VMware Cloud On AWS

When two powerhouses of cloud technology team up, what do you get? The ability to migrate to the cloud faster than ever before. This eBook has everything you need to know about VMware Cloud on AWS.

AC3

The VMware Cloud on AWS story

The ability to accelerate innovation is one of the key factors driving the world's most successful organisations.

But like Popeye robbed of his spinach or Thor his hammer, even the most robust business plan will be rendered useless without a full suite of cutting edge technological infrastructure supporting it.

Until now this has been a big issue for Australian and New Zealand businesses eager to realise their ambitions to increase deployments to cloud services without amplifying cost, purchasing additional hardware or re-engineering work already completed. Large differences in operation models, established governance, availability and control policies have further complicated the issue, as has an inability to extend enterprise applications natively.

The background

The arrival of a new hybrid cloud service, delivered by two global powerhouses of private and public cloud, now promises to answer demand from customers who seek to leverage all the benefits of the private cloud and on-premises infrastructure experience while delaying the requirement to convert existing applications.

Providing a unified infrastructure framework that bridges the gap between private and public clouds, hybrid clouds are the solution that the 60 percent of large enterprises running workloads in the public cloud [1] have been waiting for.

Widely recognised as best in class when it comes to supplying software and applications for virtualisation, VMware first paired with digital giant Amazon Web Services (AWS) two years ago to offer users an unprecedented level of easy workload portability and hybrid capability.

After successfully launching across the US, Europe, South America and Canada, the highly scalable, secure and innovative VMware Cloud on AWS service landed on Australian shores in mid-2019.

The details

Essentially an on-demand VMware software-defined datacentre (SDDC) delivered as a cloud service, VMware Cloud on AWS allows customers to scale faster while offering direct access to the power of native Amazon Web Services.

Powered by a unified SDDC platform, dubbed VMware Cloud Foundation, the service integrates vCentre Server (a centralised platform for managing vSphere environments), ESXi (a virtualisation server), NSX (software defined networking) and vSAN (software defined storage) technologies.

Optimised to run on next-generation, elastic, bare-metal AWS infrastructure, it offers the functionality, elasticity and security expected from providers of this calibre.

The platform offers users access to the broad range of 165-plus AWS services incorporating everything from virtual machine images, servers, storage, software, and databases to complete multi-tier application architectures.

Perhaps VMware Cloud on AWS's most compelling feature, however, is that enterprises can manage this service from an existing VMware vCentre Server interface with the ability to easily scale AWS resources.

Feedback from existing users, which at a local level include the NSW Government's Department of Customer Service, suggests one of the key benefits of using this technology is that it allows users to minimise the complexity and associated risks of managing diverse environments.

The users

VMware Cloud on AWS is a technology clearly hitting the sweet spot within its target market. And it seems organisations looking to migrate applications to the public cloud, develop new applications, extend the capacity of existing data centres, or quickly provision development and test environments, are reaping the greatest rewards.

Yet it seems it's not just VMware and Amazon who have strategic interest in the long-term viability and growth of this platform.

Despite the fact the technology is relatively new, VMware Cloud on AWS's popularity looks set to skyrocket with all signs leading to the platform's continued dominance of this category.

In a 2018 report forecasting the future of cloud managed services, advisory group Gartner claimed that hybrid IT scenarios combining cloud services with on-premises information technology systems will dominate the IT landscape for the near future as organisations selectively utilise public cloud services to benefit from the cloud value proposition.

The same report determined that by 2022, 55 percent to 60 percent of organisations will use an external service provider's cloud managed service offering – up from 30 percent in 2018.

The data is consistent with research undertaken by the same group that suggests that customers looking for on-demand capacity for scalability find VMware Cloud on AWS the most compelling option.

An additional Gartner report predicted that by early 2020, one million virtual machines globally will be running on VMware Cloud on AWS. It also found that by year-end 2021, more than

150,000 hosts will be supported by VMware Cloud on AWS.

The costs

This level of innovation always comes at a price. Yet while it's $250,000 entry level pricing may prove prohibitive for smaller organisations, the VMware Cloud on AWS business model has been set up to offer larger users of the service the chance to shift their IT provisioning from a capital expenditure to an operational one.

