White Paper

IBM Cloud for VMware Solutions: Bringing VMware Environments to the Public Cloud

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IDC OPINION

Public cloud adoption is an enabler for digital transformation (DX). Public cloud offers organizations an IT platform that enables flexibility, scalability, and access to emerging new technologies – all of which are key components to empower the IT organization and facilitate digital transformation initiatives. But adoption of public cloud also presents challenges to large enterprises with existing infrastructure investments and processes. These are typically due to changes and disruptions introduced in tools, processes, and skill sets when moving to a public cloud environment.

The IBM Cloud for VMware Solutions portfolio offers a suite of VMware-based infrastructure environments within the broader IBM Cloud, bringing to enterprises the benefits of public cloud with minimal disruption, risk, and change. These are enabled through:

- Offering a range of VMware options, allowing customers to select their preferred level of automation and flexibility with their VMware environment automation
- Providing customers complete access to the VMware stack including administrative and root access to vCenter Server, configuration options to optimize the server hardware for the workload, and optional visibility down to the Intel chipset
- Providing customers access to an integrated set of software solutions from partners, covering commonly needed enterprise IT use cases like disaster recovery, backup, and security
- Enabling access to the broader IBM Cloud services including Watson for artificial intelligence (AI) and cognitive services and GPU-integrated servers and rich services for emerging cloud-native architectures
- Ensuring a secure and compliant IT environment enabled by deep expertise and investments with IT security and compliance needs at enterprises.

These are complemented by IBM's global availability and broader IBM offerings, providing enterprise IT organizations a full toolbox of products and services as they invest in IT modernization and lead digital transformation at their enterprises.

IN THIS WHITE PAPER

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

SITUATION OVERVIEW

Public Cloud Is an Enabler to Enterprise Digital Transformation

IDC research shows that digital transformation is a top investment priority at enterprise IT organizations, and over 80% of enterprises have ongoing initiatives to rationalize and modernize their infrastructure (see *Rationalizing Vendors and Cultivating Partners for Modernization: Five Key Attributes for Digital Transformation,* IDC #US43859118, June 2018). Successful early movers are beginning to see tangible outcomes of DX initiatives, and success in this dimension is emerging as a strong predictor of future competitiveness in nearly all industries.

Modernization of the underlying IT platform is a critical early step in the digital transformation journey. This includes removing traditional constraints around infrastructure operations and transforming the platform into one that enables agility, flexibility, and speed, which are necessary to be responsive in today's business environment. Public cloud infrastructure has long promised to deliver these to enterprises. Over the past two years, public cloud has crossed the chasm in terms of enterprise acceptance, and public cloud is increasingly seen as the preferred platform for existing and new enterprise IT applications. Public cloud also accelerates the access to emerging new technology areas such as AI, Big Data and analytics, and cloud-native application development platforms – all of which are increasingly seen as key components of the information and operations modernization process. These trends can be seen across the globe, and the rate of global expansion by hyperscalers is an acknowledgement of the global nature of this focus.

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. IDC surveys of enterprises moving to public cloud infrastructure have consistently highlighted the lack of internal skill sets and the challenges with application migration and management in the cloud as top challenges faced by these enterprises. These introduce risk and cost in the cloud adoption journey, making it difficult to move business-critical applications and data sets into public cloud.

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

IBM Cloud for VMware Solutions portfolio 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 — Bringing Customers Choice and Flexibility

IBM Cloud for VMware Solutions offers customers a hosted VMware environment within the IBM Cloud and is available in distinct versions — VMware vSphere and VMware vCenter Server. These 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. Table 1 briefly describes the three versions.

TABLE 1

IBM Cloud for VMware Solutions

Version	Description	Offers Customers
VMware vSphere	VMware-compatible bare-metal servers with ESXi, giving customers flexibility to select, configure, and install their required cloud stack software components	Maximum flexibility to select, configure, and install VMware as well as partner software needed for the environment
VMware vCenter Server	Turnkey-hosted environment within the IBM Cloud, with automated installation and provisioning of vSphere, vCenter, and NSX, giving customers a ready-to-use VMware solution for their workloads	Automated installation and provisioning of a ready-to-use VMware private cloud environment, including ability to add additional software as needed

Source: IDC, 2018

In addition, all IBM Cloud for VMware Solutions versions:

