Application-Centric Pathways to the Hybrid Cloud

A guide to building a modern cloud strategy

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Executive Summary

Applications drive modern businesses, and the dependency businesses have on their applications is growing stronger. IDC predicts that from 2018 to 2023, 500 million new logical apps will be created, equal to the number built over the past 40 years.[1] To keep up with demand, IT organizations will deploy and manage applications across a diverse infrastructure landscape. While diversity helps meet business needs, managing a wide range of deployment environments can present unique needs and challenges.
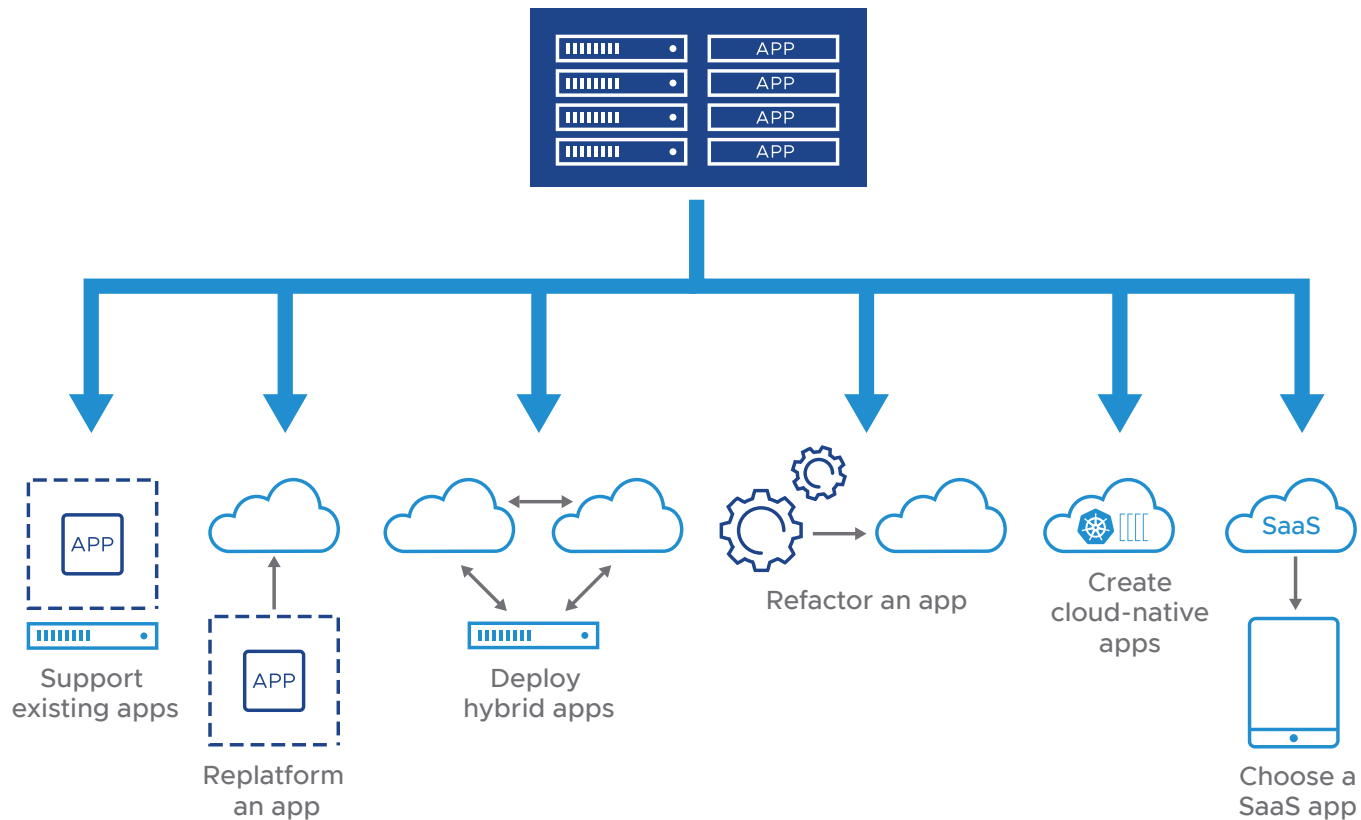
The current leading approach to meet the needs of a typical application portfolio is a hybrid cloud model. The industry defines hybrid cloud as the combination of private cloud, public cloud and edge environments unified with consistent infrastructure and consistent operations. A hybrid approach is preferred by IT organizations as they determine what aspects of public cloud fit their unique application needs—in fact, two-thirds of cloud buyers are seeking a hybrid cloud solution.[2] The good news is that IT organizations can build on existing infrastructure investments, bridging the gap to modern public cloud solutions while consolidating IT control and management.

