

A modern office interior with large windows, a desk with a laptop, and two people in business attire discussing a project. The scene is overlaid with a green diagonal graphic.

Map Your Technical Future with an Operating Model for Multi-Cloud and Data Center Modernization

For IT leaders, business teams
and infrastructure architects

Executive Summary

Businesses are finding more and more opportunities to leverage the latest and greatest tech to push them forward in the market and these very demanding business requirements have driven more and more complexity within IT services. As teams grow, organizations are leveraging cloud services more than ever. With these globally available marketplaces of software and data, available to use and customize instantly, businesses don't need to start from scratch anymore.

These marketplaces of cloud services are available across different clouds. For example, if you have skills in Lambda specifically, you will want to leverage AWS. If you prefer BigQuery, you use Google Cloud. Business and commercial decisions drive the consumption of different clouds too. Who do we already have a relationship with? Who has the best deal right now? Is this hyper-scaler a competitor of ours in another area?

For many organizations, all of these considerations and more combine to form a multi-cloud strategy.

Executive Summary (cont'd)

By running all new and old applications on a VMware architecture (any application, any cloud), you can choose the fastest and least disruptive path to app modernization and hybrid cloud and realize these benefits:

- Accelerated IT processes to support digital business initiatives
- Reduced complexity with consistent Intel-based infrastructure and consistent operations
- Lower operational cost and business risk by using proven solutions

In this executive guide, VMware and Intel infrastructure and operations experts, together with cloud architects, share guidance for setting cloud strategy and developing a detailed operating plan.

For IT Leaders and Business Teams

- Primary reasons to consider hybrid as your cloud strategy to meet business objectives
- Typical benefits with anticipated time to results
- Top considerations, dependencies and steps to take on a successful journey
- How VMware and Intel solutions can help
- Where and how to start, when adopting a prescriptive VMware approach

For Infrastructure and Cloud Architects

Each page offers a link to more detailed resources on each topic for those who are responsible for developing and implementing detailed plans.



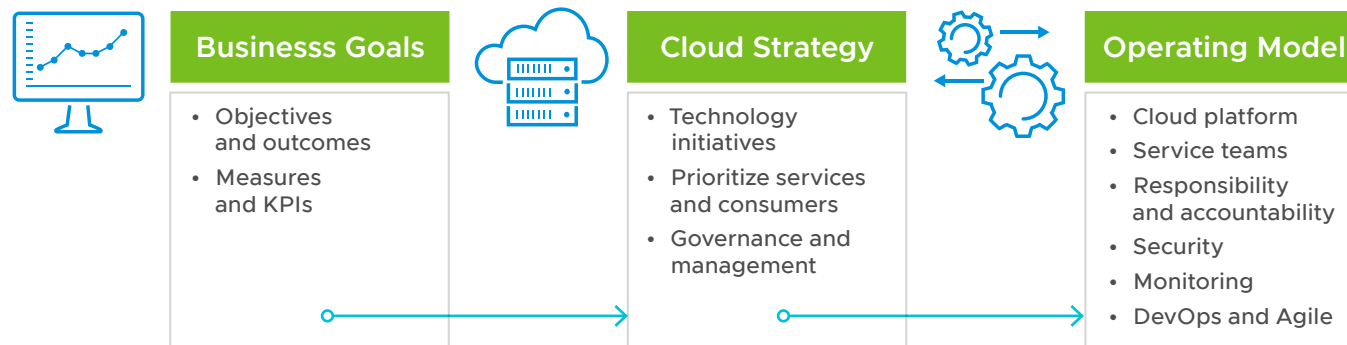
Cloud Strategy

Your cloud strategy needs to link your business goals to your operational plan.

Business goals, objectives and measures of success come first. Your cloud strategy translates business goals into technology initiatives, prioritizes services in terms of application and consumer needs, and defines a governance and management framework. It should be a clear, unambiguous and widely communicated technology plan for your IT organization to achieve digital outcomes.

Although many enterprises have announced a cloud-first approach and set application migration targets, not all communicate the “why” in business terms, or the “how” and “what” in IT service capability terms. This is a common mistake.

The cloud strategy is an input to the creation of a cloud operating model that articulates operational capabilities needed to realize the cloud strategy and achieve business goals.



