Azure VMware Solution

Choosing between Azure VMware Solution and native public cloud services

97%

of enterprises have both public and private cloud environments installed

92%

do business with two or more cloud service providers

IDC

SOURCE: IDC DIRECTIONS 2021 - MARY JOHNSTON TURNER - *TEN TIPS FOR POWERING RESILIENT, AUTONOMOUS IT OPERATIONS WITH POLICY, PROGRAMMABILITY & OBSERVABILITY*, MARCH 16, 2021

"The emergence of hybrid/multicloud as the organizing architectural principle of IT in the digital era is a recurring theme in recent years, with nearly 60% of organizations indicating current or planned implementation of hybrid strategies"

451 RESEARCH, PART OF S&P MARKET INTELLIGENCE, *CLOUD PRICE INDEX - COVID-19 AND THE COMPLEXITY STORM*, MARCH 16, 2021

Hybrid cloud – where applications run in both an on-premises private cloud and a public cloud – has emerged as the dominant mode of operation for enterprise IT. IDC data[1] shows an overwhelming 97% of enterprises have adopted hybrid cloud. By using the public cloud component of hybrid cloud, you benefit from the tremendous scale, geographic reach, and breadth of services offered by the large public cloud providers. With private cloud you get the most control and sovereignty for apps and data. The challenge of hybrid cloud stems from the differing infrastructure of your private and public cloud platforms. Most on-premises applications run on VMware vSphere®, but the major public clouds all use different hypervisors, different networking and storage, and different management. So how do you adopt hybrid cloud while avoiding the operational complexity created with inconsistent platforms?

The VMware Cloud™ family of multi-cloud solutions solves that dilemma by providing compute, storage, networking, and management infrastructure on all major public clouds that is fully consistent with your VMware private cloud. For customers considering Azure for their cloud use cases, this Buyers Guide will show how Azure VMware Solution (AVS) delivers VMware infrastructure – virtual machines for traditional applications and desktops, plus Kubernetes containers for modern cloud-native apps - running in Azure to speed cloud adoption while avoiding operational disruptions. For each use case, we have provided a comparison with the native Azure infrastructure-as-a-service (IaaS) public cloud platform to show the benefits of Azure VMware Solution.

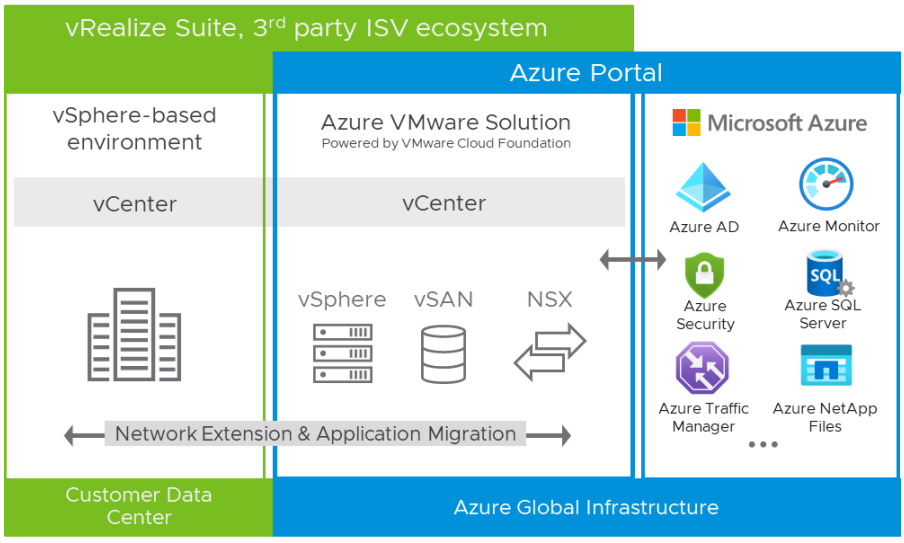


Figure 1. Azure VMware Solution provides a VMware SDDC on bare-metal Azure infrastructure.

27 DAYS

"Organizations report needing, on average, 27 days to refactor and migrate an application to public cloud services. At this rate, it would take 7.4 years for a business to migrate 100 applications."

