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# Hybrid Cloud: The Future Ready Reference Architecture for Modern Cusiness.

Let's do more.

## Get future ready - Modernise now

No industry was prepared for the disruption COVID-19 caused. Although some organisations were able to act more quickly than others to support remote workers and sustain business operations, even those wit sophisticated digital capabilities faced challenges with scalability and interrupted supply chains.

As a result, businesses across industries had to swiftly pivot to build new digital competences if they wanted to not only survive but compete. Today, they're accelerating digital transformation initiatives despite economic uncertainty. They're moving beyond simply responding or adapting, to accelerating innovation so they can seize any new opportunities that arise.

And to achieve all this, they're modernizing both apps and infrastructure while moving to the cloud.

### App modernization drives digital transformation

App modernization makes it possible for enterprises to continuously change and improve applications at a pace that keeps up with their rapidly shifting business needs.

This usually involves using container technology. Containers allow enterprise developers to deploy applications using portable, lightweight packaging. App modernization also includes using the cloud to achieve programmatic control of infrastructure, both virtually and remotely. It is the combination of both packaging and on-demand infrastructure services that allow developers to use Agile development practices and automated release processes to quickly and frequently update application features. Kubernetes is a popular choice for automating deployment to production and orchestrating container run time at scale to achieve high availability.

**In combination, containers, cloud and Kubernetes make it possible for developers and IT work together to meet digital business requirements.**

### Cloud brings it all together

Modern apps require modern infrastructure. And for most organizations, that means adopting hybrid cloud infrastructure. And it's not just about efficiency and scale; it's about changing the way that IT services are delivered and consumed, with flexibility to deploy workloads where it makes sense from both business and technical requirements.

This white paper explores how a hybrid cloud ties together IT elements as a cost-efficient and productive strategy. It provides a reference architecture detailing all of the necessary layers. With this information, your team can deliver standardized, on-demand services that are platform- and environment- ndependent, and deliver developer-ready infrastructure services for all types of applications to not only withstand whatever happens next, but turn it into competitive advantage.

# Hybrid Cloud Reference Architecture

Hybrid cloud is the optimal model for modern business, and is the preferred environment for the vast majority of today's IT organizations. According to Enterprise Strategy Group, 88 percent of enterprises currently have a hybrid cloud environment—a number that will continue to rise in the next 12 to 24 months.[1]