1 IDC. "IDC FutureScape, Doc #US44403818." October 2018.
2 Forrester Consulting. "*The Total Economic Impact™ of VMware Cloud on AWS.*" August 2019.

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This eBook summarizes an application-centric approach to shape cloud strategy for any business looking to streamline and modernize their IT landscape. It provides six app-centric paths for IT organizations to adopt a hybrid cloud environment. Depending on your company's application landscape, you will use some or many of these paths to optimize your cloud strategy.
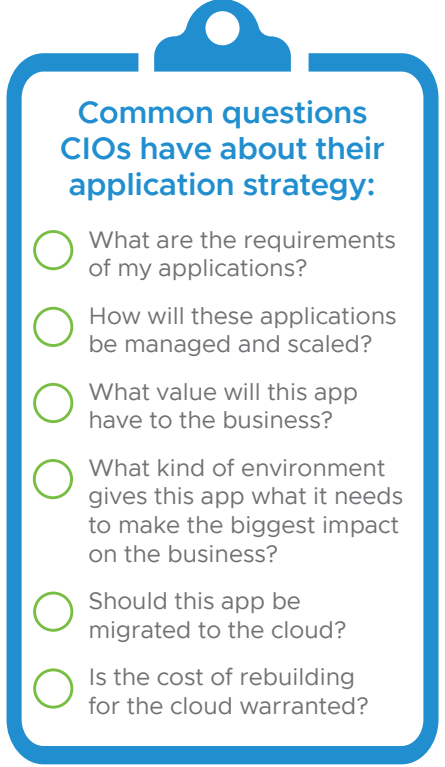
Application-centric pathways to the hybrid cloud

Support existing apps

Replatform an app

Deploy hybrid apps

Refactor an app

Create cloud-native apps

Choose a SaaS app

The Paradigm Shift: The Rise of the App-Centric Data Center

CIOs have shifted their thinking in recent years. Focus changed away from infrastructure toward applications and the new business opportunities they enable. Applications drive modern businesses and touch every aspect of the company, from delivering revenue with online self-service portals to increasing employee productivity by putting any and all information at their fingertips. And business dependency on applications is growing stronger.

Applications are now deployed and operated across a diverse infrastructure landscape, from on-premises data centers, to the public cloud, to remote or branch locations. Now more than ever, it is essential that businesses approach their IT landscape with a holistic and application-centric vision. This means application strategy—both past decisions and new deployments moving forward—should drive cloud strategy.

Common questions CIOs have about their application strategy:

○ What are the requirements of my applications?

○ How will these applications be managed and scaled?

○ What value will this app have to the business?

○ What kind of environment gives this app what it needs to make the biggest impact on the business?

○ Should this app be migrated to the cloud?

○ Is the cost of rebuilding for the cloud warranted?

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Current data center architectures are not streamlined for this shift

Installing apps in traditional data centers is becoming more and more complex, and that complexity leads to decreased efficiency for both your IT staff and the applications themselves. As your company's IT landscape expands to new locations—in the cloud or remote data centers—it becomes more difficult to decide where to host and maintain applications. The interconnectedness of apps is also leading to the rise of complexity. Few apps exist in a silo and it can be painful to manage the patchwork of your app landscape after years of unguided deployments.

The prominence of legacy systems only compounds issues for your diverse portfolio of applications. New apps that cannot be run on outdated architecture means more development or installation time as new apps are adapted to legacy systems. Thus, a complicated installation landscape leads to more diverse application deployments, and inconsistencies in execution and support. All this application diversity means lower operational efficiency of new apps, slower time to market and more administrative overhead as IT struggles to document and maintain the messy app catalog.

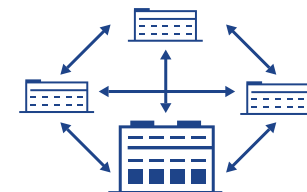**Troubles with the Legacy Data Center**

Diverse application portfolio
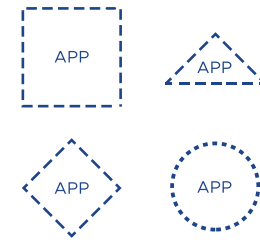
Underpowered legacy hardware

Insecure underlying architecture

Complicated application environments

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Make security part of your strategy

In the rush to adapt new apps to old architecture, security is often left by the wayside. Only 16 percent of organizations polled reported that the capabilities of traditional security tools were sufficient to manage security across the cloud.[3] Old architecture is rarely patched adequately as vulnerabilities emerge and a risky foundation allows risk to propagate through to newer applications. This means if your company is running outdated hardware, risk is increased for each new app regardless how safe or cutting edge the app itself is.