ENTERPRISE STRATEGY GROUP: HYBRID CLOUD TRENDS, OCTOBER 2019

"Organizations completed their migrations to VMware Hybrid Cloud at a **69% lower cost than public cloud** (including 71% less staff time to support the migration)"

IDC BUSINESS VALUE WHITE PAPER, SPONSORED BY VMWARE, *THE BUSINESS VALUE OF HYBRID CLOUD WITH VMWARE*, #US45435119, AUGUST 2019

Use Case #1: Cloud Migration

You may be under pressure to migrate applications from your on-premises data center to the Azure cloud for multiple reasons: an upcoming lease expiration; a Finance directive to move from CapEx spending to OpEx spending; or simply a top-down mandate to move everything to the cloud. When migration speed is critical, only a streamlined "lift and shift" approach is feasible because replatforming and refactoring applications to adapt to the cloud's particular IaaS platform is slow and expensive, often taking years[2].

The difficulty of modifying applications and the virtual machines that house them is apparent when you consider that every element of the application's infrastructure changes when moved to the cloud – compute, storage, and networking – as well as services for management, monitoring, high availability, backups, and disaster recovery.

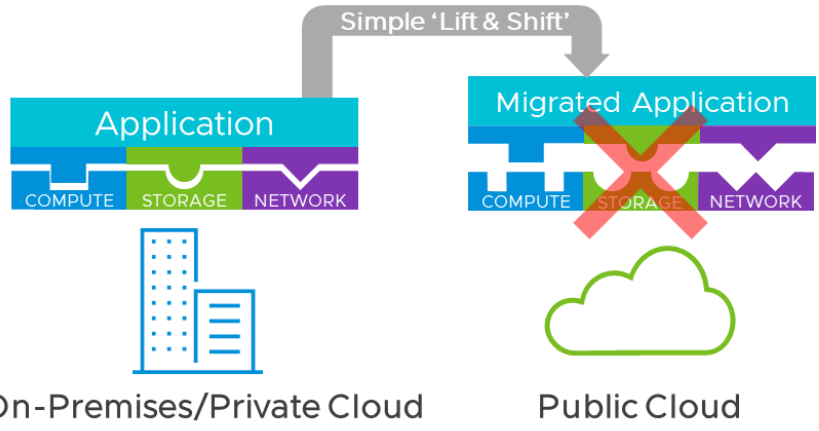


Figure 2. Lifting and shifting from private to public clouds is complicated by inconsistent infrastructure.

VMware Cloud multi-cloud solutions like Azure VMware Solution make "lift and shift" migrations easy by deploying the VMware Cloud Foundation™ Software-Defined Data Center (SDDC) stack on bare-metal servers running in Microsoft's VMware Cloud Verified Azure data centers. VMware Cloud Foundation provides a fully VMware-consistent platform of vSphere (compute), VMware vSAN™ (storage), and VMware NSX-T™ (networking) so your applications and VMs can easily migrate to Azure with no replatforming or refactoring needed. Azure VMware Solution uses familiar VMware management tools like vCenter and vRealize, so all your operational skills and processes work seamlessly. Azure VMware Solution also includes VMware HCX® to extend your on-premises network to your VMware SDDC on Azure to enable bi-directional bulk, and even live migration of applications and virtual machines. By stretching your on-premises Layer-2 network to Azure, HCX lets you avoid the complexity of changing the IP addresses of migrated VMs.