- Bring to customers the benefits of public cloud, with rapid provisioning and scalability, pay-as-you-go pricing, and access to the broader services within the IBM Cloud environment
- Are built on bare-metal servers within the IBM Cloud, with no performance impact or nested virtualization degradation compared with an on-premises installation
- Offer hardware flexibility across a range of server configurations, including CPU, memory, and storage details (These are always delivered on VMware compatible bare-metal servers and supported by IBM support.)
- Support flexible licensing models for the VMware stack, allowing customers to bring existing licenses or to get them from IBM as part of the service
- Can be extended to add additional VMware components as well as a range of third-party services pre-integrated into the IBM Cloud for VMware Solutions

These can also be complemented with the Hybrid Cloud Extension technology from VMware, providing a unified Layer 2 networking view across multiple clusters and enabling a seamless unified hybrid VMware experience across customer premises and the public cloud.

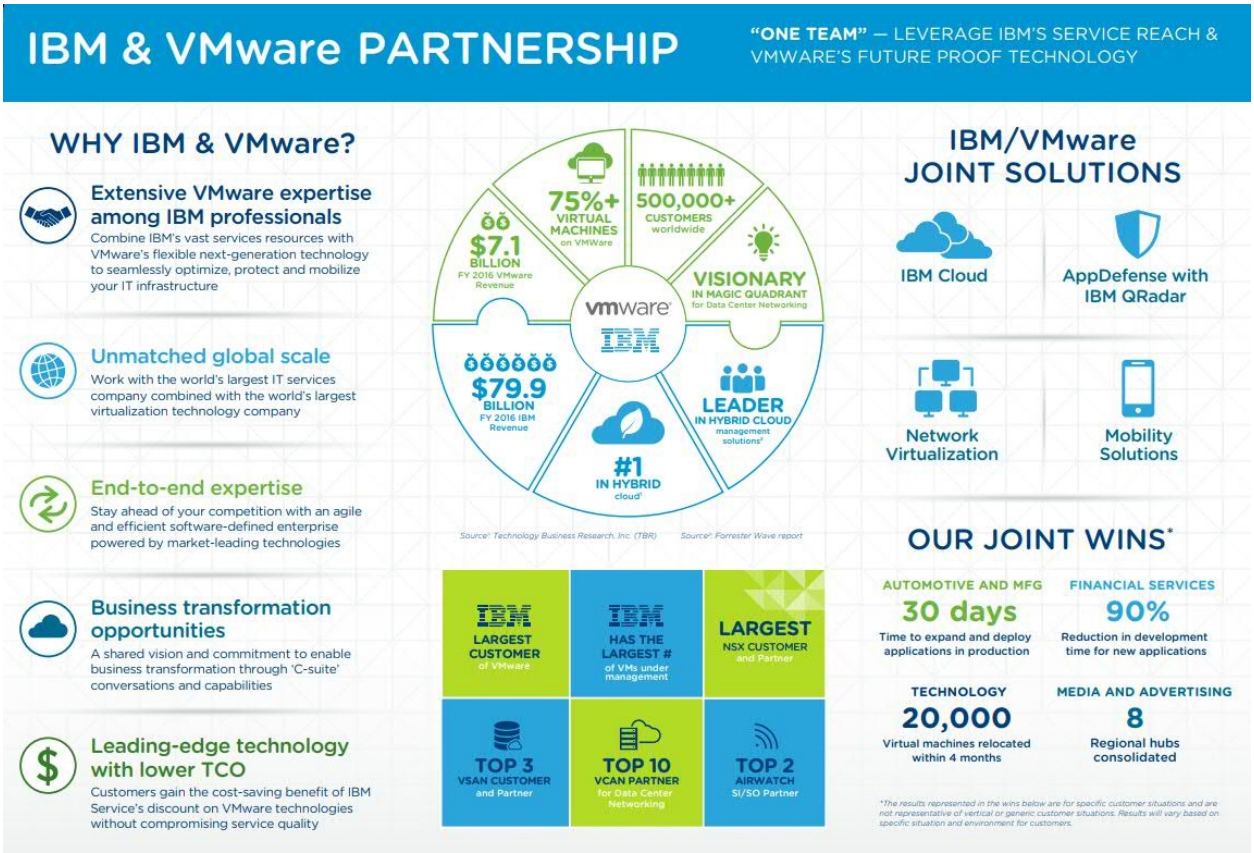
Benefits of IBM VMware Portfolio

Deep IBM-VMware Partnership

At the foundation of the IBM Cloud on VMware Solutions is the deep partnership between IBM and VMware. IBM is VMware's largest customer and has the largest number of VMware VMs under management (see Figure 1). IBM Cloud also won the VMware 2017 Partner of the Year Award, highlighting the success IBM has been able to deliver to customers through this partnership. 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



