

Renovation or reconstruction?

Building business with cloud



Renovation or reconstruction?

In 2025, having your organisation's computing power and data available in the cloud, anywhere in the world with an internet connection, at the touch of a button, is no longer just a dream - it's a reality that organisations around the world are embracing every day.

For many, the shift to the cloud began years ago; in a recent state of the cloud survey by Flexera, enterprise respondents mentioned that just under 50% of their workloads had been migrated to the cloud.

For others, it's a decision that's still in progress. What was once a groundbreaking, innovative concept is now widely considered a critical driver of business agility, data-driven decision-making, machine learning models, and unlocking the full potential of AI. But much like moving into a new home, the process is rarely smooth.

Yes, there's the allure of new possibilities: faster performance, improved customer experience, cost savings, and the ability to leverage AI to drive productivity and innovation. However, the road to the cloud is filled with unexpected challenges that must be unpacked at some point: data security concerns, integration complexities, and the constant balancing act of managing legacy systems while moving towards cutting-edge technologies.

As IT departments shift away from being a "necessary expense" and having their value measured by how efficiently costs are managed, organisations increasingly recognise that technology is not just a support function, but a core driver of innovation, efficiency and competitive advantage, particularly when it comes to implementing and driving AI uptake and adoption. But it's not as simple as deciding to migrate all your applications and data to the cloud; to do so risks blowing out budgets, creating security risks, and condemning your migration to failure. If you're moving house, you don't approach it without a strategy.

This whitepaper will examine the best ways for your organisation to extract value from the cloud. We'll start off with a general introduction about cloud migration strategies, before focusing on Infrastructure Modernisation as a pivot, to move your IT departments from the "necessary expense" mode to becoming enablers and providers of differentiated services via technology. We'll also include insights into application modernisation, transformation, and artificial intelligence, as well as some useful tools to help you understand the pathway to these innovative technologies. Finally, we'll unpack how we've helped clients on a similar path to successful cloud migration.

An introduction to cloud migration strategies



The 7 R's of cloud migration are a well-known set of approaches for moving applications and data to the cloud. For those readers who are already familiar with cloud migration strategies, you're welcome to skip ahead to our analysis of the benefits and considerations of infrastructure modernisation, or if you need a little refresher or are new to the cloud migration process, keep on reading.

Moving to the cloud enables an organisation to outsource essential components of its IT infrastructure to a hyperscaler or other large data centre operator, thereby reducing risk and procuring these non-differentiating essential services at a lower cost. While this may initially appear straightforward, the process itself presents numerous options regarding which layer or service is outsourced and how applications and services are migrated. The 7 R's framework offers a perspective on the various choices available to ensure the right path is selected.

We can think of the 7 R's as different methods of moving to a new house, which in this case is the cloud. Each R represents a distinct method with its own pros, cons, and level of effort, from simply lifting and shifting existing applications to completely re-architecting them specifically for the cloud.

An introduction to cloud migration strategies

Just as you wouldn't throw everything into boxes when you move house, you can't just dump your IT systems into the cloud. The 7 R's are your packing strategies for your move:

Rehosting (Lift-and-shift)

Moving applications to a new host in the cloud, without making any changes to the application. This is like boxing up your existing furniture and moving it to a new house. It's the quickest way, but you might not be maximising the space or the potential of your new house. It addresses the immediate need, but might not be the most impactful way.

Refactoring (or Re-architecting)

Updating an application as you move to the cloud to take advantage of cloud native architecture. This is a full renovation of a house you're about to move into. You might knock down walls, change the layout, and completely redesign the interior, to suit your current needs. This rebuild allows your applications to fully leverage cloud-native services. It's the most work, but it offers the greatest potential for improvement.

Relocating

This is like rehosting, but made simple by moving entire virtual machines to the same hypervisor technology in the cloud. Similar to rehosting, but you're moving your entire virtualised environment. Think of this as moving your entire house, room-by-room, to your new building.

Replatforming

Moving applications as they are, but taking advantage of some simpler components in the cloud. You decide to keep some furniture, but upgrade other pieces. You might get a new couch that better fits the living room space, or replace some of your old appliances. This means making tweaks to your applications to better fit a cloud environment.

Repurchasing

Replacing your original applications with cloud-based SaaS. You decide your old furniture is just too much hassle and buy new, modern pieces that fit your new house's style. This is replacing existing applications with SaaS solutions.

Retiring

End-of-life for a given application or business service. You realise you don't need that old exercise bike or that dusty bookshelf, and decide not to keep them around. This is decommissioning unused applications, and saving space and resources in the cloud.

Retaining

Keeping some applications running as they are in the data centre. You decide to keep some things in storage for now - maybe some family heirlooms, an old piece of artwork, or a side table that doesn't quite fit in the new space but might have a spot if things were to change. This is keeping some applications on-premises due to various constraints.

What about the bigger picture?

The 7 R's play only a part of your overall cloud strategy. Generally, any strategy you choose will be part of a larger cloud modernisation project. This broader, holistic approach to your IT infrastructure encompasses hardware, software, processes and people. To return to our previous analogy, infrastructure modernisation is like renovating your house to make it more modern, efficient, and better suited to your needs.

When you renovate your house, you don't just change the layout, design and appliances without considering the services that allow your house to function, such as the building foundations, plumbing and wiring. You might even consider improving elements like smart home integration and increased security.

At the same time, there is a strategy at play with the rooms inside your house. You don't just want rooms for the sake of rooms; they will usually have a general purpose; there might be some rooms you're planning on using more, such as the living room, or less, such as storage in the attic or basement, or for a particular purpose, such as a home office. In these circumstances, you might want to heavily tailor your approach to planning and designing these rooms, to match your vision for their purpose and ensure you're investing your time and funds wisely.



What about the bigger picture?

For infrastructure modernisation, we can draw the following parallels:

Updating the foundation

Ensuring you have a solid and scalable cloud platform.

Replacing old plumbing and wiring

Moving to cloud-native services that are more efficient and reliable.

Installing smart home technology

Automating tasks and improving management through tools like Infrastructure as Code.

Improving security

Implementing modern security measures to protect your data and systems.

Good modernisation takes time. You don't take a day to move or renovate houses: in the same manner, your cloud modernisation shouldn't be rushed, but instead should be considered and thoughtfully planned out. Note, however, that considered and thoughtfully planned does not necessarily equate to modernising all your applications as a default, gold-standard solution, nor does it mean not working quickly in an Agile way, rather than spending months in analysis paralysis.

Consider this. It's time to change up your living situation, and you're deciding between moving house and renovating. You really want to renovate your existing place, but the new house you've found has an incredible kitchen and dining space (with only one or two quirks) that you know will take too much time and effort to recreate in your renovation. Wouldn't it be great if you could renovate the rest of your house, but copy and paste the kitchen and dining space from the other place?

In essence, this is the difference in approaches between infrastructure modernisation and application modernisation. If you're looking for a quick win, and the context is right, a lift-and-shift approach is centred around speed, simplicity and lower initial costs. It doesn't require extensive cloud-native app experience, is much less complex, and can represent a rapid and relatively inexpensive path to the cloud.