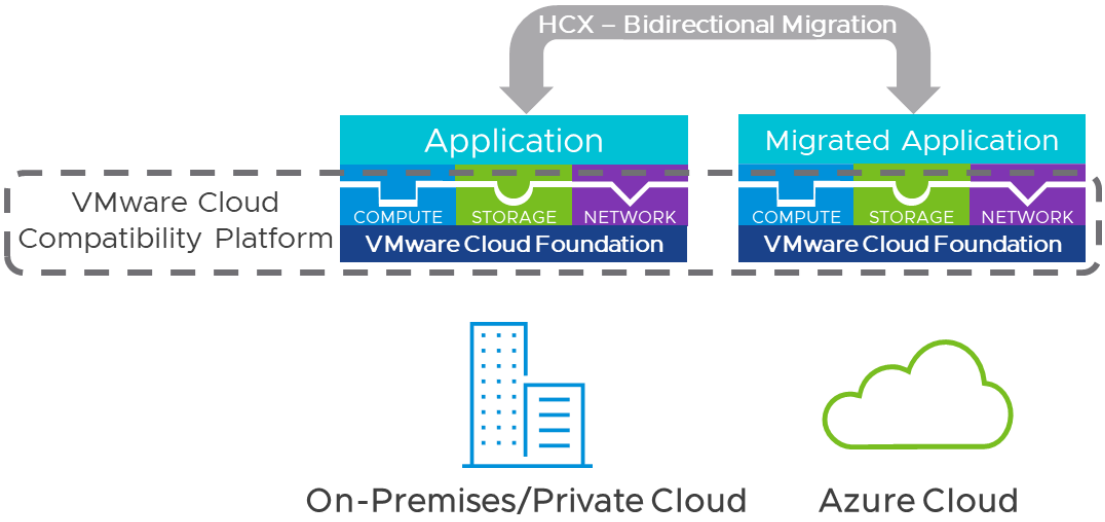


Figure 3. Azure VMware Solution makes migration easy with consistent and compatible VMware infrastructure.

"We saw multi-cloud as an opportunity right from the beginning. It gives us choice and allows us to use the best of all worlds. We can always choose from a menu to go for the best service. And it allows us to go deeper into PaaS services while mitigating any lock-in risks."

DR. CHRISTOPH BÖHM, CIO/COO DEUTSCHE BÖRSE AG, *VMWORLD 2020*

CLOUD MIGRATION COMPARISON		
ATTRIBUTES	**AZURE VMWARE SOLUTION (AVS)**	**NATIVE PUBLIC CLOUD**
Consistent infrastructure	✓Same vSphere hypervisor platform ✓Virtual machines and apps run unchanged	✗Different hypervisor, VM format, VM tools, networking, storage ✗VM conversions needed ✗App replatforming needed
Consistent operations and management	✓Familiar vSphere Client, vCenter, & vRealize (optional) tools ✓Automation continues to work ✓No new admin skills needed	✗All management from Azure Portal, CLI, or PowerShell ✗Must rebuild automation ✗New skills required
Bi-directional and non-disruptive application migration	✓Bulk and live migration of VMs and apps with HCX ✓Migrate critical apps with zero downtime ✓Migrate back to on-premises any time	✗Must shutdown VM before migration ✗Time needed for VM conversions and app replatforming ✗No support for migration back to on-premises
Application availability	✓High Availability built-in to the VMware SDDC platform ✓No need to redesign apps to handle cloud failures ✓99.9% AVS infrastructure availability from Microsoft	✗vSphere VMs moved to Azure lose vSphere HA protection ✗Apps require refactoring for cloud availability ✓Same 99.9 Azure availability guarantee

CLOUD MIGRATION COMPARISON		
ATTRIBUTES	AZURE VMWARE SOLUTION (AVS)	NATIVE PUBLIC CLOUD
Application component compatibility	✓Keep your own database, middleware, web tier to avoid app breakage	✗Apps may need to be modified and tested with cloud-native services
Savings on Microsoft workloads	✓Apply existing Windows Server & SQL Server licenses to AVS VMs with Azure Hybrid Benefit ✓Apply Microsoft EA Azure Credits	✓Same
Microsoft support for legacy apps	✓Extended Security Updates at no cost for Windows Server 2008 & SQL Server 2008	✓Same
Total Cost of Ownership and ROI	✓vSphere CPU and memory oversubscription permits high VM density ✓Storage costs included ✓Variable VM sizing better matches app resource needs ✓No app refactoring ✓Typical 35% lower TCO than native[3]	✗Instances have locked vCPU:Core ratios, so no CPU oversubscription ✗No memory oversubscription ✗Storage costs extra ✗Fixed VM sizes make over-provisioning unavoidable
Flexible consumption model	✓Pay-as-you-go with On-Demand hourly pricing, or lock-in savings with 1- and 3-year Reserved Instances	✓Same
Assured performance	✓AVS SDDCs run on dedicated servers, no noisy neighbor issues	✗VM instances run on shared servers unless higher cost Dedicated Host instances used
Cloud provider flexibility	✓AVS VMs easily migrated to other VMware Cloud IaaS providers with HCX	✗VM formats incompatible with other clouds ✗No outbound migration tools provided

"Applications deployed on a hyperscaler's platform using native tooling will take over a year (on average) to migrate to another platform."

