

# Application Modernization with VMware Cloud on AWS

## VMWARE CLOUD ON AWS SOLUTION OVERVIEW

A unified platform to help organizations alleviate their challenges in modernizing existing applications while ensuring they are future proofing their investments for new application development

A seamless developer experience across the entire platform with a developer center, developer tools, and automation tools

A simplified path to running Kubernetes and containers on VMware Cloud on AWS with the support of VMware Tanzu Kubernetes Grid Plus

Support for wide range of VMware and 3rd party ISV ecosystem solutions in order to transform applications

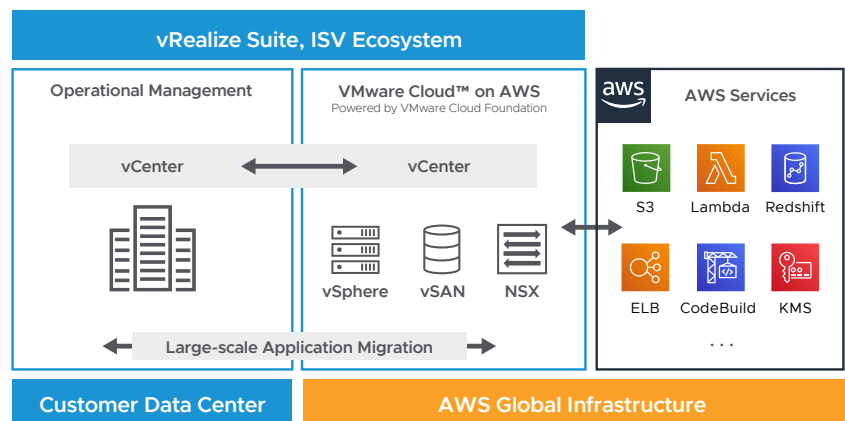
High bandwidth, low latency access to 170+ native AWS services for extending the value of enterprise applications

Modern applications are transforming businesses to deliver improved digital experiences to win, serve and retain customers. These modern applications need to drive business outcomes such as increased business agility, innovation, growth and market differentiation while balancing costs, security, reliability and control.

The cloud has played an important role in helping technology teams to not only deliver new applications but also provide an avenue for modernizing existing enterprise applications. However, when customers consider modernization of their existing on-premises applications, some of the key challenges they face increase the cost, risk and time of the modernization project.

## Key application modernization challenges:

- Lack of easy application portability between on-premises and public cloud environments leading to increased cloud migration costs, time and risk
- Disparate tools and security controls to manage on-premises and public cloud environments with a consistent set of policies
- Multiple operating models, processes and lack of self-service automation to manage complex and diverse environments consistently
- Wastage of current IT investments while modernizing applications
- Skill shortage in application development / delivery and infrastructure teams to develop for and operate in the cloud
- Disruption to existing business processes and operations due to potential for application downtime during modernization
- Inability to easily and seamlessly leverage CI/CD methodologies, application catalogs and native cloud services to enrich enterprise applications due to a fragmented technology ecosystem



## WHY VMWARE CLOUD ON AWS FOR APPLICATION MODERNIZATION?

### Low Risk

Modernize applications without application downtime and without any disruptions to existing business processes

### Seamless

Seamless integration with DevOps and automation tools, application catalogs, modern frameworks like containers and native cloud services.

### Fast and Consistent

Same tools, skillsets and security controls across hybrid cloud environment that reduces time required to modernize applications

### Cost-effective

No wastage of current IT investments while modernizing applications and support for application portability in order to optimize the app placement as needed

VMware Cloud™ on AWS alleviates these modernization challenges by delivering an infrastructure platform option for customers to modernize their existing enterprise applications on and enables them to run their enterprise workloads of today and tomorrow. With VMware Cloud on AWS, customers can start their modernization journey with minimal disruption to their business.