Creating a cogent cloud strategy is less overwhelming when you realize it doesn't need to be a detailed operating manual for every functional team. Keep it simple, but clear and concise. Focus on a high-level description of the cloud technologies your organization will prioritize to meet business objectives and how you will lower risks associated with the adoption of cloud technologies.

GETTING STARTED

[The Importance of Cloud Strategy \(blog\)](#)

A VMware Cloud Architect's must-have list for developing an effective cloud strategy.

- Purpose
- Goals and expectations for cloud
- Topics for your strategic technology plan
- How to communicate your plan to your organization

Adopting a Cloud Operating Model

The cloud operating model provides a holistic but tactical plan for the “who” “when,” and “how” of ongoing management and governance of cloud service delivery. It provides the details that operationalize the “why” and “what” found in your cloud strategy.

The cloud operating model is your blueprint for organizing to deliver cloud services, and should include the following key elements:

- | | |
|--|--|
| <p>1 Cloud platform capabilities—private, public, or hybrid</p> | <p>5 Monitoring, service-level agreements (SLAs), and high availability</p> |
| <p>2 Service definition and teams</p> | <p>6 Service quality and incident response</p> |
| <p>3 Responsibilities and accountability</p> | <p>7 Support for DevOps / agile developer practices</p> |
| <p>4 Security processes</p> | |

Many organizations have a traditional stability-oriented approach to data center operations (e.g., siloed org structure with network, operating system, storage, middleware and security teams). This traditional org structure is not generally automated or agile enough to support IT service delivery needed for digital business initiatives.

In contrast, a cloud-oriented organization structure groups specialized resources into blended teams—still with critical delivery expertise in their respective domains—to focus on standardized and automated service delivery and consumption.

Operational processes for monitoring, reporting and troubleshooting change as the traditional network operating center (NOC) evolves and focuses more on managing virtual machine (VM) and container-based applications side-by-side with the same tooling and processes.

The Cloud Operating Model (blog)

A VMware Cloud Architect’s blueprint for cloud service delivery.

People

- Consumers
- Stakeholders
- Service delivery teams

Process

- Delivery: IT operations
- Consumption: DevOps and agile

Technology

- Cloud platform

Organizing for the Cloud (blog, white paper)

A pragmatic guide for transitioning from a traditional to cloud-based org structure by VMware professional services Chief Technologist.

- Service orientation
- Collaborative and agile culture
- Services lifecycle
- Key success factors

Why Multi-Cloud?

There is no one-size-fits-all cloud strategy. IT leaders should consider application needs and IT consumer requirements that meet business goals. Digital business initiatives often require IT to be flexible and agile in the support and delivery of the application lifecycle and infrastructure scalability.

Your organization can achieve digital business goals with one or more clouds in private, public or hybrid models. But 76 percent of IT organizations are committed to hybrid cloud as a long-term strategy.¹

VMware multi-cloud delivers a consistent software foundation for your digital business. VMware multi-cloud is based on VMware Cloud Foundation™, which delivers virtualized and software-defined data center (SDDC) technology everywhere you manage workloads.

Since the same software foundation you use in your data center is available from all 6 global hyperscale public cloud providers and 4,300 VMware cloud partners, you get a single operating model for all applications, based on the most proven and widely deployed cloud infrastructure in the world.

It is important to also examine and evaluate the hardware infrastructure underlying the public cloud instances. Each instance offers different capabilities, different generations of technologies, and security levels, and you'll need to ensure the chosen instances can deliver the performance and security your cloud operating models requires.

CLOUD STRATEGIES

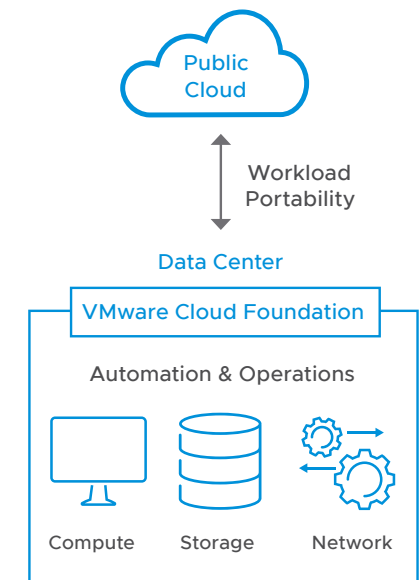
To Cloud or Not to Cloud (blog)

A VMware Cloud Architect's perspective on consumption models.