"By 2025, 50% of enterprises will adopt (intentional) multicloud"

"This approach offers several benefits to organizations: Reduces risk of vendor lock-in; Maximizes commercial leverage"

GARTNER - *THE FUTURE OF CLOUD IN 2025: FROM TECHNOLOGY TO INNOVATION*, OCTOBER 29, 2020

"Today, every major cloud provider offers a VMware-approved SDDC and a Cloud Foundation stack that overlays familiar VMware features, like vSphere, vSAN, NSX-T and vRealize, on native IaaS compute, storage and networking services."

TECHTARGET - *COMPARE VMWARE CLOUD OFFERINGS FOR AWS, AZURE AND GOOGLE*, MAY 2021

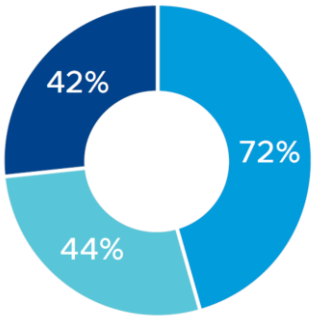
Use Case #2: Data Center Expansion

When your data center hits capacity limits due to seasonal demand spikes or just steady organic growth, public clouds offer a compelling expansion solution. However, the allure of such "cloud-bursting" can lead to frustration when the proprietary infrastructure of public clouds blocks relocation of on-premises apps without a major, and one-way, refactoring effort. VMware Cloud platforms, like Azure VMware Solution, have made rapid data center expansion and "cloud-bursting" possible by providing VMware Cloud Foundation SDDC infrastructure in public clouds that is fully consistent and compatible with the VMware infrastructure you already use. You can now treat Azure regions worldwide as extensions to your data center, ready to run instances of your critical applications without modifications, so you can easily handle short-lived demand surges or even make permanent capacity increases or decreases.

DATA CENTER EXPANSION COMPARISON		
ATTRIBUTES	AZURE VMWARE SOLUTION (AVS)	NATIVE PUBLIC CLOUD
Support "Azure First" cloud policy	✓Consume Azure credits ✓Extend apps with Azure Services ✓Consolidate billing	✓Same
Application licensing	✓No changes, traditional on-premises licensing applies	✗Oracle DB and other software have higher licensing costs on Azure
Network bandwidth and latency	✓Azure ExpressRoute high-speed private connections to on-premises apps and services ✓Azure VNets connect AVS SDDC to Azure Services with no egress charges	✓Same
Bi-directional portability	✓Bulk and live migration of VMs and apps to AVS and other VMware Clouds with HCX ✓Migrate back to on-premises any time	✗Time needed for VM conversions and app replatforming ✗No support for migration back to on-premises
Enterprise-grade security	✓Micro-segmentation of apps & VMs with NSX-T ✓Use Azure Services for identity (Active Directory), firewalls (Azure Firewall), DDOS protection, secrets (Key Vault) ✓AVS SDDC security patches applied by Microsoft ✓Azure data center physical security protections ✓Free Extended Security Updates for Windows & SQL Server 2008	✗Complex Network Security Group rules for micro-segmentation ✓Same for other security features
Regulatory compliance & certifications	✓Inherits Azure industry and regional certifications	✓Same

DATA CENTER EXPANSION COMPARISON		
ATTRIBUTES	AZURE VMWARE SOLUTION (AVS)	NATIVE PUBLIC CLOUD
Application scalability	✓Adjust VMware SDDC VM sizing dynamically as needs require ✓Hot-add CPU and hot-add memory to running VMs ✓Quickly (~30 minutes) add SDDC nodes to increase capacity	✗Changing app resources requires migrating VM to different instance size ✗App downtime when resizing
Application resource guarantees	✓vSphere Distributed Resource Scheduler™ load balances VMs across SDDC nodes	✗No user control of VM placement
Application availability	✓High availability for single instance apps with vSphere HA ✓Failed SDDC hosts replaced with Automatic Remediation	✗Must rebuild apps as multi-instance for failover protection
Storage features	✓Storage Policy-Based Management assigns VMs to correct storage tiers ✓Encryption, deduplication, and compression built into vSAN	✗No SPBM, deduplication, or compression
Global locations	✓Available in 13 Azure regions worldwide with more coming	✓Over 60 Azure regions worldwide

