



Driving Digital Business with App and Cloud Transformation

2021 VMware Market Insights Report



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FOREWORD

Delving Into a Digital-First Future

Every organization is now defined by the digital services it delivers. From engaging customers with new experiences, to building new revenue opportunities, and driving digital-first touchpoints that protect and enable customers and communities, these services have never been more essential.

For over a decade, organizations have emphasized the importance of technology in reshaping business processes and models. They've also recognized the need to redefine how they interact with customers and markets, anywhere in the world. Now, more than ever, the focus is on acceleration. And, even more, on impact. Every organization needs to move faster. COVID-19 may not have created digital transformation – but it has certainly increased its urgency.

As part of VMware's work with technology decision-makers globally, we've spoken with leaders and experts from more than 1,200 organizations about their goals, challenges and successes. Through this research, a clear picture of market priorities is emerging, including how organizations are building for the future, and the major challenges they experience and overcome along the way.

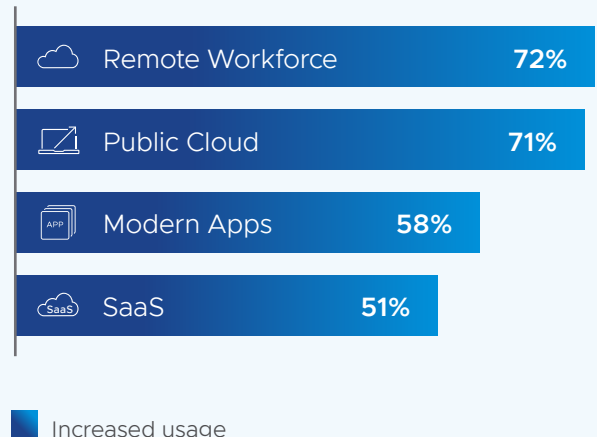
A core focus on cloud

Not surprisingly, 71 percent of VMware customers surveyed are prioritizing and expanding investment in digital-first models of engagement for customers and employees.¹ Technology leaders are on a path to reinvent their business. With this comes a clear expansion in core cloud and modern app investments, as well as a shift in IT operations.

Cloud has already redefined the relationship between IT and the business, accelerating the delivery of new services and bringing unprecedented innovation to developers. It has forever changed the way business services transform from inspiration to reality, as well as how we unlock insights from a vast expanse of data. Perhaps most importantly, cloud has helped us move faster. It is a true accelerant for innovation.

These benefits are among the reasons why 71 percent of organizations surveyed are increasing their reliance on cloud.² Buoyed by accelerated migration, cloud deployments are expected to outnumber on-premise deployments in the next three years.² Yet cloud and modern apps are intricately linked. Apps will continue to grow in vast numbers – by 28 percent over the next three years.² They will increase in complexity, diversity and strategic value, too. Clearly, a new model of cloud infrastructure is required.

Over half of organizations dramatically **increased reliance on distributed processes** due to COVID-19²