- IT service delivery maturation
- Public cloud drivers
- Private cloud drivers
- Decision criteria

70 percent of IT organizations are actively engaged in migrating existing applications to public cloud.

They are also planning to deploy half of new cloud-native workloads (47 percent) to private cloud.²



¹ Enterprise Strategy Group, Research Highlights, Hybrid Cloud Trends: Strategies for optimizing On-premises and Public Cloud Infrastructure, June 2019. (N = 358)

² VMware research snapshot: The State of Application Modernization and Hybrid Cloud Computing, Management Insight Technologies, January 2020. (N=1205)

Why Multi-Cloud? (cont'd)

Using VMware Cloud Foundation everywhere, you can benefit from the instant agility and scale of public cloud providers, without having to refactor applications, and while using familiar tools and processes. Intel® Virtualization Technologies provide five generations of compatibility across Intel® Xeon® processors, whether on premises or in the public cloud. This gives you flexibility in terms of migrating existing workloads, but also a low friction exit strategy when needs change. And with VMware you can manage containerized applications and traditional virtual-machine based applications side-by-side on the same platform.

Consider your business objectives to help choose the right cloud model, and then develop an operational plan for execution.

GO: DESIGN YOUR MULTI-CLOUD PLAN

VMware Research: Application and Cloud Trends

VMware, in collaboration with Management Insights Technologies, studied 1,200 companies globally to identify application and cloud trends, challenges and plans.³

Key Findings from Most Organizations

- **70%** of organizations are actively engaged in cloud migration with almost seven in ten **66%** planning to migrate more than half of their existing applications in the next three years.
- Half **48%** already use more than one public cloud IaaS in production.
- Yet on average, they plan to deploy half **49%** of all new cloud-native or containerized applications to private cloud.
- They plan to leave nearly one in five legacy applications **20%** unchanged, as they modernize data centers to achieve cloud benefits for existing applications.
- A large majority **76%** expect IT to delivery developer-ready Kubernetes.

APPLICATION AND CLOUD TRENDS

Read the Report – choose your geo

Key takeaways include:

- Hybrid is the most common cloud strategy.
- IT organizations are rushing to meet developer expectations.
- IT teams are extending consistent operations from data center to public cloud.
- IT modernization includes adding cloud-like capabilities to on-premises environments.

3. VMware research snapshot: The State of Application Modernization and Hybrid Cloud Computing, Management Insight Technologies, January 2020. (N=1205)

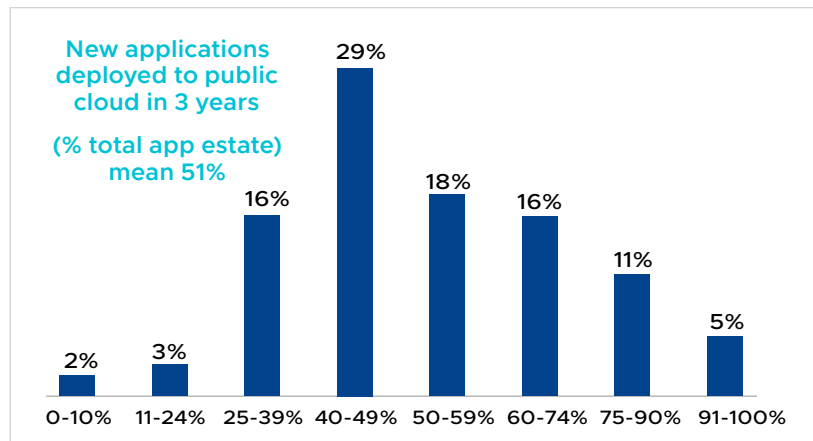


VMware Research: Application and Cloud Trends (cont'd)

Many initial cloud efforts have been tactical, not strategic. As IT organizations gain experience with cloud, they step back and consider the best path forward.

