

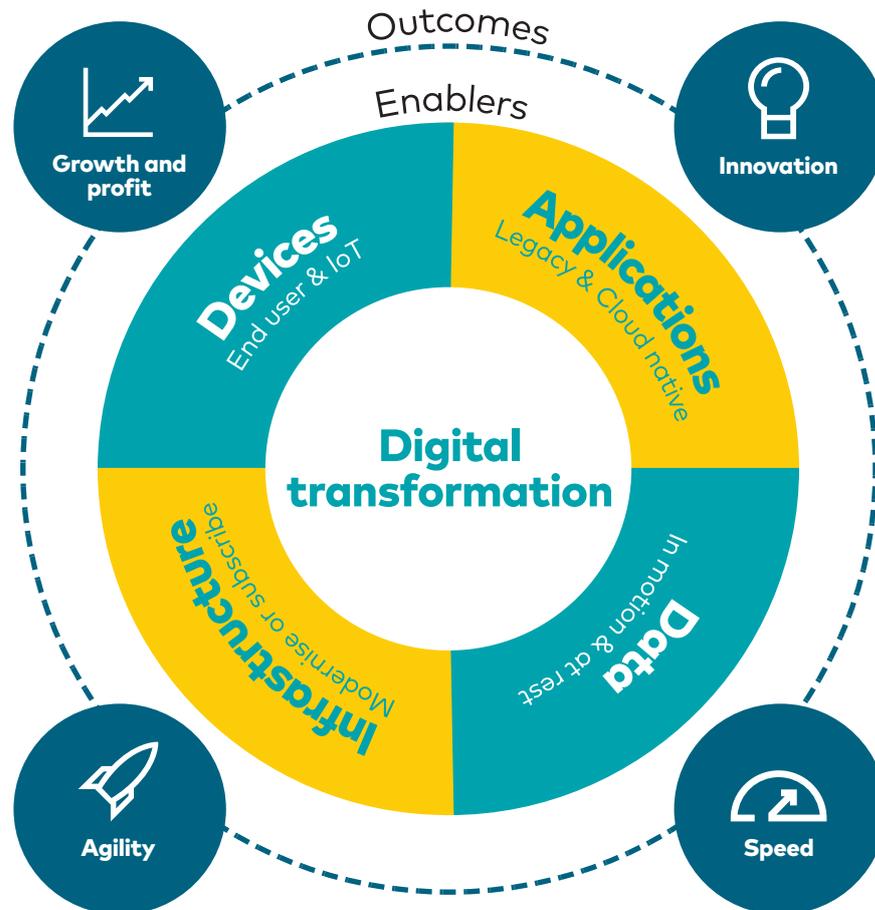
Enabling digital transformation with Optus Managed Cloud

Build a simple, secure and cost-effective Cloud strategy to drive business outcomes

yes

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Fast track your digital transformation

An ever-growing number of always connected people are placing unprecedented demands on business today. Most organisations recognise that the rules have changed, that digital transformation is needed to be able to meet the expectations of today's digital citizens.

Underlying your organisation's ability to digitally transform are enablers such as modernising infrastructure, accommodating smart devices, internet-of-things sensors, innovative applications and exploiting data for new insights.

We understand that your business needs to deliver growth and profit and that you need innovation, speed and agility to deliver this. A key facilitator of these things is the Cloud – IT as a service (ITaaS) – helping you to do more with less and do it faster.

Optus' vision for Cloud is to enable your digital transformation journey with enterprise-grade ITaaS that will deliver compelling business outcomes. It's an exciting time for most businesses, with lots of change, opportunity and risks. We aim to work with you to make your Cloud journey simpler.