Moving ahead with app modernization

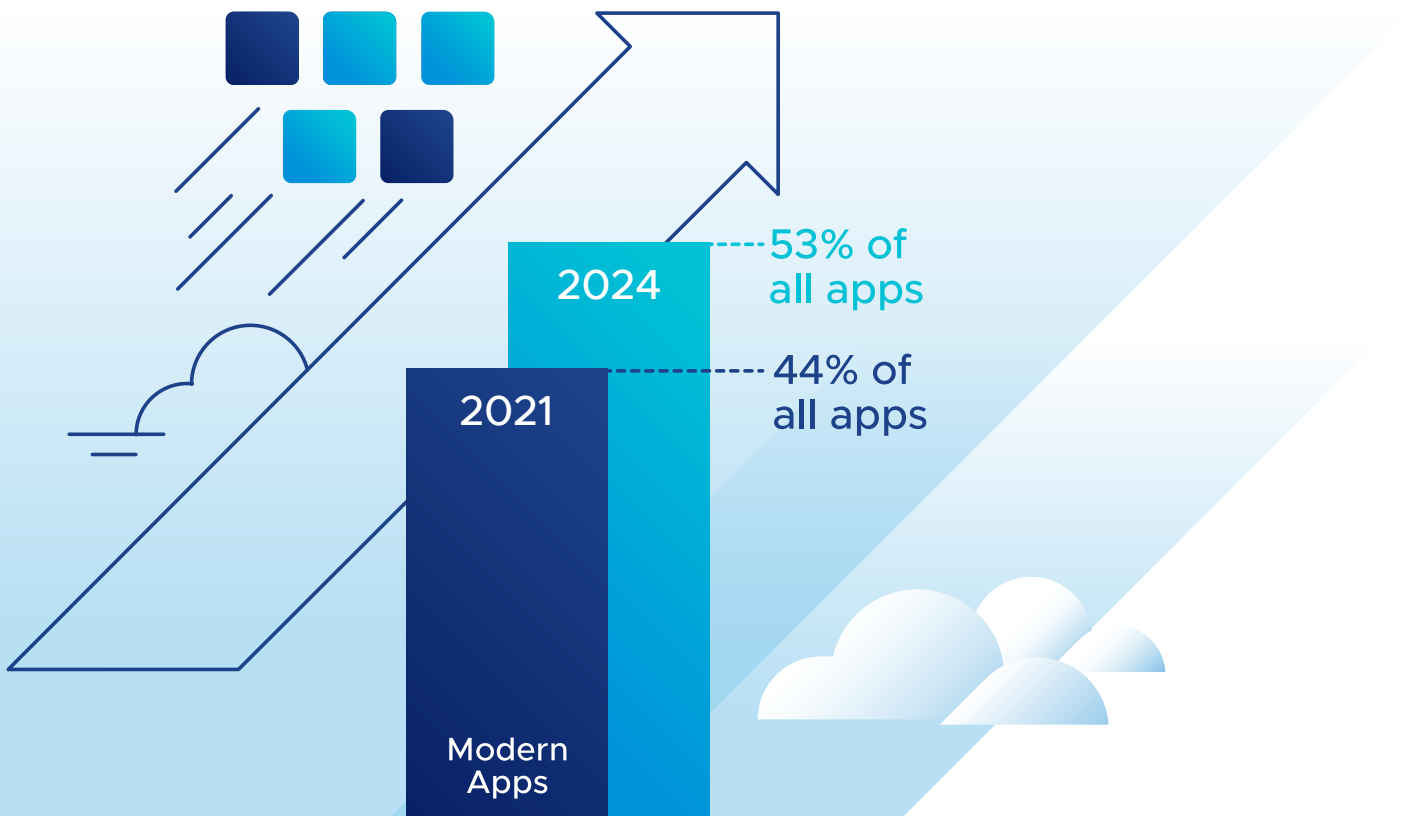
Even more impactful is the shift in how applications are being built or modernized. Organizations have stated that 68 percent of upcoming application deployments will take advantage of modernization initiatives.² The apps powering business systems need to evolve to power the business goals of tomorrow. This modernization is pervasive – technology decision-makers anticipate that modern apps will grow at 20 percent on average across the cloud and data center by 2024, surpassing traditional apps.²

But transformation isn't happening fast enough. While expectations are high, efforts are slowed or stalled by the complexity of existing apps, interdependencies with existing infrastructure, diversity across public clouds, and silos of infrastructure, operations and security. Nearly every organization can feel the tension between the opportunities tied to transformation and the daunting challenge of how to achieve it.

In this eBook, we explore the keys to unlocking opportunities with greater impact, faster than ever.

46% of organizations expect to add **more cloud environments** by end of 2021¹

By 2024, over half of all apps are expected to be modern apps²



MARKET FORCES

The New, Distributed, Multi-Cloud Era Arrives

Along with dramatic growth in cloud services, the market is also experiencing a fundamental transformation. Today's cloud infrastructure is increasingly distributed – in fact, 80 percent of global organizations surveyed, based on an inventory of their app deployments, use a combination of public clouds, on-premise private cloud and edge environments to deploy applications and data.²




This decentralized system of infrastructure resources will continue to grow, supporting performance requirements, data locality rules and the now ubiquitous remote workforce. Yet, while it leads to new opportunities to meet the needs of apps and users, this distributed system also creates challenges for managing and securing apps across diverse environments.

80% of organizations have a **distributed model for cloud apps** across public, private and edge environments, and expect to support this combination **in three years' time**²

91% of executives agree their **major app initiative** in 2021 is to **migrate and modernize** legacy apps¹

Why multi-cloud?