Owing to the sophistication and unique engineering of VMware's management and policy tools, this technology offers a unified and operationally consistent experience. This means there is no custom hardware to deploy in the on-premises environment, and no requirement to rewrite or modify applications, allowing users to leverage all existing investments to help save money.

In addition, the VMware Cloud on AWS model comes in a standard pack that includes three physical nodes. Licence fees are then based on how many additional nodes are required. Dedicated clusters combining VMware software and AWS infrastructure can then be purchased either on demand or as part of a monthly subscription service.

The assistance

VMware Cloud on AWS is a VMware service that is delivered, operated, sold and supported by VMware, with the assistance of a number of international partners, including AC3, that also provide a managed service.

Depending on the user's individual agreement, there is a standard support number to call for all VMware Cloud of AWS users for queries related to general infrastructure life cycle management, such as technical support, login queries or software upgrade issues. If a user has purchased a managed service through AC3, then it will attempt to iron out any issues a user may encounter.

In addition, all customers are provided with supplementary resources to ensure success, including access to online chat support and forums.

The possibilities

VMware Cloud on AWS's cutting edge flexibility, adaptability and portability ensures unrivalled capability for a vast array of applications.

Having made the decision to make VMware Cloud on AWS the heart of your IT infrastructure, you clearly recognise that agile utility, security and scalability are key to optimising and future-proofing your business outcomes.

It also goes without saying that you are aware that VMware Cloud on AWS allows you to seamlessly migrate and extend your on-premises VMware vSphere-based environments to the AWS Cloud.
But what you may not know is how the many tools you now have at your disposal can best be leveraged.

Spanning the bridge

There are two main advantages right off the bat. The first is the opportunity to benefit from the global scale of Amazon Web Services (AWS) at speed. The second is that it eliminates any barriers that may exist between your on-premise infrastructure and your cloud-based operations.

By stretching your Network using VMWare technologies to your VMware Cloud on AWS SDDC, you effectively have an infrastructure bridge between a traditional virtualised data centre set up and the AWS service catalogue. The seamless ability of VMware Cloud on AWS to bridge workloads on-premises and in the public cloud enables you to shift from one to the other, and back again, for minimal outlay.

Disaster-proof

Such flexibility delivers a major boost to your disaster recovery capability to ensure business continuity throughout even the worse case scenario impacts on your data repository.

VMware Site Recovery – the on-demand disaster recovery as a service optimised for VMware Cloud on AWS – accelerates time-to-protection, simplifies disaster recovery operations and reduces secondary site costs with cloud economics. This happens all while providing a secondary site that is operationally consistent with your VMware based data centre.

Other advantages of toggling workloads from on-premises to AWS include the ability to run on-premises hardware upgrades and refreshes without the need for system shut down.

Ready to burst

This system also ramps up your bursting capability in times when demand for computing capacity spikes.

The hybrid deployment of VMware Cloud on AWS spreads your workloads to slash the huge capital investment usually required to cater for the extra capacity needed to burst a cloud. The load sharing also gives you a much greater range of applications that can be

burst. Typically, it is recommended to burst with non-mission critical applications that handle non-sensitive information. VMware Cloud on AWS enables you to considerably broaden the type of applications that have, up to now, been no-go options for bursting.

The will and way to modernise

Application modernisation is the refactoring, repurposing or consolidation of legacy software programming to align it more closely with the current needs of your business and market. More than anything else, application modernisation is a mindset, a culture of striving for continual improvement and wanting to make things better. And it is virtually impossible to thrive in the digital economy without it. It's a culture that must be shared and bought into by all parties, from DevOps to management and staff of the wider organisation – the sort of culture that has pervaded Amazon since foundation to enable it to grow into the successful giant that it is today.

However, all the will in the world to apply application modernisation will come to little if you do not have the right platform and the right tools.

VMware Cloud on AWS gives you the stepping stone for tremendous heft for application modernisation, while retaining the value of a VMware SDDC environment. However, it also doesn't have to be an all-in approach. The sheer scope of the AWS offering affords you the unrivalled flexibility to cherry pick and update sub-parts of the application to new services, such as Amazon RDS to reduce database management.

