VMware Cloud on AWS Outposts

Get the agility and innovation of VMware Cloud in your own data center delivered as a service

AT A GLANCE

VMware Cloud on AWS Outposts is a jointly engineered on-premises as-a-service solution, powered by VMware Cloud Foundation, that integrates VMware's enterprise-class Software-Defined Data Center (SDDC) software for compute (vSphere), storage (vSAN), and networking (NSX) along with vCenter Management, which runs on next-generation, dedicated Amazon Nitro-based EC2 bare-metal instances provisioned in AWS Outposts.

With the same architecture and operational experience on-premises and in the cloud, VMware Cloud on AWS Outposts provides a truly consistent end-to-end hybrid cloud as a service in combination with VMware Cloud on AWS that helps IT teams quickly harness the power of innovative cloud services and on-demand capacity.

Today, **Digital Transformation** has become a new normal and it is front and center of business strategies of all modern organizations. According to IDC, direct digital transformation (DX) investment is still growing at a compound annual growth rate (CAGR) of 15.5% from 2020 to 2023 and is expected to approach $6.8 trillion.[1] Businesses want to implement a successful digital strategy to streamline operations, improve employee productivity and operational efficiency, provide excellent customer experience, and differentiate themselves from the competitors. And, modern IT infrastructure is one of the core pillars of the digital transformation strategy.

So far, public cloud has been a digital transformation enabler for the organizations because of several benefits such as agility, innovation, infrastructure scalability etc. VMware Cloud on AWS is prime example of such an offering. While a broad range of modern applications are increasingly finding value in VMware Cloud on AWS, many applications need to reside on-premises due to several reasons such as data locality, low latency requirements, better flexibility to comply with certain regulatory and compliance requirements, data sovereignty and/or data residency requirements, better flexibility to comply with certain internal security or architectural design requirements, large data volume/local data processing needs, etc. But at the same time, customers want to leverage cloud like agility, innovation and as-a-service model in their own data center so that they can focus on other business priorities rather than focusing their resources on managing infrastructure.

In order to help customers leverage the benefits of on-premises environments and public cloud environments, we are bringing the best of both worlds with VMware Cloud on AWS Outposts.

Solution overview

For customers looking to extend their AWS-centric model to their data center, VMware Cloud on AWS Outposts delivers the agility and innovation of AWS cloud on-premises, where customers continue to have control of their data and applications as they are used to in their on-premises environement, but at the same time, they can take advantage of cloud operating model in their data center.

It is a jointly engineered on-premises as-a-service solution, powered by VMware Cloud Foundation™, that integrates VMware's enterprise-class Software-Defined Data Center (SDDC) software for compute (VMware vSphere®), storage (VMware vSAN™), and networking (VMware NSX®), along with VMware vCenter® Management, which runs on next-generation, dedicated, Amazon Nitro-based EC2 bare-metal instances provisioned in AWS Outposts. It provides a deeply integrated hybrid cloud environment with a unified control plane that provides access to VMware Cloud on AWS capacity and regional native AWS services.

1. IDC FutureScape: Worldwide Digital Transformation 2021 Predictions (IDC #US46880818)

KEY DIFFERENTIATORS

- **Consistency**
  Compatible infrastructure and consistent operations with same vSphere and vCenter APIs
- **Familiarity**
  Same VMware tools and skillsets with minimal learning curve
- **Scalability:** Ability to seamlessly scale capacity to public cloud as needed (for non-constrained workloads)
- **Flexibility:** Ability to place VMware workloads across on-premises data center, VMware Cloud on AWS Outposts or VMware Cloud on AWS as per the business needs
- **Innovation:** Optimized access to native cloud services, fully managed environment to deploy, run and manage containerized workloads*
- **Speed:** Ability to setup up the infrastructure faster without long procurement cycles