## Key capabilities

With VMware Cloud on AWS, customers can rapidly migrate their applications to the cloud without downtime. Once in the cloud, they can start application and infrastructure modernization in 3 ways:

### 1. Automate IT infrastructure operations

With VMware Cloud on AWS, integrate, extend, and automate IT infrastructure operations across VMware products and services. VMware Cloud on AWS provides a seamless developer experience across the entire platform with a developer center, developer tools, and automation tools. Some of the key capabilities provided by VMware Cloud on AWS to automate IT infrastructure operations are:

- a. **Developer center:** VMware Cloud on AWS developer centers provide access to all content related to automation and integration. VMware Cloud on AWS also supports a contextual, logged-in experience for developers in the VMware Cloud on AWS Console.
  - [Public developer center](#) is accessible by everyone and has all public content related to automation and integration. The key features include API explorer, samples, and community forums.
  - [In-product developer center](#) requires access to VMware Cloud on AWS and provides a rich, contextual experience based on user profile.
- b. **Developer tools:** VMware Cloud on AWS provides a wide range of developer tools (SDKs, APIs, and Samples) that enable users to use their preferred programming language and leverage the samples for automation instead of writing the code from scratch.
  - [REST APIs](#) enable admins and developers to easily build automation and integrate with their workflows.
  - [Language-specific SDKs](#) provide an easy way to automate using your preferred programming language.
  - [Samples](#) from a comprehensive list of examples across VMware products can be leveraged to quickly build automation.
- c. **Automation tools:** VMware Cloud on AWS provides high level cmdlets for VMware vSphere® PowerCLI™, DCLI, and Infrastructure as Code (IaC) for the key infrastructure management workflows.
  - [PowerCLI](#) is one of the most popular automation tools for VMware products and we continue to add new capabilities and enhance the platform for hybrid cloud provisioning and management.
  - [IaC:](#)
    - [vRealize® Automation™ Cloud IaC provider](#) can deliver Infrastructure as Code-based automation for VMware Cloud on AWS.
    - [Hashicorp Terraform provider for VMware Cloud on AWS](#) will enable users (cloud admins and DevOps engineers) to declaratively define and provision their VMware Cloud on AWS environments and simplify the management of their hybrid infrastructure through automation.
    - [AWS CloudFormation templates](#) can be used to create and deploy a VMware Cloud on AWS SDDC.



### VMWARE TANZU KUBERNETES GRID PLUS

Tanzu Kubernetes Grid Plus is an enterprise-ready Kubernetes runtime that packages open source technologies and automation tooling in order to deploy, scale and manage Kubernetes clusters across any infrastructure from vSphere to public cloud to edge. Read the [VMware Tanzu Kubernetes Grid Plus Solution Brief](#) to learn more.



### VMWARE CLOUD MARKETPLACE

Check out [VMware Cloud Marketplace](#) to find support for a wide range of VMware and 3rd party ISV ecosystem solutions.



### LISTEN AND LEARN #VMWONAWS: VMWARE CLOUD ON AWS UNPLUGGED PODCAST SERIES

Hear it from the VMware experts: The latest and greatest about VMware Cloud on AWS use cases, technical deep dive, product features, capabilities, new product announcements and much more: [VMware Cloud on AWS Unplugged podcast series](#)

- d. **Consistent operations management:** VMware Cloud on AWS provides consistent operations across the cloud infrastructure with familiar and proven technologies such as VMware vCenter® Server for day-to-day operations and VMware vRealize® set of technologies for advanced operations.
  - **VMware vCenter Server** delivers centralized visibility and management at scale for VMware vSphere®-based environments for day-to-day tasks, giving IT administrators simple and automated control over their virtual environment to deliver infrastructure with confidence. With [vCenter Hybrid Linked Mode](#), administrators can unify management view across on-premises vSphere environments and VMware Cloud on AWS environments by linking their VMware Cloud on AWS vCenter Server instance with an on-premises vCenter Single Sign-On domain.
  - **VMware vRealize® Operations™ Cloud** can help VMware Cloud on AWS customers to optimize, plan, and scale their hybrid cloud deployments. Review [VMware Cloud on AWS: What's new with advanced operations management](#) to learn more.
  - **VMware vRealize® Log Insight™ Cloud** can centralize log management, accelerate IT troubleshooting, provide deep operational visibility across VMware Cloud on AWS, vSphere-based private cloud environments, AWS and both traditional and container-based applications. Review [VMware Cloud on AWS: What's new with advanced operations management](#) to learn more.