In this challenging new era, organizations are pursuing multi-cloud strategies to:

-  Support diverse business unit needs
-  Leverage best of breed functionality
-  Align apps to specific cloud capabilities from any cloud provider

Top three drivers of multi-cloud strategy



#1

Diverse business unit needs

#2

Best of breed functionality

#3

Align apps to specific cloud capabilities

Goals for an app-focused future



Build modern apps at speed

To do this, you need capabilities and tools like the right infrastructure, an agile DevSecOps team, and low-code platforms.



Run on cloud, data center and edge

By 2022, three quarters of enterprises will deploy a unified management system for clouds, networks and data centers.³



Gain enterprise resiliency, security and operations

Focus on untangling the complexity of multi-cloud by unifying all environments for consistent operations and security.

Expected application growth² 2021-2024



+20% Modern applications

+26% Cloud-deployed applications

+28% Total number of applications
across all environments

MARKET FORCES

The Complexities of Moving to Multi-Cloud

While organizations maintain high expectations for modern apps and a shift to cloud, significant challenges continue to hinder progress – from outdated and complex apps, to the diversity of architectures across public clouds, to the scarcity of essential skills. Here are three of the most common reasons why the move to multi-cloud is so slow.

1. Rigid, monolithic apps delivering enterprise services

Keen to free themselves from the burden of legacy, monolithic apps, organizations rightly want to modernize them. Yet it's not as simple as flicking a switch.

2. Costs, complexity and risk of refactoring apps for the cloud

Each app has specific needs that make it suited for specific environments. But the architectural differences create significant challenges for migration. Migrating apps to cloud requires careful consideration about optimum environments and formats. According to VMware's 2020 report, "App Modernization in a Multi-Cloud World", 63 percent of organizations rate inconsistencies between clouds as one of their top challenges.⁴

3. Scarce developer resources

The IT skills shortage is well-documented. Even among organizations with three or more public clouds, a third (32 percent) cite 'specialized teams or skills' as a challenge in managing multiple clouds.²



MARKET FORCES

Three Transformations Powering App Modernization

To advance their goals for modern apps, organizations are increasingly pursuing three fundamental transformations. These transformations deliver a range of benefits. They:

- Reshape how apps are developed
- Ensure high-quality code is delivered securely and with less risk
- Ensure the underlying infrastructure is optimized for the unique needs of all apps

[See how VMware helps with these transformations.](#)



Application transformation

Embracing modern development practices, microservices and APIs, and enabling a fundamentally improved developer experience, speeding innovation and business services.

28% of worldwide apps are now containerized, indicating **the cloud-native movement has begun**²



DevSecOps transformation

Accelerating the path to new and modernized apps, and delivering critical business services to production faster, more securely and continuously. DevOps practices and continuous delivery help get higher-quality code to production faster and more frequently, with security integrated at every step and level.

81% of IT execs are concerned about **data breaches** due to a **wider distributed threat plane**¹



Cloud infrastructure transformation

Redefining the foundation of IT with cloud capabilities and modern architectures that span the data center to any cloud to the edge for all apps.

80% of organizations surveyed use **distributed cloud services** to support their apps²

THE VMWARE VISION

Delivering Multi-Cloud Services for All Apps

VMware has a unique vision for the cloud market. We believe cloud is less about where you run apps, and more about how you deliver business innovation.

With this in mind, multi-cloud shifts from a source of complexity to a source of strategic advantage, where apps are built and deployed faster than ever, and new capabilities continuously added. It's an environment in which organizations have the freedom to deploy apps anywhere across a distributed cloud, and the ability to move apps freely to the best cloud – all built on a secure, resilient foundation where all apps are protected, anywhere.

To deliver on this vision, VMware brings to market a solution built uniquely for today's distributed, multi-cloud world. VMware Cloud delivers multi-cloud services that span the data center, edge and any cloud, including native cloud services. Optimized for both traditional and modern apps, VMware Cloud creates a single platform for all apps in any environment. And it unifies all environments with consistent operations and security, delivering the enterprise reliability, resiliency and governance organizations need – while significantly reducing total cost of ownership.

Why VMware Cloud?

