing the introduction of hybrid or remote work scenarios. It was interesting to note that while several participants mentioned talent and hiring challenges, few seemed to augment staff with partners until later in their journeys.

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“It’s become very apparent that the skillset is either not there, or we aren’t able to offer a good enough package to win talent. So we’ve branched out to different areas [of the UK] and offered potential talent remote work possibilities. So rather than hiring engineers or taking engineers from the infrastructure world and upskilling them, we’ve had a large drive to hire people with the intention of driving them down into the DevOps/ Infrastructure as Code world. So, it’s been quite an investment in people. Today, we haven’t seen the reduction in resources required, but it’s what we’re expecting over the next several years.”



Khanna mentioned that since he is dealing with the data side of the IT department, the basics of management are similar, and it's the platforms that are being updated to handle data. This mitigates some talent challenges faced by his peers.

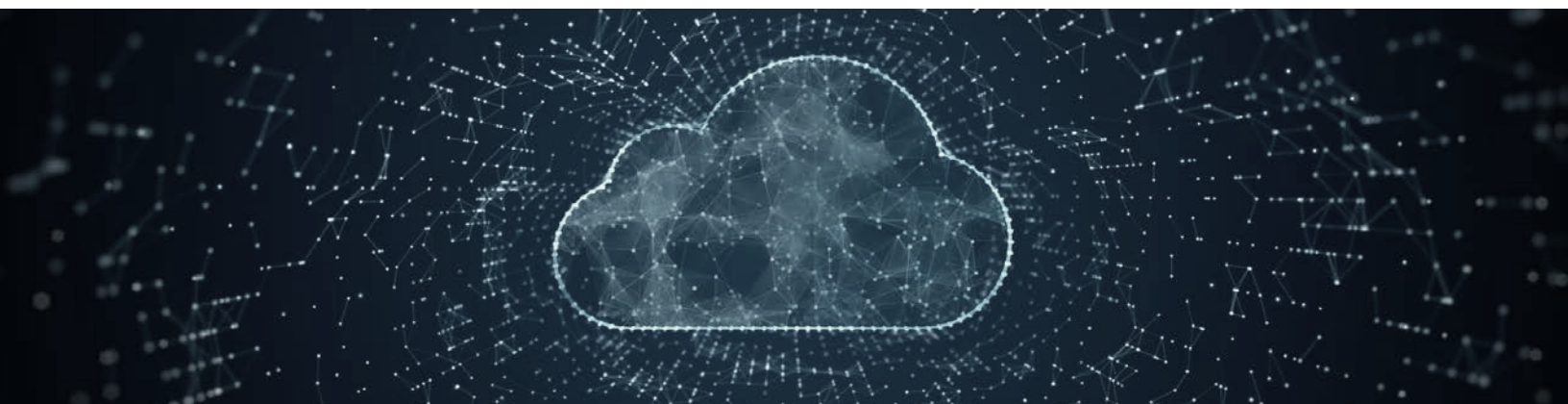
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We are still drawing the same left to right diagrams from sourcing of the data to curation of the data and then reporting on that data. It's just that the platform has changed from the Oracles and the Teradatas of the world to the Googles of the world. So, I think there are certain synergies between the old school and the new school [with regard to data management].”

It was interesting that, when asked how their businesses managed their hybrid environments, all participants primarily focused on people who managed resources rather than on the technology used to manage them. Swaminathan Subramanian, Vice President and Regional Head, Infrastructure and Cloud Services Europe of Tech Mahindra, discussed the technology side of the equation and how technology may help mitigate the human resource issues plaguing enterprises today.

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Whether it's in the public cloud or in a private cloud, observability is key [to effectively managing the environment]. Compliance and governance play key roles as well, especially in industries like healthcare or life sciences and banking. Another important dimension is obviously cost management: how does one manage cost when you are managing cloud resources as a whole? So, these are relevant and important dimensions of managing cloud resources.”





At this point, Sinead Glynn, EMEA GTM with Strategic Partners from IBM, jumped in to acknowledge the challenges participants faced and discuss how technology—rather than manual management methods—could mitigate some of these with regard to effective hybrid cloud management.

