

## White Paper

# IBM Cloud for VMware Solutions: A Comprehensive Portfolio to Rehost and Modernize Enterprise Workloads in the Cloud

Sponsored by: IBM

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## IDC OPINION

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This IDC White Paper discusses IBM Cloud for VMware Solutions, a portfolio of VMware environment offerings hosted within the IBM Cloud. This White Paper also highlights the strengths of the portfolio and illustrates how it offers a secure and flexible path to public cloud and to broader digital transformation (DX).

## SITUATION OVERVIEW

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### Public Cloud Is an Enabler to Enterprise Digital Transformation

Transforming legacy infrastructure platforms to better support agility, flexibility, and speed is necessary to be responsive in today's business environment. This modernization of IT platforms is often the first step in the digital transformation journey.

Public cloud is increasingly seen as the preferred platform for existing and new enterprise IT applications. This is especially true as public cloud accelerates the access to emerging new technologies such as AI, Big Data and analytics, and cloud-native application development platforms – all of which are increasingly seen as key components of the modernization process.

Adopting cloud offers enterprises a short lead time to tangible results, such as avoidable up-front costs for datacenter and capacity expenses. Migrating applications to the cloud is just the first step in the DX journey. Enterprises typically have a vision of modernizing these applications to increase software agility and scalability. This is usually through use of open cloud-native frameworks such as microservices, containerization, and Kubernetes. Enterprises moving to cloud are increasingly looking ahead to these modernization and application transformation needs and for services from cloud providers to address these needs.

### *Challenges with Public Cloud Adoption – The Need for Consistency and Hybrid*

Public cloud adoption is not without its challenges, particularly for IT organizations with existing technologies, processes, and skill set investments. Movement into public cloud typically introduces changes in skill set needs, management tools, and processes.

As the dominant virtualization environment used in the enterprise IT world, VMware environments represent a large segment affected by these challenges. Organizations that build their IT environments

using VMware typically have a deep integration with the VMware stack, with processes, tooling, and internal skill sets being built around VMware software and API. Providers have responded to this with hybrid solutions built around VMware, allowing customers to have a consistent experience both on premises and in public cloud. But most are limited in production applicability due to one or more of the following:

- Limited formal backing from VMware in terms of support and certification
- Limited flexibility in hardware selection and software configuration
- Limited regional availability from a global perspective
- Lack of flexibility to run adjacent workloads on a mix of single-tenant and multitenant infrastructure options

IBM Cloud for VMware Solutions addresses these gaps and brings to VMware customers a nondisruptive path to public cloud. Integrated into the broader IBM Cloud, these offerings bring to customers a known environment for their business applications while enabling access to new cloud technologies and innovations including IBM Watson for AI and platforms for new cloud-native apps.

## IBM Cloud for VMware Solutions – Choice, Control, and Flexibility

IBM Cloud for VMware Solutions offers customers single-tenant and multitenant offerings, with varying levels of configuration flexibility. Customers can choose between five distinct starting points as shown in Table 1.

IBM Cloud for VMware Solutions Dedicated is a client-managed solution run on a single-tenant infrastructure. Depending on the level of customization required, customers can choose between the following options:

- **VMware vCenter Server on IBM Cloud** – delivered as a turnkey solution of qualified hosts and attached storage options with automated installation of vSphere and additional optional VMware components such as NSX and vSAN
- **VMware vSphere on IBM Cloud** – delivered as VMware-compatible hardware and licenses that can be used to build a VMware environment that is configured to meet the customer's specific requirements, including a specific version of vCenter and desired software add-ons

IBM Cloud for VMware Solutions Shared is an IBM-managed solution run on a multitenant infrastructure. This solution allows customers to configure and launch ESXi virtual machines (VMs) on demand with no up-front commitment. This leverages *VMware vCloud Director* and allows customers to consume in an hourly or a monthly consumption model. Customers can select configurations starting from 1vCPU and 1GB RAM as well as "reserved" and "on demand" consumption options, allowing for an easy and cost-effective starting point into VMware on IBM Cloud.

