VMware Cloud Provider Partner Portfolio Comparison: AWS-Edition

### Compute, IaaS and Virtual Machines
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  - vSphere + VCD
- **Containers & Serverless Computing**
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  - CSE + TKG
- **Relational**
  - Amazon RDS
  - MySQL
- **Virtual Desktops**
  - Amazon WorkSpaces
  - Horizon Desktops
- **Object Storage**
  - Amazon S3
  - VCD + OSE
- **Cloud Network**
  - Amazon VPC
  - VDC Networks

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  - VCD Auto Scaling
- **Container Services**
  - EC2 / Fargate
  - vSphere 7 with K8s
- **NoSQL**
  - DynamoDB
  - Cassandra
- **Virtual Applications**
  - Amazon AppStream
  - Horizon Apps
- **Archive Storage**
  - Amazon S3 Glacier
  - VCD + OSE
- **Load Balancing**
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  - NSX Advanced LB

### SDDC Services
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  - VMC on AWS
  - VCF / DTCP
- **Caching**
  - Amazon ECR
  - Harbor
- **Resource Access**
  - Amazon WorkLink
  - WSONE Apps
- **File Storage Service**
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  - vSAN File Service
- **Firewall**
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  - NSX DFW

### Hybrid / On Premises Cloud
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  - VMC on Dell EMC
- **Document**
  - Amazon Lambda
  - VCD + OpenFaaS
- **Single Sign-On**
  - AWS Single Sign-On
  - WSONE Access
- **Block Storage Volumes**
  - Amazon EBS
  - vSAN

### Networking and Connectivity
- **WAN Connectivity**
  - Direct Connect / VPN
  - VeloCloud SD-WAN

### Applications, Web, Mobile and Integration
- **Application PaaS**
  - Elastic Beanstalk
  - TAS
- **App Marketplace**
  - AWS Marketplace
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- **Cloud Disaster Recovery**
  - CloudEndure
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- **Hosted Hadoop**
  - Amazon EMR
  - Bitnami + Hadoop
- **CI / CD**
  - CodeDeploy
  - CodeCommit
  - CodePipeline
- **Cost and Optimization**
  - Trusted Advisor
  - CloudHealth

### Networking and Connectivity
- **Monitoring and Logging**
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  - AWS CloudWatch
  - AWS Cloud Map
  - vrealize Operations vRNI and vRLI
  - Caveonix
- **Billing and Chargeback**
  - AWS Organization Cost Explorer
  - CP HUB, Usage Meter
  - vROps Chargeback

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# VMware Cloud Provider Partner Portfolio Comparison: AWS-Edition

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<td>vSphere is a server virtualization platform that delivers essential services for the modern hybrid cloud. <a href="https://www.vmware.com/products/vsphere.html">https://www.vmware.com/products/vsphere.html</a></td>
<td>In this blog post, we will present a horizontal autoscaling solution using: vCloud Director (vCD)’s native UI extensibility as management frontend vRealize Orchestrator (vRO) as backend. vRealize Operations (vROps) as monitoring system. <a href="https://blogs.vmware.com/cloudprovider/2018/08/autoscaling-with-vcloud-director-9-x.html">https://blogs.vmware.com/cloudprovider/2018/08/autoscaling-with-vcloud-director-9-x.html</a></td>
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<td>VMware Cloud Foundation is the hybrid cloud platform for managing VMs and orchestrating containers, built on full-stack hyperconverged infrastructure (HCI) technology. With a single architecture that is easy to deploy, VMware Cloud Foundation enables consistent, secure infrastructure and operations across private and public cloud. <a href="https://www.vmware.com/products/cloud-foundation.html">https://www.vmware.com/products/cloud-foundation.html</a></td>
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## Cloud Provider Resources

- **VMware Cloud Provider Program**: [https://www.vmware.com/partners/services-provider.html](https://www.vmware.com/partners/services-provider.html)
- **VMware Cloud Director**: [https://www.vmware.com/products/cloud-director.html](https://www.vmware.com/products/cloud-director.html)
- **VMware Cloud Director service**: [https://cloud.vmware.com/cloud-provider/hub/cloud-director-service](https://cloud.vmware.com/cloud-provider/hub/cloud-director-service)
- **VMC on AWS MSP Program**: [https://cloud.vmware.com/cloud-provider/hub/vmc-aws](https://cloud.vmware.com/cloud-provider/hub/vmc-aws)

## Compute, IaaS and Virtual Machines

- **Virtual Machines**: Amazon EC2, VMware vCloud Director service, VMware vCloud Foundation, Dell Technologies Cloud Platform
- **Auto Scaling**: Amazon EC2 Auto Scaling, VMware Cloud on AWS, VMware Cloud on Dell EMC
- **SDDC Services**: VMC on AWS, VCF / DTCP, VMware Cloud on AWS

## VMware Cloud Provider Partner Portfolio Comparison: AWS-Edition

- **Amazon EC2**: "Amazon EC2 presents a true virtual computing environment, allowing you to use web service interfaces to launch instances with a variety of operating systems, load them with your custom application environment, manage your network’s access permissions, and run your image using as many or few systems as you desire."
  