The legacy data center has seen much evolution over the past 30 years, but its time for achieving greater cost efficiencies has ended. New apps can't run on much of the legacy hardware cluttering up old data centers as modern requirements outpace old capabilities—across compute, storage, networking, software features and more. IT teams must face forward toward new technologies and embrace new platforms and architecture lest they get left behind by their competition.

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Source: Cybersecurity Insiders Cloud Security Report 2018

3 Cybersecurity Insiders. "*Cloud Security Report.*" 2018.

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Application strategy drives platform decisions

The needs of applications drive the decision for what platform must be purchased, and businesses are asking, "What is the best infrastructure to match the needs of our applications? What are the unique requirements of each application? And how might these answers change over time?"

Businesses must decide on which platform to invest in carefully, as investing in the wrong platform can be costly. You don't want to keep rewriting your apps every time a new tool or system comes along. Your next platform will need to be flexible enough to accommodate future features and standards, whatever they may be.

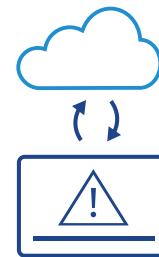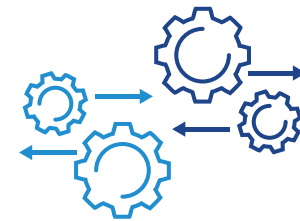**What to avoid when determining your cloud platform**

Cloud silos

Limitations on scaling or data recovery

Overpaying for capacity limits

Proprietary hardware or software

Inconsistent management and operations between environments

Hybrid cloud is the bridge from traditional infrastructure to the app-centric data center

The hybrid cloud approach utilizes your investment in current infrastructure and bridges the gap between data center and public cloud by leveraging common tools and management processes across every phase of your cloud journey. You can start leveraging new innovations now while preserving existing investments, minimizing disruption to IT processes and the services they provide.

Public cloud is not one-size-fits-all and most companies don't make the switch to public cloud cold turkey or fully. IT organizations prefer a hybrid approach as they determine what aspects of public cloud fit their unique companies—in fact, two-thirds of cloud buyers are seeking a hybrid cloud solution.[2] Any proprietary or business-critical applications that need to be maintained on company servers can exist along with public cloud and SaaS solutions, with the biggest change being the reduction in administrative overhead necessary to manage both systems.

93% of VMware enterprise customers say consistency of architecture between private and public clouds is important.
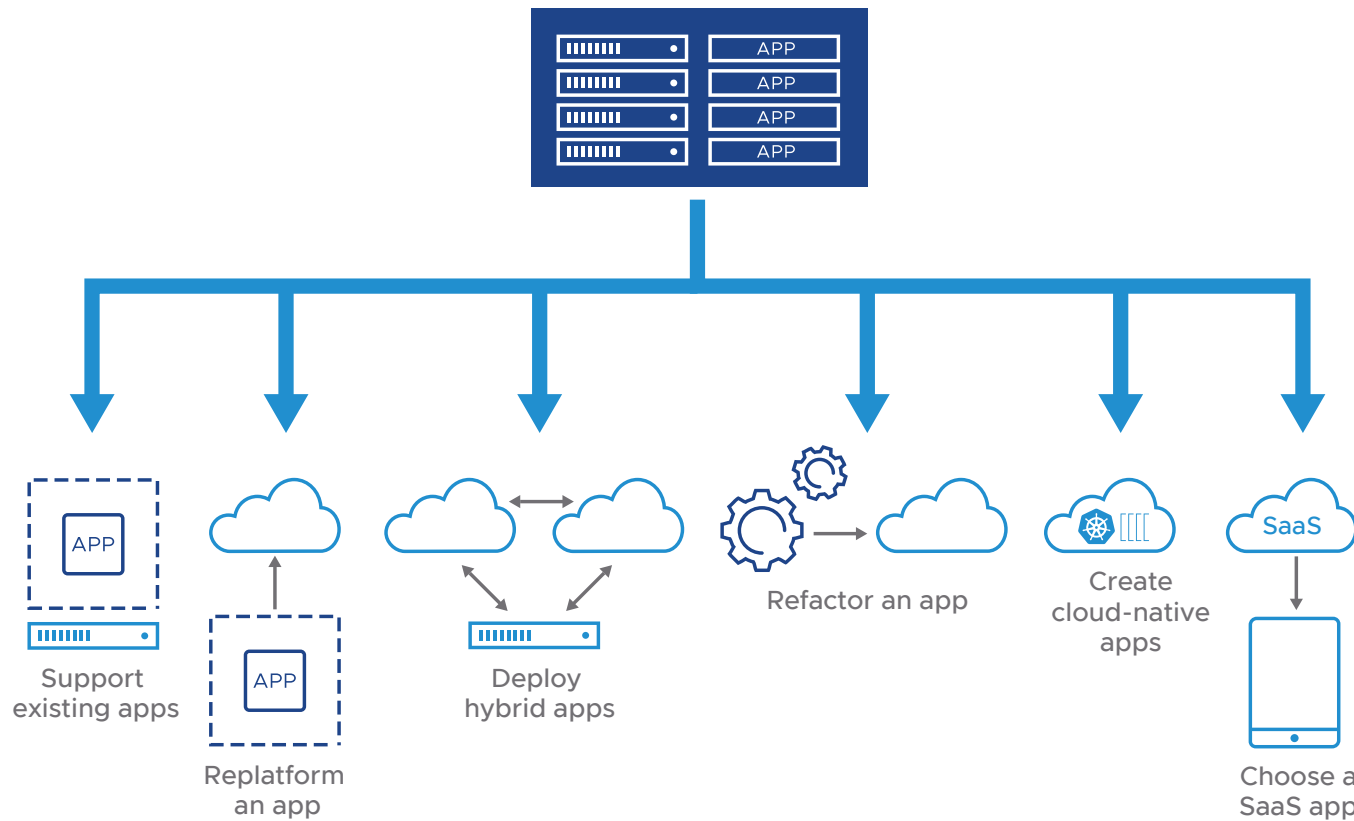Source: VMware Cloud Market Study, Management Insights, January 2018.