Application modernisation is the opposite. It requires much more cloud-native experience, is costly to begin with, and will take time and effort to invest in. However, the benefits of refactoring lie in the long-term outlook. It's a path to improved optimisation, lower overall costs, increased scalability and agility, and enhanced security. Imagine the kitchen you're copying over to your renovation was built a few years ago, and the appliances are a bit dated. If you built it entirely from scratch, with new appliances and the latest technology, it would be costly right now, but it might last longer, be more efficient immediately, and save time, maintenance, and running costs further down the line.

So. How do you decide which approach is best for you?

Understand which strategy you should use

The most straightforward way to understand your strategy is to conduct a portfolio analysis. In essence, portfolio analysis is about assessing your organisation's applications & business services to make informed decisions about cloud migration and the best way for you to achieve your cloud goals.

A good portfolio analysis should cover these key areas:

- **Start with the business strategy**; which services, data and technology will differentiate your organisation?
- **Identify what you can migrate**, like workloads or specific solutions.
- **Set clear reasons** or rationale for the migration.
- **Understand your current IT setup** - including hardware, software, and any dependencies between them. Overlooking these could lead to application failures during the migration.
- **Assess whether your team is ready** and has the right skills. This should include the Cloud & Infrastructure teams, the application teams, the business, and the operating model that helps them work effectively together
- **Consider how long each application will remain relevant** and if the migration investment is justified.
- **Map out all the connections** between applications and services.
- **Assess your existing infrastructure** to understand what the migration will involve.
- **Think about your data** in terms of size and complexity, as this impacts how long migration will take.
- **Check compliance and security needs.**
- **Create a cost model.**
- **Prioritise your applications** for migration.

Understand which strategy you should use

Below, we've attached an example of portfolio analysis categorisation, examining application types and properties as a suggested approach, and the next step that would help you further understand if the suggested approach is right for you.

Application Type	Properties	Suggested approach	Next step
Revenue generation	5-20 year old codebase	Application Modernisation Refactor	Cost/benefit analysis
Customer Experience	Combination of SaaS and in house developed systems. Front end already Cloud Native.	Assess the back end and integration layer for modernisation via Cloud Native or Lift & Shift	1. Technical feasibility of integration and back end modernisation 2. Cost/benefit analysis
Operational (Finance)	10 year Common off the Shelf (COTS) application, fit for purpose for current needs	Relocate	Cost/benefit analysis
Technology (Database)	Operational systems on vendor based DB technology serving many Lines of Business	Assess the DBs for lift and shift, tactical uplift to Cloud Managed Service or Cloud Native transformation.	1. Map DBs to respective Line of Business Applications 2. Cost/Benefit Analysis

By carefully considering these factors, you'll be in a much better position to **ensure a smooth cloud transition** that aligns with your business and operational goals.

Case study



Helping an APRA-regulated superannuation company on its cloud migration journey

One of our clients, the IT department of one of Australia's largest APRA-regulated superannuation companies, realised that managing their hardware refresh and data centres was preventing them from effectively servicing the business.

When considering the potential of cloud migration, they saw the opportunity to exit three physical data centres. After careful consideration and a thorough analysis of its portfolio, the organisation decided to invest heavily in infrastructure modernisation, migrate around 1,400 virtual machines out of the data centre into the cloud, and retire 600.

While their portfolio analysis highlighted the value of modernising some applications, the complexity associated with such a large-scale move meant the organisation felt a sequential cloud migration approach was the best for their context.

By opting to lift and shift its existing VMs into the cloud, the organisation freed up resources within its workforce to create investment opportunities, thereby enabling further budget and talent allocation to enhance revenue and customer experience. This approach also supports the long-term strategic objective of application modernisation where the organisation considers it necessary.

How cloud helps you build your business

From a business perspective, organisations succeed when they can allocate resources to their most pressing risks and key opportunities. Conversely, if an organisation invests in mitigating a risk that is not aligned with its core business, it will likely underperform because it cannot focus on key opportunities.

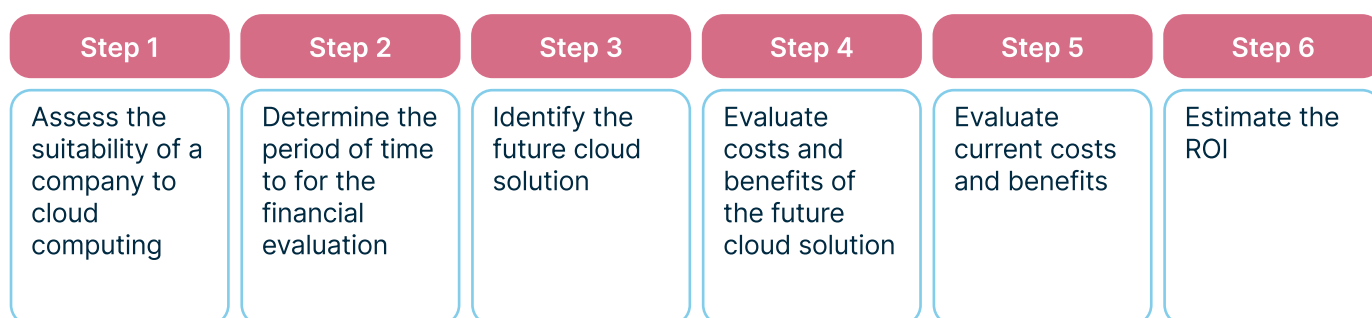
For companies without a core product in the Cloud or Data centre space, managing Data centres and hardware should not be considered core business. Therefore, continued investment in this area hinders innovation in new technology. Despite this, over half of enterprise workloads in Australia still run on internally managed hardware and data centres. This represents an immense opportunity to realign technology departments to core capabilities and business priorities.

As mentioned earlier, cloud migration empowers organisations to outsource non-core functions such as data centre and hardware management to hyperscalers, allowing for the reallocation of valuable resources towards innovation, revenue generation, and customer experience. While Infrastructure Modernisation (lift-and-shift) offers a swift migration path, it does not bring the same transformative benefits of Cloud Native approaches through refactoring.

To maximise the benefits of cloud migration, organisations should adopt a dual-pronged strategy based on their portfolio analysis. This approach identifies candidates for immediate Infrastructure Modernisation, accelerating benefits such as capital and resource reallocation. These freed-up resources can then be strategically invested in Refactoring or Application Modernisation candidates, which hold the most significant potential for future business growth, revenue, and innovation.

With the most significant new technological shifts, such as Artificial Intelligence and data-driven transformation, primarily adopted in the cloud (*cite reference*), organisations that favour allocating resources in this area will be more likely to develop a competitive advantage using these tools.

While this approach is theoretically correct, the decision-making process should also include careful consideration of strategic benefits against risk mitigation and a thorough understanding of ROI, including both tangible and intangible benefits. For this whitepaper, we have utilised the methodology outlined by Rosati & Lynn in their 2020 paper, **"Measuring the Business Value of Infrastructure Migration to the Cloud."**



How cloud helps build business

Understanding the ROI of cloud migration

For infrastructure modernisation, we can draw the following parallels:

Soft benefits

While some progress has been made in articulating soft benefits (Rosati & Lynn), it is important to recognise that there are some straightforward benefits to establishing a modern foundation in the cloud using infrastructure modernisation:

Availability

Hyperscaler regional availability models can enhance availability for essential systems.

Embracing new services

in the cloud requires significantly less initial investment than preparing to deploy new workloads in a data centre, thereby enhancing an organisation's agility.

