

CHALLENGES IN CLOUD MIGRATION

Our guide on how to
avoid or mitigate them



What are we seeing in Cloud Migration? We're seeing customers that want to move away from outdated and inefficient legacy infrastructures, such as aging servers or unreliable networks. We're seeing customers seeking to replace hardware or software solutions that are no longer performing optimally. But mostly we are seeing customers who are struggling to realise the expected benefits of migration, because Cloud Migration is harder than was first thought.

The early promises of rapid workload movement to the cloud and its associated financial benefits have in many cases failed to materialise as planned.

If we take away simple one tier workloads then applications are often multi-tier, with data sources, integration points, and security/access policies.

The last thing our customers need when migrating any workload into the cloud is to be hit with unforeseen issues, either technically or commercially. Stalled migrations, increased costs, mediocre performance, and increased security risks to name just a few. However, these can be mitigated or reduced through preparation and planning.

When we decided to write about these challenges, and what we are seeing in the market, we stood back a little and looked at the Computacenter "Cloud Migration Pathway", the value we add, and how we focus on our customers' key imperatives that sit at the heart of these challenges, the ones that keep our customers awake at night.

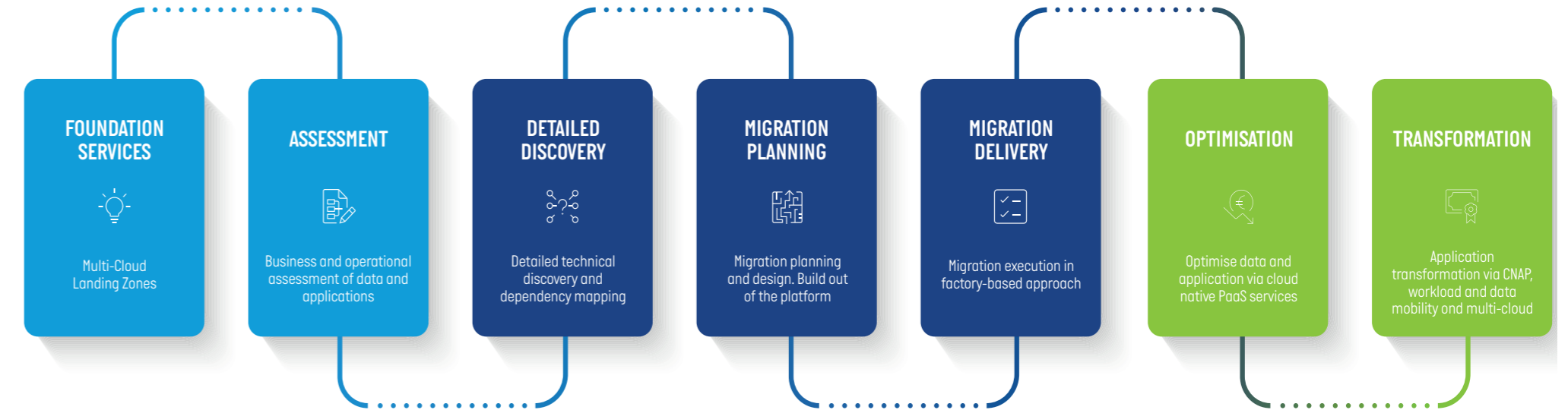
From our 25 years of migration experience from the data center to the cloud, we have identified several common areas to consider.



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Computacenter Cloud Migration Pathway

DON'T FORGET ABOUT DATA

Data must be considered as an imperative in cloud migration, it cannot just be a conversation on server or workload migration. One of the biggest benefits of the cloud is the way you can leverage additional cloud services to gain value from the data that you hold. The last thing you need is to create yet another secure silo that gives nothing back to the business. Look to any migration as an opportunity to align to wider data management and sharing initiatives. As such, understanding the following is not an option anymore, it is a necessity.



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DARREN FRANKLIN

HOW MUCH DATA IS BEING MOVED?