**TABLE 1**

**IBM Cloud for VMware Solutions**

Product	Version	Description	Offers Customers
IBM Cloud for VMware Solutions Dedicated	VMware vSphere on IBM Cloud	VMware-compatible bare metal servers with ESXi, giving customers flexibility to select, configure, and install their required components	Maximum flexibility to select, configure, and install VMware as well as partner software needed for the environment
IBM Cloud for VMware Solutions Dedicated	VMware vCenter on IBM Cloud	Turnkey environment within the IBM Cloud, with automated installation and provisioning of vSphere, vCenter, and NSX, giving customers a ready-to-use VMware environment	Automated installation and provisioning of a ready-to-use VMware private cloud environment, including ability to add additional software as needed
IBM Cloud for VMware Solutions Shared		Configurable virtual machines (VMs) on shared tenancy servers, available in an on-demand hourly, on-demand monthly, or reserved consumption model	On-demand VMware ESXi VMs for customer workloads that can be run in a shared tenancy environment at a low up-front cost and no long-term commitment
Single-node trials	Migrate and modernize	Trial configuration, including IBM Cloud Private Hosted and VMware HCX, on a VMware vCenter Server on IBM Cloud instances	Proof-of-concept environment to quickly migrate VMs into IBM Cloud and modernize to a cloud-native architecture
Single-node trials	Disaster recovery	Trial configuration, including VMware HCX, Veeam, and Zerto, and VMware vCenter on IBM Cloud	Proof-of-concept environment to quickly execute a disaster recovery replica and execute a failover into the IBM Cloud

Source: IDC, 2020

IBM Cloud for VMware Solutions Dedicated and IBM Cloud for VMware Solutions Shared allow customers to choose from a range of VMware options going from a highly customizable and self-managed version to a highly automated and turnkey one. These are built on VMware-compatible bare metal servers and bring to customers the scalability and agility of public cloud without any change in the workload's operating environment. Alongside, the flexibility in these options supports forward-looking modernization paths as needed.

Frequently reported reasons customers use IBM Cloud for VMware Solutions for VMware environment modernization include:

- To gain hardware flexibility across a range of server configurations, including CPU, memory, and storage details, allowing the creation of an optimized environment for customer needs (These are always delivered on VMware-compatible bare metal servers and supported by IBM support.)
- To achieve benefits of public cloud from within a VMware environment, including rapid provisioning and scalability, pay-as-you-go pricing, and access to the broader services within the IBM Cloud environment

- To build on bare metal servers within the IBM Cloud without using a nested virtualization approach
- To have flexibility in the usage of existing VMware licenses and investments, allowing customers to bring existing licenses or get them from IBM as part of the service
- To provide access to additional VMware components as well as a range of third-party services pre-integrated into IBM Cloud for VMware Solutions

## Benefits of IBM Cloud for VMware Solutions

### Deep IBM-VMware Partnership

The deep partnership between IBM and VMware spans over 15 years. IBM is VMware's largest customer and has the largest number of VMware VMs under management (see Figure 1). This partnership enables a strong level of engineering collaboration and road map alignment between the two companies and a smooth customer experience on the joint platform.

FIGURE 1

## IBM and VMware Partnership

### IBM Cloud - the right cloud for VMware solutions

The most secure, enterprise-grade cloud at global scale

[ibm.com/cloud/vmware](https://ibm.com/cloud/vmware)

#### Enterprise Grade

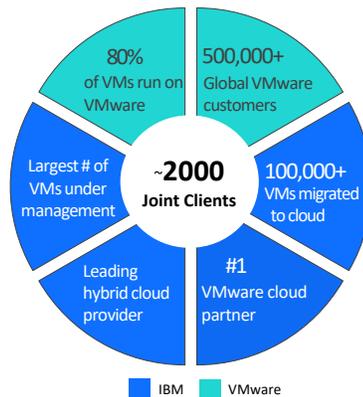
- Mission-critical VMware workloads on multi-zone HA infrastructure with 99.99% uptime
- Higher levels of isolation from public internet with single-tenant architecture
- Same level of visibility, control & operational consistency as on-prem
- Right-size infrastructure & performance with 100+ bare metal configs for VMware

#### Security Leadership

- Highest level key management encryption with FIPS 140-2 Level 4
- Prevent accidental/malicious IT configuration changes via role-based access control
- Comply with data sovereignty regulations by geo-fencing workloads running on trusted servers across 35+ data centers

#### VMware Expertise

- One of the world's largest operators of VMware workloads with 15+ years experience
- 100,000+ VMs migrated to the cloud without re-platforming or re-factoring



#### Top 5 Use Cases

##### Hybrid Cloud Transformation

- **Data Center Consolidation:** Consolidate multiple data centers onto cloud
- **Capacity Expansion:** Expand capacity to address current resource constraints
- **Infrastructure Modernization:** Leverage the latest infrastructure innovations in the cloud

##### Application Modernization

- **Lift and Shift:** Host existing on-premises VMware workloads in the cloud
- **Transform:** Extend and modernize VMware apps with IBM Cloud services
- **Containerize:** Integrate VMware apps with containers & Kubernetes to accelerate innovation

##### Migration to SAP HANA

- Best VMware-powered cloud for SAP workloads on SAP certified servers
- Migrate traditional DBs per 2025 SAP directive

##### Data Protection, DR & High Availability

- Protect and recover data in a resilient cloud model

##### Risk Mitigation & Compliance Readiness

- Security Policy Enforcement, Encryption of Data/Keys & Cyber Risk Management
- Continuous Compliance Management, Monitoring & Prevention

Source: IBM, 2020

## Full Access to the VMware Stack and Ability to Configure Hardware

Customers get full access to the native VMware stack, including administrator and root access to vCenter Server and root access to ESXi hosts. This gives customers a level of access and control that is consistent with on-premises infrastructure. This means IT staff have a high level of control over the stack and can use existing tools and processes for the management of operations without disruption.