More enterprises are moving to the Cloud

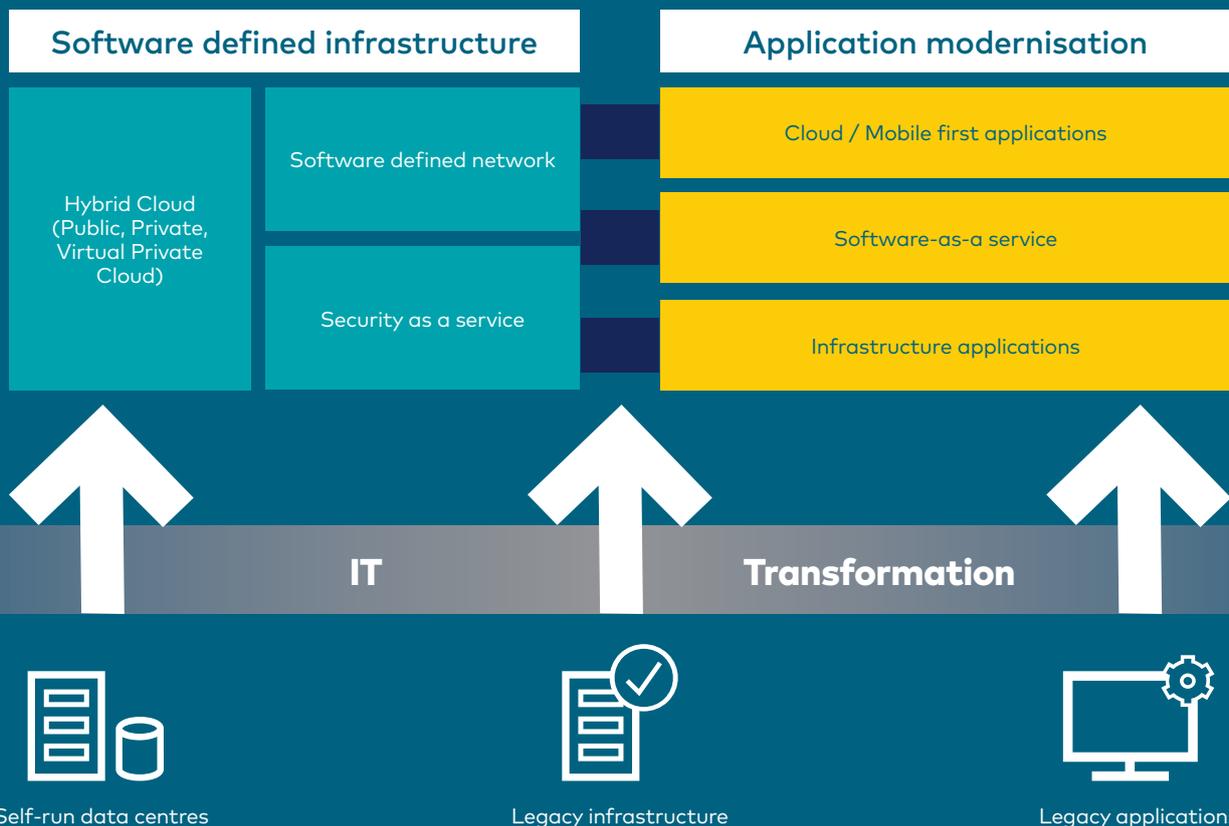
According to IDC, digital transformation is mandating Hybrid Cloud architectures with half of Australian organisations having a Hybrid Cloud strategy – a clear illustration that Australian organisations are making steady progress towards deploying Hybrid Cloud architectures.¹

Here are some of the business drivers triggering a move to Cloud:

- **Application transformation and modernisation** – Migrating platforms to gain a more agile, and functionally rich environment; rebuilding to achieve a more compliant infrastructure; seeking scalability that can result in lower total cost of ownership
- **Data centre consolidation and centralisation** – Lowering the risk of infrastructure migrations; a desire to shift from capex to opex; looking for better utilisation of hardware to lower total cost of ownership.
- **Renewal of managed services contracts** – Lowering managed services cost by moving to Cloud-enabled environment