  Source: [https://aws.amazon.com/ec2/features/](https://aws.amazon.com/ec2/features/)

- **VMware Cloud on AWS**: "With VMware Cloud on AWS you can migrate datacenters to the cloud for rapid datacenter evacuation, disaster recovery, and application modernization. With over 3 years of joint engineering, VMware and AWS provide organizations with enhanced VMware functionalities integrated in the solution and a single point of contact for support and service integration."
  
  Source: [https://aws.amazon.com/vmware/](https://aws.amazon.com/vmware/)

- **AWS Outposts**: "AWS Outposts is a fully managed service that extends AWS infrastructure, AWS services, APIs, and tools to virtually any datacenter, co-location space, or on-premises facility for a truly consistent hybrid experience."
  
  Source: [https://aws.amazon.com/outposts/](https://aws.amazon.com/outposts/)

- **VMware Cloud on Dell EMC**: VMware Cloud on Dell EMC is a fully managed hybrid cloud service that combines the simplicity and agility of the public cloud with the security and control of on-premises infrastructure. Delivered as a service to data center and edge locations, VMware Cloud on Dell EMC and its hybrid cloud services provide you with simple, secure, and scalable infrastructure.
  
  Source: [https://www.vmware.com/products/vmc-on-dell-emc.html](https://www.vmware.com/products/vmc-on-dell-emc.html)
VMware Cloud Provider Partner Portfolio Comparison: AWS-Edition

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**Containers & Serverless Computing**

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**Kubernetes Services**

- **Amazon EKS**
  "Amazon Elastic Kubernetes Service (Amazon EKS) is a fully managed Kubernetes service. Customers such as Intel, Snap, Intuit, GoDaddy, and Autodesk trust EKS to run their most sensitive and mission critical applications because of its security, reliability, and scalability." Source: https://aws.amazon.com/eks/

- **Amazon ECS**
  "Amazon Elastic Container Service (Amazon ECS) is a fully managed container orchestration service. Customers such as Duolingo, Samsung, GE, and Coupa use ECS to run their most sensitive and mission critical applications because of its security, reliability, and scalability." Source: https://aws.amazon.com/ecs/

**Registry Services**

- **Amazon ECR**
  "Amazon Elastic Container Registry (ECR) is a fully managed Docker container registry that makes it easy for developers to store, manage, and deploy Docker container images." Source: https://aws.amazon.com/ecr/

**Serverless Computing**

- **Amazon Lambda**
  "With Lambda, you can run code for virtually any type of application or backend service - all with zero administration. Just upload your code and Lambda takes care of everything required to run and scale your code with high availability." Source: https://aws.amazon.com/lambda/

---

VMware Cloud Director (service) Developer-ready Cloud with Container Service Extension, Tanzu Kubernetes Grid, Harbor and vSphere 7 with Kubernetes

CSE brings Kubernetes as a Service to VCD / CDS, by enabling tenant users to deploy fully functional Kubernetes clusters based on native KBs, Tanzu Kubernetes Grid and vSphere 7 with Kubernetes.

Tanzu Kubernetes Grid is an CNCF-certified, enterprise-ready Kubernetes runtime that streamlines operations across a multi-cloud infrastructure.

vSphere Pod Service in vSphere 7 with Kubernetes is a service that runs on a VMware managed Kubernetes control plane over your ESXi cluster. It allows you to run native Kubernetes workloads directly on ESXi. The ESXi hosts become the Nodes and vSphere Pods are what are running the components of the app workloads.

Helm Charts for Kubernetes apps can be deployed into KBs cluster using the VCD App Launchpad 2.0.

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Harbor is an open source trusted cloud-native registry to store, sign, and scan content. It adds functionalities like security, identity, and management to the open source Docker distribution.

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VCD Extensibility

Providers can use the VCD extensibility framework with vRealize Orchestrator to build FaaS, using for example OpenFaaS or Knative. Or Kubeless, which is another community-supported Bitnami project.

Amazon RDS

"Amazon Relational Database Service (Amazon RDS) makes it easy to set up, operate, and scale a relational database in the cloud. It provides cost-efficient and resizable capacity while automating time-consuming administration tasks such as hardware provisioning, database setup, patching and backups."

Source: https://aws.amazon.com/rds/

Amazon DynamoDB

"Amazon DynamoDB is a key-value and document database that delivers single-digit millisecond performance at any scale. It’s a fully managed, multi-region, multimaster, durable database with built-in security, backup and restore, and in-memory caching for internet-scale applications."

Source: https://aws.amazon.com/dynamodb/

Amazon ElastiCache

"Amazon ElastiCache allows you to seamlessly set up, run, and scale popular open-source compatible in-memory data stores in the cloud. Build data-intensive apps or boost the performance of your existing databases by retrieving data from high throughput and low latency in-memory data stores."

Source: https://aws.amazon.com/elasticache/

AWS DocumentDB

"Amazon DocumentDB (with MongoDB compatibility) is a fast, scalable, highly available, and fully managed document database service that supports MongoDB workloads. As a document database, Amazon DocumentDB makes it easy to store, query, and index JSON data."

