



# VMware Cloud on AWS

Accelerating drug and device innovation for the life sciences sector with a key focus on digital transformation and adaptability

## KEY IT DRIVERS FOR IT MODERNIZATION FOR LIFE SCIENCES SECTOR

- Accelerating shift to decentralized clinical trials through digital engagement and connected health technologies
- Pressures to accelerate drug discovery and development timelines while decreasing costs are driving digital efficiency solutions
- Capturing real world evidence (RWE) for device and drug discovery, development, monitoring, and approvals incorporates continuous, real-time collection of data from patients through patient apps, wearables, etc
- Need for hybrid workforce management models to enable remote work and enhance collaboration, co-innovation, and a device-agnostic user experience
- Increased usage of digital twins to support biopharma manufacturing, supply chain planning, and R&D

The life sciences sector is evolving at a rapid pace with a key focus on digital transformation and adaptability. The demand for accelerated drug and device innovations has been at the forefront over the past two years, enhancing the need for cloud-based digital ecosystems across the industry. A newly distributed workforce, evolving security threats, and a connected consumer environment have transformed day-to-day operations, and the expanded use of telehealth and digital endpoints in clinical research and pharma approvals has introduced new models of patient recruitment, engagement, and tracking in real time. Life sciences organizations need a secure, digital-first strategy that can address all their needs, from the lab through to commercialization. With an agile, software-based approach to solving complex problems, life sciences companies can rapidly pivot priorities and accelerate innovation when necessary.

To advance innovation, life sciences companies need IT modernization that provides modular, hybrid-cloud IT architecture that supports the development and delivery of modern apps and digital services.

## Challenges customers face while adopting hybrid cloud are

- Inconsistent infrastructures between private cloud and public cloud, forcing customers to re-architect/refactor existing applications while moving to the cloud, thus increasing risks, costs, and complexity
- Differences in operational models and inability to leverage established on-premises governance, security, and operational policies while taking advantage of cloud-scale and agility
- Complexity of using multiple management tools to manage on-premises and cloud environment
- Inability to leverage existing IT skillsets and tools when adopting public cloud
- Lack of security and compliance certifications might lead to security vulnerabilities of sensitive PHI (Protective Health Information) data
- Firms continue to run a patchwork of old and new applications and platforms while utilizing many different types of devices from a variety of vendors, which slows and complicates processes around drug discovery, quality control, and communications
- Managing the plethora of data/information across disparate sources leads to interoperability challenges

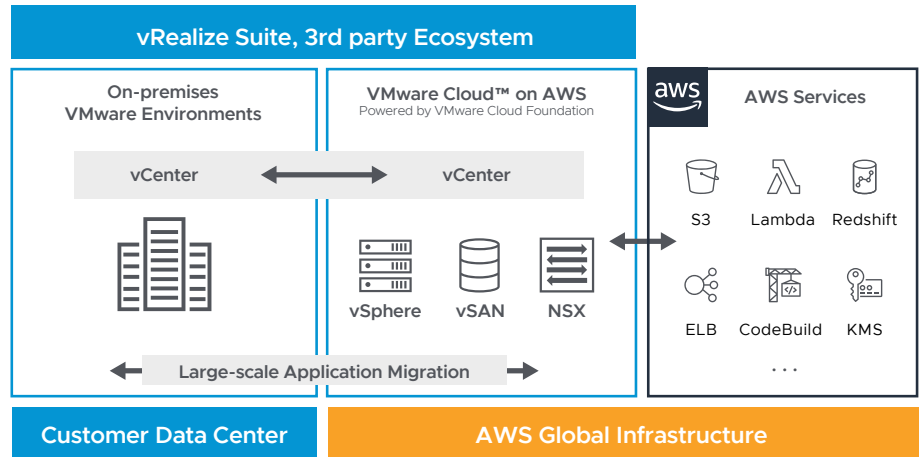


FIGURE 1: VMware Cloud on AWS brings VMware's enterprise-class Software-Defined Data Center software to the AWS Cloud and enables customers to run production applications across VMware vSphere-based private, public and hybrid cloud environments, with optimized access to AWS services.

## Solution

VMware's digital-first, cloud-first infrastructure supports any application, any cloud, and any device, giving life sciences organizations an end-to-end digital platform from which they can transform R&D, recruit and manage world-class talent from anywhere, improve patient experiences and outcomes, and uncover advancements at breakneck speed. VMware has a long history of providing life sciences solutions that drive digital resiliency and growth. In order to help customers modernize their IT infrastructure and applications in a fast yet cost-effective manner, VMware and Amazon Web Services – the industry leading private and public cloud providers respectively – announced VMware Cloud™ on AWS and AWS GovCloud (US), the hybrid cloud service that would enable life sciences customers to leverage a consistent cloud infrastructure on-premises and in the public cloud to further increase agility, speed, innovation and security, while maximizing the usage of existing IT investments that further lowers IT infrastructure costs. VMware Cloud on AWS is AWS' preferred service for all vSphere-based workloads and AWS is VMware's preferred public cloud partner for all vSphere-based workloads.

**VMware Cloud on AWS** provides life sciences IT teams with an on-demand, scalable hybrid cloud service that enables them to seamlessly extend, migrate, and protect their infrastructure in the cloud. And once in the cloud, they can start their application modernization journey with minimal disruption. With the same architecture and operational experience on-premises and in the cloud, IT teams can now quickly derive instant business value through the AWS and VMware hybrid cloud experience. VMware Cloud on AWS GovCloud (US) provides them with the hardened security and production-grade capabilities required to run highly sensitive workloads. These hybrid cloud services provide the environment needed to support modern R&D and lab operating models, reach new patient populations for clinical trials, enable researchers to utilize real-world evidence, and modernize manufacturing and supply chain operations. With this modern hybrid cloud infrastructure, life sciences customers can now efficiently build their digital ecosystem and supercharge co-innovation.