Enterprise outcomes

Innovation, Speed, Agility, Growth



1. Australia Cloud Adoption and Buyer Attitudes - IDC - July 2016

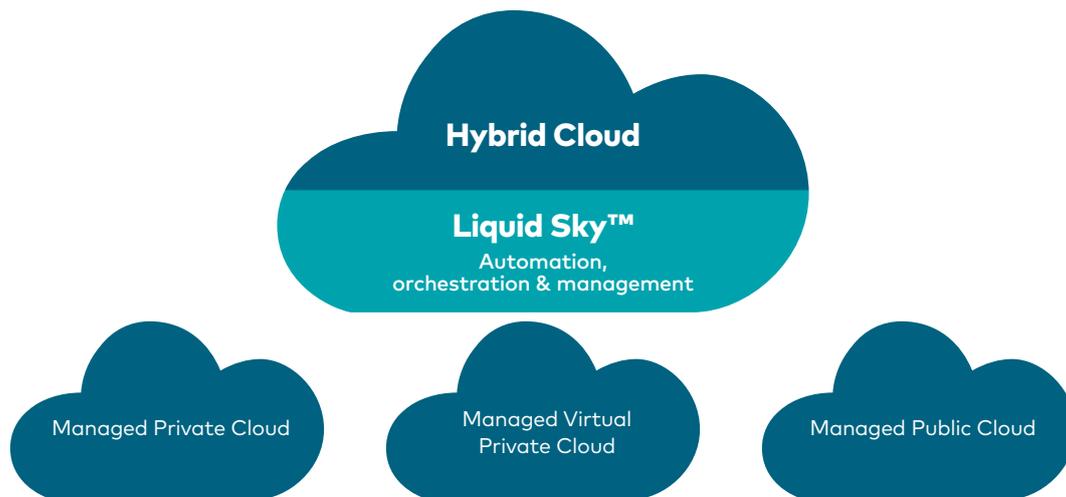
A Cloud ecosystem

The Cloud is not just one thing. There are different types of Cloud solutions to meet different needs.

Your specific applications data and workload will determine which type of Cloud is best suited to your requirement. For web applications you are likely to be wanting elasticity and pay per use; for mission critical applications high availability, customisation and control; whereas for sensitive databases data security and sovereignty will be a major concern.

At Optus we have made sure our offerings reflect this and are comprehensive. We have partnered with industry leaders to bring you best-in-class managed Cloud solutions – Private, Virtual Private, Public Cloud and a combination with Hybrid Cloud.

Apart from deciding to transition from traditional server and storage to a Cloud implementation, one major consideration is which Cloud model to deploy. Let's look at the options Optus has available for you and why you might choose one type of Cloud service over another.



- On-premises
- Dedicated Cloud

- Multi - tenanted
- Logically dedicated

- Multi - tenanted
- Highly scalable

Managed Private Cloud

Private Cloud operates exclusively for your organisation – dedicated enterprise-grade hardware, network and storage is located on your premises or in a co-location data centre.

Who chooses Private Cloud?

Some of the reasons organisations choose Private Cloud are:

- **Compliance and security** – Organisations with requirements for compliance and data sovereignty or are hosting highly sensitive data.
- **Performance and control** – Organisations with applications that require high performance with low latency and those wanting direct control and oversight of their IT assets.
- **Business size** – Businesses with small IT departments or branch offices/ departments/ remote offices looking to set up new on-premises Cloud implementation or to share and standardise resources.

Private Cloud deployment models

Converged Cloud which uses hardware-focused building blocks of server and storage enabling you to meet specific hardware compatibility, performance and scalability requirements.

Converged Cloud is ideal for enterprise Cloud, data centre consolidation and where you have critical performance requirements.

Hyper-converged Cloud, an all-in-one, pre-integrated appliance comprising hardware, software, implementation and support. It has a lower entry point and is easy to scale using cost-efficient, software-defined data centre building blocks.

Hyper-converged Cloud is ideal for small organisations, remote offices and small footprint with scalability.

Customised architecture provides you with deep control over the hardware and software components in much the same way as traditional server and storage. The downside is you need to be involved in every technology choice across your Private Cloud platform and requires greater technical resources and expertise.

Customised Private Cloud is suited to large organisations needing a high level of customisation and control.

Virtual Private Cloud

Optus' secure and flexible Virtual Private Cloud solutions let your business harness the benefits of Cloud without having to procure, deploy and manage your own IT systems – we provide and manage the resources for you.