When asked to describe their ideal cloud environment, companies with cloud experience agree on these imperatives:

1. Applications are secure and protected, no matter where deployed.
2. IT can manage applications consistently in any environment.
3. Applications are portable and can be migrated without refactoring.
4. A single set of tools are used to manage applications anywhere.
5. Dev and Ops can collaborate easily.
6. Developers can build and deploy applications to their choice of clouds.



Key Considerations and Actions

Leading a shift to hybrid cloud service delivery requires evaluation of key considerations and taking action.

Consideration	Action
<p>Consumption expectations – Public cloud is setting the gold standard for instantly accessible and highly standardized service consumption.</p>	<p>Task IT operations to meet with your key IT consumer groups (e.g., lines of business, developers, etc.) and understand service requirements in order to meet or exceed their expectations.</p>
<p>Inertia and status quo – Traditional IT organizations often have a vested interest in the old way of delivering services, and may actively resist change to a cloud operating model.</p>	<p>Identify an IT executive sponsor willing to be the change agent to lead your IT organization through a purposeful transition plan. Identify both transition and end-state metrics to incent desired behavior.</p>
<p>Skills gap – Modern container-based workloads may require different management tools and processes than existing virtual machine-based workloads.</p>	<p>Architects – look for solutions that can manage virtual machine (VM) and container-based workloads side-by-side that work in both on-premises and in public cloud environments.</p>
<p>Risk mitigation – For organizations of all sizes, new application technologies and cloud environments increase complexity and potentially impact security, compliance and service quality risk profiles.</p>	<p>Architects – look for solutions that deliver intrinsic security at the infrastructure layer, and apply policies at the application layer that can be deployed consistently across environments, or use differences to intelligently place each application to meet its security requirements.</p>
<p>Cloud economics – A cloud operating model is service oriented, and it may change your cost structure that was previously infrastructure oriented.</p>	<p>Meet with your CFO to understand their preferred mix of CapEx and OpEx expenses. Architects – evaluate the hidden costs of cloud migration and workload refactoring that may impact the cost analysis.</p>
<p>Pilot-based launch – The transition to a cloud operating model is best approached intentionally.</p>	<p>Plan a staged rollout as part of your change transition plan. Architects – identify key workload types or influencer groups, and gain and promote their buy-in to ensure momentum after early successes.</p>

Intel and VMware Unique Value

VMware is committed to delivering solutions that help you at every stage of your cloud and application modernization journey. If you are modernizing applications and want to manage hybrid cloud, your workloads should be deployed on a VMware foundation.

- Intel transformed the IT industry with Intel® Virtualization Technologies, enabling easier cross-generation and cross-cloud migration.
- VMware leads the private cloud market with solutions based on VMware SDDC technology.
- VMware now leads the hybrid cloud market having forged key partnerships with leading public cloud providers. Now the same VMware Cloud Foundation stack you run in your private cloud is also available from all six global hyperscalers as well as from 4,300+ VMware Cloud Provider Partners.
- Millions of Intel Xeon processors over 5 generations run across the world's top Cloud Service Providers, delivering a broad choice of performance, availability and scalability for your workloads. Intel's broad footprint offers you an easier migration path, so you can pivot for the applications, cost, cloud provider and data governance needs most critical for your business.
- VMware is making significant investments in containerized application solutions through acquisitions (Heptio, Bitnami, and Pivotal) as well as the development of new app modernization and Kubernetes platform VMware Tanzu.
- VMware has announced product support for Kubernetes-based applications on familiar VMware platforms—VMware vSphere®, VMware vRealize® Suite, VMware NSX® and others—to ensure your IT organization can support container and virtual machine-based workloads on your VMware architecture and enable digital business success now and into the future.

VMWARE SOLUTIONS

- *Hybrid Cloud Solutions*
- *App Modernization solutions*

VMware and Intel are top contributors to the Kubernetes open source community.⁴

⁴ [K8s.devstats.cncf.io](https://k8s.devstats.cncf.io)

Intel and VMware Unique Value (cont'd)

- Intel's early contributions to Kubernetes helped extend capabilities by shaping the architecture and requirements for device plugins, addressing limitations for a variety of high-bandwidth, low-latency workloads, and enabling new features for use in networking applications such as multiple network interfaces and I/O virtualization. Today, Intel is continuing to collaborate across the Kubernetes community and ecosystem to deliver best-fit performance and security for cloud native workloads, ease the developer experience and pave the way for tomorrow.