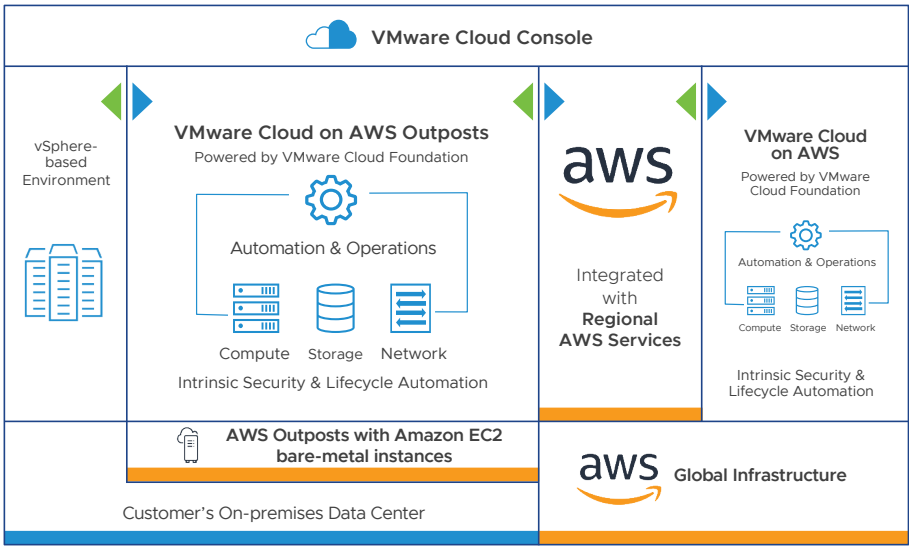

FIGURE 1. VMware Cloud on AWS Outposts

Why VMware Cloud on AWS Outposts?

Best-in-class enterprise grade capabilities delivered as-a-service on-premises

- **VMware's flagship SDDC software** (vSphere, vSAN and NSX along with vCenter Management) running on **dedicated Amazon Nitro-based EC2 bare-metal instances provisioned in AWS Outposts,** delivered as-a-service on-premises
- Improved agility and minimal operational overhead and maintenance downtime with fully managed infrastructure: **Continuous lifecycle management**, ongoing service monitoring and automated processes to ensure health and security of infrastructure, backed by expert VMware Site Reliability Engineers
- **Proactive hardware monitoring from AWS** with break/fix support
- **VMware is a single point of contact for any kind of support**
- Developer ready infrastructure **delivered in weeks** vs. months with plug and play installation
- **Intrinsic availability and built-in resiliency** with features such as comprehensive failure protection with Storage Policy-Based Management (SPBM), vSphere HA, Auto Remediation
- Ability to auto scale and rebalance clusters based on user requirements through **Elastic DRS** feature enabled out of the box

Next-gen high performance AWS Outposts infrastructure with enhanced security

- Amazon Nitro-based bare metal EC2 infrastructure with **high performance and enhanced security** to support the workloads of today and tomorrow
- AWS Nitro System that continuously monitors, protects, and verifies the instance hardware and firmware
- Resilient infrastructure with **dark node capacity** included for remediation, Elastic DRS scale-out, and lifecycle management purposes
- A centralized redundant power conversion unit and a DC distribution system in the backplane of the rack that improves reliability, cost, serviceability, and energy efficiency.

*Based on future availability

BUSINESS OUTCOMES

Uplift infrastructure operations: Refocus efforts on strategic priorities by relieving IT team's burden of infrastructure management and improve infrastructure security and reliability

Transform to agile infrastructure: Scale capacity in minutes by extending to cloud, increase developer velocity and flexibility with agile infrastructure and improve efficiency with a single operational model across hybrid cloud environment

Accelerate digital transformation: Leverage a single turnkey solution with latest infrastructure, access to latest VMware and AWS cloud services and containers, and expertise in infrastructure operations

- **Hardened security** with removable and destroyable hardware security key on each server and Nitro security key to protect data at rest residing on the rack
- Enclosed rack with lockable door and built-in tamper detection
- **Encrypted network connection** to the AWS region along with network encryption between the nodes in Outposts rack