## 2. Transform application infrastructure

- a. **Support for Kubernetes on VMware Cloud on AWS**
  - **VMware Tanzu™ Kubernetes Grid™ Plus** support for VMware Cloud on AWS enables customers to deploy their SDDC in the cloud, with the required components needed to architect and scale Kubernetes to fit their needs. Tanzu Kubernetes Grid Plus is an enterprise-ready Kubernetes distribution that packages open source technologies and automation tooling to help get you up and running quickly with a scalable, multi-cluster Kubernetes environment. Review the [VMware Tanzu Kubernetes Grid Plus on VMware Cloud on AWS Solution Brief](#) to learn more.
- b. **Support for wide range of VMware and 3rd party ISV ecosystem solutions:** Customers can leverage the [VMware Cloud Marketplace™](#) for a vast ecosystem of VMware Cloud ready solutions for continuous integration / continuous delivery (CI/CD) and source control.
  - **Configuration management** is a powerful process which allows administrators to establish and maintain verifiable consistency of their deployed environment as code. VMware Cloud on AWS enables existing compatibility for Ansible, Chef, and Puppet.
  - **Continuous integration / continuous delivery:** [VMware vRealize® Code Stream™](#) already supports VMware Cloud on AWS and provides powerful infrastructure release pipeline automation capabilities for rapidly, safely and consistently delivering the infrastructure that developers and LOBs need to be productive. VMware Cloud on AWS also enables the deployment and the usage of the popular 3rd party ISV CI/CD utilities such as Jenkins Virtual Appliance, GitLab Community Edition, JFrog and Xebia Labs.
  - **Source control** establishes a single source of truth for code-based contributions. VMware Cloud on AWS supports the deployment of virtual appliances for both GitLab Community Edition and Subversion.



## VMWARE CLOUD ON AWS REFERENCE ARCHITECTURES

### [Integrating Amazon FSx for Windows Servers with VMware Cloud on AWS](#)

This reference architecture highlights the recommended production topology for deploying managed file-servers leveraging Amazon FSx for Windows Server with VMware Cloud on AWS.

### [Leveraging Amazon Application Load Balancer \(ALB\) with VMware Cloud on AWS](#)

This reference architecture details how Amazon Application Load Balancers can be used to load balance secured web traffic destined for web servers hosted on VMware Cloud on AWS infrastructure.

## 3. Enrich applications and infrastructure with cloud services

Enrich existing enterprise apps with high-bandwidth, low latency connectivity to a broad range of AWS services.

Extend the value of enterprise applications running in VMware Cloud on AWS by providing enterprises with a simple and consistent way for their applications to access native AWS services. By seamlessly integrating with these innovative native AWS services, customers can incrementally add new features to their applications and enhance the end use experience. Examples of key AWS services include:

### a. Storage

- **Amazon FSx** provides VMware Cloud on AWS customers highly available, scalable and cost-effective file storage system. It helps them overcome performance challenges and enables them to store and retrieve files wherever and whenever they are needed while reducing the complexity of installing and managing it. Check out the Amazon FSx reference architecture [here](#).
- **Amazon Elastic File System (Amazon EFS)** equips customers with a fully managed, cost-effective NFS file system that provides massive on-demand scalability and fast throughput. With this service, file storage scaling time is reduced from months to minutes, and customers can bring services to the market faster.
- **Amazon Simple Storage Service (Amazon S3)** provides customers on-demand scalability to scale to multi-petabytes of storage to meet fluctuating demands, eliminating the need of upfront investments or long procurement cycles. Also, it provides customers with the ability to respond to issues in real time, by leveraging real time data insights from the big data analytics run across S3 objects.