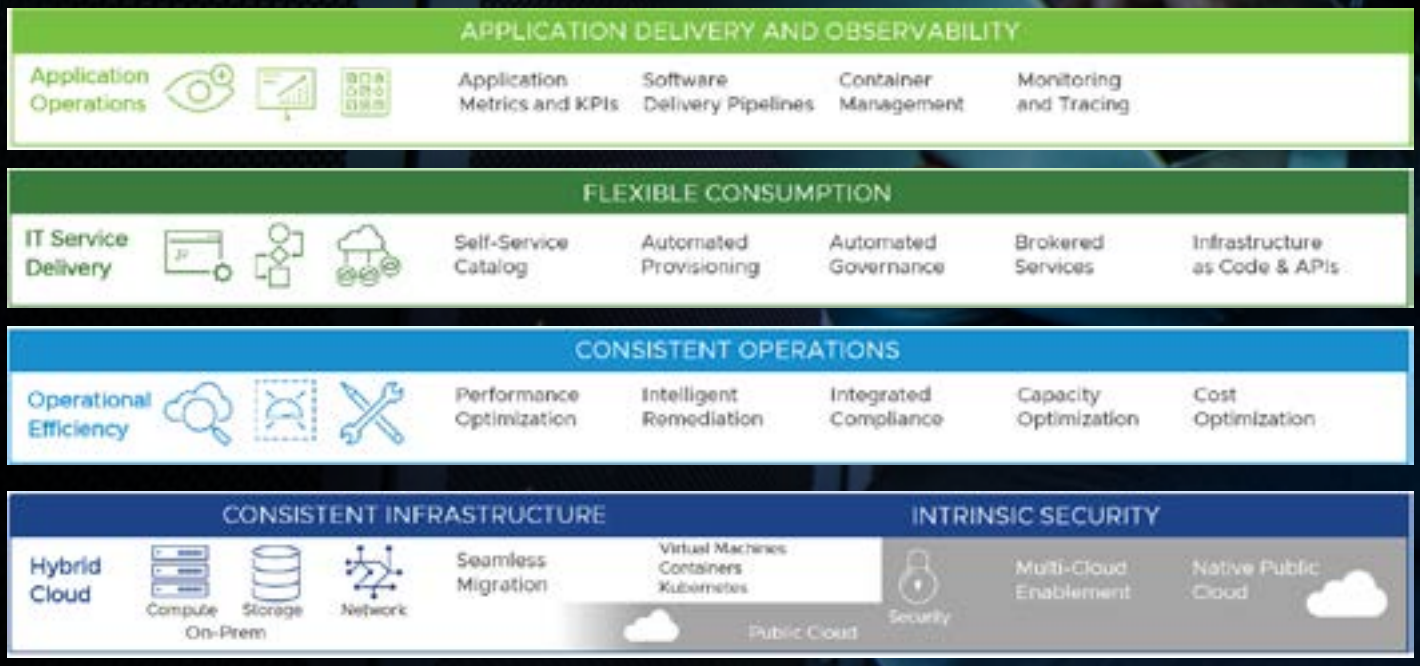
Hybrid cloud is defined as a combination of on-premises data center, cloud, and edge IT environments that have been unified to support consistent operations. It's important to understand that cloud is an operating model that can utilize either public or private cloud infrastructure. Although 70 percent of IT organizations recently surveyed are actively engaged in migrating existing applications to public cloud, they are also planning to deploy nearly half (47 percent) of their new cloud-native workloads to private cloud.[2]

But the hybrid cloud infrastructure is just the beginning. You need other capabilities layered on top of it: application operations, IT service delivery, and operational efficiency.

You need these to enable:

- Rapid application delivery and observability
- Flexible consumption of IT services
- Consistent operations

## The reference architecture in Figure 1 illustrates key capabilities delivered by a singleplatform hybrid cloud solution.




1. Enterprise Strategy Group. "Exploring Hybrid Cloud Adoption and the Complexity of Securing East-West Traffic," January 2020.
2. Management Insight Technologies. "VMware Research Snapshot: The State of Application Modernization and Hybrid Cloud Computing," January 2020. (N=1205)

## Application delivery and observability

At the top level of the reference architecture—the application operations level—your organization needs the ability to swiftly make a broad spectrum of changes to application operations. Specifically, you need to be able to:

- Rehost – Perform "as is" workload migration to the cloud without changing architecture or code
- Replatform – Be able to containerize traditional workloads to increase agility and standardize automated development and deployment tool chains
- Refactor – Utilize cloud-native and microservices architectures by rewriting or writing new code.

## Flexible consumption

At the IT service delivery layer, your team needs to be able to optimize infrastructure by leveraging the instant agility and scale of public cloud providers while using familiar tools and processes. This leads directly to:

- Self-service – Your developers and line-of-business application owners can access resources from both on-site and public cloud environments with the cloud self-service delivery capabilities and programmatic API interfaces they have come to expect.
- Strong governance – With hybrid cloud, you can link policies to each application which ensures consistent adoption wherever workloads are deployed and managed.
- Reduced costs – Your organization can improve on-premises cloud capabilities and shift from siloed infrastructure-oriented operations to a service-broker capability that delivers the same interactions with IT, regardless of where applications are deployed. This drives efficiencies of scale and thus lower costs

## Consistent operations

At the operations layer of the hybrid cloud reference architecture, your organization can deploy a single cloud operating model for securing, governing, and operating the entire hybrid cloud. This is where you benefit from the significant efficiencies of extending a single, proven model everywhere because you have:

- Standardized services – A single model for security, governing, and operating the entire hybrid cloud
- Automated service delivery – Greater agility and productivity, and the elimination of operational bottlenecks created by legacy infrastructure
- Optimized infrastructure and resource utilization – The ability to get more out of your existing investments in teams, processes, policies, and skills by extending to the cloud