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In terms of what's working and what isn't, I would see that more broadly. If the move to cloud is seen more as a destination, it can undersell what the whole point of digitalisation and modernisation is—achieving business outcomes like agility, or engaging clients more fully, or providing a user experience—it's about changing your operational models ... There is no doubt that operating in a hybrid, multi-cloud environment is more complex, especially for IT operations. The level of decision-making and management that needs to happen in order to effectively manage in that environment is, it's overwhelmingly large, it's extremely tedious, it's very risk-prone for the individual that's making those decisions. But the good news is there's technology that can support the workforce in order to make those decisions and the technologies can make the decisions far more effectively and at speed and at scale. So it's considering it both from an operational perspective and a technology perspective and not just a destination perspective.”





Another participant agreed and acknowledged the sensitivity of some data held by businesses on the panel. While technologies can ease the burden of provisioning, management, and security, how do you ensure data security while managing cloud workloads of businesses with massive volumes of customer data? Glynn responded to the concern.

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“There is a realisation—particularly since the digital acceleration that has happened since the pandemic—that complexity [in hybrid environments] has impacted the intended outcomes that IT had for the cloud. So, it becomes necessary to rethink the operational model and the supporting technologies you choose to help realise the benefits that you got into the cloud to achieve.”

Taggart agreed with the idea of operational outcomes as a focus but noted that cost remains the primary driver for technology decisions. This is important because it is easy to experience cloud sprawl and rising costs if a cloud is not strategically and intentionally managed.

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“It’s all about cost, cost, cost. If you don’t optimise your cloud, you’ll get that horde of wild horses—that is, your cloud bill—out of control, and it becomes very hard to change. And it’s not just about things like optimisation, but its decisions taken within the cloud as well. ... [You need to consider that] optimisation of data, optimisation of networking, and not putting all your eggs in one basket are especially important because your cost will go out of control. Down the line, you will realise you are tied into a cloud vendor because of certain loopholes that make it very difficult to move out, move back to your old models, or move to other vendors. Therefore, you need to get in control of that at the start because if the business loses control of the cost, then the value of the actual cloud deployments becomes less and less.”



Swaminathan agreed that optimisation is important, but his rationale as to why differed from those of other panellists. He specifically noted that optimisation enables businesses to focus more closely on their actual business and drive business value through IT initiatives rather than focusing on manual IT environment management. This shift in mindset allows IT to be seen as an innovator and revenue generator in the business, rather than as a cost centre.

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The way I look at it is: optimising resources gives the focus back to the businesses and lets them focus on what their core business is rather than worrying about the cost of resources, or the infrastructure, or anything they use in the cloud. Also, it might be better to look at optimisation as a means to improving the business service, rather than the IT resources. The resources underpin the services, so they need to be optimised to get the best value for the service.”

Rawcliffe was the one participant that noted technology use as a key to managing his hybrid environment efficiently and successfully.

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The complexity of the technology landscape has prompted my organisation to make a decision to have a centralised enabling platform that basically looks after hosting infrastructure, giving us end-to-end control over environments. Culturally within the organisation, a shift has been made toward greater utilisation of data ... We are much more thoughtful about what data we have, why do we want it, where do we store it, how easy is it to curate and do something with? And particularly as we move into a place of hyper-personalisation on the digital front, how can we use that data in meaningful ways to talk to customers about things that are important for them? So I think the optimisation culturally within the business, certainly in the onboarding side that I'm involved with has really been thinking about how to optimise and manage data, and how that can build out a much richer customer proposition.”



Glynn acknowledged the aspects of financial and resource optimisation that other participants were quick to bring forward. Still, he noted that another key IT component is becoming increasingly critical to improve: sustainability factors.

“But the other aspect that’s top of mind with the leaders I talk to is around the environmental side of things and particularly the carbon impact of IT footprints. I think the lack of understanding of that and realisation of its importance when it’s shown is prevalent. But there’s also good news [in that, when you have more data around sustainability factors] there are really easy levers to pull to improve IT sustainability, because it’s pretty easy to optimise virtualised workloads, whereas it’s quite difficult to optimise other parts of the business. It needs to be thought of in terms of the whole top line and bottom line rather than just an element that’s parked over here and it needs to be treated with the same respect and consideration as the rest of the business.”