### b. Networking and content delivery

- **Amazon Route 53** enables VMware Cloud on AWS users to quickly and effectively connect to infrastructure running in AWS—such as EC2, ELB, or S3 buckets—and can also be used to route users to infrastructure outside of AWS. Customers can use Amazon Route 53 to configure DNS health checks to route traffic to healthy endpoints or to independently monitor the health of your application and its endpoints.
- **Amazon Elastic Load Balancing (ELB)** integration can improve the performance of applications running in VMware Cloud on AWS by distributing the application traffic across fleet of VMs. Check out the Amazon Application Load Balancer (ALB) reference architecture [here](#).
- **Amazon CloudFront** enables VMware Cloud on AWS customers to deliver content globally with low latency and high transfer speeds by being closer to the end user, and improve the end-user experience.

### c. Database and analytics

- **Amazon RedShift** provides a scalable, high performance cloud data warehouse that helps VMware Cloud on AWS customers run high performance queries on petabytes of data to generate business intelligence reports. With seamless integration with Amazon S3, customers can get real time data analytics using services such as Amazon EMR, Amazon Athena, and Amazon SageMaker etc. that deliver mission critical insights in order to make informed business decisions.
- **Amazon Aurora** provides VMware Cloud on AWS customers a fully managed relational database service that automates time-consuming administration tasks like hardware provisioning, database setup, patching, and backups, so that customers can bring innovation faster to the market. In addition, it mitigates latency issues due to co-locality of the web and database tiers of the application.

## RESOURCES

-  Learn more about our VMware Cloud on AWS service at the [VMware Cloud on AWS website](#)
-  Review the [VMware Cloud on AWS Solution Brief](#) and [VMware Cloud on AWS Total Cost of Ownership](#)
-  Watch informative demos, overview videos, webinars and hear from our customers: [VMware Cloud on AWS on YouTube](#)
-  Read our latest [VMware Cloud on AWS blogs](#)
-  Follow us on Twitter [@vmwarecloudaws](#) and give us a shout with #VMWonAWS
-  [Read VMware Cloud on AWS technical documentation](#)
-  Listen and learn: [#VMWonAWS: VMware Cloud on AWS Unplugged Podcast Series](#)
-  [Try VMware Cloud on AWS Hands-on-Lab](#)
-  Request a TCO Analysis of your Current Infrastructure with our [online TCO estimator](#)



Click here to get started now with VMware Cloud on AWS

- [Amazon DynamoDB](#) is a serverless backend data store that can support web applications, mobile applications or microservices running on VMs in VMware Cloud on AWS. It can serve customers across different industries (such as retail, finance, gaming, media and entertainment) who need tremendous scalability, very low latency and minimal operational overhead.
- d. **Serverless**
  - [AWS Lambda](#) enables customers to bring new applications to the market faster, because their developers do not need to worry about infrastructure—they can focus on application code while AWS Lambda takes care of everything to run and scale the code. With AWS Lambda, customers get a cost-effective solution to build variety of serverless data processing systems as well as serverless backends for Web, IoT and mobile applications.
- e. **Security**
  - [AWS Shield](#) helps VMware Cloud on AWS customers defend against most common, frequently occurring network and transport layer DDoS attacks that target any web site or applications. When customers use AWS Shield Standard with Amazon CloudFront and Amazon Route 53, customers receive comprehensive availability protection against all known infrastructure (Layer 3 and 4) attacks.
  - [AWS Web Application Firewall \(AWS WAF\)](#) helps customers protect their web applications with customized rules and other comprehensive security capabilities, and allows the DevOps team to define application-specific rules that increase web security as they develop applications. It also provides agile protection against web attacks so that customers can quickly update security across their environment when issues arise.
- f. **IoT**
  - [AWS IoT Core](#) enables customers to build modern IoT applications in VMware Cloud on AWS that collect data from connected devices and filter, transform, and act upon device data on the fly, based on defined business rules.
- g. **AI and machine learning**
  - [Amazon SageMaker](#) helps VMware Cloud on AWS customers build, deploy, and train customer ML models quickly. Customers can choose from pre-trained AI services for computer vision, language, recommendations, and forecasting.