Cloud foundation

Establishing a cloud foundation involves creating a secure cloud environment that incorporates elements of availability and financial management, tailored to meet the organisation's specific regulatory requirements, risk tolerance, and financial considerations. This **offers a stepping stone to evolve into more valuable cloud-native services**, with the fundamentals of cloud already established as part of the initial ROI.

Scalability

Key applications can utilise hyperscalers' elastic capabilities to achieve scalability that is not viable in the data centre, primarily due to the high costs associated with over-provisioning data centre resources and hardware.

Customer experience

The global networks and points of presence available to hyperscalers can be utilised at a lower cost to enhance customer experience (CX)

Data and Artificial Intelligence

The global networks and points of presence available to hyperscalers can be utilised at a lower cost to enhance customer experience (CX)

Begin retraining the current workforce for cloud capabilities;

infrastructure modernisation is a legacy-friendly method to educate the existing team on cloud technology and take them on the journey.

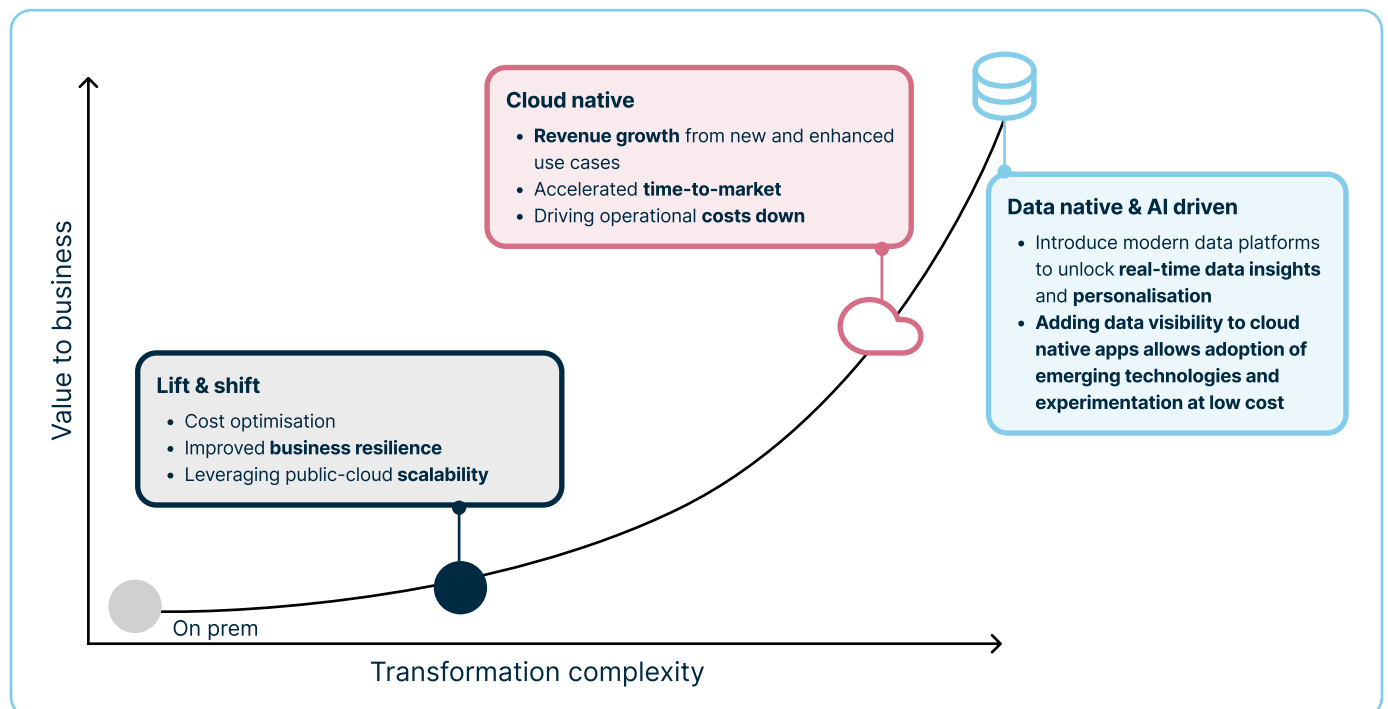
To accelerate progress towards innovation

and begin delivering tangible benefits sooner, create parallel streams of work, including app modernisation and Infrastructure modernisation.

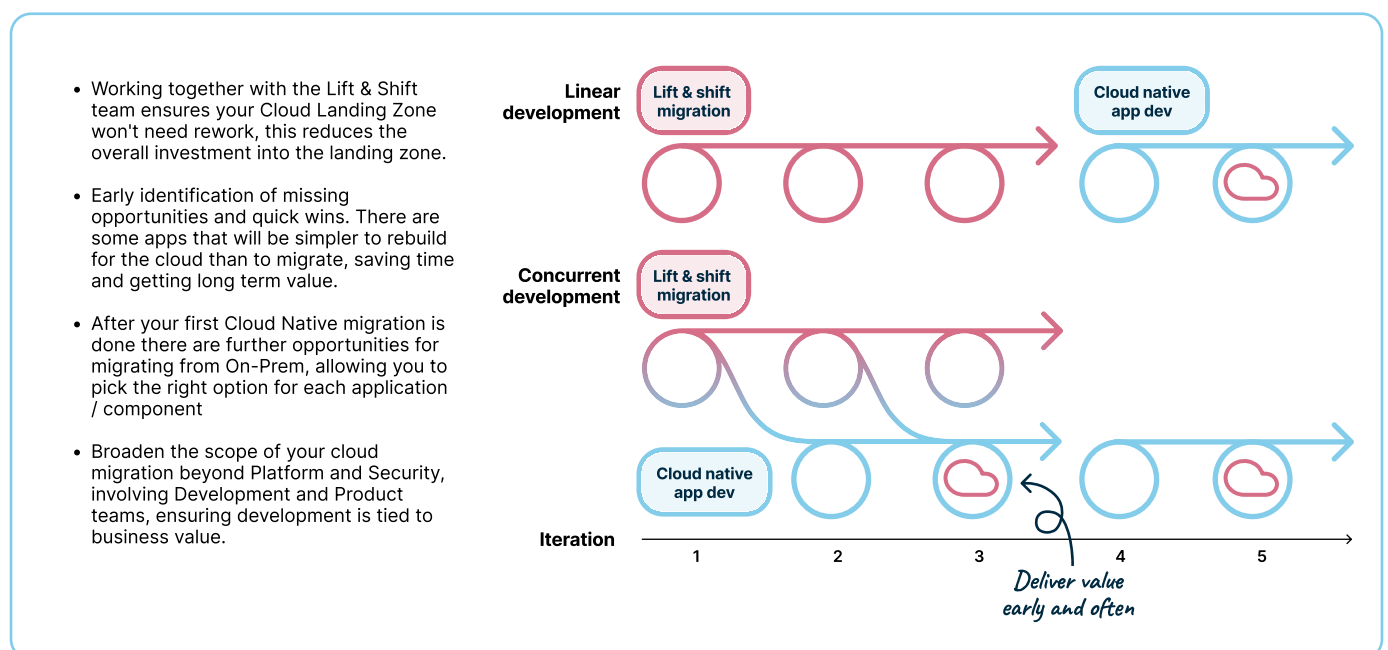
How cloud helps build business

Understanding the ROI of cloud migration

Drivers that enable cloud to deliver more value



Concurrent development



Briefed for Business Stakeholders

Understanding the ROI of cloud migration

For infrastructure modernisation, we can draw the following parallels:

Hard benefits

Moving your hardware and data centres to hyperscalers can bring significant quantifiable business benefits, such as:

Lower facility costs

You no longer need to run physical data centres or pay for their power. Cloud migration lets you avoid significant expenses for facilities, equipment, and staff.