## Consistent infrastructure

Finally, at the infrastructure layer, your organization can leverage a cloud operating model that is based on a standardized solution stack across multiple environments. No retraining or retooling required because the hybrid cloud infrastructure is:

- Software-defined – Bringing siloed resources together into a holistic, software-defined system allows consistent operations through a single management interface
- Automated and orchestrated – Streamlining and standardizing service delivery makes IT both more agile and efficient
- Flexible deployment – With options for on-premises, hosted provider, and public cloud— with software-defined and automated control of all underlying resources

## Hybrid Cloud Supports Strategic IT Initiatives

A single hybrid cloud operating model builds on existing, proven capabilities for supporting the most demanding and essential applications in the world. It also enables your organisation to tap into powerful emerging IT innovations. Here are some ways that one platform for hybrid cloud can advance your strategic initiatives while also enabling your organisation to get the most out of your existing IT investments.

### Modernise your data center with cloud

Massive opportunities still exist for your IT organisation to improve the capacity, efficiency, and operations of your on-premises data center(s). By extending proven virtualisation to storage and networking, and managing infrastructure resources together (rather than in silos) your organisation can create complete software-defined data centers that reduce IT complexity. Hyperconverged infrastructure (HCI) significantly improves resource efficiency and makes resources more easily consumable. By adopting a hybrid cloud operating model, you quickly transform traditional IT offerings into as-a-service ones through service blueprinting, self-service, and rich APIs for developers, further increasing IT agility.

### Tap into public clouds

Although cloud strategies initially involved migrating a target percentage of on-premises applications to the cloud, today's hybrid cloud strategies are more nuanced. A hybrid cloud extends your cloud model to traditional IT, delivering:

- Pay-per-use pricing by linking on-going costs to operational expenses (OpEx) instead of capital expenses (CapEx
- At-scale service delivery for temporary but resource-intensive use cases
- Data center consolidation or evacuation
- App development in cloud, app production on premises
- Cross-environment disaster recovery

### Automate your service delivery

Automated service delivery is the hallmark of cloud, reducing IT burdens and speeding your operations. With hybrid cloud, you transform how IT services are consumed because automation streamlines and standardizes service delivery.

### Automate service consumption with developer-ready infrastructure

With hybrid cloud, your team can ensure developer-ready infrastructure can be automatically consumed as cloud services as part of DevOps, Agile, and CI/CD methodologies. Additionally, you can enable abstraction and API interfaces for programmatic consumption of infrastructure services in a way that powers faster and more frequent development of new app features.

### Modernise your apps

Modernising infrastructure and applications accelerates the speed and ease of developing new apps as well as updating existing ones. Through containers, your developers can deploy their applications with portable, lightweight packaging while hybrid cloud gives them programmatic control of infrastructure both virtually and remotely. The combination of containers, cloud infrastructure, and integrated CI/CD, tools allows your developers to ship rapid incremental changes to applications to meet continuously changing business needs

### Embed security

Although seamlessly scaling applications between data centers and cloud has immense advantages, securing hybrid solutions is increasingly complicated. And more so for organizations that try to secure applications by "bolting on" multiple point security products that solve niche problems. A future ready hybrid cloud embeds security intrinsically into the infrastructure, enabling your IT organization to apply security policies that follow workloads, and are not limited to infrastructure boundaries. This ensures your security policies scale with applications as they extend from the data center to the cloud or to the edge.

# Dimension Data and VMware Cloud

## Hybrid Cloud from Dimension Data and VMware

Dimension Data and VMware  hybrid cloud platform is built on full-stack hyperconverged infrastructure. It provides a complete set of secure, software-defined services for compute, storage, network security, Kubernetes management, and cloud management. The result is agile, reliable, and efficient cloud infrastructure that offers consistent infrastructure and operations across private and public clouds.