Source: https://aws.amazon.com/documentdb/

Bitnami Community Catalog available through the VMware Managed Service Provider program allows service providers to offer well-architected and secure applications and frameworks as a service. Bitnami provides access to more than 180 pre-packaged, tested and security-hardened open-source solutions. Use MySQL or PostgreSQL for relational Databases, MongoDB or Cassandra as NoSQL and Document databases and Redis or Memcached for caching. These are available as vApp Templates that can be published through the VCD catalog for self-service by tenants with App Launchpad.

Bitnami Packages: https://bitnami.com/stacks


MSP Program and Cloud Provider Hub: https://cloud.vmware.com/cloud-provider-hub/

Amazon VPC

Amazon Virtual Private Cloud (Amazon VPC) lets you provision a logically isolated section of the AWS Cloud where you can launch AWS resources in a virtual network that you define.

Source: https://aws.amazon.com/vpc/

AWS ELB

Elastic Load Balancing automatically distributes incoming application traffic across multiple targets, such as Amazon EC2 instances, containers, IP addresses, and Lambda functions. It can handle the varying load of your application traffic in a single Availability Zone or across multiple Availability Zones.

Source: https://aws.amazon.com/elasticloadbalancing/

AWS WAF / Firewall

AWS WAF is a web application firewall that helps protect your web applications or APIs against common web exploits that may affect availability, compromise security, or consume excessive resources.

Source: https://aws.amazon.com/waf/

AWS Direct Connect/VPN

VMware SD-WAN assures enterprise and cloud application performance over Internet and hybrid WAN while simplifying deployments and reducing costs.

Source: https://www.velocloud.com/

Network and Connectivity

Cloud Network

Amazon VPC

VDC Networks

Load Balancing

AWS ELB

NSX Advanced LB

Firewall

AWS WAF / Firewall

NSX DFW

WAN Connectivity

Direct Connect / VPN

VeloCloud SD-WAN

VMware Cloud Provider Partner Portfolio Comparison: AWS-Edition

VMware NSX Distributed Firewall and Advanced Load Balancer with Cloud Director VDC Networks

An organization virtual data center network allows vApps in an organization to communicate with each other. To provide external connectivity, you can connect an organization virtual data center network to an external network. You can also create an isolated organization virtual data center network that is internal to the organization.

VMware NSX Advanced Load Balancer (Avi) provides multi-cloud load balancing, web application firewall and application analytics across on-premises data centers and any cloud. The software-defined platform delivers applications consistently across bare metal servers, virtual machines and containers to ensure a fast, scalable, and secure application experience.

Easily create, enforce, and automatically manage granular micro-segmentation policies between applications, services, and workloads across multi-cloud environments spanning VMs, containers, and bare metal infrastructures. Secure critical applications and shared services from compromises by auto-discovering application boundaries and applying application-level segmentation policies.

Cloud Provider Resources

Architecting Tenant Networking with VMware NSX in VCD

Deploying NSX Advanced Load Balancer with VCD
https://cloudsolutions.vmware.com/assets/b74c633b447f7c7969/Deploying_NSX_Advanced_Load_Balancer_with_VMware_Cloud_Director.pdf

VeloCloud SD-WAN MSP Program
https://vmstarcommunity.force.com/partnerconnect/s/3sdwan-by-velocloud
VMware Cloud Provider Partner Portfolio Comparison: AWS-Edition

**End User Computing**

### Virtual Desktops

**Amazon WorkSpaces**

“Amazon WorkSpaces is a managed, secure Desktop-as-a-Service (DaaS) solution. You can use Amazon WorkSpaces to provision either Windows or Linux desktops in just a few minutes and quickly scale to provide thousands of desktops to workers across the globe.”

Source: [https://aws.amazon.com/workspaces/](https://aws.amazon.com/workspaces/)

**Virtual Desktops**

**VMware Horizon DaaS & Horizon Apps**

The VMware Horizon DaaS Platform enables service providers to deliver virtual workspaces—including full desktops, shared desktops and applications—to end users as a monthly subscription service. VMware enables a risk-free, incremental evolution of the next-generation workspace. It provides a complete virtual workspace from the cloud, delivering desktops and applications as an easily managed, integrated cloud service. Enterprises can rapidly provision desktops and applications to users on any device, anywhere. And desktop virtualization is transformed from the CAPEX outlay inherent in enterprise onsite desktop virtualization and physical PC refreshes, into a predictable, easy to budget OPEX item.

**Resource Access**

**Amazon WorkLink**

“Amazon WorkLink is a fully managed service that lets you provide your employees with secure, easy access to your internal corporate websites and web apps using their mobile phones.”

Source: [https://aws.amazon.com/worklink/](https://aws.amazon.com/worklink/)

**Virtual Applications**

**Amazon AppStream**

“Amazon AppStream 2.0 is a fully managed application streaming service. You centrally manage your desktop applications on AppStream 2.0 and securely deliver them to any computer.”