Not only is this a key question to understand timelines for any migration and for calculating potential cost of the target platform, but it is also key in the ongoing operational efficiency and data management. We are aware that at times there are external drivers that force us into moving quickly, meaning that we might have to forsake certain due diligence steps that we may have taken should time be in our favour, Data center closure, legacy platform issues etc. How many times have you really had time to fix issues once the pressure is off and other things take priority? It's likely that the data you migrate will remain where it is for a significant time before you get the chance to remediate, all the time being added to, making the swamp even deeper.

DATA PROTECTION AND SECURITY

Protection and security are key to any migration planning activity. Knowing how critical your data is to the business will dictate the level of protection and resiliency needed and will give the business confidence in future migration plans.

KNOWING THE STORAGE PROTOCOLS

Is the data you have now and the way you access it really the best way to do it in the cloud? Possibly not, but either way it needs to be understood and possibly rearchitected to make the best use of future cloud services.

CLASSIFYING DATA

Data classification is key. We have seen multiple examples of customers unable to move data to the cloud because the data isn't well understood and has not been suitably classified. This leads to security teams preventing cloud adoption and migration programmes.

BACKUP AND RECOVERY

It's also crucial to be able to operate with a wider range of data protection tools or to leverage and expand the cloud capabilities of your known and understood on premises tools.

PREVENT ATTACKS SUCH AS RANSOMWARE

Cyber resilience for data seems to have become a table stakes capability for most if not all enterprise data protection vendors, e.g. Immutability, Air Gapped, Vaults and encryption. All migration conversations about securing data pre, post and during migration should hinge on the understanding of its criticality to the business and how much or little attention you should pay to this level of capability. Let's not forget, not all data is equal, either in importance or value - so why should you spend more in protecting it than what it's worth to the business?



LET'S NOT FORGET, ALL DATA IS NOT EQUAL, EITHER IN IMPORTANCE OR VALUE”.

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UNDERSTAND THE COSTS

Being able to reliably predict and manage the financial cost of migration is also an imperative to simplify, expedite, and reduce the cost of cloud migration and achieve the expected objectives and meet business cases.

DEFINE A UNIT-BASED PRICING TO GAIN VISIBILITY

By creating a well-defined set of processes and automation around migration from discovery, design, execution, and test, you can get to a unit rated cost model, or a PxQ [Price multiplied by Quantity] to effectively predict the cost of migrations per workload. This can only be done with experience such as data points exist to model the effort required across the different stages. When aligned with a factory-based approach, industrialised migration patterns provide lowest cost, risk mitigated workload migrations.

USE A FACTORY-BASED APPROACH WITH AUTOMATION

By using a factory-based approach to migrating multiple workloads simultaneously this can drive standardisation in migration to provide confidence in “right first time” migrations. A migration factory consists of teams, tools, and processes that work together to streamline migrations in a systematic way, incorporating lessons learned from previous migration waves. It also allows for migration at scale. As an example, Computacenter have led migration projects with customers ranging from 20 virtual machines/workloads per day up to 100.



MAKING YOUR BUSINESS MORE AGILE AND SCALABLE TO KEEP UP WITH BUSINESS DEMANDS COULD, AND MAYBE SHOULD, BE ONE OF THE MAIN DRIVERS FOR ANY MIGRATION TO THE CLOUD”.

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DESIGN MIGRATION EFFORTS TO SUPPORT MULTIPLE CLOUDS

The multi-cloud nature of workloads now needs to be carefully considered. Our enterprise customers are increasingly multi-cloud, both private and public. The 2023 Flexera State of the Cloud report shows 87% of enterprise customers now have multi-cloud strategies and 71% see migration as a top challenge.

ABSTRACT DATA FROM PLATFORMS

As respected cloud strategist lead David Linthicum from Deloitte states - “Data should be treated independently of the underlying cloud infrastructure. This enables movement and integration across various platforms. I’m not sure why this message hasn’t been heard.” The need to design for data and workload portability is growing. Data sets need to be easily moved between on-premise and cloud, from cloud to cloud and from application to application. Thus, providing this data abstraction layer is increasingly important to decouple data from platforms ensuring portability and interoperability.

USE BEST OF BREED MIGRATION TOOLS

When looking at migration tooling, process, and governance we believe there is a need to abstract these away from the native hyperscaler services and use best of breed platform agnostic tooling with standardisation. This provides commonality in migration processes and reduces risk by removing disparate tools and processes.