Less networking hardware

You don't need as much expensive networking equipment. VMware Engine has high-speed networking built on Google Cloud's infrastructure.

Easier VMware licensing

You can get VMware licenses through the cloud provider at a reduced cost, or use your current licences in the cloud before getting new ones from the provider. Google Cloud VMware Engine has all the necessary hardware and VMware licenses to run in Google Cloud.

Better use of staff

With less hardware and no data centres to manage, your staff can focus on tasks that increase revenue and improve customer satisfaction. Cloud services let you match resources to what you need, when you need them.

Simplified storage

You don't have to manage storage hardware anymore. Google Cloud VMware Engine allows you to increase storage separately from computing power.

Improved efficiency

Cloud computing is attractive from a business point of view as it requires lower upfront investment, reduced risk, and improved organisational agility and efficiency.

No need to over-provision

The cloud lets you get computing resources when you need them, so you don't have to buy extra capacity in advance. This allows organisations to move focus to operational expenses rather than investing in capital.

Scalability and reliability

Hyperscalers provide infrastructure that can grow with your business and is more reliable.

Access to innovation

You gain access to cutting-edge technology without having to build it yourself.

Compliance

Cloud providers can help you meet regulatory requirements.

How cloud helps build business

Choosing the best ROI and long-term strategic option



As we discussed earlier, while organisations can take several approaches to infrastructure modernisation, the most effective strategy is often to **prioritise the most straightforward transformations that yield the greatest organisational benefits.**

For many Infrastructure Modernisation candidates, this involves minimising the impact on operational teams by aligning with cloud best practices, minimising transformation work to keep migration costs down, and tactically adopting managed services to reduce operational burden.

VMware in the cloud is a significant opportunity for non-refactor workloads that align with these principles. Google Cloud VMware Engine (GCVE), Google's offering of VMware in the cloud, has differentiated technical components that enable high consolidation ratios, meaning fewer resources are required to run the same source systems, and therefore a better ROI.

Additionally, hypervisor licensing changes are resulting in organisations paying significantly more for on-premise licenses during renewals (up to 5x more). This expenditure can be redirected towards migrating to hyperscaler-acquired licenses, which are generally more cost-effective.

Google Cloud's leadership in AI, data, and cloud-native applications positions it as a future-driven cloud, ensuring the future direction of organisations establishing a footprint in this environment.

How cloud helps build business

Risks and considerations

- **Understanding your organisation's ROI:**

We've developed a high-level, preliminary ROI calculator - using a sample set of data regarding your organisation, it will produce an approximate ROI by referencing similar organisations and their existing technology landscape. Our team can provide you further information.

- **How quickly can relevant workloads be migrated?**

We've also developed an implementation calculator, based on Mantel's experience completing over 100 cloud migrations. This calculator can give you an indication of migration timeframes, though should always be followed up with a more in-depth analysis.

- **Is our portfolio analysis accurate?**

An accurate portfolio analysis requires an understanding of the line of business relevant to workloads and a grasp of the mid- to long-term business strategy. Mantel can help you establish an accurate portfolio analysis; contact us to learn more.

- **What key risks should I be aware of when it comes to project execution?**

Risk	Explanation	Mitigation
Can't execute on the migration	<ul style="list-style-type: none"> • The technology team isn't able to move at the pace we envisaged so we aren't able to meet the ROI • Some workloads are too complex/regulated/latency sensitive to run in the cloud 	<ul style="list-style-type: none"> • Do a thorough portfolio analysis • Leverage and experienced partner • Ensure the correct treatment of workloadss based on analysis • Ensure the assessment of upskilling the existing team or outsourcing the run of the new platform result in a tangible plan

Table continued overleaf

How cloud helps build business

Risks and considerations

Risk	Explanation	Mitigation
ROI isn't met due to over consumption of cloud resources	<ul style="list-style-type: none"> • Too much reliance on lift-and-shift mentality without cost optimisation can challenge project ROI • Visibility of cost and appropriate cost centre is important in the cloud 	<ul style="list-style-type: none"> • Ensure a thorough portfolio analysis to ensure the right strategy is taken for workloads • Leverage a FinOps approach, deployed by a team with the relevant experience
Unable to meet ROI due to hypervisor licencing	<ul style="list-style-type: none"> • Unable to negotiate the right agreement with our hypervisor licence provider or we need to bring licences to the cloud 	<ul style="list-style-type: none"> • GCVE offers both included licensing and BYOL, increasing flexibility • Leverage hyperscaler partners who have greater buying power to negotiate
Applications and Data aren't secured properly in the cloud leading to breach	<ul style="list-style-type: none"> • Cloud data security setup requires data sensitivity comprehension, and mapping of existing controls to potential new controls in the cloud. 	<ul style="list-style-type: none"> • Use an experienced partner with deep knowledge of cloud architecture and cyber security risk • Ensure the cloud provider supports encryption in transit and at rest

Table continued overleaf

How cloud helps build business

Risks and considerations

Risk	Explanation	Mitigation
Your existing team don't have the capability to properly manage the new cloud environment	<ul style="list-style-type: none"> Managing a cloud environment requires a different set of skills that might not exist in your technology team. Performance, availability, cost and scalability need to be well-managed to ensure business operations and successfully deliver ROI 	<ul style="list-style-type: none"> Choose between upskilling the existing team via training, and hiring or engaging managed services If you choose to upskill, ensure your training partner can train the team on the actual solution being deployed If you choose managed services, ensure it's compatible with the cloud-native approach
Your regulatory authority doesn't support you running workloads in the cloud	<ul style="list-style-type: none"> This can be a common misconception; many regulators globally now support cloud-based operation. Instead, regulators may have concerns when material outsourcing (e.g. cloud) have not been approached with due diligence 	<ul style="list-style-type: none"> Approach regulators early, with a clear plan Leverage a partner with experience working with regulators Ensure the cloud vendor has the appropriate relationships with the regulator

Case Study



Helping an APRA-regulated superannuation company on its cloud migration journey

Our client mentioned previously had 18 months remaining on their physical data centre agreement and needed to assess infrastructure modernisation and lift-and-shift options.

They ultimately chose Google Cloud VMware Engine (GCVE), initially opting for a lift and shift strategy followed by modernisation in the cloud. This approach allowed them to maximise investment in new technologies and avoid substantial costs associated with renewing their existing data centre term.

A thorough ROI analysis was conducted, along with costing and estimation for implementation. Key risks, including those related to people, skills, timelines (which were very tight at 12 months), finances, and technology, were identified and mitigation strategies were put in place. Over-run risks were also considered and collaboratively plotted to ensure a successful migration.