Source: [https://aws.amazon.com/appstream2/](https://aws.amazon.com/appstream2/)

**Virtual Applications**

**VMware Workspace ONE Productivity Apps**

VMware Workspace ONE is the intelligence-driven digital workspace platform that simply and securely delivers and manages any app on any device by integrating access control, application management, and multiplatform endpoint management. It begins with consumer-simple, single sign-on (SSO) access to cloud, mobile, web, and Windows apps in one unified catalog, and includes powerfully integrated email, calendar, file, and social collaboration tools that engage employees.

**MSP Program Overview**

[https://www.vmware.com/de/partners/service-provider/managed-services.html](https://www.vmware.com/de/partners/service-provider/managed-services.html)

**Cloud Provider Resources**

**VMware Horizon DaaS**


**VMware Workspace ONE**


**MSP Program Overview**

[https://www.vmware.com/de/partners/service-provider/managed-services.html](https://www.vmware.com/de/partners/service-provider/managed-services.html)

**Single Sign-On**

**AWS Single Sign-On**

“AWS Single Sign-On (SSO) makes it easy to centrally manage access to multiple AWS accounts and business applications and provide users with single sign-on access to all their assigned accounts and applications from one place. With AWS SSO, you can easily manage access and user permissions to all of your accounts in AWS Organizations centrally.”

Source: [https://aws.amazon.com/single-sign-on/](https://aws.amazon.com/single-sign-on/)
**VMware Cloud Provider Partner Comparison: AWS-Edition**

**aws Cloud Endure Disaster Recovery**

"Cloud Endure Disaster Recovery continuously replicates your machines (including operating system, system state configuration, databases, applications, and files) into a low-cost staging area in your target AWS account and preferred Region. In the case of a disaster, you can instruct Cloud Endure Disaster Recovery to automatically launch thousands of your machines in their fully provisioned state in minutes."

Source: [https://aws.amazon.com/cloudendure-disaster-recovery/](https://aws.amazon.com/cloudendure-disaster-recovery/)

"Cloud Endure Migration conducts continuous, block-level data replication of your source machines into a staging area in your AWS account without causing downtime or impacting performance. When you’re ready to launch the production machines, Cloud Endure Migration automatically converts your machines from their source infrastructure into the AWS infrastructure so they can boot and run natively in AWS."

Source: [https://aws.amazon.com/cloudendure-migration/](https://aws.amazon.com/cloudendure-migration/)

**Cloud Migration**

**Cloud Endure Migration**

**VCDA SRM**

**HCX**

**VCDA**

**Backup**

**AWS Backup**

**Data Protection Suite**

**Ecosystem Partners**

**Software**

**VMware DR as a Service:** [https://cloudsolutions.vmware.com/disaster-recovery](https://cloudsolutions.vmware.com/disaster-recovery)

**VMware HCX:** [https://cloud.vmware.com/vmware-hcx](https://cloud.vmware.com/vmware-hcx)

**VMware Site Recovery:** [https://cloud.vmware.com/vmware-site-recovery](https://cloud.vmware.com/vmware-site-recovery)


**aws AWS Backup**

"AWS Backup is a fully managed backup service that makes it easy to centralize and automate the backup of data across AWS services. Using AWS Backup, you can centrally configure backup policies and monitor backup activity for AWS resources, such as Amazon EBS volumes, Amazon EC2 instances, Amazon RDS databases, Amazon DynamoDB tables, Amazon EFS file systems, and AWS Storage Gateway volumes."

Source: [https://aws.amazon.com/backups/](https://aws.amazon.com/backups/)

**Backup**

**VMware Cloud Director Data Protection Suite (DellEMC)**

**Ecosystem Partners and Solutions**

The Dell EMC Data Protection Extension is the first certified data protection solution for VMware vCloud Director, which is also a native data protection solution. It extends the vCloud Director HTML 5 UI and REST API providing tenants a single management end-point for their virtual datacenters. Tenants can manage image level backups of VMs and vApps, restore to a new VM or in-place, by policy or adhoc, even file level restore: [https://kb.vmware.com/s/article/71302](https://kb.vmware.com/s/article/71302)

Other integrated Backup Solutions are available from Ecosystem Partners, for example:

- Commvault: [https://kb.vmware.com/s/article/71356](https://kb.vmware.com/s/article/71356)
- Veeam: [https://kb.vmware.com/s/article/71287](https://kb.vmware.com/s/article/71287)
- Cohesity: [https://kb.vmware.com/s/article/71326](https://kb.vmware.com/s/article/71326)
- Rubrik: [https://kb.vmware.com/s/article/71303](https://kb.vmware.com/s/article/71303)

**VMware Cloud Director Availability**

**VMware Hybrid Cloud Extension**

**VMware Site Recovery (Manager)**

VMware Cloud Director Availability is a powerful solution built to offer simple, secure, and cost-effective onboarding, migration, and disaster recovery services “to” or “between” multi-tenant VMware clouds. It provides integrated VCD self-service and requires not source-side agents.