PROPERLY ASSESS AND UNDERSTAND THE APPLICATIONS

The need to accurately assess workloads prior to migration is vital, as it is to have a deeper understanding of what to migrate, when and how.

UNDERSTAND APPLICATION FATES

The most critical early phase in a cloud migration project is a full application assessment, as it helps to determine which cloud migration approach should be used on a per application basis. Failing to fully assess workloads to be migrated is a common mistake, resulting in incomplete specification of migration requirements and an increase in scope during execution. Therefore, the need to carry out Application Migration Assessments to see if and how these workloads can move to cloud is a necessary exercise.

USING APPLICATION DEPENDENCY MAPPING

Many native migration tools offer a high-level overview of the assets that could be migrated alongside a TCO-based analysis. However detailed Application Dependency Mapping is a crucial step in assessment to mitigate issues that may arise during migration. Having a clear understanding of integrations, underlying data stores and network topology provides a better understanding of how a move to cloud can be achieved and the complexity of the task.



TAKING ACTION ON THESE CONSIDERATIONS CREATES REPEATABLE, EFFICIENT, FLEXIBLE PROCESSES THAT CAN PROVIDE SUCCESSFUL MIGRATIONS, ROLLBACKS AND CUTOVERS, TESTING, AND REAL TIME REPORTING”.

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CONSIDER OPTIMISATION AND TRANSFORMATION AFTER MIGRATION

Migration and transformation are often confused but shouldn't be. Trying to both migrate and transform a workload or application at the same time can be a painful exercise. Separating these activities is more effective, something that the Application Assessment activities should draw out.

OPTIMISATION

After a workload has been migrated to the cloud, can further optimisation be achieved? Perhaps by using cloud native services or database modernisation. Further, is the increasing consumption of more cloud resources being effectively measured against spend through services such as Cost Optimisation?

TRANSFORMATION

Looking through a longer-term lens can or should we achieve transformation through Cloud Native Application platforms [CNAP] to decouple applications from platforms and follow a microservices type approach? Should an application be ported then transformed or rearchitected by development teams to a microservices based approach?

BUILD SUSTAINABILITY INTO MIGRATION

Any Cloud migration activity must now consider the sustainability impacts as organisations strive to reduce their carbon footprint. Whether it's on-premises to cloud, cloud-to-cloud, or repatriation from cloud to on-premises - clearly measuring and evaluating sustainability impacts must form part of any migration assessment and planning activity. Some of the key areas we have seen include:

In line with multi-cloud abstraction, using a cloud-agnostic sustainability assessment tool is recommended. Clearly each hyperscaler touts significant benefits of their platforms but they all report their ESG targets in different ways, so providing an agnostic view through third party ISV tools provides a non-partisan view.

Aim to create a sustainable cloud architecture, which promotes energy efficiency and responsible carbon emissions. These help companies stay compliant with regulations such as the European Union's ERP (Energy Related Products) Directive.

Using cloud efficiently through elasticity, auto-scaling, and Cloud Native Applications (CNAP) promotes more sustainable usage of resources. And as this is mutually interconnected into FinOps you save money, too!

IN CONCLUSION

Fundamentally, cloud migration is just a form of technology refresh, and our customers have been doing this in one form or another since the digital world came into existence. Moving onto a newer more efficient platform in order to evolve, reduce costs or scale has been a challenge for years, it just so happens that the cloud enables this change to take place with technology and choices that live outside the boundaries of our own facilities. Importantly, let's not forget that the cloud exists to make things simple. Therefore, it may well be that it's the existing processes, procedures, and operating models that are the barrier to successful adoption and having flexibility in these areas will help significantly in making any migration to the cloud more palatable.

We hope this has given a flavour of the challenges our migration teams are seeing within our customers and the areas we are suggesting, which can reduce cost, increase velocity, create commonality, and move workloads to cloud securely and efficiently. These challenges and considerations are significant but there is a path through to success, we just need to make sure that the correct choices and decisions are made early and with conviction.



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