How cloud empowers tech teams

Information for Technical decision-makers

Technical Considerations for Cloud Adoption

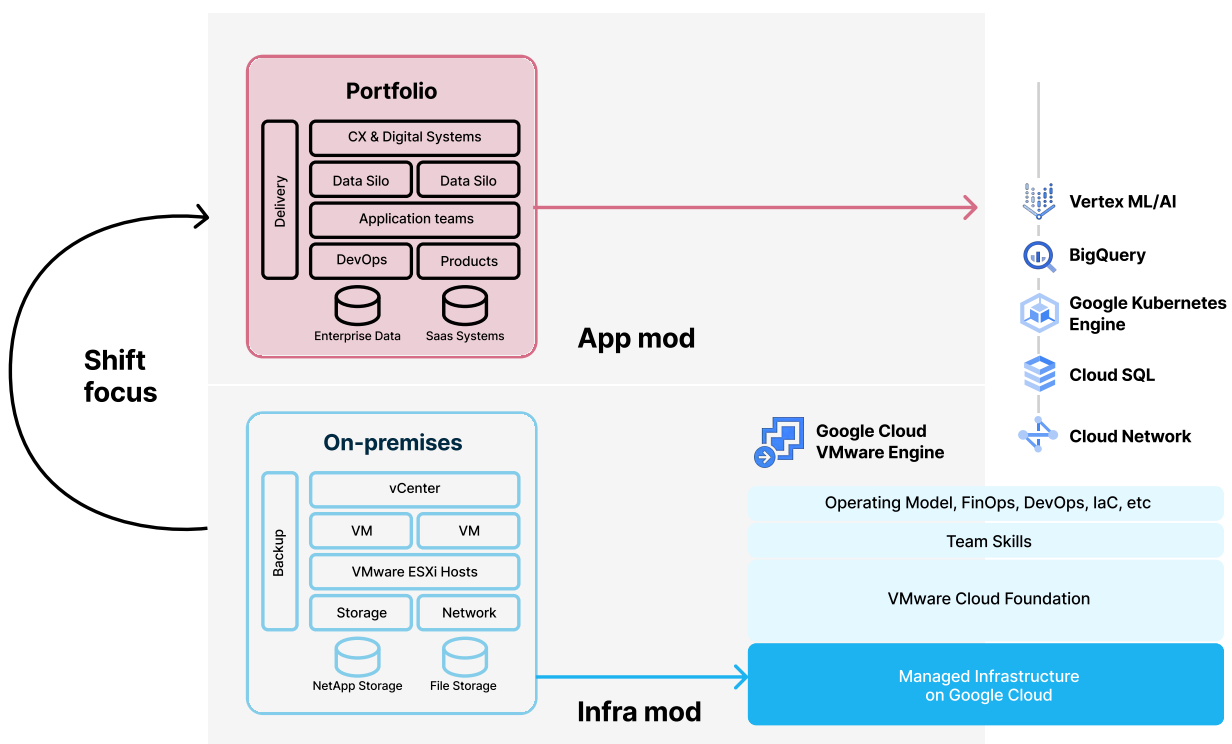
While some may see business and technology as sitting at opposite ends of the table, the truth is they are inextricably linked. Technology drives business because it is the cornerstone of customer experience; by focusing technology on improving both customer outcomes and operational effectiveness, organisations can stand out from the competition and become leaders in their field.

A shift to a customer-oriented mindset requires embracing a new operational mindset, such as DORA, which prioritises customer-impacting layers of the software stack, rather than network, infrastructure, and data centre concerns.

Emphasising automated PaaS solutions with inbuilt resilience allows a greater focus on observability, app scalability, zero trust security, and other initiatives that enhance overall application health and usability. While selecting hyperscaler-managed services and/or PaaS over infrastructure is crucial for cost reduction and flexibility, it's essential to avoid solely relying on lift-and-shift or wholesale transformation strategies, which rarely succeed.

The key to success lies in choosing the right strategy for each workload, with Infrastructure Modernisation as a tactic to enable teams to concentrate on transforming higher-level layers.

Shifting team focus - 2 speed



How cloud empowers tech teams

With the shared responsibility model of VMware in the cloud, the hyperscaler manages technical aspects such as the data centre, storage, and network. This allows tech teams to focus on higher-priority tasks and eliminates the need to invest in skills, capabilities, and capacity in lower-priority areas. As a result, teams can instead upskill in areas such as IaC and GCP integration.

Additionally, when organisations adopt an Infrastructure as Code (IaC) model and leverage automation tools such as Terraform, operations to deploy cloud assets become repeatable. This repeatability results in the ability to deploy systems with built-in benefits such as higher availability, better security, lower maintenance costs, and automated scalability. The IaC approach also saves time and manual work while increasing compliance because these benefits no longer need to be configured for each instance, workload, or application.

Infrastructure Modernisation as a tactic to adopt the basics of cloud:

The following capabilities can be included in an infrastructure modernisation project, upskilling the technical team and the business for cloud technology:

Infra as Code (IaC) pipelines - automation & compliance built into the cloud operating environment, with a move to repeatable software based deployments over error prone manual click-ops.

Cloud Networking & Firewalling - moving the organisation towards a risk based approach to resilience and zero trust networking.

Cloud Security Posture including IAM - including security and identity risk reduction in all traffic flows, regardless of the zone they reside in.

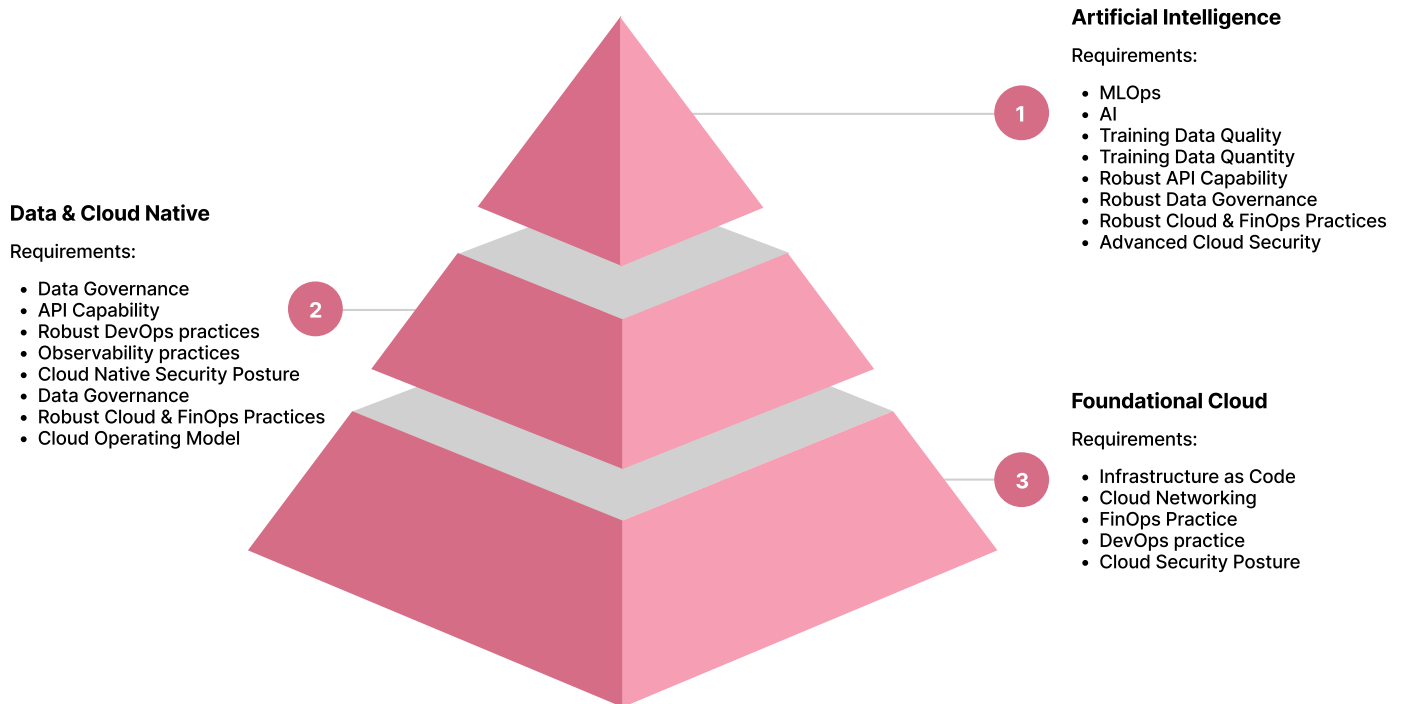
Cloud Operating model - empowering the technology team to engage the business early in solution definition and the ability to be instantly responsive to changing business needs.