VMware HCX is an application mobility platform designed for simplifying application migration, workload rebalancing and business continuity across datacenters and clouds. HCX is designed to provide simplified large-scale application mobility across any VMware-based SDDC environment including VMware Cloud Foundation, VMware Cloud on AWS, Azure VMware Service and all VMware Cloud Provider Partner offerings.

[https://cloud.vmware.com/vmware-hcx](https://cloud.vmware.com/vmware-hcx)

VMware Site Recovery Manager is a disaster recovery solution that provides automated orchestration and non-disruptive testing of centralized recovery plans for all virtualized applications. It allows Service Providers to offer reliable, automated protection for workloads hosted on their own cloud infrastructure and being replicated to another cloud destination (DR of the cloud) or workloads running on customer premises and being replicated to the cloud infrastructure (DR to the Cloud). It integrates natively with VMware vSphere Replication or with a broad range of array-based replication solutions available from all major VMware storage partners. VMware Site Recovery brings this trusted replication, orchestration and automation technologies to VMware Cloud on AWS to protect applications in the event of site failures.

[https://cloud.vmware.com/vmware-site-recovery](https://cloud.vmware.com/vmware-site-recovery)

**Cloud Provider Resources**

**VMware HCX:** [https://cloud.vmware.com/vmware-hcx](https://cloud.vmware.com/vmware-hcx)

**VMware Site Recovery:** [https://cloud.vmware.com/vmware-site-recovery](https://cloud.vmware.com/vmware-site-recovery)

Object and Archive Storage

Amazon Simple Storage Service
Amazon S3 Glacier

“Amazon Simple Storage Service (Amazon S3) is an object storage service that offers industry-leading scalability, data availability, security, and performance. This means customers of all sizes and industries can use it to store and protect any amount of data for a range of use cases, such as websites, mobile applications, backup and restore, archive, enterprise applications, IoT devices, and big data analytics.”

Source: https://aws.amazon.com/s3/

“Amazon S3 Glacier and S3 Glacier Deep Archive are a secure, durable, and extremely low-cost Amazon S3 cloud storage classes for data archiving and long-term backup. They are designed to deliver 99.999999999% durability, and provide comprehensive security and compliance capabilities that can help meet even the most stringent regulatory requirements.”

Source: https://aws.amazon.com/glacier/

VMware Cloud Director Object Storage Extension

VMware Cloud Director Object Storage Extension runs atop of a storage cluster or AWS S3 and provides object storage capabilities to the users of VMware Cloud Director. OSE supports native integration with AWS S3 with the multi-tenancy of VMware Cloud Director and also supports the complete set of native S3 APIs.

Starting with VMware Cloud Director Object Storage Extension 1.5, you can configure VMware Cloud Director Object Storage Extension with a Dell EMC ECS or with a Cloudian HyperStore cluster.

For service providers, this solution supports services such as Storage-as-a-Service, Backup-as-a-Service, WORM Object Lock security, and software development.

File Storage Service

AWS Amazon Elastic File System

“Amazon Elastic File System (Amazon EFS) provides a simple, scalable, fully managed elastic NFS file system for use with AWS Cloud services and on-premises resources. It is built to scale on demand to petabytes without disrupting applications, growing and shrinking automatically as you add and remove files, eliminating the need to provision and manage capacity to accommodate growth.”

Source: https://aws.amazon.com/efs/

vSAN File Service is a layer that sits on top of vSAN to provide file shares. It currently supports NFSv3 and NFSv4.1 file shares. vSAN File Service comprises of vSAN Distributed File System (vDFS) which provides the underlying scalable filesystem by aggregating vSAN objects, a Storage Services Platform which provides resilient file server end points and a control plane for deployment, management, and monitoring.


Developing a HyperConverged Storage Strategy for VCD with VMware vSAN:

Block Storage Volumes

AWS Elastic Block Store

“Amazon Elastic Block Store (EBS) is an easy-to-use, high performance block storage service designed for use with Amazon EC2 for both throughput and transaction intensive workloads at any scale. A broad range of workloads, such as relational and non-relational databases, enterprise applications, containerized applications, big data analytics engines, file systems, and media workflows are widely deployed on Amazon EBS.”

Source: https://aws.amazon.com/ebs/

VMware vSAN

vSAN is enterprise-class, storage virtualization software that, when combined with vSphere, allows you to manage compute and storage with a single platform. With vSAN, you can reduce the cost and complexity of traditional storage and take the easiest path to hyperconverged infrastructure and hybrid cloud. Evolve to an integrated hyperconverged infrastructure (HCI) solution with vSAN to improve business agility, all while speeding operations and lowering costs.