Deciding to go native on AWS

As mentioned above, AWS offers an enormous array of services that cater for virtually all types and all scales of software deployment. Choosing which of the vast menu items to adopt as your native AWS in the VMware Cloud context depends largely on four variables:

- the current workloads that are sitting on the VMware Cloud
- the requirements of those workloads
- the requirements from the relevant and affected business units, and
- most importantly, the appetite to modernise.

Adding the 7th R

VMware Cloud on AWS has broken the previously accepted 'six Rs' mould of cloud migration strategy that comprised the options to: remove, retain, replatform, rehost, repurchase or rearchitect.

The release of VMware Cloud on AWS has increased the AWS 'six Rs' to add a seventh; 'relocate'.

Relocate gives a similar outcome to rehost, with significantly less operational overhead and risk. Prior to the introduction of VMware Cloud on AWS customers who did not want to rearchitect their environments would perform a full migration into an AWS EC2 environment. This involved standing up EC2 instances, installing the appropriate applications and then migrating the data. Or, alternatively, by using more complex physical to virtual (P2V) technologies.

With the introduction of a standard VMware SDDC running on AWS bare metal, VMware workloads are simply migrated to the cloud in their current form.

The game-changing key here is that a migration to VMware Cloud on AWS does not require a 'rehosting' or 'rearchitecting' of your IT infrastructure. The move occurs within your current architecture, which means there is no need to knock down what you've built and start from scratch.

The rearchitecting option is typically the most prohibitive for organisations in terms of cost – in cash outlay, labour and time. The outcome of using VMware Cloud on AWS could be considered another R – 'reduce': reduced time, reduced effort, reduced risk. And this all adds up to reduced cost.

Big ROI off R&D

Since 2017 VMware has been engaged in extensive R&D of its management tooling, especially its work with managed service providers such as AC3. This has been borne out in the integration of VMware's recent acquisitions, such as CloudHealth and Bitnami, to configure them seamlessly with VMware IaaS offerings such as its marriage to AWS.

Scratching the surface

We have really only scratched the surface of how your organisation could leverage VMware Cloud on AWS for a competitive advantage. There is simply no room to outline all the benefits here. Hopefully, we have given you a flavour, but as always the real proof will be in the eating of the pudding.

And another thing…

When the VMC on AWS partnership was announced it's fair to say the AC3 engineers were reasonably excited, largely because it's a nexus of the two things we've always been really good at – running VMware at scale and AWS consulting and managed services.

AC3 was the first VMware partner in ANZ to launch a VMware production workload, back in 2006, and the first AWS Premier partner in Australia. Our experience with these two technology vendors means we currently have the highest possible tier of partner certification and several competencies, including the VMware Cloud on AWS Competency, so you can trust the AC3 team to deliver and support this new technology.

Those of you who have worked with us before know to always expect something a little extra and, in keeping with tradition, we asked our techs to really drill down on what they believe are the best technical features of this product. The following are their responses:

- CloudHealth works with VMWare Cloud on AWS, VMWare on-premises and AWS giving you a single pane of glass across your hybrid cloud.
- Having the ability to use CloudWatch events in combination with Lambda to have the capabilities to schedule the stop and start of your virtual machines running within VMware Cloud on AWS. This could be extended much further. For example, you could have a connector in ServiceNow that allows your staff to fill out a form and it will provision all the required pieces within VMware Cloud on AWS.
- Having a managed shared file system layer presented from AWS to your virtual machines (EFS or encrypting file system), this shared file system is also visible from your EC2 instances. Using this also gives you the ability to automatically move files that have not been accessed for seven days into a lower storage tier (Infrequent Access).
- The ability to use EC2 instances in an auto scale group behind an Application Load Balancer that provides a reverse proxy service back to your VMware virtual machines. The load balancer would be presented over SSL with SSL certificates provided by AWS ACM at no extra cost. You can also place services like CloudFront and AWS WAF in front of the load balancer for added security.
- With VMware Cloud on AWS you could look at more services, such as CodeDeploy, where you can fully manage the deployment of software into any machine. You could have, for example, warm DR running on EC2 and Production on VMWare, and a CodeDeploy could manage updating all the machines, both DR and production, at same time.
- This could be further extended – with the load balancers and EC2s involved, you could run Blue/Green style deployments between your VMWare Servers and Amazon EC2 instances.