FinOps - creating accountability for technology spend in the lines of business which create the revenue, thereby initiating a mature approach to investment into technology usage

Cloud Enablement - helping the business to understand how to leverage technology to differentiate the organisation via embedding the organisation's IP into its technology systems.

How cloud empowers tech teams

A view of the layers of cloud



To ensure viability of the solution as the migration is planned and executed, choose a partner business with expertise in both the technology itself, and the ability to impart learning on the existing team. At a minimum, a successful partner should:

- **Manage the initial solution** safely while the existing team learn the fundamentals,
- **Upskill the team** to be able to operate a cloud environment at scale, and
- **Help transform the environment** via Cloud Native operation, a Modern Data Lakehouse strategy, real-time data architecture and deploying enterprise-grade AI capabilities (Lift & Transform).

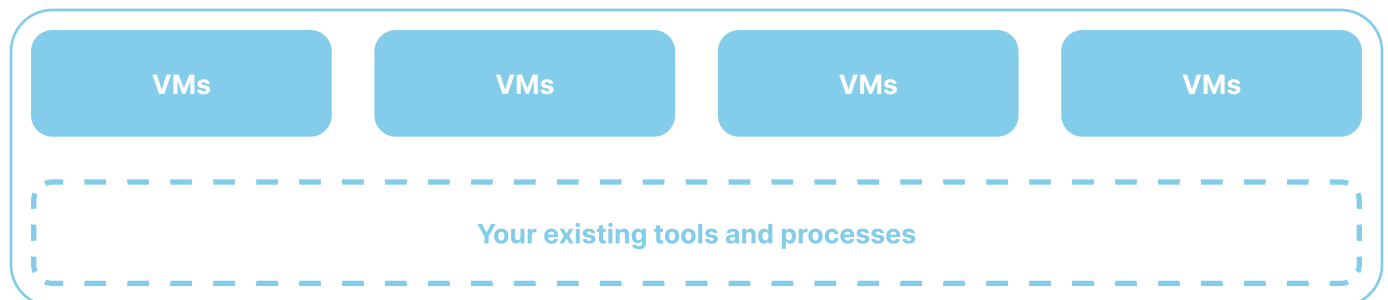
How cloud empowers tech teams

Hurdle 2 - Select an infrastructure modernisation approach

When to choose VMware in the cloud over other Infra Mod options

For applications within a portfolio that don't currently require modernisation or refactoring, leveraging VMware in the cloud presents a way to migrate existing applications without changes to the operating system or operational cont.ext. While replatforming options remain for databases, firewalls, and other key dependencies, the applications themselves (including databases where required) can be migrated as-is to VMware in the cloud.

A key benefit of this approach is that the management of the cloud environment will already be familiar to the existing team. This allows effort to be focused on upskilling or partnering for the components identified for modernisation. Overall, this strategy enables a faster, lower-risk migration.



Comparison of Lift and Shift techniques

Technical complexity	Method	Example Service	Skills uplift	Compatibility Complexity	Key questions
	Replatforming	Managed Databases	High	High	<ul style="list-style-type: none"> Can we make our applications compatible? Can we create effective guardrails? How does this affect operations?
	Rehosting	VMs in the cloud	Medium	Medium	<ul style="list-style-type: none"> How will we size our VMs? How will we manage our VMs? What benefits will the hosted applications derive?
	Relocating	VMware in the cloud	Low	Low	<ul style="list-style-type: none"> How quickly can we migrate? Who will manage the cloud tenancy layer?

How cloud empowers tech teams

Database analysis:

For databases in particular, there is an opportunity to choose an optimisation model that fits the migration criteria. For migrations at speed, moving databases in VMs can satisfy the migration criteria, where a small amount of tactical uplift to managed databases in the cloud can provide better resilience for a lower operational overhead.

Finally, where time and budget permits, a migration to cloud native data solutions can provide a huge uplift in performance and scalability while reducing the cost per transaction of an application. This, however, may create a significant amount of migration work to refactor applications to accommodate the new data architecture. This type of analysis should be conducted by a team with experience across many different migrations.

Our calculators can give you an appropriate assessment of your current portfolio.

Mantel's multi-award winning Google Cloud team are ready to help you answer your biggest cloud questions.

Get in touch 

How cloud empowers tech teams

How Google Cloud VMWare Engine stands out

This whitepaper is based on selecting Google Cloud's GCVE as your VMware in the cloud option, from the following evaluation criteria:

- **Feature set** of the VMware in the cloud offering,
- **Ease of transition** from on-premises VMware, and:
- **Strength of the cloud native stack** for Serverless, Data & AI offerings.

The following points highlight the main technical differentiators of Google Cloud's offering:

Networking - Google Cloud's networking architecture and backbone has long been a strength, providing a simplified ability to leverage Google's global fibre network. Migrating VMs to GCVE means existing IPs can be maintained, vastly reducing migration risk and effort.

GCVE offers a flexible platform for network connectivity, enabling seamless interconnection with any existing on-premises VMware infrastructure and networking architecture. Existing IP addressing can be maintained, whether using HCX for rapid migration or transitioning to a micro-segmented network architecture with NSX-T. Consideration should be given to migration timing, cost, complexity, and target architecture when determining the optimal network topology for migration and end state.

The target network architecture in GCVE presents a crucial decision: Should you retain your existing network architecture by utilising network appliances in GCVE, or should you modify your on-prem network architecture to take advantage of GCVE NSX-T distributed firewall and micro-segmentation?

If your bimodal strategy includes maintaining VMware workloads for the mid-term, we recommend transforming to NSX-T SDDC and using micro-segmentation due to tighter integration and reduced cost. However, if you plan to modernise workloads in the shorter term, the cost and complexity of GCVE NSX-T network transformation may not be necessary once workloads are in GCVE.

Availability - A single GCVE zone offers 99.99% (4 9s) of uptime without the need for stretch clusters. Dedicated connectivity for vSAN and vMotion also help to drive higher availability and stability for GCVE workloads.