Source: https://www.vmware.com/products/vsan.html
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<td>Kong, ActiveMQ, Kafka from Bitnami Community Catalog MSP</td>
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<td>Bitnami Community Catalog available through the VMware Managed Service Provider program allows service providers to offer well-architected and secure applications and frameworks as a service. Bitnami provides access to more than 180 pre-packaged, tested and security-hardened open-source solutions. Use Kong or NGINX as an API-Gateway or Active MQ, RabbitMQ or Kafka as Message Queue and Pub/Sub solutions. These are available as vApp Templates that can be published through the VCD catalog for self-service by tenants with App Launchpad.</td>
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<td>MSP Program and Cloud Provider Hub:</td>
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<td>Apache ActiveMQ is an open source message broker written in Java together with a full Java Message Service (JMS) client. RabbitMQ is an open source general-purpose message broker that is designed for consistent, highly-available messaging scenarios (both synchronous and asynchronous). Kafka is a distributed streaming platform designed to build real-time pipelines and can be used as a message broker or as a replacement for a log aggregation solution for big data applications.</td>
</tr>
<tr>
<td>VCD App Launchpad Launch Blog:</td>
<td>&quot;AWS Elastic Beanstalk is an easy-to-use service for deploying and scaling web applications and services developed with Java, .NET, PHP, Node.js, Python, Ruby, Go, and Docker on familiar servers such as Apache, Nginx, Passenger, and IIS.&quot;</td>
<td>Source: <a href="https://aws.amazon.com/elasticbeanstalk/">https://aws.amazon.com/elasticbeanstalk/</a></td>
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<th>Amazon Pub/Sub Notification</th>
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<td>&quot;Amazon API Gateway is a fully managed service that makes it easy for developers to create, publish, maintain, monitor, and secure APIs at any scale. APIs act as the &quot;front door&quot; for applications to access data, business logic, or functionality from your backend services. Using API Gateway, you can create RESTful APIs and WebSocket APIs that enable real-time two-way communication applications.&quot;</td>
<td>&quot;Amazon Simple Queue Service (SQS) is a fully managed message queuing service that enables you to decouple and scale microservices, distributed systems, and serverless applications.&quot;</td>
<td>&quot;Amazon Simple Notification Service (SNS) is a fully managed messaging service for both system-to-system and app-to-person (AZP) communication. It enables you to communicate between systems through publish/subscribe (pub/sub) patterns that enable messaging between decoupled microservice applications or to communicate directly to users via SMS, mobile push and email.&quot;</td>
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<td>Bitnami + ActiveMQ</td>
<td>&quot;Amazon MQ is a managed message broker service for Apache ActiveMQ that makes it easy to set up and operate message brokers in the cloud.&quot;</td>
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AWS Marketplace

“AWS Marketplace is a digital catalog with thousands of software listings from independent software vendors that make it easy to find, test, buy, and deploy software that runs on AWS.”
Source: https://aws.amazon.com/marketplace

App MarketPlace

VMware Cloud Marketplace enables customers to discover and deploy validated third-party and open-source solutions for VMware-based cloud environments. It enables VMware customers to tap into the rich ecosystem of solutions that work alongside VMware products. VMware Cloud Marketplace includes third-party solutions from ISVs, as well as open-source solutions.
https://cloud.vmware.com/cloud-marketplace/

AWS Service Catalog

“AWS Service Catalog allows organizations to create and manage catalogs of IT services that are approved for use on AWS. These IT services can include everything from virtual machine images, servers, software, and databases to complete multi-tier application architectures.”
Source: https://aws.amazon.com/servicecatalog/

Service Catalog

VMware Service Broker aggregates native content from multiple clouds and platforms into a single catalog with role-based policies -service model for IT service deployments. Service Broker supports AWS, Azure, GCP and vSphere based clouds. Additionally Service Broker supports Cloud Assembly blueprints and AWS Cloud Formation Templates. The list of supported platforms and services will keep expanding.
https://cloud.vmware.com/service-broker

Ready-to-use Stacks

AWS Lightsail

“Lightsail is an easy-to-use cloud platform that offers you everything needed to build an application or website, plus a cost-effective, monthly plan. Lightsail is ideal for simpler workloads, quick deployments, and getting started on AWS. It’s designed to help you start small, and then scale as you grow.”
Source: https://aws.amazon.com/lightsail/

Ready to-use Stacks

App Launchpad enables Service Providers to offer a marketplace of applications within VMware Cloud Director. App Launchpad is a plug-in for VMware Cloud Director that provides a user interface to easily access and launch applications from VMware Cloud Director content catalogs. Using App Launchpad, developers and DevOps engineers can launch applications to VMware Cloud Director in seconds. You can configure App Launchpad to work with Bitnami Applications, Apps from VMware Cloud Marketplace and in-house Applications.

Search Engine

Amazon Elasticsearch Service

“Amazon Elasticsearch Service is a fully managed service that makes it easy for you to deploy, secure, and run Elasticsearch cost effectively at scale. You can build, monitor, and troubleshoot your applications using the tools you love, at the scale you need.”
Source: https://aws.amazon.com/elasticsearch-service/

Search Engine

The Bitnami Elasticsearch Stack provides a one-click install solution for Elasticsearch. Elasticsearch is a distributed search and analytics engine. It is used for web search, log monitoring, and real-time analytics. Ideal for Big Data applications.
https://bitnami.com/stack/elasticsearch
Hosted Hadoop

Amazon EMR

“Amazon EMR is the industry-leading cloud big data platform for processing vast amounts of data using open source tools such as Apache Spark, Apache Hive, Apache HBase, Apache Flink, Apache Hudi, and Presto.