37% increase in **developer productivity**, for a faster path to app modernization⁵

Fast cloud migrations, reducing the time from years to months⁵

82% increase in software to production through optimized **DevSecOps**⁵

59% lower TCO, with the added benefit of enterprise security production⁵

Proven enterprise capabilities to handle your needs



85 million production workloads



15 million total app workloads in the cloud



Unique multi-cloud strategy



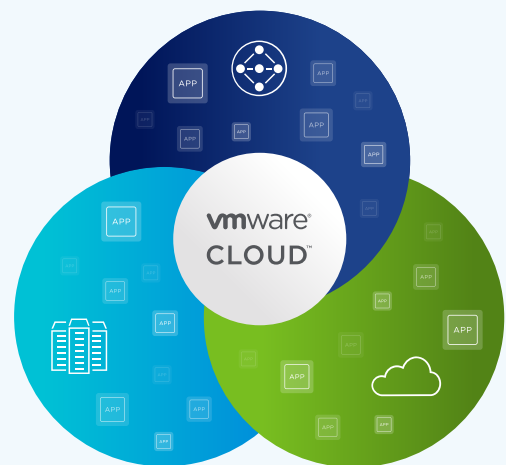
Powerful distributed **management, security** and **operations** solutions



4,300 VMware cloud providers building public clouds using VMware technology

VMware Cloud

Delivering multi-cloud services that span the data center, edge and any cloud



THE VMWARE VISION

VMware Cloud: The Optimal Solution for App Modernization on Any Cloud

Every organization manages a complex portfolio of traditional and modern apps. Each of these apps has unique needs along with specific value – now and in the future.

By proactively managing your portfolio and mapping each app to its own journey, you can set up the optimal environment while delivering key services that deliver the greatest impact from each app.

VMware Cloud is uniquely designed to help you accelerate the journey every app needs to take, while also rapidly migrating and modernizing apps in any cloud.



Retain

Maintain apps in a highly virtualized data center to optimize architecture, security and performance. Modernize the data center environment to increase automation and evolve the core infrastructure platform.



Rehost

Migrate apps to the optimal cloud environment or edge with minimal rework. Match each app to the best environment and move seamlessly without the cost, complexity and risk of refactoring.



Replatform

Modernize apps using containers and Kubernetes. Replatforming is most successful with a standardized approach to minimize complexity and extend existing platforms, architectures, tools and skills.



Refactor

When building and rebuilding new and existing apps, harness modern app design, microservices and cloud native principles to scale services, accelerate development and enable innovation.



Retire

For some apps, it simply makes sense to replace with SaaS apps while supporting optimal user access, cost governance and security.

[Learn more about how VMware supports the Five Rs.](#)



THE VMWARE VISION

Getting Started

To help you take action, fast, VMware recommends building an application strategy focused on the app journey. We have the tools to help you get there.

VMware App Navigator

With App Navigator, you can:

- Gain complete visibility into your entire app landscape and prioritize individual applications for migration and modernization
- Rationalize your app portfolio to determine the optimal cloud environment and better understand your options for rehosting versus refactoring, including the architectural requirements and costs of each potential move
- Build a plan for near-term and long-term action based on the value of applications to your business today and in the future