Our Virtual Cloud services and the Optus data centres that support them are ISO/IEC 27001:2013 certified, a globally recognised standard governing security of information and network systems. Our data centres feature fully redundant subsystems, strict security controls and 24 hours a day, 7 days a week, 365 days a year monitoring of service availability and delivery. Secure, world-class connectivity gives you optimal efficiency, reliability and secured Cloud access.

Optus Managed Cloud suite of Virtual Private Cloud services provides premium-grade Infrastructure as a Service with:

- Flexible service schemes on shared or dedicated infrastructure
- Access via a range of connectivity options
- A choice of server systems and a broad choice of operating systems
- Two classes of storage to suit standard and performance applications requirements
- User-friendly self-service portals giving you visibility and control to directly manage your Cloud resources
- Service platform targets and service level agreements (SLAs) designed to ensure the service availability match your business needs.
- Ongoing technical support with service desk (available 24 hours 7 days a week), change management and service management reporting.
- A rich set of value-added services including firewall, anti-malware, monitoring, network load balancing, SSL VPN/IPSec and data backup options.

Who chooses Virtual Private Cloud?

Organisations often choose Virtual Private Cloud for:

- **Business efficiencies** – To enable the cost efficiencies of Cloud computing while ensuring data sovereignty
- **Easier migration** – Migrating workloads as seamlessly as possible to Cloud without needing to re-familiarise with new interfaces and tools
- **Extending IT** – Running and operating Cloud as an extension of their own IT operations for capacity expansion.
- **Disaster recovery** – To enable disaster recovery options over the Internet that allow the replication of critical workloads to the Cloud.
- **Speed** – To quickly deploy development, test and production servers.

Public Cloud

Public Cloud offers highly scalable shared computing resources, presented to you as a utility service, accessible through the Public Cloud provider's portal, control panel or service application programming interfaces (APIs).

With Public Clouds, you are able to leverage the highly competitive and rapidly progressing software innovations that these providers bring.

Optus partners with advanced and trusted Public Cloud technology providers – such as Amazon Web Services and Microsoft Azure - so you can extend your private infrastructure into the Public Cloud with ease. We provide direct, private connectivity to these Public Cloud providers, delivering more predictable performance and improved security via dedicated lines.

Who chooses Public Cloud?

Organisations choose Public Cloud for:

- **Quick deployment** – Productivity applications and websites with high bandwidth pipes, high availability and auto-scaling capabilities to scale easily
- **Extending IT** – High bandwidth connectivity combined with high performance computing services as an extension of the organisation's data centres
- **Cloud bursting** – Temporary increase of resources (Cloud burst) to accommodate short-term projects
- **Disaster recovery** – Cloud-based disaster recovery measures to ensure business continuity and short recovery time objectives (time to restore) in case of outage

But how do you understand whether Public Cloud is suitable for your business, choose which Public Cloud is right for your workload, get support in deployment, configure the Public Clouds for reliability and performance and learn how to leverage the powerful features and capabilities available to you? Optus offers a suite of Professional Services that can help you with these challenges around Public Cloud. Working together, we can simplify the decision making process, and guide you along the way to aligning your business for the future using Cloud services.



Flexibility with Hybrid Cloud

Today it is common for businesses to live in a world of many Clouds – choosing to have an optimal mix of Private and Public Cloud resources, known as Hybrid Cloud. Hybrid Cloud uses two or more distinct Cloud infrastructures with data and application portability across the Clouds.

For example, most organisations follow cycles of peaks and downturns. A hybrid approach lets you draw on additional computing resources in the Public Cloud for peak workloads and scale back down when business is quiet.

Also Hybrid Cloud enables you to manage risk and compliance, as your critical data can be kept locally to meet sovereignty or other regulatory compliance issues. Less sensitive data can be stored on the Public Cloud to help manage costs.

Optus provides Hybrid Clouds by combining our Private and Public Cloud services and orchestrating between these platforms.

Who chooses Hybrid Cloud?

Organisations implement Hybrid Cloud solutions for:

Backup and disaster recovery (DR) – Hybrid offers a ready solution with primary data residing on Private Cloud backed up to a more cost-effective scalable storage on Public Cloud.

Development and testing – Test environments can be easily and quickly set up. Migrating back to production when completed is as simple as making a clone and booting back in the Private Cloud. Testing workload no longer competes with resources allocated for production.