Source: https://aws.amazon.com/emr/

Hadoop is a free, Java-based programming framework that supports the processing of large data sets in a distributed computing environment. It is part of the Apache project sponsored by the Apache Software Foundation. Hadoop makes it possible to run applications on systems with thousands of nodes involving thousands of terabytes.

https://bitnami.com/stack/hadoop

Deep Learning Frameworks

Apache MXNet on AWS

PyTorch on AWS

TensorFlow on AWS

MXNet is a flexible and efficient library for deep learning designed to work as a neural network. Bitnami image ships OpenBLAS as math library.

PyTorch is a deep learning platform that accelerates the transition from research prototyping to production deployment. Bitnami image includes Torchvision for specific computer vision support.

TensorFlow Serving is an open source system for serving a wide variety of machine learning models. Developed and released by the Google Brain team in 2015, the system uses a standard architecture and set of APIs for new and existing machine learning algorithms and frameworks.

https://aws.amazon.com/mxnet/
https://aws.amazon.com/pytorch/
https://aws.amazon.com/tensorflow/

Internet of Things

AWS IoT Device Management

“AWS IoT Device Management makes it easy to securely register, organize, monitor, and remotely manage IoT devices at scale. With AWS IoT Device Management, you can register your connected devices individually or in bulk, and easily manage permissions so that devices remain secure.”

Source: https://aws.amazon.com/iot-device-management/

Workplace ONE UEM platform enables organizations to securely manage any device—from laptops and smartphones to rugged devices and wearables—from a single console. Whether you’re exploring workspace IoT technologies, pilot testing, or ready to roll-out to a production environment, leverage Workplace ONE to ensure all your endpoints are managed and meet corporate compliance and security standards.

https://www.vmware.com/de/products/workspace-one/workspace-iot.html
VMware Cloud Provider Partner Portfolio Comparison: AWS-Edition

**Cloud Provider Resources**

- **AWS CodePipeline**: [https://aws.amazon.com/codepipeline/](https://aws.amazon.com/codepipeline/)
- **AWS CodeCommit**: [https://aws.amazon.com/codecommit/](https://aws.amazon.com/codecommit/)
- **AWS CodeDeploy**: [https://aws.amazon.com/codedeploy/](https://aws.amazon.com/codedeploy/)
- **VCD Terraform Provider**: [https://github.com/terraform-provider-vcd](https://github.com/terraform-provider-vcd)

**Infrastructure as Code**

- **CloudFormation**: [https://aws.amazon.com/cloudformation/](https://aws.amazon.com/cloudformation/)
- **vRA CodeStream**
- **Bitnami + Jenkins**
- **Bitnami + GitLab**
- **Bitnami + Jenkins from Bitnami Catalog**
- **vRA Cloud Assembly**

**Artifact Management**

- **AWS CodeArtifact**: [https://aws.amazon.com/codeartifact/](https://aws.amazon.com/codeartifact/)
- **JFrog Artifactory**: [https://bitnami.com/stack/artifactory](https://bitnami.com/stack/artifactory)

**DevOps and Development**

**CI / CD**

- **AWS CodePipeline**
- **AWS CodeCommit**
- **AWS CodeDeploy**

"AWS CodePipeline is a fully managed continuous delivery service that helps you automate your release pipelines for fast and reliable application and infrastructure updates." Source: [https://aws.amazon.com/codepipeline/](https://aws.amazon.com/codepipeline/)

"AWS CodeCommit is a fully-managed source control service that hosts secure Git-based repositories. It makes it easy for teams to collaborate on code in a secure and highly scalable ecosystem." Source: [https://aws.amazon.com/codecommit/](https://aws.amazon.com/codecommit/)

"AWS CodeDeploy is a fully managed deployment service that automates software deployments to a variety of compute services such as Amazon EC2, AWS Fargate, AWS Lambda, and your on-premises servers." Source: [https://aws.amazon.com/codedeploy/](https://aws.amazon.com/codedeploy/)

**Infrastructure as Code**

- **VMware vRealize Automation Cloud**
- **CodeStream**
- **GitLab and Jenkins from Bitnami Catalog**

VMware Code Stream is a continuous integration and continuous delivery (CI/CD) tool that you use to build pipelines that model the software release process in your DevOps lifecycle. By creating pipelines, you build the code infrastructure that delivers your software rapidly and continuously. [https://cloud.vmware.com/code-stream](https://cloud.vmware.com/code-stream)

GitLab CE is an open source, cloud-based Git repository and version control system used by thousands of organizations worldwide. [https://bitnami.com/stack/gitlab](https://bitnami.com/stack/gitlab)

Jenkins supports multiple SCM tools including CVS, Subversion and Git. It can execute Apache Ant and Apache Maven-based projects as well as arbitrary scripts. Out of the box, the Bitnami Jenkins package includes Jenkins, Apache, Tomcat, and Git. [https://bitnami.com/stack/jenkins](https://bitnami.com/stack/jenkins)