In addition, IBM Cloud for VMware Solutions allows customers to configure CPU, memory, storage, and networking for the underlying servers, enabling customers to optimize the solution for their specific

workload needs. IBM Cloud for VMware Solutions also supports options such as add-on functionality, providing visibility down to the Intel chipset. These are different from what is generally available with other VMware offerings, which are typically designed on fixed, preconfigured hardware and give limited depth of access to customers and customer tools.

## Security and Compliance

Given the focus on business-critical workloads and business-sensitive data, IBM Cloud for VMware Solutions is designed from the bottom up, with a focus on security and compliance needs for enterprise customers. A unique component is the IBM Cloud Secure Virtualization – built on Intel Trusted Execution Technology (Intel TXT) and delivered by a partnership across Intel, IBM, HyTrust, and VMware. IBM Cloud Secure Virtualization enables a highly secure hardware-embedded mechanism to:

- Tag information assets and enforce policies based on the assets.
- Enforce authentication and authorization of physical server before decryption of data.
- Monitor and meter system to create templated reports for compliance audits with standards such as PCI 3.0, HIPAA, and GDPR.

IBM Cloud Secure Virtualization is available as an add-on service for customers. This provides enterprises a reliable framework to audit and enforce their security and compliance status, addressing one of the top concerns with enterprises evaluating public cloud for business-critical workloads.

For use cases needing the highest levels of security and data protection, IBM Cloud supports compliance to FIPS 140-2 Level 4, the highest level of FIPS 140-2 security requirements for cryptography. In addition, IBM Cloud supports "bring your own key (BYOK)" for encryption of customer data, enabling the creation of a zero-trust framework for security-sensitive workloads.

## Global Availability

IBM Cloud for VMware Solutions is available in over 35 IBM Cloud datacenters located across the globe (e.g., North America, Asia/Pacific, Latin America, and Europe). This maturity and availability have been especially valuable for global businesses and for regional businesses, which prefer a local region for their workloads. This has enabled a number of financial institutions in Asia/Pacific, Canada, and Europe to adopt IBM as their public cloud partner.

## The IBM Difference – Public Cloud Ecosystem, Partners, and DX Expertise *IBM's Cloud-Native Products, Including Red Hat OpenShift Container Platform*

As discussed previously, the enterprise cloud journey does not stop with the move to the cloud, and a majority of enterprises have a road map that leads to application refactoring and/or next-generation applications built on cloud-native technologies. IBM's rich set of cloud-native platforms is a key enabler for this phase and can help accelerate the adoption and deployment of new cloud-native applications and developer tools.

Proximity to IBM Cloud Kubernetes Service, IBM Blockchain, IBM Cloud Functions, IBM Cloud Object Storage and so forth can help accelerate new opportunities for innovation and end-user experience enhancements. This also enables customers to effectively start their cloud journey with zero disruption, follow a "lift and shift" path, and concurrently build on modernization initiatives using new microservices-based architectures.

With the Red Hat acquisition, IBM has expanded these acceleration capabilities to include Red Hat's broad portfolio of open source-based technologies, including the open Kubernetes-based Red Hat OpenShift Container Platform. This offers customers a readily usable set of tools and services to enable their application modernization and flexibility to build a consistent and open cloud-native environment across premises and platforms. The integration and automation of the Red Hat OpenShift Container Platform on VMware allow customers to manage their existing and cloud-native workloads with a single management framework to fast-track day two operations and to accelerate application modernization.

### ***Open Hybrid Cloud Capabilities***

IDC's 2019 *IaaSView Survey* highlights that 84% of global enterprise respondents either already have a hybrid cloud environment or expect to implement one over the next year. IBM's strategic focus on building an open hybrid cloud platform aligns perfectly with the needs and preferences of enterprises as they plan their cloud adoption. These needs include support for traditional workloads through capabilities like VMware HCX as well as cloud-native investments and open source leadership through frameworks like Istio. These preferences have been complemented with the Red Hat acquisition, bringing on board Red Hat's infrastructure-agnostic operating system, and cloud-native platform assets. IBM Cloud Satellite, announced at IBM Think 2020, builds on these capabilities and brings to market a truly premises-agnostic managed cloud-native platform for enterprise workloads.