MODERNIZATION AND TRANSFORMATION IS THE #1 APPLICATION PRIORITY FOR ENTERPRISES



Top 3 Priorities for Application Portfolios
(multiple responses allowed)

- Application Transformation
- Cloud Migration
- Develop New Cloud Apps

CRITICAL FEATURES FOR MODERN APPLICATION PLATFORMS

IT leaders and decision makers ranked the ideal environment attributes they want wherever their modernized applications are deployed:

1. Security and protection for every application
2. IT can manage applications consistently
3. Multi-cloud application portability without refactoring
4. Easy collaboration between developers and operations teams
5. Build and deploy applications to any public cloud

Source: "*App Modernization in a Multi-Cloud World, 2020 VMware Market Insights Report*"

Use Case #3: Application Modernization

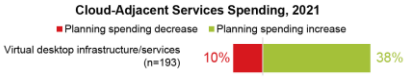
While Azure VMware Solution makes it easy to migrate your applications directly to Azure with no changes, such simple "lifting and shifting" is rarely optimal. Once your applications are in the Azure cloud, you will want to take advantage of the hundreds of powerful Azure Services to modernize and extend them. In fact, modernization is the top application priority for enterprises (see sidebar) and Azure VMware Solution is an ideal platform for application transformation with direct high-speed private connections to Azure Services for databases, storage, identity, security, and monitoring.

Migrating and extending your infrastructure to public clouds offers a great opportunity to adopt a cloud-native architecture for new or mission-critical applications. Azure VMware Solution provides several paths you can take to accelerate and simplify modernization of your applications with microservice architectures built on containers, Kubernetes, and serverless technologies. You can deploy a complete Kubernetes infrastructure in your Azure VMware Solution SDDC using the VMware Tanzu™ portfolio of products or other Kubernetes distributions. For a more incremental path to cloud-native modernization, you can extend traditional applications in Azure VMware Solution virtual machines to use Azure cloud-native Platform-as-a-Service features for data, AI/ML, Kubernetes containers, and more.

APPLICATION MODERNIZATION COMPARISON		
ATTRIBUTES	**AZURE VMWARE SOLUTION (AVS)**	**NATIVE PUBLIC CLOUD**
App security & protection	✓Use Azure Security service ✓Use VMware Carbon Black, CloudHealth, and NSX-T ✓Use 3rd-party solutions	✓Use Azure Security service
Consistent app management	✓Use same tools for traditional and Kubernetes apps on-premises and in AVS ✓Manage and apply policy governance to Kubernetes clusters in AVS or any cloud with *Tanzu Mission Control*	✗Limited on-premises app management with Azure Arc
Multi-cloud app portability	✓Migrate traditional and Kubernetes apps between on-premises, AVS, and any VMware Cloud platform with HCX, no refactoring needed	✗Portability limited to Azure and Azure Stack on-premises
Developer & IT Ops collaboration	✓Developers can self-provision Kubernetes infrastructure within resource guardrails set by IT	✗Separate Azure subscriptions per developer needed for quota restrictions
Kubernetes platform	✓*Tanzu Standard* CNCF-conformant Kubernetes supported on AVS	✓Azure Kubernetes Service ✓Tanzu Standard on Azure VMs
Traditional app transformation	✓Extend apps in AVS VMs with Azure Services	✓Same Azure Services available

APPLICATION MODERNIZATION COMPARISON		
ATTRIBUTES	AZURE VMWARE SOLUTION (AVS)	NATIVE PUBLIC CLOUD
Hybrid application support	✓Compose apps with components in on-premises vSphere, AVS VMs and containers, and Azure Services ✓Fast ExpressRoute connections for hybrid app performance	✗Limited to *Azure App Service hybrid web apps*
Modern app platform lifecycle management	✓Kubernetes cluster lifecycle management with *Tanzu Mission Control*	✓AKS (Azure and Azure Stack) and Azure Arc
3rd-party component support	✓Use any component supported in a vSphere VM or Kubernetes container	✗Only Azure Service components
Modern application scaling & TCO	✓*Higher Kubernetes container pod density in AVS vSphere VMs* lowers cost of adding Kubernetes to your AVS SDDC	✗*Fixed AKS pods per node limit* means more Azure instances needed and higher costs

"There is continued uptick for [cloud-adjacent] virtual desktops in 2021. A net positive 27% of organizations currently using virtual desktop infrastructure/services will expand spending in this category in 2021."