In the horses for courses world of IT infrastructure, AWS has 'best in breed' to negotiate whichever course you need to run. With so many options, you have ultimate flexibility to go back to the stable time and again to choose the native services that best cater for your need when it is at its most critical.

VMware on AWS use cases

By now it will have become obvious that the better the capabilities of your VMware Software Defined Data Centre (SDDC) become, the more value VMware Cloud on AWS can offer.

Forward-thinking organisations recognise that public cloud is the ideal way to gain the flexibility and speed to respond to changing business needs while also managing upfront expenses, operational support and total costs of ownership.

The challenge users of private cloud can sometimes face is the time and effort required, as well as the complexity of lifecycle management of the VMware stack, and the server, storage and network infrastructure. VMware Cloud on AWS solves this problem by shifting the responsibility of managing these infrastructure components from you to both VMware and AWS, significantly reducing operational overheads.

In addition, VMware Cloud on AWS has been designed to simplify the integration of the AWS public cloud with their existing environment. This approach applies to the widest range of on-premises deployments of VMware technologies, meaning a customer can have vSphere alone on one end of the spectrum, all the way up to a fully deployed and fully integrated SDDC via VMware Cloud Foundation, with vRealize Suite for cloud management and still realise the same seamless integration.

So how then can this software be best utilised to help your organisation to succeed? While there are lots of use cases for VMware Cloud on AWS, we would like to focus on two specifically – namely data centre evacuation and disaster recovery.

Data centre evacuation

In essence, a data centre evacuation occurs when your organisation needs to get out of a place to which it has a long-term physical attachment.

Clients with private clouds typically consume this with long-term engagements, incorporating around a three- to five-year lifespan for physical infrastructure. These types of contracts contain numerous maintenance requirements including the need to maintain facilities (data centre building and floor space, compliance inspections and racks etc), as well as physical networking and systems infrastructure incorporating items such as routers, switches, firewalls and servers.

All of these elements have capacity limitations, and generally require large capex (capital expenditure) in order to expand.

There is, of course, also the ongoing maintenance, repair costs, risks and

management of the associated teams and vendors with most requiring regular physical access to the facilities and physical infrastructure.

As each of these elements and technologies associated with traditional private clouds approach end of life, an organisation may find itself unable to offer a long-term commitment to a physical location or unable to commit to a five-year new SAN (storage area network) or network core.

Typically, a project would then be created to update or replace the elements with something more modern, thereby inviting a large project cost.

This is the point at which a business will start considering what would be involved in moving to an opex (operating expense) cloud-based model.

In such situations VMware Cloud on AWS is an absolute game-changer for data centre consolidation.

Without the requirement to replatform or rearchitect applications, thanks to the consistency of VMware's infrastructure layer, and VMware HCX for bulk and/or live migrations, moving traditional workloads out of a VMware data centre into VMware Cloud is painless.

The advantages VMware Cloud on AWS offer over traditional private cloud are numerous, but its superiority is most keenly felt in the ways in which it enables users to:

- centralise these costs into a per host spend, in an on-demand or a commit model
- reduce management overheads simplifying total amount of vendors
- minimise risks by leveraging best of breed technologies in hyperscale provider data centres with increased levels of redundancy and resiliency across all areas of the platform, and
- consume services that are continually upgraded, with a future roadmap.

Not to mention, migration is super fast. In fact it is so quick it is not beyond the realm of possibility for VMware Cloud on AWS customers to evacuate entire data centres with hundreds of virtual machines over a single weekend.

Disaster recovery

Business interruptions due to the unplanned downtime of IT systems will always remain a risk. Good preparation is the best defence, and will help ensure responses are timely, effective and error-free.

Unfortunately, there are a number of catastrophic events that can and do occur where even the most well-resourced data centre can be pushed to its limits.