Cloud bursting – Using Public Cloud for peak and unexpected usage lets you manage capital investments in hardware, and help avoid over-capacity.

Don't forget these

To get the best of everything, Hybrid Cloud adoption is accelerating. However, Hybrid Cloud introduces additional challenges including:

- **Security** – Ensuring adequate security policies are in place and practices are implemented consistently across Hybrid Cloud environments
- **Networking** – Extending native network topology seamlessly to the Cloud
- **Data and applications integration** – Applications needing to gracefully handle individual components residing in different parts of a Hybrid Cloud
- **Compatibility** – Effectively dealing with conflicts that surface between different infrastructure and software stacks
- **Portability** – Moving metadata and configurations seamlessly
- **Tooling and skillsets** – Need for personnel that are proficient in the areas of infrastructure, applications and business process to remake IT while taking advantage of the Cloud model

Enterprises are looking for a provider that can provide the flexibility of various Cloud options depending on actual workloads, plus having expertise with security, interoperability and manageability in the Hybrid Cloud environment. Optus can be that provider.

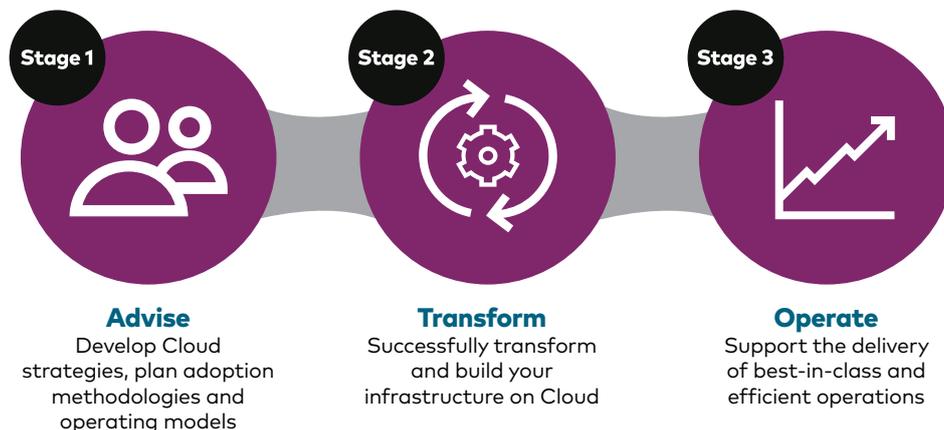
The **easy way** to adopt Cloud

Wherever you're at on your Cloud journey, it always helps to have an experienced guide by your side. Optus Cloud Lifecycle Services are project-based services that assist you with end-to-end planning, adoption and implementation and management of your Cloud services strategy.

We support you with expert resources in each step of your Cloud journey – guiding you to a Cloud strategy that fits your IT needs. We work with you to understand the outcomes you need for your business, and then help deliver those by leveraging the most appropriate platform while ensuring a seamless, secure and optimal experience for your end users.

We remove the complexity of Cloud through our managed capability and expert services to firstly ADVISE, then TRANSFORM and finally OPERATE your integrated Cloud solutions. You can enjoy the convenience of having a single Cloud service provider to design, implement and manage your solution.

Optus' team of Cloud professionals are joined by Ensys (an Optus owned company) who deliver award winning Microsoft and Citrix focused IT and Cloud services and solutions. Most recently Ensys have been awarded the prestigious 2016 Microsoft Worldwide Hybrid Cloud and Infrastructure Platform Partner of the Year.