**Artifact Management**

- **AWS CodeArtifact**
- **JFrog Artifactory**

VMware Cloud Assembly connects to public and private cloud providers to deploy machines, applications, and services to those resources. Develop blueprints-as-code in an environment that supports an iterative workflow, from development to testing to production." [https://cloud.vmware.com/cloud-assembly](https://cloud.vmware.com/cloud-assembly)

The Bitnami JFrog Artifactory Open Source Stack provides a one-click install solution for JFrog Artifactory Open Source. [https://bitnami.com/stack/artifactory](https://bitnami.com/stack/artifactory)

"AWS CodeArtifact is a fully managed artifact repository service that makes it easy for organizations of any size to securely store, publish, and share software packages used in their software development process." Source: [https://aws.amazon.com/codeartifact/](https://aws.amazon.com/codeartifact/)
VMware Cloud Provider Partner Portfolio Comparison: AWS-Edition

### AWS Trusted Advisor

“AWS Trusted Advisor is an online tool that provides you real-time guidance to help you provision your resources following AWS best practices. Trusted Advisor checks help optimize your AWS infrastructure, increase security and performance, reduce your overall costs, and monitor service limits.”

Source: https://aws.amazon.com/premiumsupport/technology/trusted-advisor/

### CloudHealth

CloudHealth is the most trusted cloud service management platform, providing business intelligence across multi-cloud environments. Partners can enable their end customers to analyze and manage cloud cost, usage, security, and governance in one place through the CloudHealth Platform.

https://cloud.vmware.com/cloud-provider-hub/cloud-health

### AWS CloudTrail

“AWS CloudTrail is a service that enables governance, compliance, operational auditing, and risk auditing of your AWS account.”

Source: https://aws.amazon.com/cloudtrail

“Amazon CloudWatch is a monitoring and observability service built for DevOps engineers, developers, site reliability engineers (SREs), and IT managers.”

Source: https://aws.amazon.com/cloudwatch/

“AWS Cloud Map is a cloud resource discovery service. With Cloud Map, you can define custom names for your application resources, and it maintains the updated location of these dynamically changing resources.”

Source: https://aws.amazon.com/cloud-map/

### VMware vRealize Operations Cloud

VMware vRealize Operations delivers self-driving IT operations management for private, hybrid, and multi-cloud environments in a unified, AI-powered platform. It full-stack visibility from physical, virtual and cloud infrastructure – including VMs and containers – to the applications they support.

https://www.vmware.com/products/vrealize-operations.html

VMware vRealize Network Insight helps you build an optimized, highly available and secure network infrastructure across hybrid and multi-cloud environments.


Caveonix RiskForesight is the first multi-tenant Cyber Risk & Compliance Management platform for the hybrid cloud, enabling Service Providers to offer workload protection services to their customers.

https://www.caveonix.com/resources/vmware-cloud-provider-program-risk foresight-content/

### AWS Organizations

“AWS Organizations helps you centrally govern your environment as you grow and scale your workloads on AWS.”

Source: https://aws.amazon.com/organizations/

“AWS Cost Explorer has an easy-to-use interface that lets you visualize, understand, and manage your AWS costs and usage over time.”


### VMware vRealize Log & Network Insight Cloud

vRealize Log & Network Insight Cloud delivers full-stack visibility and real-time insights into your hybrid cloud infrastructure – including VMs and containers – to the applications they support. It is the most trusted cloud service management platform, providing business intelligence across multi-cloud environments. Partners can enable their end customers to analyze and manage cloud cost, usage, security, and governance in one place through the CloudHealth Platform.

https://cloud.vmware.com/cloud-provider-hub/cloud-health

### VMware Usage Meter and Usage Insight

VMware Usage Meter and Usage Insight provides accurate, real-time usage data and insight to help you understand cost and usage over time.


### VMware Cloud Provider Hub

VMware Cloud Provider Hub provides a central location for customers to manage and provision resources across multiple cloud providers.

https://cloud.vmware.com/cloud-provider-hub/cloud-health

### Usage Meter and Usage Insight

With Cloud Provider Hub, partners can now manage end-to-end customer lifecycle management including onboarding, customizing, and managing services for them, having a consolidated view of their usage, and managing support.

https://cloud.vmware.com/cloud-provider-hub/hub

Licensing usage metering and automatic reporting using vCloud Usage Meter on-premises agent and vCloud Usage Insight SaaS.

https://cloud.vmware.com/cloud-provider-metering/

Tenant App generates monthly bills to provide an account of the overall expenses used for resources in an organization.


### vROps Chargeback Tenant App

With Cloud Provider Hub, partners can now manage end-to-end customer lifecycle management including onboarding, customizing, and managing services for them, having a consolidated view of their usage, and managing support.

https://cloud.vmware.com/cloud-provider-hub/hub

Licensing usage metering and automatic reporting using vCloud Usage Meter on-premises agent and vCloud Usage Insight SaaS.

https://cloud.vmware.com/cloud-provider-metering/

Tenant App generates monthly bills to provide an account of the overall expenses used for resources in an organization.