While, thankfully, large-scale power crises are rare, businesses in Auckland, New Zealand's largest city, experienced this first-hand in 1998 when the CBD was without power for five whole weeks. Similarly, in 2016 a number of South Australian businesses were impacted when a series of storms triggered a state-wide black out.

Yet disaster recovery can also be triggered by a major hardware fault within existing infrastructure – for example, the complete failure of an enterprise SAN or network core

within existing infrastructure or as a result of a cyber attack or natural disaster.

VMware Cloud on AWS can utilise trusted replication, orchestration and automation technologies, such as VMware Site Recovery Manager (SRM) and vSphere Replication, to allow VMware Cloud on AWS users to protect data and quickly restore application access in the event of a site, or technology failure.

An industry-leading recovery plan automation solution, the VMware SRM option is an add-on to VMware Cloud on AWS that provides an end-to-end disaster recovery solution that can help reduce the requirements for a secondary recovery site while also minimising downtime in the event of a disaster. It is completely testable without impacting production availability, and provides your business with the assurance that disaster recovery will function, and meet replication time and point objectives when needed most.

With VMware Cloud on AWS, AC3 can also extend your disaster recovery protection by deploying VMware Site Recovery alongside existing disaster recovery solutions from a single on-premises deployment:

- deploy multiple instances of SRM 8.1 on a single vCenter
- assign each SRM instance to a different DR target, and
- choose the DR target for each workload by assigning it to the relevant SRM instance.

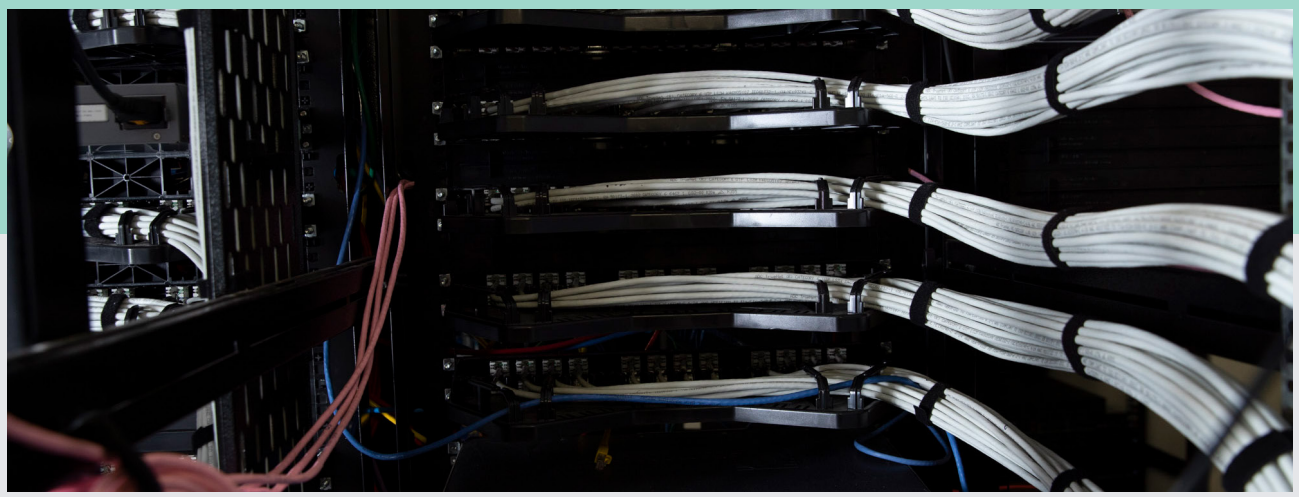
As well as ensuring right-sized DR storage and compute needs, through combining SDDC hosts with Amazon storage, this solution also offers reduced storage costs through built-in storage de-duplication and compression.

Time-consuming risk mitigation is also all taken care of because the platform is designed with multiple layers of protection. The service inherits all the physical and network protections of the AWS infrastructure and adds dedicated compute and storage along with the security capabilities built into vSphere, vSan and NSX.
All data transmitted between your site and the service can be encrypted via VPN (virtual private network).