Advise

We assist you with understanding Cloud technologies, plan adoption and developing strategies to meet your business aims and outcomes. We work with you to:

- Analyse your IT infrastructure and understand your needs and pain points
- Understand Cloud benefits and assess your existing IT environment
- Develop a strategy to achieve Cloud best practices
- Identify current applications to move to the Cloud and propose suitable solutions

Transform

We help you to achieve a successful migration to latest Cloud technology to achieve business effectiveness and productivity, providing leadership, guidance and complementary and supplementary architectural consulting and engineering skills:

- Select from a range of Public, Private and Virtual Private Cloud services to suit different business needs
- Set up, integrate and implement infrastructure moving to the Cloud
- Conduct application and data migration services
- Assess post-migration operations

Operate

We support and deliver best-in-class efficient operations by providing effective management of your Cloud services:

- Ongoing management of your Cloud environments to enable you to focus on your core business
- Round the clock (24x7) oversight of the infrastructure helping to monitor traffic and generate analytics to assist with optimising your Cloud environments.
- Seamlessly deploying and migrating workload between different Cloud platforms to achieve efficiencies and meet changing business requirements

Hybrid Cloud management

And that's not all. If you move to Hybrid Cloud, you will need Cloud orchestration and automation to help leverage agility and efficiencies across multiple Clouds.

Liquid Sky™, Optus' orchestration and automation tool set, can help you manage your Cloud operations through rapid blueprint-driven repeatable provisioning and enhanced visibility within the Cloud environment, as well as being able to enforce key policies and governance across a multi-Cloud architecture.

Complete Cloud services

Optus Managed Cloud

Cloud Security



Software - as - a - service

Hybrid Cloud

Liquid Sky™

Automation,
orchestration & management

Managed Private
Cloud

Managed Virtual
Private Cloud

Managed
Public Cloud



Cloud Lifecycle Services



Advise

Transform

Operate

Managed Connectivity

Azure ExpressRoute
AWS DirectConnect

Cloud - enabled Data Centres

Along with Cloud Lifecycle Services to smooth your Cloud journey, Optus provides the other important wrap around services needed for successful Cloud implementation.

Reliable, seamless and secure connectivity to the Cloud

Optus Cloud access is a fast, direct private connection from your network to the Cloud, giving you more predictable performance and greater enhanced security

- Seamless provisioning – Near real-time set up of virtual connection to provision for Cloud services
- Redundant and diverse interconnectivity paths – To ensure high availability
- High throughput – Flexible bandwidth options to scale up
- Higher security – Data transfer is within private connection to reduce risk

Secure and highly resilient Cloud enabled data centres

Optus can provide co-located EXPAN hosting services for your IT equipment in secure Tier 3 data centre facilities in most capital cities around Australia. We provide the physical infrastructure to host your equipment, including rack space or secure hosting floor space together with power supply, high volume cooling and on-site security.

Offering ISO/IEC 27001:2013 certified data centres the Optus EXPAN Hosting Data Centres are equipped with advanced security technology including a closed circuit TV and intercom at all perimeter entry points with biometrics scanners. This technology is complimented with professional security staff monitoring the facility 24 hours a day, 7 days a week. The data centres incorporate N + 1 redundancy on all facility sub-systems including power, cooling, electrical, mechanical, fire detection and security.

To suit your international needs, EXPAN hosting is also available through Singtel's regional data centres.

Security solutions to monitor, detect and protect

In addition to secure connectivity and physical security of your Cloud environment within secure data centres, Optus protects your Virtual Private Cloud with network based firewalls, distributed denial of service protection and scheduled maintenance to maintain security posture.

Optus also has available a comprehensive portfolio of managed security solutions to help protect your Cloud environment's applications, data, systems and network as well as providing security assessments, professional services, monitoring and management. Additionally Optus' security team bring expertise about a broad range of security controls, including authentication, endpoint security, data security, application security and security event management, to apply security best practices for cloud computing in your organisation.

As a leading provider of security services, security is in Optus DNA. We have recently established a multi-million dollar, state of the art Optus Advanced Security Operations Centre (ASOC) powered by Trustwave, collocated with and integrated into the Optus Network Management centre.

Further demonstrating Optus' commitment to this key business concern, Optus Business and Macquarie University have joined forces to establish a multi-disciplinary Cyber Security Hub to support businesses and government to recognise and protect themselves from increasing cyber threats.