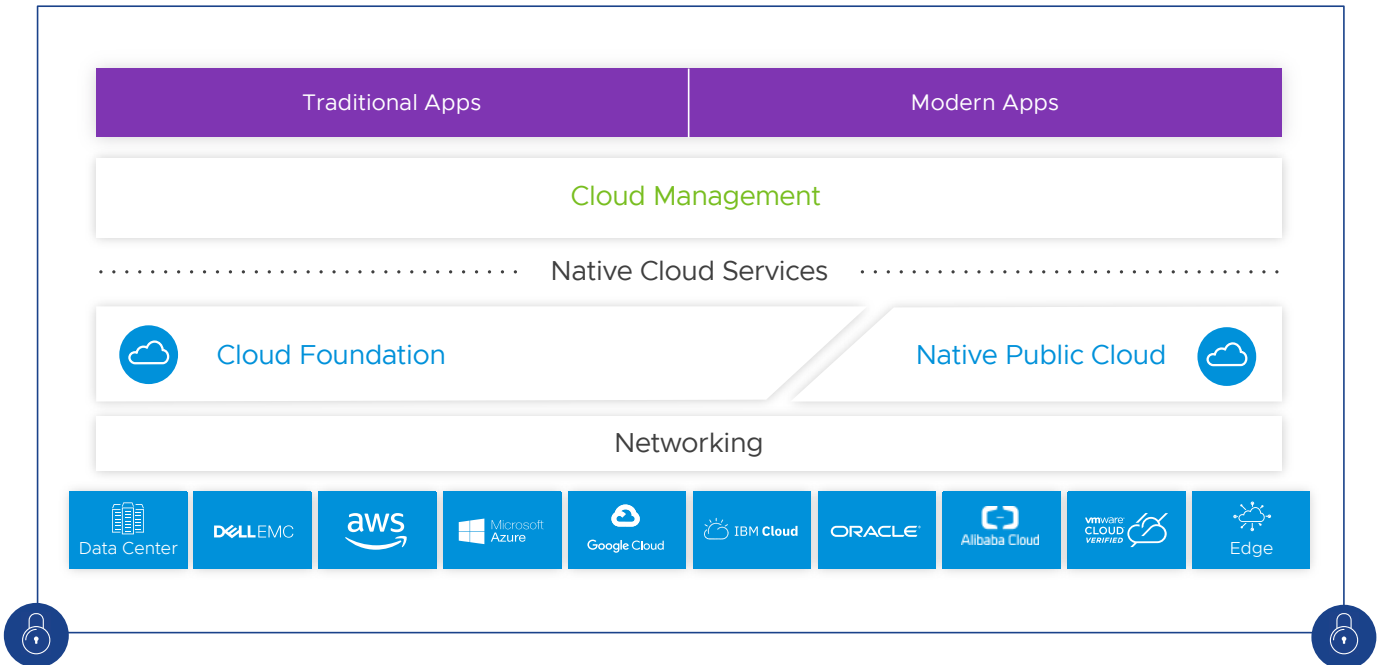
VMware Success 360

Get to success faster on your app and cloud transformation journey, with:

- Success planning to help you accelerate outcomes from your VMware technology investments
- Ongoing adoption guidance to optimize your use of VMware solutions
- Design workshops to explore new features and capabilities
- Dedicated and proactive support to predict and resolve issues before they impact productivity

VMware Cloud

Accelerating app modernization on any cloud



References

1. VMware FY22 Q1 Executive Pulse, January 2021
2. VMware FY22 H1 Benchmark, Cloud and Applications, March 2021
3. IDC FutureScape: Worldwide Future of Digital Infrastructure 2021 Predictions, DOC #US46420120, October 2020
4. VMware, App Modernization in a Multi-Cloud World, March 2020
5. VMware, The Counterintuitively Fastest Path to App Modernization, Kit Colbert, CTO VMware Cloud Platform, October 2020

Research Methodology

VMware FY22 Q1 Executive Pulse, January 2021

The VMware FY Q1 Executive Pulse study was fielded on behalf of VMware by Qualtrics between December 2020 and January 2021.

Custom research was conducted in the Americas (Argentina, Brazil, Canada, Mexico, U.S.), Europe (Belgium, France, Germany, Italy, the Netherlands, U.K., Spain, Sweden, Russia) and Asia Pacific (Australia, China, India, Japan, Singapore) using web-based surveys.

Responses were collected from 456 C-suite and senior technology decision-maker respondents involved in app and infrastructure platform decisions. The sample targeted 49% commercial (1,000-4,999 employees), and 51% enterprise (5,000+ employees).

VMware FY22 H1 Benchmark, Cloud and Applications, March 2021

The VMware H1 Benchmark, Cloud and Applications study was fielded on behalf of VMware by Management Insight Technologies between January and March 2021.

The custom research was conducted in North America (U.S. and Canada), Western Europe (U.K., Germany and France) and APAC (Australia, New Zealand, Japan, India and China) using a combination of web and telephone interviews.

Responses were collected from 1,200 IT leaders, IT decision-makers, and developers who are knowledgeable about and involved in decision making for cloud platforms. The sample targeted 13% SMB (2-999 employees), 33% commercial (1,000-4,999 employees), and 54% enterprise (5,000+ employees).



Ready to drive change?

[Get in touch](#) to schedule an App Navigator assessment.
Or, dive deeper into solutions demos and Hands-On Labs
to explore our solutions at your own pace.

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