VMware Cloud Foundation™ with VMware Tanzu™ now integrates Kubernetes to deliver infrastructure services for developers, and cluster management and container workload orchestration for IT administrators. As a result, both virtual machine (VM) and container workloads are treated as first-class citizens, giving developers a compliant and conformant API interface, and IT administrators trusted and familiar tools and operating processes for systems management.

## Hybrid and Multi-Cloud

Dimension Data and VMware have built some of the largest and most successful private and hybrid clouds in the world. Now, Dimension Data and VMware is making hybrid cloud and multi-cloud a reality by introducing Dimension Data and VMware Cloud on all major cloud provider platforms.

The same Dimension Data and VMware Cloud Foundation deployed in your data center is available as a Dimension Data managed service as Dimension Data and VMware Cloud on AWS. It is also offered by the leading global hyperscalers as Google Cloud Dimension Data and VMware Engine, IBM Cloud for Dimension Data and VMware  Solutions, Microsoft Azure Dimension Data and VMware solution, and Oracle Cloud Dimension Data and VMware Solution.

Dimension Data andVMware Cloud delivers enterprise agility, reliability, and efficiency for clients who have private, hybrid, and multi-cloud strategies

## Dimension Data and VMware Hybrid Cloud Value

By modernising both applications and infrastructure and by taking advantage of cloud capabilities - specifically the VMware hybrid cloud via a single platform model—your enterprise can easy meet core IT priorities. These include agility, high service quality, minimized costs, and robust governance and security.

| PRIORITY | OBJECTIVE | DIMENSION DATA AND VMWARE HYBRID CLOUD VALUE |
|---|---|---|
| Agility | Enhance IT responsiveness and timeliness as you deliver digital business capabilities | • Find the optimal mix of on-premises and public cloud capacity utilisation based on workload duration, cost, compliance, and other business factors<br>• Flexibly place and migrate workloads based on business, compliance, and technical application requirements<br>• Support cloud service consumption that is standardised across underlying infrastructure environments<br>• Support integrated and automated agile and CI/CD application build and release processes<br>• Optimise OpEx and CapEx mix |
| Service Quality | Ensure key systems are available and performing as needed for your customers, employees, and partners | • Reduce IT complexity with consistent infrastructure and operations in a way that lowers service delivery risk while optimising service assurance, monitoring, and incident response<br>• Support container workloads that use Kubernetes orchestration, scaling, and failover<br>• Extend automation and optimisation to all environments to standardise service catalog, self-service, and on-demand delivery<br>• Use a single tool stack for monitoring, observing, and optimising your IT environment<br>• Eliminate the need for custom services creation as well as manual deployments, upgrades, and patching which cause service outages |
| Cost Optimisation | Maximise your spending efficiency, prioritised by what the business requires | • Achieve significant CapEx savings (49% average projected three-year total) from combined compute optimization, host consolidation, and networking savings[3]<br>• Enjoy outstanding OpEx savings (69% average projected three-year total) from combined system lifecycle management, service blueprinting, and service delivery automation savings[4]<br>• Monitor costs and control usage across environments<br>• Shift to a pay-per-use model |
| Security and Compliance | Manage your risk while delivering digital business capabilities | • Consistently implement compliance and security policies<br>• Enforce software-defined network and perimeter policies—including whitelist and micro-segmentation—within and between environments<br>• Provide data encryption at rest and in flight<br>• Gain intrinsic security across various infrastructure and workload control points |

3. Findings and data based on average projected business case savings for 103 VMware customers assessed in 2019 and 2020.
4. Ibid.

## Realise the value of Dimension Data and VMware Cloud today.

### Visibility into how your workloads impact each other

This online assessment gives you visibility into how your workloads impact each other and helps optimise your IT environment for the easiest and fastest path toward hyperconverged infrastructure (HCI) and hybrid cloud.

**Sign up now for your free assessment**

# Advantages of Dimension Data and VMware Cloud

Dimension Data and VMware Cloud is software-defined infrastructure that helps to simplify your IT operations while also offering powerful capabilities to your storage and networking teams to secure and accelerate infrastructure and workloads across hybrid clouds. With it, your teams unlock greater agility and productivity by eliminating the operational bottlenecks of legacy infrastructure.