The sustainability challenge resonated with Taggert, who noted that going forward, it would be a key focus for his bank.

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“One of the things that we all look at is not just shifting the carbon footprint to another vendor like AWS, but also taking into account that their footprint is affected by our actions. The next step for us is trying to move towards serverless technology instead of having full servers, or instead of having reserve servers. Then we are just using processing power when and if we need it, that is one of the big steps that we’re taking to acknowledge the fact that even though we’re using cloud, we’re still having a carbon footprint effect. So sustainability is one of the big things that we’re trying to incorporate in our thinking as well.”

As the conversation shifted to sustainability, Subramanian took the opportunity to discuss the availability of artificial intelligence (AI)-based tools that help with all types of IT optimisation, including sustainability.

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“So as a GSI, we are close to looking at several AI-powered tools or AI tools for managing our own cloud resources, with IBM® Turbonomic® being one of the ones that we use to provide a full stack visualisation from the application to infrastructure to the database and at all levels. This way, the AI apps understand where the problem is with respect to the business service and can give you insights or dashboards that you get, or even provide intelligent automation to powerfully change how your services operate, for the better. Whether it’s automatic scaling, provisioning, or working with the reserved instances or adjusting the capacity dynamically, AI can be quite powerful. So there is a lot of potential there and we see adoption of AI-based management solutions increasing from our vantage point.”



Taggert was already using some AI-based monitoring and optimisation tools to enhance and optimise his bank's IT operations, but interestingly, he also noted AI's ability to enhance human skill sets. He hopes to mitigate his ongoing HR challenges by using AI to upskill his existing employees.

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We are using AI-based monitoring tools and log management tools to analyse logs and work out correlations and future sort of possibilities of incidents. We also use it for our networking environment. The software we use can do any isolation that looks at your policies and rules around your network. And when you add new firewall rules, it analyses the effect and impact of those rules. We also use AI to scan and improve code as well.

But at the human level, we're trying to encourage our staff to take advantage of AI tools, especially the more recent variations of the chatbots and things like that to help them improve their own skillsets, to improve our coding, to improve their abilities as well. So on the other side of our technology approach, we're taking a human approach where rather than replace people with AI, we're trying to encourage people to improve their skills and efficiencies using AI to give back to the business. So, it's something that we're exploring in a significant way. It's not formalised yet, but certainly it's something that I want to take forward.”

Taggert's approach struck a chord with Glynn.

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The one thing I would say when it comes to hybrid and multi-cloud is that the new challenges are overwhelming for humans. Managing those can be extremely tedious, boring, and risk prone. In terms of keeping AI and IT management human, let's just be aware that there's capabilities to make jobs better and more fulfilling, which helps with retention, because it is an issue where people are leaving because they are constantly bombarded with the firefighting [to manage the IT environment].”



The Last Word

Enhancing hybrid cloud visibility and management, optimising resources, and improving IT sustainability do not have to be human-only, manual challenges that require hard-to-find skillsets. New tools and technologies can make the process easier. AI-based resource management can provide more complete visibility of the IT environment and employ consistent governance and security practices across every infrastructure and resource. Even better, it can offer proactive recommendations for optimisation based on cost, workload productivity, or sustainability, based on pre-defined parameters set by the business. Coupling this technology with the right skillsets of people can not only enhance the IT environment, but also help your IT team improve and enhance their IT skills to encompass modern operational models and tools.

This article was written as a summation of a recent Virtual Think Tank conducted by Frost & Sullivan. Participants included:

- Nitin Khanna, Head of Digital Transformation for Receivable Finance, HSBC
- Mark Rawcliffe, Head of Digital Transformation, Lloyds Banking Group
- Christopher Taggert, Engineering Lead & Solutions Architect, Tesco Bank
- Sinead Glynn, EMEA GTM with Strategic Partners, IBM® Turbonomic®
- Swaminathan Subramanian, Vice President & Regional Head, Infrastructure & Cloud Services Europe, Tech Mahindra

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