By running applications on the VMware architecture (any application, any cloud), your organization can take the fastest and least disruptive path to app modernization and hybrid cloud:

- Accelerating IT processes to support digital business initiatives
- Reducing complexity by using familiar and trusted VMware and Intel solutions
- Lowering operational cost and business risk with proven partners

VMware Multi-Cloud Benefits

VMware and Intel deliver consistent infrastructure and consistent operations everywhere workloads are deployed that make it easier to modernize applications, adopt a hybrid operating model, accelerate time to value, and reduce operational risk and costs.

By running both your new modern applications and existing legacy applications on the same VMware and Intel architecture, your IT organization gets the fastest, least disruptive way to support your digital business initiatives.

BUSINESS VALUE ASSESSMENTS

Learn about workload migration cost

Forrester Total Economic Impact of VMware Cloud on AWS – Accelerate migration and reduce operating costs.

Benefit	Timeframe
Fastest and least disruptive path to cloud – Extending VMware solutions on Intel-based infrastructure to the cloud to migrate workloads or add capacity—all with familiar tooling, skills and core processes.	Immediate
Faster time to market – With automated and standardized cloud services, you can reduce application deployment times so apps and features get to users sooner.	After integrating the application release process
Reduce data center footprint – By tapping cloud resources on demand for either temporary or long-term use, you can reduce space, power and cooling costs on-premises.	After cloud migration
Reduce software license costs – Retiring older hosts and increasing workload density on new, more efficient Intel-based servers helps you cut unnecessary expenses.	With consolidation
Faster and cheaper workload migration – By migrating applications without refactoring or replatforming using familiar VMware tools on Intel-based instances, you can move workloads more efficiently and cost effectively.	Immediate



VMware Multi-Cloud Benefits (cont'd)

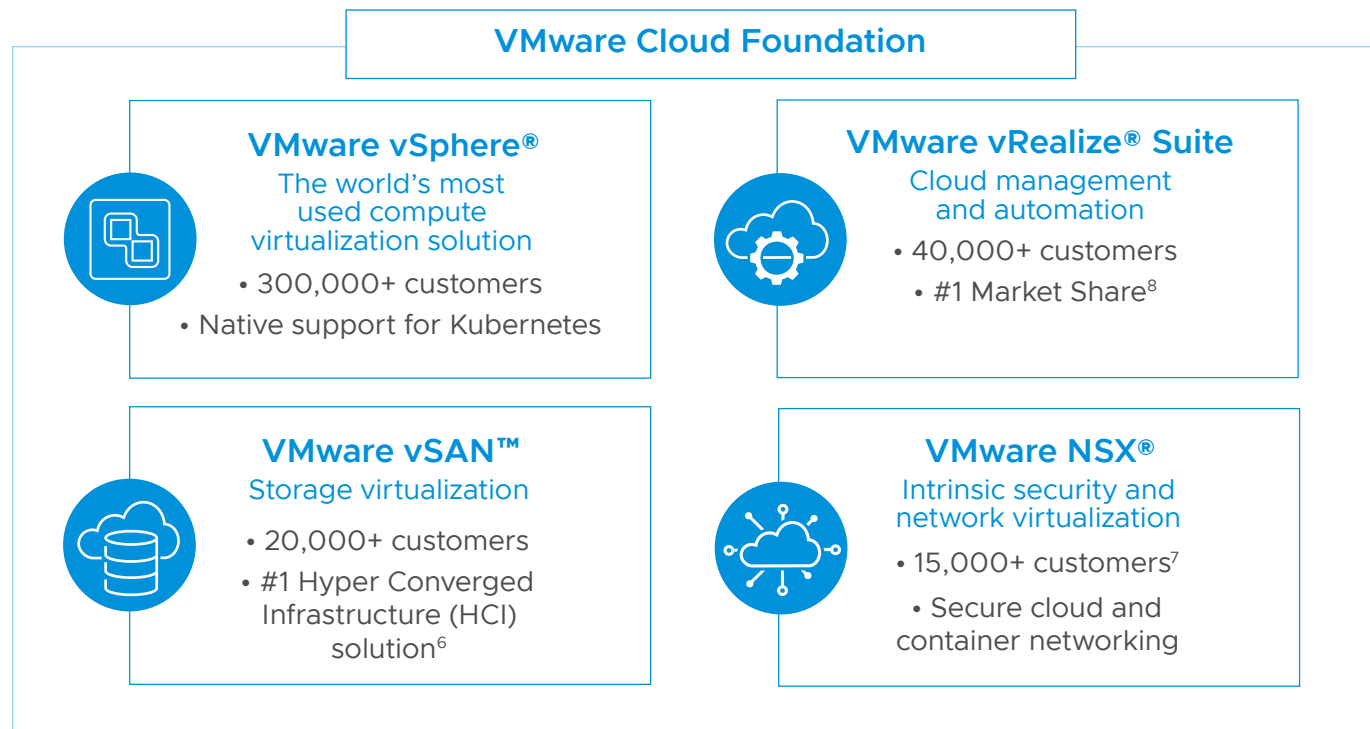
Benefit	Timeframe	BUSINESS VALUE ASSESSMENTS
<p>Support modern apps with existing teams and tools – Manage container-based and VM-based applications side-by-side with the same team, tools, and processes—wherever they are deployed.</p>	<p>After upgrade to vSphere with Kubernetes</p>	<p>Compare private and public cloud costs VMware Cloud on AWS TCO Calculator</p>
<p>Strategic flexibility – Deploy workloads to best-fit environments based on technical or business requirements, then migrate or re-deploy more easily across five generations of Intel Xeon processor-based clouds without vendor lock-in, should conditions change.</p>	<p>Ongoing when needed</p>	
<p>Faster mergers and acquisitions – Spinning up cloud resources in region, migrating workloads, and shutting down old infrastructure is faster, often happening in weeks not months.</p>	<p>As needed</p>	
<p>Reduced risk – You can reduce hybrid cloud and modern application complexity and link policies to workloads for consistent and streamlined compliance across environments.</p>	<p>Immediate</p>	