### ***Ecosystem of Higher-Layer IBM Cloud Services – Includes IBM Watson AI, Analytics, and Blockchain***

Public cloud adoption and the perceived benefits from public cloud have evolved over the past three years. One specific area that has increased in priority, when selecting a public cloud partner, is the broader ecosystem of higher services available. Public cloud is increasingly seen as a source of technology innovations and a means to access latest digital innovations, and IDC survey data of public cloud IaaS customers indicates this as one of the top factors driving adoption and selection of a public cloud platform. The IBM Cloud enables this, bringing to users a rich and mature set of higher-layer services that are valuable to enterprises.

Key among these is the IBM Watson platform, empowering enterprises to better integrate AI in their workloads and operations and drive value and insights from existing enterprise data. AI is one of the fastest-growing new technologies enterprises wish to adopt, and IDC survey data indicates that over 50% of enterprises have active plans to incorporate AI for operational and business improvement use cases over the next 12 months. IBM Watson offers a mature and highly vertical-ready set of AI services that enterprises can use alongside their workloads and data and pilot initial use cases.

### ***Access to Broad Portfolio of IBM and Partner Software Solutions***

In addition to the public cloud services ecosystem, IBM Cloud allows customers to easily integrate with and use software from IBM and its portfolio of software and service partners. These include leading software packages for common enterprise IT use cases including Zerto (disaster recovery), Veeam and IBM Spectrum Protect Plus (backup), NetApp (storage and storage management), and F5 and Fortinet (networking) as well as additional infrastructure platform services from VMware. These also include automated compliance and security through the IBM Cloud Secure Virtualization Service, delivered jointly with technologies from IBM, HyTrust, and Intel.

These partnerships and the integrated workflows enable push-button deployment of security and resiliency services with automated configuration, licensing, and billing and allow customers to easily incorporate additional functionality into their deployment.

## *IBM Services Can Bring Expertise to Accelerate Transformation and Delivery*

With growth of focus and momentum in digital transformation, skill set and expertise scarcity have rapidly grown to become crucial bottlenecks in the transformation. IBM Services complements the technology portfolio available from IBM and its partners, with professional expertise across containerization, microservices, DevOps, Agile principles, and enterprise IT transformation. This can help bridge skill set gaps at enterprises and speed up application delivery. This is particularly valuable in the early phase where design choices have a disproportionate impact on outcome and success.

## CHALLENGES/OPPORTUNITIES

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Recent years have witnessed an acceleration in public cloud adoption and acceptance by enterprise IT organizations. IBM's early-mover advantage in the public cloud market, through the company's 2013 SoftLayer acquisition and early presence as a public cloud IaaS provider, was eroded during this period – partly because of constant branding changes and limited holistic focus on the public cloud market and partly because of strong investment and focus on this market during this period from other public cloud providers.

Since the unification of its cloud offerings under the IBM Cloud umbrella, there has been a renewed focus on public cloud from IBM. IBM also made the strategic decision to focus on an open hybrid cloud approach, aligning IBM well with enterprise IT preferences. This renewed focus on cloud has delivered momentum over the past two years, with investments in cloud region expansions, the acquisition of Red Hat, and the new cloud-focused leadership. This focus on cloud was also seen at a recent company conference, with the emphasis on open hybrid cloud in the keynotes, cloud customers and partners such as Anthem and Avaya, and the IBM Cloud Satellite announcement.

IBM Cloud needs to maintain this momentum and reinvigorate its image as a technology innovator and increase the pace of productization of industry-specific technology capabilities. Such initiatives will build on its history as a trusted technology partner to enterprises and complement its investments in cloud. In addition, IBM Cloud needs to continue expansion of its hybrid cloud capabilities and communicate these to its customers. These actions will help IBM recapture enterprise customer mindshare in the cloud market.

## CONCLUSION

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Customer needs vary, and different customers are at different points of their cloud journey. In several cases, IT organizations are in multiple phases – moving certain applications directly into public cloud while building new next-generation applications on cloud-native technologies. Addressing these needs requires flexibility in the core offering as well as a rich and growing set of technologies on the public cloud platform such as analytics, AI and cognitive services, and cloud-native platforms.

IBM Cloud has been designed keeping this variance of enterprise IT needs as a key consideration to meet customers where they are while enabling a comprehensive path to public cloud adoption, new technologies, and transformation. IBM Cloud for VMware Solutions brings these same principles to the VMware environment, bringing VMware customers a flexible and nondisruptive path into public cloud and access to the rich and fast-growing IBM Cloud ecosystem.

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