Dimension Data and VMware Cloud features:

- **A full stack solution for simpler operations**
  Dimension Data and VMware Cloud is engineered integration on HCI deployed as a software-defined platform that guarantees interoperability while simplifying adoption and migration. No more dealing with complex interoperability matrixes.
- **Automated deployment for faster time to market and lower risk**
  Dimenion Data and VMware Cloud automates the deployment of full-stack compute, storage, networking, and management capabilities into workload domains. This level of automation enables fast, repeatable deployments while eliminating the operational cost of engineering environments with in-house skills, reducing manual misconfiguration risks.
- **Automated lifecycle management for reduced risk**
  Dimension Dara and VMware Cloud includes unique lifecycle management services that automate the Day 0 to Day 2 operations associated with cloud environment administration—from establishing a standardized architecture to configuring and provisioning infrastructure resources in a modular, cloud-like operational manner to patching or upgrading the software stack.
- **Integrated Kubernetes for greater efficiency**
  Dimension Data and VMware Cloud with VMware Tanzu™ enable virtual machines (VM) and container workloads to be first-class citizens which enables developer and IT administrator efficiency.

## Future Ready with VMware Hybrid Cloud

The power of cloud to drive business value is now an acknowledged fact. And cloud adoption can help your enterprise maintain a competitive edge in uncertain times. But what type of cloud and how many? How will one or more clouds integrate with your organisation's existing IT infrastructure and applications?

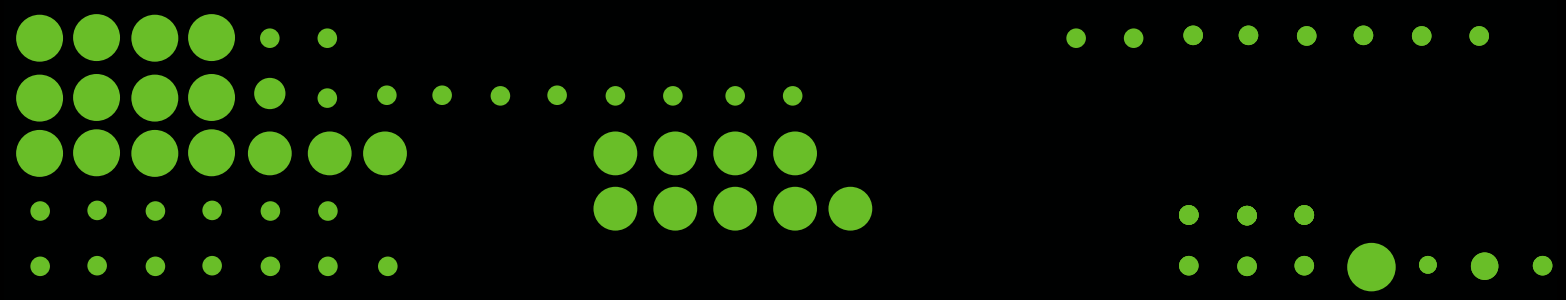
Hybrid cloud unlocks massive opportunities for your organisation without making you choose how many or which cloud today for tomorrow. By building an IT architecture around the single, Dimension Data and VMware hybrid cloud platform that integrates data center, cloud, and edge environments, your enterprise can accomplish three important goals.

One, you can modernise apps through microservices, containerisation, and modern Dev/Ops frameworks like Agile and CI/CD to speed up app development so that it matches the pace of your business.

Two, you can modernize your infrastructure, and break down traditional infrastructure-specific silos by adopting a hybrid cloud infrastructure that includes both on-premises and public cloud components with automated, on-demand service delivery capabilities.

Finally—and most importantly—you can leverage all this plus intrinsic security to make your businesses future ready, able to take on whatever the world throws at your organisation, and turn it to your advantage.

The Dimension Data and VMware model for hybrid cloud,builds upon years of success in the market and provides the ideal path forward for your business, no matter where you are today in your cloud journey, or where you want to go in the future

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