Intel and VMware Market Leadership

VMware Cloud solutions are based on VMware Cloud Foundation, which combines proven, trusted products that work with both new and existing applications, on-premises and in the public cloud.⁵

FURTHER READING

Gartner Magic Quadrant for Hyperconverged Infrastructure



5. Customer counts as of Q2 FY20

6. IDC Worldwide Quarterly Converged Systems Tracker, Hyperconverged Systems Based on Owner of HCI Software, Q4 2019 (including Dell Technologies)*

7. VMware press release VMware Surpasses Major Virtual Cloud Network Milestones, April 8, 2020 .

8. IDC Worldwide Cloud System and Service Management Software Market Shares, 2018: Multicloud Strategies Take the Lead

Team with VMware

VMware Cloud solutions are based on VMware Cloud Foundation, which combines proven, trusted products that work with both new and existing applications, on-premises and in the public cloud.

Once you have made a decision, VMware can help with the following steps to ensure adoption and success:

1. [Develop a cloud strategy that accommodates the needs of key user groups – not doing so invites “shadow IT”](#)
2. [Define a service-oriented cloud operating model](#)
3. [Assess IT operational readiness including team structure, roles, skillsets, processes and technologies](#)
4. [Determine the degree of operational change needed for evolving to blended, cross-functional service lifecycle management teams](#)
5. [Prepare your organization for change—communicate, communicate, and communicate more](#)
6. [Modify behaviors through learning paths and/or reviews](#)
7. [Plan for a pilot-based launch and scale over time](#)

VMware and Intel provide the foundation for some of the largest and most successful private and hybrid clouds in the world. VMware is making multi-cloud a reality with a VMware foundation available on all major cloud providers.

Our experts thoroughly understand the opportunities and challenges cloud adoption and operations present. VMware and Intel have the experience and insight to bring a complete solution that includes a full suite of software products and solutions to maximize your investment across cloud platforms.

Let us bring our experience, insight and expertise to your teams and environments, helping you achieve cloud computing’s benefits.

VMWARE PROFESSIONAL SERVICES CAN HELP

[Learn more](#) about VMware professional services for your cloud project.

For more information please contact your account executive or [request a consultation](#).

[Read the Intel-VMware Multi-Cloud Analytics Solution Reference Architecture.](#)



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