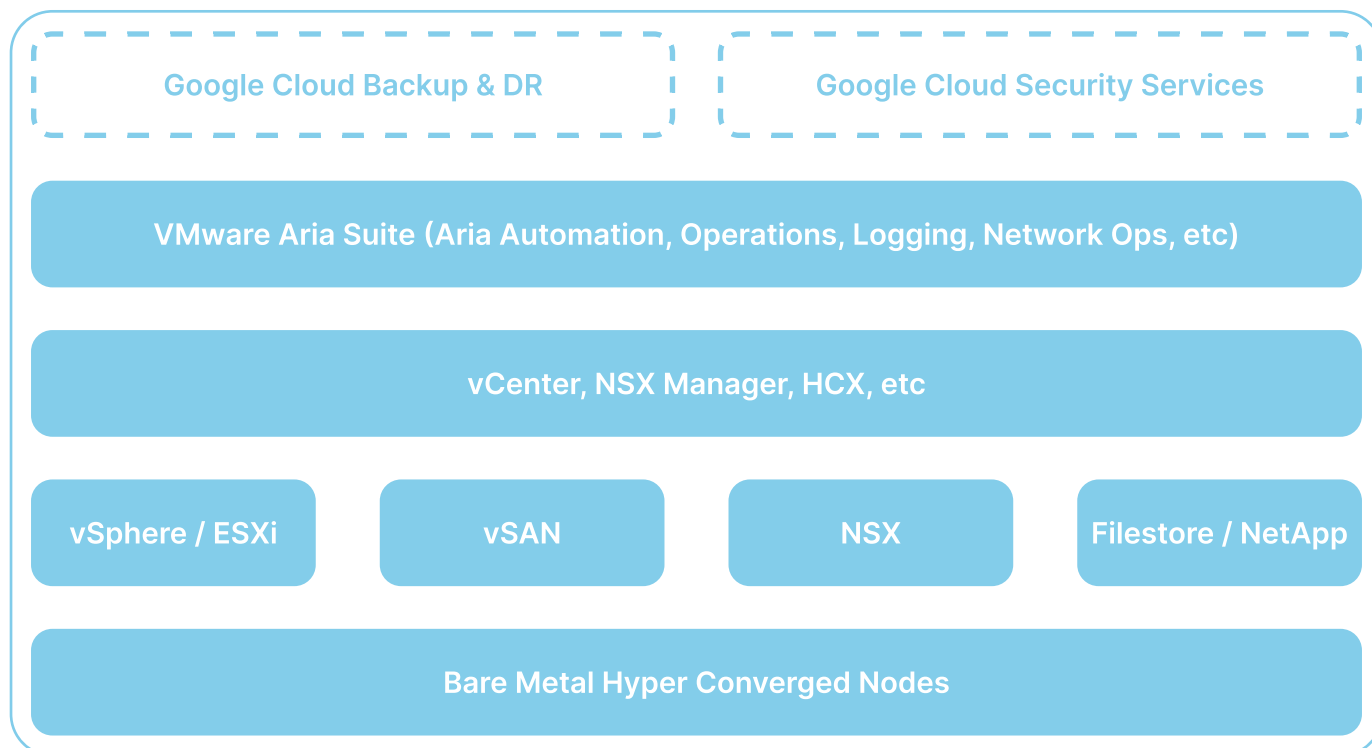
How cloud empowers tech teams

How Google Cloud VMWare Engine stands out

Consolidation - GCVE's underlying VMware node architecture leverages Intel Xeon Scalable Processors and comes with 36 cores, 72 hyperthreaded cores, 768 GB memory, 19.2 TB NVMe data and 3.2 TB NVMe cache storage. This produces higher consolidation ratios than other providers, leading to a lower TCO and therefore better ROI.

Bring Your Own Licensing (BYOL) - Google offers the ability to bring your VMware licences as well as acquire via Google. This means you don't need to wait until your existing licences expire for the ROI of a GCVE migration project to be positive.

Google Cloud VMware Engine



Fully Managed, Secure & Resilient, backed by a 99.99% SLA

How cloud empowers tech teams

Technical considerations for GCVE adoption:

Organisations should be mindful of several key factors when considering a migration to Google Cloud VMware Engine (GCVE). From a technical perspective, these include an assessment of the size and complexity of the migration, familiarity with HCX, any existing non-cloud native backup solutions, the integration of the data centre network with GCP, and the migration of firewall rulesets.

Operationally, organisations should ensure they have well-defined positions on key capabilities such as backup, logging, monitoring, alerting, and security. The shared responsibility model inherent in GCVE means that Google manages many lower-level technical tasks, enabling organisations to focus on higher-value activities. In this context, a move towards an Infrastructure as Code (IaC) model using Terraform is recommended.

Finally, compliance is a key consideration, and organisations can rest safe knowing that VMware Engine meets their required certifications. These include [ISO/IEC 27001](#), [27017](#), [27018](#); [PCI-DSS](#); [SOC 1](#), [SOC 2](#), and [SOC 3](#).

How cloud empowers tech teams

The migration process

The cloud migration process involves a series of carefully planned and executed steps to ensure a smooth transition of applications and data from on-premise data centres to the cloud environment, centred around four key phases: planning, design, implementation, and testing.

Planning Phase

The initial planning phase is the cornerstone of a successful migration. As mentioned earlier, it starts with a thorough **portfolio assessment** to identify applications that are suitable candidates for modernisation. This assessment helps in reducing the complexity and risk associated with the migration process by prioritising applications based on their business value, technical feasibility, and cloud readiness.

- **Dependency Mapping:** A crucial aspect of the planning phase involves mapping application dependencies. This step helps define the migration scope and determine the appropriate migration methods for different applications. It also aids in identifying potential bottlenecks and risks that might arise during the migration process. While the approach can be to leverage a CMDB, tools also exist which are able to add value. An assessment of the internal knowledge, knowledge bases and available tools is necessary.
- **Risk Assessment and Mitigation:** A risk-based assessment criteria is used to identify and evaluate potential risks associated with the migration. This assessment helps in developing effective mitigation strategies to address these risks. Mitigation strategies include tools-based discovery, co-location of GCVE region and DC location, smaller migration waves, longer migration schedules, and non-production testing for business-critical scenarios.
- **Wave Migration Approach:** Based on the portfolio assessment, dependency mapping, and risk assessment, a wave migration approach is determined. This approach involves migrating applications in a series of waves or groups, taking into account both network and application dependencies. The wave migration approach helps minimise disruption to business operations and ensures a controlled and manageable migration process.

How cloud empowers tech teams

The migration process

Design Phase

The design phase focuses on the technical aspects of the migration. Here, Google provides the necessary VMware admin components to minimise engineering requirements and streamline migration.

- **Foundational design:** what are the underlying principles of operation, (identity, security, networking, billing) the organisation will use, and what services and base design is required to support these. This includes integration where required into existing tooling, or the use of cloud based solutions as an alternative.
- **Capacity Planning:** Capacity planning is a critical aspect of the design phase. Migration tools require significant storage and network resources. An assessment tool evaluates node capacity for monolithic applications and databases. Physical to virtual core and RAM ratios are also considered to ensure optimal performance in the cloud environment.
- **VM Migration:** VMware HCX is used to migrate from the data centre to GCVE. HCX service meshes are designed to support migration bandwidth and schedules, with additional bandwidth allocated for replicated servers awaiting cutover.
- **Cluster Design:** Stretched clusters are used exclusively for servers and applications with RPO=0 or requiring zone resilience, as they can limit scalability. It is crucial to create a sufficient number of clusters to allow for future scaling and accommodate the growing needs of the business.

Implementation Phase

This phase includes migrating applications and data to the cloud environment, configuring the cloud infrastructure, and testing the migrated applications. A wave migration is usually recommended which moves applications with common dependency or networks.