451 RESEARCH - *CLOUD, HOSTING AND MANAGED SERVICES BUDGETS & OUTLOOK 2021*, MAY 21, 2021

"VMware remains by far the largest vendor delivering virtual hypervisor infrastructure for virtual desktops and applications"

VDI LIKE A PRO, *END USER COMPUTING STATE OF THE UNION 2021*, APRIL 29, 2021

"The biggest challenge[s] with the on-premises virtual desktop and application environment [is] migration to the cloud"

VDI LIKE A PRO, *END USER COMPUTING STATE OF THE UNION 2020*, JUNE 11, 2020

"Cloud VDI adoption grew by 82% in 6 weeks in response to the rapid shift to remote work."

INTERNAL VMWARE DATA (SOURCE: MARCH 13–APRIL 24, 2020).

Use Case #4: Cloud Desktop Virtualization

The events of 2020 and 2021 made remote worker support essential for most organizations, and virtual desktops deployed to public clouds allowed their IT teams to respond quickly. Remote working is here to stay, and the move to cloud-based virtual desktops is continuing, according to 451 Research, part of S&P Market Intelligence[4]. As pandemic pressures ease, reasons to adopt cloud virtual desktops beyond the work-from-home use case remain, including overall "Cloud First" migration directives, replacing CapEx with OpEx, on-demand capacity adjustments for temporary or seasonal workers, and providing a disaster recovery site for on-premises virtual desktop infrastructure (VDI).

The most common mode of operation for virtual desktops is now hybrid, where enterprises host desktop workloads on both on-premises infrastructure and public clouds[5]. Managing such a mixed virtual desktop environment is made far easier with a single, consistent virtual desktop and application software stack extending from the hypervisor to the desktop session broker and management layers – especially when the hypervisor is vSphere, used by more customers for VDI and server-based computing than any other[6]. That is exactly the solution provided by VMware Horizon®, our platform for delivering virtual desktops and apps efficiently and securely across hybrid cloud for the best end-user digital workspace experience. VMware Horizon on Azure VMware Solution lets you combine on-premises and Azure-hosted virtual desktops and apps into a uniform pool with fully consistent user and management experiences.

CLOUD DESKTOP VIRTUALIZATION COMPARISON		
ATTRIBUTES	VMWARE HORIZON ON AZURE VMWARE SOLUTION (AVS)	NATIVE PUBLIC CLOUD (AZURE VIRTUAL DESKTOP - AVD)
Consistent hybrid infrastructure	✓Same vSphere infrastructure ✓Same Horizon management ✓Host users in AVS or on-premises ✓Cloud Pod Architecture federates Horizon on-premises and on AVS	✗Azure Virtual Desktop (AVD) is available only on Azure, no hybrid on-premises options available ✓AVD can be managed through *VMware Horizon Cloud on Azure* DaaS solution
Desktop bursting	✓Quickly provision extra capacity in AVS ✓Scales to *1000s of concurrent desktops* per AVS cluster	✗Bursting implies hybrid on-premises component, not available with AVD
Remote worker support	✓Secure user access through Horizon Unified Access Gateway in AVS	✓Yes
Storage & resource efficiency	✓Instant clones reduce storage use up to 80% ✓Compute and memory oversubscription to maximize desktops per AVS node ✓App Volumes and Dynamic Environment Manager assemble customized desktops on demand	✗Pay separately for Azure VM instances, persistent storage, and networking used by AVD desktops ✗Must pay for one Azure VM instance per personal desktop