All data between the VMware Cloud on AWS service and your SDDC is encrypted. Data at rest is encrypted. The VMware Cloud on AWS infrastructure is monitored and regularly tested for security vulnerabilities and hardened to enhance security.

You can also take comfort in the knowledge you are getting the most out of correctly configured management tools working with optimal compatibility to give you the best possible experience.

Is VMware Cloud on AWS right for you?



The public cloud is rapidly becoming the go-to infrastructure of choice for any organisation looking to succeed in the digital economy.

Viewed as the Holy Grail among administrators tasked with managing complex environments, cloud computing is seen as the must-have accelerant for those looking to gain the agility to respond to changing needs while better aligning their spend to business requirements.

Perhaps unsurprisingly, many find it difficult to manage a public cloud infrastructure that requires different skill sets and tools than their on-premises environment.

Not to mention, of course, other potential concerns sometimes associated with the cloud migration process including interoperability, data and application portability, data integrity and security, and business continuity.

Fortunately, help is at hand with the detailed nature of VMware Cloud on AWS's design ensuring it is able to mitigate precisely these types of challenges.

Where to start

As with any major capital expenditure, committing to a cloud integration project of this magnitude requires that administrators understand fully the complexities of the platform to ensure VMware on AWS is the best fit for your business.

Before viewing a contract, let alone undertaking workload migration, most ICT workers, CIOs and IT administrators worth their salt will begin by asking themselves a number of key questions.

These include the six 'Hows'. Namely:

- How can I avoid creating a new cloud silo?
- How can I ensure operational consistency and simplicity?
- How do I get the maximum leverage out of my existing investments in skill sets and tooling?
- How can I better control, manage and secure these environments and my workloads?
- How do I provide enterprise-class application SLAs consistently across private and public clouds?
- How do I ensure compatibility with applications between on and off premises?

Having established you are already a VMware user, the next issue you will be required to address is size. Not your own of course, but rather an honest appraisal of the scale of the organisation you are representing.

While VMware on AWS is suited to all industries, its intricacy means only mid-market businesses and up are positioned to take advantage of all the benefits this platform provides.

Essentially, the issue is one of economics. This is because when purchasing VMware on AWS hardware your contract dictates that you are required to purchase a minimum standard cluster configuration containing three hosts. Even on a one-year commitment, this equates to around $246,000 in fees. Therefore you as an end user must ensure you have a large enough workload to ensure it remains cost-effective.

Having determined that your organisation is of a sufficient size to benefit from the many advantages VMware Cloud on AWS offers over its competitors, the next step is to look at where you are in your hardware refresh or data centre contract life cycles, as this will determine how quickly your workloads can be moved.

It may also be worth taking a close look at how regularly your workforce is using AWS's on-demand cloud computing platform. AWS has 165-plus fully featured services on offer, but if your organisation is only using one or two of them, you will need to consider how much value you may or may not get from the tight integration between VMware Cloud and AWS. Once you have ticked all the boxes above, you need to start thinking about how quickly you can make the move to ensure you are not at risk of wasting resources.

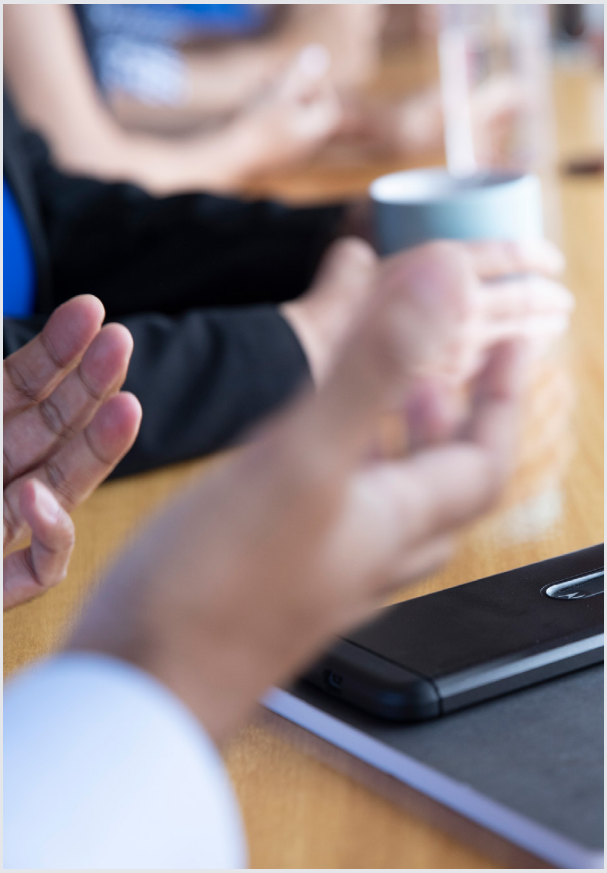
OK, now what?