Six common Cloud security concerns:

1. **Data breaches** – This may inflict severe damage depending on the sensitivity of data exposed
2. **Compromised credentials** – Leaving the door open to compromise through lacklustre authentication process, weak passwords, and poor key and certificate management
3. **Hacked interface and APIs** – Weak system interfaces and APIs expose organisations to security issues
4. **Advanced Persistent Threats** – Advanced Persistent Threats infiltrate systems to establish a foothold, then stealthily steal data and intellectual property
5. **Permanent data loss** – Malicious hackers have been known to permanently delete Cloud data to harm businesses
6. **Inadequate diligence** – Issues arise if a development team is not familiar with Cloud technologies when deploying Cloud-based apps

Learn about Optus Managed Security Services at optus.com.au/business/security-and-applications

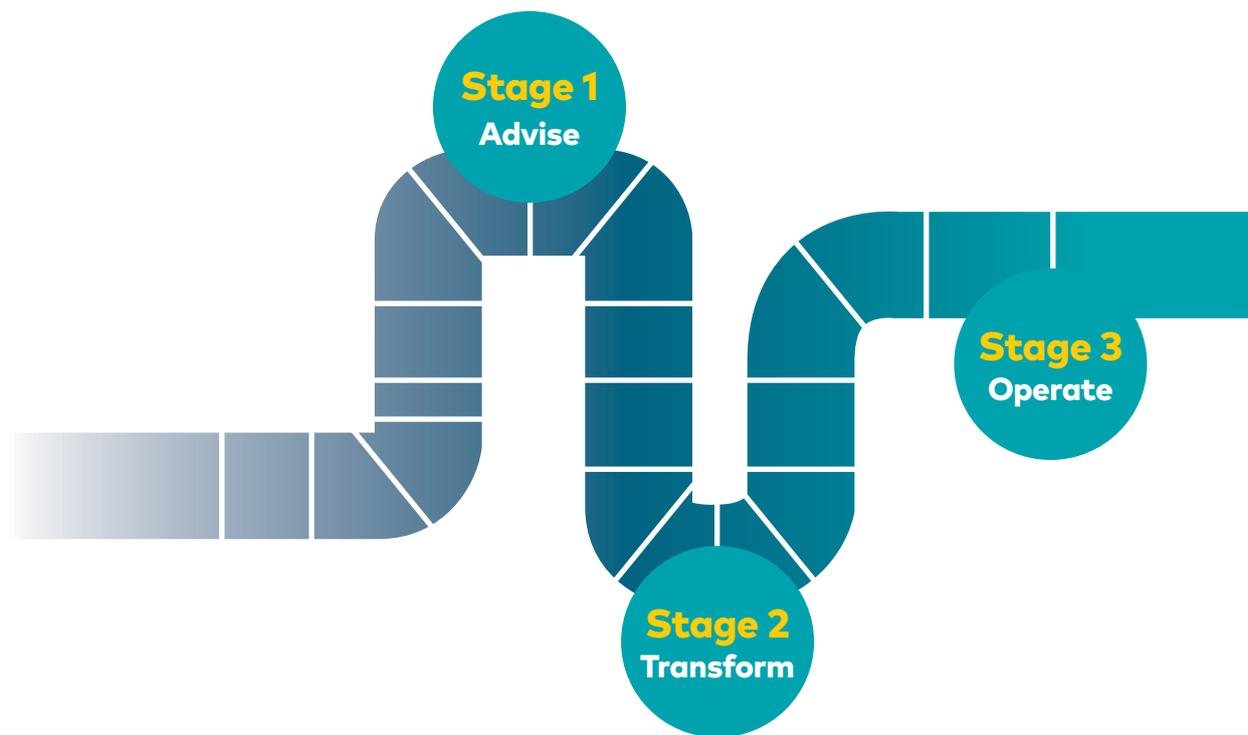


Transform with Optus

Optus can help unshackle you from old systems and thinking with Cloud solutions that bring your digital transformation closer.

Enjoy the convenience and responsiveness of a single, trusted advisor that can bring you a full suite of Cloud services, lifecycle services, plus data centre, network and security services to complement your Clouds.

Let us assist you on your Cloud journey today to leverage the agility, flexibility, and efficiency of Cloud to drive innovation and competitive advantage for your business.



Give us a call

OPTUS



To discuss how Optus can help you through innovative Cloud solutions, contact your Optus Account Manager or call the Optus Business hotline on 1800 555 937

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