CLOUD DESKTOP VIRTUALIZATION COMPARISON		
ATTRIBUTES	VMWARE HORIZON ON AZURE VMWARE SOLUTION (AVS)	NATIVE PUBLIC CLOUD (AZURE VIRTUAL DESKTOP - AVD)
Proximity to cloud apps	✓AVS-hosted desktops have fast Azure backbone network access to Azure services	✓Same
Desktop DR protection	✓Keep AVS SDDC in “pilot light” status for low-cost DR capacity on demand ✓Horizon redirects users to AVS desktops in case of on-premises failure ✓Stateless desktops customized with stored user preferences on startup	✗AVD offers Azure-to-Azure DR, but not DR for on-premises desktops
Multi-cloud flexibility	✓Horizon Cloud Connector provides portability across Horizon on any VMware Cloud platform ✓Use Horizon subscription on any supported cloud	✗AVD is Azure-only
Workspace management portal	✓VMware Workspace ONE® unifies user access to Horizon on AVS desktops, apps, and Azure SaaS plus any other apps from any device	✗Microsoft Endpoint Manager supports Microsoft apps on limited devices
Microsoft-managed infrastructure	✓Microsoft handles AVS lifecycle management, customer responsible for Horizon components	✓AVD is DaaS – no lifecycle management needed by customer
Windows client licensing	✓Azure Hybrid Benefit allows reuse of Windows Server licenses for Horizon Apps RDSH hosts on AVS ✓Eligible for bring-your-own M365 and Windows 10 licenses	✓Same
Flexible pricing	✓Horizon Universal Subscription for on-premises or on AVS ✓Horizon Subscription for AVS-only ✓Per Named or Concurrent user	✗No unified on-premises & Azure licensing ✓Personal (persistent) and Pooled (shared) AVD pricing options

AZURE VMWARE SOLUTION DISASTER RECOVERY PARTNER SOLUTIONS

These VMware and Microsoft partners offer on-premises vSphere-to-AVS and AVS-to-AVS disaster recovery.

- *Cohesity DataProtect*
- *Commvault*
- *Dell EMC Data Protection*
- *JetStream DR*
- *Veeam Backup & Replication*
- *Veritas NetBackup*
- *Zerto IT Resilience Platform*

VMware offers vSphere-to-AVS disaster recovery with *VMware HCX Disaster Recovery*

Use Case #5: Disaster Recovery to the Cloud

Just as public clouds are attracting production IT infrastructure, they have also become the preferred platform for disaster recovery solutions. You no longer need to reserve expensive, but idle, capacity in your own data centers to provide disaster recovery infrastructure when public clouds offer fast network connections, low-cost storage, geographic diversity, and immense capacity.

As with migrating production workloads to the cloud, the main obstacle to adopting disaster recovery using the cloud providers' native DR services has been the platform inconsistency between your vSphere infrastructure and public clouds that use entirely different platforms. If a disaster occurs, the virtual machines replicated to the cloud would require conversion to the cloud's own hypervisor platform before they could be restored – not a task you want to take on during a crisis.

VMware Cloud platforms, like Azure VMware Solution, offer a better approach for disaster recovery to the cloud that allows your VM replicas to be recovered on fully consistent VMware SDDC infrastructure with no conversion needed. Disaster recovery procedures are greatly simplified and made more trustworthy.

DISASTER RECOVER TO THE CLOUD COMPARISON		
ATTRIBUTES	AZURE VMWARE SOLUTION (AVS)	NATIVE PUBLIC CLOUD (AZURE SITE RECOVERY)
Protection for on-premises and cloud VMs	✓Yes, partner solutions protect on-premises vSphere and AVS VMs	✓*Same*
Simplified on-premises DR protection	✓No agents needed in protected VMs for replication ✓Protection for any vSphere-supported guest OS	✗ASR requires *Mobility service* agents installed in VMs ✗Must install *multiple ASR servers* on-premises ✗Limited *Windows and Linux VM configurations* supported
Simplified recovery process	✓No VM pre-configurations needed ✓On-premises L2 network subnets can stretch to AVS, so no IP address changes needed on failover	✗Must pre-configure RDP and firewall access on protected VMs ✗Protected Linux VMs *require pre-boot compliance changes* at time of failover ✗*New public IPs required* on Internet-facing VMs ✗Must *re-IP internal VM networks or reconfigure subnets* to use Azure VNets
Simplified failback process	✓Partner solutions support live failback ✓Partner solutions support non-disruptive test recovery	✗Must complete *complex reprotection process* before failing back ✗VMs with RDMs can't failback if on-premises VMs are lost
Simplified configuration & management	✓Partner solutions configured and managed from vCenter plug-ins	✗Multiple points of management: Azure Portal, ASR Configuration Server, vCenter