Once you have established that VMware on AWS offers the best fit to propel your organisation forward, there are a number of steps you can take to help ensure a smooth transition.

The first is to work with your team to complete a detailed migration assessment to accurately calculate the extent of the work ahead. For example, will you need to decide whether to rehost, replatform, repurchase, refactor, rearchitect, retire or retain each individual workload. And, on what timeline?

This would also be an appropriate point to decide in what order your applications should make the transition. The criteria used to select good candidates are highly subjective and will be dependent on the needs of individual organisations.

But whichever way you choose to make your selection, ensure you take into account business, cost, compliance, geographic, size and security considerations.



You may decide on a phased approach to your cloud migration, in which case it may be wise to start with smaller and less critical applications before moving on to larger, more complex ones.

Bear in mind it is always best to look for application candidates that have fewer dependencies and aren't tightly intertwined with other applications in your data centre. This is because untangled applications are easier to move and less likely to cause on-premise and cloud cross-communication problems. With that task in the bag, your focus should now turn to workloads. Start by undertaking an audit of all current content, consolidating where appropriate. Ask yourself whether everything needs to be moved or are there some items that can be decommissioned or archived.

Once you have chosen your applications and are familiar with their associated workloads, you should look at reducing their resource usage. Reclaiming unneeded resources from workloads can save you money and space. In this regard, VMware on AWS has a number of tools that can help identify and reclaim unused disk, CPU and memory from your virtual environment.

This process can also assist you to identify opportunities for rightsizing of workloads – does a virtual machine really require 16GB of RAM, for example, or will it need to be increased or decreased?

Now it's time to begin thinking about your connectivity options. If you wish to have on-premises workloads communicate with workloads on VMware Cloud on AWS, your networking team will need to set up a VPN connection between the two networks.

Right, anything else?

Determining how you will migrate your workloads between on-premises and VMware Cloud on AWS is one of the final acts you need to do before you can start enjoying all the great advantages using the VMware Cloud on AWS offers.

As with onboarding, migration is also customer and use case dependent. Here, the network set-up is a key factor to be able to migrate workloads across.

There are a number of ways to move workloads into VMware Cloud on AWS: starting fresh, cold migration, live migration or batch, sometimes referred to as bulk, migration.

To help make this process more efficient Hybrid Cloud Extension is now a part of the core VMware Cloud on AWS offering, assisting you to migrate large quantities of workloads up to 10 times faster than conventional approaches. In addition, it offers average labour savings of five hours per virtual server and downtimes reduced by as much as 90 percent.

In terms of timing, this too is done on a case-by-case basis. The set-up of a VMware Cloud on AWS SDDC cluster takes as little as two hours, with additional hosts being added in minutes. While it is still relatively quick given the amount of work involved, a lift and shift migration could take a few weeks, depending on the number of workloads, the amount of data to be migrated and the complexity of the environment.

The final word

In the unlikely event your procurement team still requires some convincing that VMware Cloud on AWS is the right platform for your organisation, there is a bespoke sizing and assessment tool available for use by all prospective clients.

The tool enables you to size for factors including storage, compute, memory and IOPS (input/output operations per second) in the logic to provide you with the most optimised Server and SDDC (software-defined data centre) recommendation.

The tool will calculate the number of nodes and clusters required to support your workload to run on a VMware Cloud on AWS SDDC.

Once you have completed sizing your workloads, you can calculate your total cost of ownership for these workloads and compare it with an on-premises virtual environment.