Deeply integrated end-to-end Hybrid Cloud as a Service

- **Compatible infrastructure**: Same architecture and APIs across on-premises, VMware Cloud on AWS Outposts and VMware Cloud on AWS. No reconfiguration, conversion, refactoring, or rearchitecting of existing applications
- **Consistent operations**: Use established on-premises governance, security and operational policies and vSphere/vCenter APIs across environments.
- Familiarity: Eliminate re-training or minimize learning curve by using **familiar skills, tools, and processes** for managing hybrid cloud environments
- Seamless workload portability: **Move workloads bi-directionally** between VMware on-premises, VMware Cloud on AWS Outposts and VMware Cloud on AWS and optimize workload placement as per the business needs
- Ability to easily **extend infrastructure capacity to cloud** in minutes as needed (for non-constrained workloads)
- **A unified hybrid control plane** with single pane of glass view to manage resources across end-to-end hybrid cloud environment
- **Direct access with 200+ native AWS services** available in the local AWS region via Elastic Network Interface or VMware Transit Connect
- Build once, deploy anywhere: **Truly consistent developer experience** with same APIs, developer tools and automation tools across the hybrid cloud environments
- **Seamless connectivity** between VMware Cloud on AWS Outposts to VMware Cloud on AWS via AWS Direct Connect private connection, a public virtual interface, or the public Internet and between VMware Cloud on AWS Outposts and existing on-premises environment via VMware managed local gateway
- Fast, cost-effective and low risk **migration at scale** across hybrid cloud environment **with VMware HCX**
- **Robust ecosystem**: Extend the capabilities through a robust set of 300+ open-source and third-party solutions validated for use on VMware Cloud on AWS Outposts SDDCs

Key use cases

Data/App Locality

For Cloud first organizations, who want to leverage the cloud ("as-a-service") model, but at the same time, want to keep data on-premises for a variety of reasons. Typical scenarios include:

- Low latency
  - For latency sensitive applications or real time applications, want to enable proximity to data and physical systems to address WAN latency sensitivity. Examples: video transcoding apps, high-frequency trading, and exchange platforms.
- Local data processing
  - Need to host workloads processing large volumes of data locally due to WAN bandwidth constraints or high data transfer costs

RESOURCES

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- **Data sovereignty/compliance**
  - Need to run specific applications locally to have better flexibility in addressing compliance requirements or want to use VMware Cloud on AWS Outposts as a DR target due to inability to fail over to VMware Cloud on AWS due to compliance needs such as data residency and sovereignty requirements, country specific regulations etc.

Data center elasticity/resiliency

For Cloud fit organizations, who want to leverage hybrid cloud model in order to address static data center limitations. Typical scenarios include:

- **Infrastructure scaling:**
  - Need to circumvent internal resource and process constraints or need to rebalance CapEx-OpEx costs in data center by on-demand scaling of infrastructure capacity to the cloud for non-constrained workloads
  - Want to cache data locally for fast response but use cloud for long term storage or for data analytics needs.
- **Workload resiliency:**
  - Want to perform host-level HA with automated failover to VMware Cloud on AWS in case of a disaster event*
- **Cloud ready infrastructure:**
  - Want to use VMware Cloud on AWS Outposts infrastructure as test bed for short term projects before moving to cloud
  - Want to use VMware Cloud on AWS Outposts infrastructure as training or development environment for cloud native applications

Data Center/App Modernization

For 'Digital First' organizations who want to accelerate their digital transformation initiatives by modernizing infrastructure and applications. Typical scenarios include:

- **Infrastructure modernization**
  - Are doing infrastructure refreshes and want to leverage the opportunity to replace current hardware with modern infrastructure stack (HW EOL, Infra software upgrades to major versions – pre-vSphere 6.0, etc.)
- **Application modernization**
  - Want to modernize existing applications or build modern hybrid applications leveraging regional AWS native cloud services
  - Want to containerize applications with Kubernetes support across hybrid cloud environments*
- **Branch office/large edge modernization**
  - Want to setup managed IT infrastructure and modernize operations at large branch offices or edge locations with centralized management plane, e.g., infrastructure setup at big retail stores, manufacturing plants, Telco edge locations etc.*

*Based on future availability

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