While an approach will be outlined in the design phase, it's important to note that each migration can be as different as the organisation executing the migration, and an overall agile approach should be taken.

Each wave is an opportunity to learn about the optimal methodology for your organisation's context, and the appropriate run-books, processes and design can be iteratively improved.

How cloud empowers tech teams

The migration process

Testing Phase

The testing phase is crucial to ensure that the migrated applications are functioning correctly in the cloud environment. This phase involves various types of testing, such as functional testing, performance testing, and security testing.

By following these key steps and utilising the appropriate tools and strategies, your organisation can successfully migrate its applications to the cloud, and benefit from enhanced scalability, flexibility, and cost-efficiency.

Security

When securing your network in the cloud, following best practices that protect your valuable data and applications is essential. Start with the basics: implement **Zero Trust** and **least privilege** principles, ensuring that users and applications only have access to the resources they need to do their jobs. Additionally, Google recommends establishing a **service perimeter** and including VMware Engine in the restricted services list when setting up your first Private Cloud.

Perimeter security is another critical aspect of cloud network security. You'll need to determine where your internet perimeter and IDS/IPS protection will be located. While many organisations maintain existing data centres with their current IDS/IPS, consider using cloud-native tools and routing your internet traffic through GCP if you're accelerating your data centre exit.

Network segmentation is also crucial for protecting your business-critical domains. You can either migrate your existing firewall ruleset to GCP firewall appliances or transform it into NSX-T micro-segmentation. And remember, your existing policy of encrypting data at rest and in transit still applies in the cloud. By following these best practices, you can ensure that your network is secure and your data is protected in the cloud. Automating the migration can be a key step in maintaining security posture and ensuring application functionality post migration.

How cloud empowers tech teams

The migration process

Performance Optimisation

Optimising performance in the cloud and ensuring high availability requires a multifaceted approach. Initially, focus on aligning your cloud environment with the performance optimisation strategies you've employed in your existing VMWare datacentre environment. Be mindful that specific hardware configurations, such as SAN and synchronous replication between data centres, may necessitate adjustments.

Remember that cloud environments present opportunities for enhanced observability and efficiency; capitalise on these by integrating with cloud-native logging and monitoring tools. Additionally, explore tactical modernisation options for managed databases, data capabilities, and security to further optimise performance and availability. By strategically combining these elements, you can create a robust, high-performing cloud infrastructure.

Disaster Recovery & Business Continuity

Disaster recovery and business continuity planning remain largely unaffected by the transition to a cloud environment like GCVE. Disaster recovery still necessitates robust data backup strategies that go beyond mere replication; cloud-based backup solutions offer cost-effective options for storing backup data. While the specific providers may shift, the fundamental data backup and recovery processes remain consistent.

Similarly, business continuity planning requires comprehensive contingency plans (Plans B, C, and D), with Plan D outlining how critical business services will operate in the event of GCVE or Google Cloud Platform unavailability.

The key takeaway here is that while the cloud offers new tools and efficiencies, the core principles of disaster recovery and business continuity remain unchanged.

How cloud empowers tech teams

The future of cloud migration

“There is already a significant ROI benefit that comes with an Infra Modernisation pivot. Organisations who leverage the benefits of AI to help with these projects will complete them faster and with less effort and risk, particularly if they use the correct techniques and guardrails.”

Simon Poulton | Partner - Mantel

The current landscape of cloud migrations is rapidly evolving, pushing the boundaries of what was previously achievable. We are now witnessing a significant shift towards leveraging AI-based solutions to optimise and accelerate the migration process. These intelligent tools and platforms can automate complex tasks, analyse vast amounts of data, and provide valuable insights that enable more efficient and effective migrations. This includes:

- **Risk Assessment:** Using the large amount of data we have on migrated workloads and their migration difficulty to train a Machine Learning model. Based on data from the source environment, this model can then identify workloads that may pose a higher risk during migration.
- **Generating Infrastructure as Code:** Using Generative AI to produce IaC assets based on given configuration data more quickly.
- **Creating design assets:** Utilising Generative AI to either create design artefacts, or assess source data (including application documentation). This reduces the work in migration planning and application support processes.
- **Building a migration wave plan using AI:** As mentioned previously, the correct wave migration approach for your business and tech context is key to a seamless migration. Generative AI can be used to build the Wave migration plan, providing you with anything from the building blocks of an approach, to a structured and detailed guide.

Conclusion

Let the power of Google Cloud drive your future innovation

This white paper has provided a comprehensive analysis of the considerable business and technical advantages of adopting Infrastructure Modernisation. We've explored how this strategic approach can speed up your IT transformation and boost business agility and flexibility, ultimately placing your customers squarely at the centre of your operations.

The insights and recommendations we've provided are grounded in the extensive, collective experience of Mantel's specialist Google Cloud team, accumulated through the successful execution of hundreds of migrations.

As a multi-award winning Google Cloud partner, our people possess the skills and knowledge to help guide you through your unique cloud migration journey.

If you'd like to explore this topic further, or would like to find out how we can help you, get in touch with our expert team below:

Get in touch with our multi-award winning Google Cloud experts.

Our team will help you understand where your biggest cloud opportunities are.

Get in touch 

References

- Song, M., Fu, M., Han, B., & Yin, S. (2023). Analysis of financial statements based on the perspective of strategic management: A case study of Midea group in China. *International Journal of Applied Economics, Finance and Accounting*, 17(1), 146-155. <https://doi.org/10.33094/ijaefa.v17i1.1091>
- Teradata. (2025). Benefits & Limitations of Lift-and-Shift Cloud Migration. [Web page].
- Flexera. (2024). Flexera 2024 State of the Cloud Report. [Report].
- Google Cloud. (n.d.). Google Cloud VMware Engine. [Web page].
- HCL Technologies Limited. (2023). Is lift and shift dead? Evolving cloud migration strategies. [Web page].
- LeanIX. (n.d.). "Lift and Shift" - Rehost Strategy of Cloud Migration. [Web page/Guide Chapter].
- ClearScale. (n.d.). Lift-and-Shift or Refactor: Which Migration Methodology is Right for You? [Web page].
- Rosati, P., & Lynn, T. G. (2020). Measuring the Business Value of Infrastructure Migration to the Cloud. In T. Lynn et al. (Eds.), *Measuring the Business Value of Cloud Computing* (Chapter 2, pp. approx. 24-35). Palgrave Macmillan. https://doi.org/10.1007/978-3-030-43198-3_2
- Talebi, H., & Bardsiri, A. K. (2023). The Impact of Information Technology on Service Quality, Satisfaction, and Customer Relationship Management (Case Study: IT Organization Individuals). *Journal of Management Science & Engineering Research*, 6(2), 24-31. <https://doi.org/10.30564/jmser.v6i2.5823>
- Device42 (now part of Freshworks). (2025). Understanding Cloud Migration Benefits. In *Cloud Migration Best Practices: A Comprehensive Guide* (Chapter 2). [Web page/Guide Chapter].
- Lewis, J., & Cartwright, I. (2022, March 03). What causes poor cloud ROI — and how to fix it. Thoughtworks Australia. [Web page/Article].
- Google Cloud & IDC. (n.d.). Strategies for Successful Migration to Public Clouds. [Infobrief]



Let's connect

Start a conversation about
using technology to impact
people in positive ways.

Contact us 