Source: VMware, 2017

Full Access to the VMware Stack and Ability to Configure Hardware

IBM Cloud on VMware solutions offers customers 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. IT staff have a high level of control over the stack and can use existing tools and processes for the management 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. 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. In addition, the IBM Cloud for VMware Solutions supports options such as add-on functionality providing visibility down to the Intel chipset, allowing deep vertical transparency.

Security and Compliance

Given the focus on business-critical workloads and business-sensitive data, the IBM Cloud for VMware solutions is designed from bottom up, with a focus on security and compliance needs for enterprise customers. A unique component here 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 can be added as an add-on service with IBM Cloud for VMware. 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.

Additional investments in security include a strong internal governing process for operations processes around the underlying infrastructure, including a concerted centralized effort within the IBM Cloud to ensure consistency with regard to the internal approach to ensure security and compliance. The IBM Cloud for VMware Solutions brings to customers a secure stack of underlying blocks for security and compliance needs, including support for commonly needed compliance certifications such as ISO27001 and GDPR. In addition, the broader IBM professional services offerings are able to assist customers in their full-stack compliance certification effort, providing a single-point engagement for customers' security and compliance needs.

Global Availability

The IBM Cloud for VMware Solutions is generally available in 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 Movius case study also emphasizes the importance of IBM's global presence, which was a key reason that Movius selected IBM Cloud as its global provider.

Seamless Hybrid Experience with HCX

The VMware Hybrid Cloud Extension enables secure connectivity across the VMware environments on-premises and in the public cloud, extending a single Layer 2 virtual network across multiple datacenters and the public cloud as needed. This allows seamless portability, connectivity, and migration of VMs across premises. This also enables minimal downtime migration of VMs using VMware services like vMotion and Bulk Migration, without the need to change IP configuration, networking details, or tooling related to the VMs.

For complex legacy applications, this allows customers to leverage existing investment in legacy infrastructure and middleware by containerizing stateless components of the workload where it makes sense, maintaining the remaining legacy components as they are, and executing a "lift and transform" of the required components into public cloud. This also helps extend the application into public cloud without the cost and risk of a complete application migration into public cloud as illustrated by the Syniverse customer case study, where Syniverse leveraged the IBM Cloud for VMware Solutions to extend its environment into the public cloud and run a scalable hybrid environment.

The IBM Difference — Public Cloud Ecosystem, Partners, and DX Expertise

Ecosystem of Higher-Layer IBM Cloud Services — Include 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.

IBM Cloud's Strong Cloud-Native Platform Services

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. These include architectures that allow higher agility and scalability like microservices and scale-out architectures. 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 Services, 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. The American Airlines case study published at the IBM Cloud

website illustrates the value that this brings to enterprises and the business transformation enabled by leveraging these platforms.

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. The American Airlines case study highlights this, where the IBM team worked alongside the customer engineering and planning team to execute on the new application delivery. The partnership with the IBM team enabled cutting the project timeline from the initial forecast 12 months down to 4.5 months.

CHALLENGES/OPPORTUNITIES

The past three years 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. This has had a perceivable effect on momentum over the past year. 2017 saw IBM Cloud launch the new free tier "IBM Cloud Lite," introduce new flexible storage pricing tiers with IBM Cloud Object Storage, and release the Kubernetes-based IBM Cloud Private. 2018 has so far seen announcement of 18 new availability zones as part of its geographic expansion and infrastructure evolution. Alongside its investments to enable enterprise environments move to public cloud, IBM Cloud will need to maintain this renewed focus and continue the current feature momentum in order to recapture customer mindshare in this market.

CONCLUSION

Customer needs vary, and different customers are at different points of their cloud journey. In several cases, IT organizations are in multiple phases at the same time — 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. The 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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