DISASTER RECOVER TO THE CLOUD COMPARISON		
ATTRIBUTES	AZURE VMWARE SOLUTION (AVS)	NATIVE PUBLIC CLOUD (AZURE SITE RECOVERY)
Multi-cloud support	✓Partner solutions can protect on-premises vSphere to all major public clouds	✗ASR supports only Azure as the DR target
Reduced DR cost	✓Only small "Pilot light" AVS cluster needed ✓Dynamically provision AVS recovery nodes when needed ✓Partner solutions use deduplication and compression and low-cost Azure Blob storage for replicated VMs	✓Recovery VM instances provisioned on failover ✗No deduplication or compression of VM replicas
Verified RTOs and low RPOs	✓Partner solutions use ExpressRoute or VPN connections for fast replication and failback ✓Continuous replication by some backup tools for near-zero RPOs ✓No need to reconfigure VMs on recovery reduces RTOs	✓ASR uses continuous replication from vSphere for low RPOs ✗*2-hour RTO SLA*, RTO affected by time needed to re-IP VMs on recovery
Fast recovery options	✓File-level recovery with *Cohesity Helios, Dell EMC Data Protection,* and *Veritas NetBackup*	✗File-level recovery only from *Azure Backup Server* Windows VM backups
Pricing	• Per VM per month, AVS and Azure costs are separate	• *$25 per VM per month*, Azure usage costs for storage, data egress, and recovery VM instances are separate

RESOURCES

Solution Overviews
- *Azure VMware Solution*
- *Horizon on Azure VMware Solution*

Websites
- *https://www.vmware.com/cloud-solutions/azure.html*
- *https://azure.microsoft.com/en-us/services/azure-vmware/*

Documentation
- *https://docs.microsoft.com/en-us/azure/azure-vmware/*

Hands-On Labs
- *http://hol.pub/avs*

Tools
- *Azure VMware Solution Platform Updates*
- *VMware Cloud Economics*
- *Azure VMware Solution Learning Module*

Conclusion

Whether your IT infrastructure plans are to adopt a hybrid cloud strategy that includes Azure or to migrate fully to the Azure cloud, you are facing important decisions on how you migrate, modernize, and build your applications and end-user environments. Platform differences between public Azure native IaaS and PaaS and the VMware infrastructure most enterprises run in their private data centers are unavoidable. Those differences initially appear to impose a labor-intensive application replatforming and refactoring hurdle to your migration plans. Azure VMware Solution removes the hurdle by extending consistent VMware infrastructure and management to Azure, bypassing the need for costly application changes. Azure VMware Solution also enables incremental application modernization through high-performance connections to native Azure Services. Azure VMware Solution lets you get the most from the bare-metal VMware SDDC hosts running in Azure data centers to increase utilization and keeps costs low.

Savings Summary in (USD)

3-Year Total Cost of Ownership

	Azure VMware Solution	Azure Public Cloud
Compute	2,147,076	1,357,075
Storage	Included	1,035,084
Network	107,354	119,608
Migration (Rehosting)	49,303	784,989
Re-Skilling	5,482	187,078
Migration Downtime Cost	0	40,639
Functional Equivalence Software	Included	54,972
Microsoft	0	0
Facilities	Included	Included
Labor	32,531	32,531
DR	0	0
Professional Services	0	0
Support	Included	0
Other	0	0
Total	2,341,746	3,611,976

Figure 4. TCO for migration to Azure VMware Solution is usually less than the cost of apps and desktops deployed on fully native Azure services, even before expensive refactoring work is included. Source: VMware internal Cloud Economics analysis

Whatever your use case, choose Azure VMware Solution for rapid realization of cloud benefits, consistent infrastructure and operations across on-premises and multiple clouds, bi-directional portability of workloads, and enterprise-grade capacity and performance.

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[1] IDC Directions - Mary Johnston Turner - *Ten Tips for Powering Resilient, Autonomous IT Operations with Policy, Programmability & Observability*, Doc # DR2021_FoDInf_MJT, March 16, 2021

[2] Enterprise Strategy Group: *Hybrid Cloud Trends*, October 2019

[3] Azure VMware Solution Economic Analysis, VMware internal

[4] 451 Research, part of S&P Market Intelligence - *Cloud, Hosting and Managed Services BUDGETS & OUTLOOK 2021*, May 21, 2021

[5] VDI Like a Pro, *End User Computing State of the Union 2021*, April 29, 2021, page 20

[6] VDI Like a Pro, *End User Computing State of the Union 2021*, April 29, 2021, page 22

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