## Key value propositions

- Run, manage, secure, and protect production applications in a seamlessly integrated hybrid IT environment without having to purchase custom hardware
- Deliver rapid time to value with the ability to spin up an entire VMware Software Defined Data Center™ (SDDC) in the AWS Cloud in under two hours on average and scale host capacity in minutes
- Accelerate cloud migrations from months and years to weeks and days by eliminating the rework tax needed to re-architect enterprise applications with consistent infrastructure across vSphere-based private clouds and the AWS Cloud.
- Innovate and respond to changing business demands with the enterprise capabilities of VMware SDDC for any app, coupled with the elastic infrastructure of the AWS cloud, and the breadth and depth of AWS services and fully managed Kubernetes services for containerized workloads
- Use familiar skills, tools, and processes for managing cloud environments with consistent operations for improved productivity, and reduced costs
- Secure sensitive information with intrinsically secure, platform supported major regulatory compliance certifications<sup>1</sup>
- Flexibly choose where to run apps based on business needs. Seamlessly move workloads bi-directionally between vSphere-based private clouds and the AWS Cloud
- Leverage established on-premises enterprise security, governance and operational policies and extend that with the cloud scale and security that AWS Cloud delivers
- Take advantage of flexible consumption economics in order to provision cloud services on a predictable per-host basis, avoiding cost overruns
- Leverage the most expansive global scale and reach that AWS provides in order to scale government services across different regions

## Use cases

### Data Center Extension/Cloud Migration

- App specific migrations: Move specific applications or mission critical workloads to the cloud due to specific business needs e.g., move business critical applications such as Oracle or Virtual Desktop Infrastructure workloads to the cloud
- Footprint expansion: Provision IT capacity rapidly to set up IT infrastructure quickly for clinical trials
- Business continuity needs:
  - Burst and Scale On-Demand: Burst infrastructure to support burst capacity needs e.g., need for an on-demand IT infrastructure to support the creation of new genetic sequences and virus prototypes, set up an on-demand IT infrastructure for R&D facilities for next-generation digital drug development. Accelerated advancements in drug discovery and delivery are expected to fuel industry growth and demand for lab space in the near term
  - Distributed workforce: Enable remote working for life sciences companies' staff or to enable clinicians with telehealth services or shared workstations that will allow them to work from any location or have a need for leveraging consistent cloud capacity for scaling on-premises virtual desktop infrastructure for temporary workers or contractors

1. Current certifications include SOC 2 Type 2, ISO 27001, ISO 27018, ISO 27017, EBA (European Banking Authority), Japan FISC (The Center for Financial Industry Information Systems), APRA (Australian Prudential Regulation Authority), CSA, Cyber Essentials Plus, HIPAA, GDPR, FISC, NCSC (National Cyber Security Centre), EBA (European Banking Authority), and G-Cloud.

## RESOURCES

Learn more about our VMware Cloud on AWS service at the [VMware Cloud on AWS website](#)

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Review the [VMware Cloud on AWS Total Cost of Ownership](#)

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For technical resources, check out [VMware Cloud Tech Zone](#)

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Watch informative demos, overview videos, webinars and hear from our customers: [VMware Cloud on AWS on YouTube](#)

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➔ Get started now with VMware Cloud on AWS: <https://cloud.vmware.com/vmc-aws/get-started>

- Disaster recovery: Replace existing DR (Disaster Recovery) in order to reduce secondary DR site costs by moving their DR operations to the cloud or want to modernize their existing DR solutions or want to complement their existing DR strategy with a cloud-based DR solution for specific applications
- Ransomware protection: Reduce the impact of ransomware and quickly recover to normal operations with minimal data loss. Keep patient data confidential while allowing secure access to Patient Health Information (PHI), and systems from any device or location to improve quality of communications and interactions. All of this must be done securely while ensuring HIPAA compliance
- Test/Dev: Have a need for doing test and development activities in the cloud in an environment that is operationally similar to their on-premises environments

## Modernization of Life Sciences Data Centers

- Real time connected data centers: Consolidate data centers and seamlessly interconnect hundreds of sites, devices and data sources, and provide anywhere, anytime access to data
- IT infrastructure transformation: Build and manage containers and microservices, enabling developers with the resources and environments they need to drive continuous innovation
- Automation of IT infrastructure and operations: Automate provisioning and management of IT infrastructure using vRealize Automation. Automate IT operations across heterogeneous cloud environments to increase efficiency, improve service delivery and reduce risk. Automate IT infrastructure to make it scalable and dynamic while keeping the architecture open and extendable
- DevOps-Ready IT: Need to rapidly provision a complete application stack within a hybrid cloud and support developer choice in how resources are accessed in order to accelerate life sciences app development and delivery

## Next-Generation Apps development and delivery

- Application modernization: Utilize native AWS services to extend the value of existing applications and accelerate development, manufacturing, and delivery of treatments. Enable diverse clinical trials that provide real-world evidence through IoT devices at the edge.
- Next-generation application build-out: Build new applications using native AWS services like AI/L/IoT/Monitoring/Analytics services etc. while leveraging infrastructure that is consistent with organization's on-premises vSphere environments e.g., apps that gather and analyze patient data collected through wearables, modern R&D applications using AI/ML services. Reduce patient burden through distributed and decentralized trials through accelerated app development.
- Hybrid applications: Build hybrid applications spanning the data center, cloud, edge, native AWS services or a combination of these
- Build modern applications by integrating existing data in the cloud with VMware Tanzu