What is the hybrid cloud? The industry defines hybrid cloud as the combination of private cloud, public cloud and edge environments unified with consistent infrastructure and consistent operations. All layers of the stack—compute, storage, networking—are defined in software, with integrated management, governance and security.
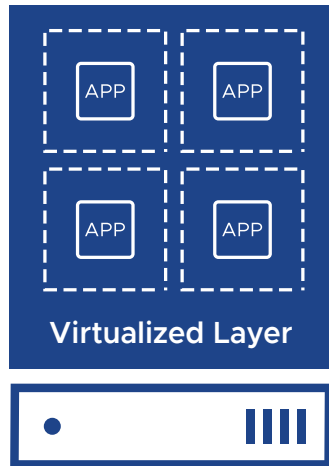
Why is **hybrid cloud** so widely adopted?

- ✓ Optimized infrastructure that can support every application
- ✓ Efficient and simplified IT operations
- ✓ Avoided dependence on specialists for legacy infrastructure
- ✓ Rapid delivery of modern apps
- ✓ Reduced security and compliance risks

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# Six application-centric pathways to the hybrid cloud

Now that the prominent role applications play when determining a cloud platform is clear, here are six pathways your business can take to transition applications from a traditional data center to the hybrid cloud. Your individual journey may include one or several of these paths depending on your unique investments and challenges for migrating systems.
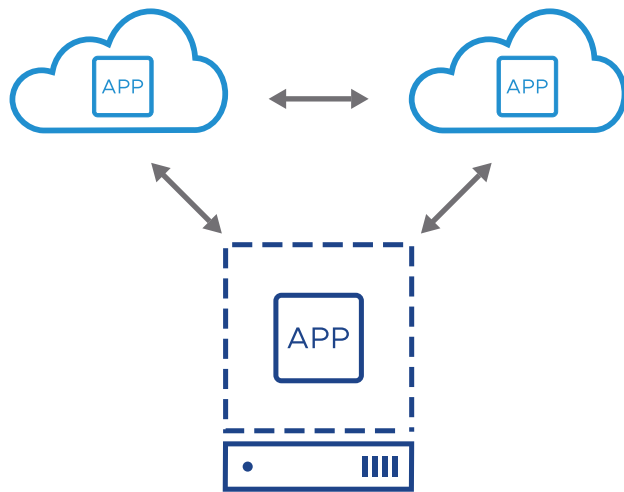

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APP **APP**

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Virtualized Layer

1 **Support existing apps in the data center.** Applications continue to be maintained in data centers for a number of reasons, including data protection regulations, to better manage performance requirements, or to guarantee access to some unique in-house service. Highly virtualized data centers, maintained on premises, enhance performance, capacity and sufficiency of applications without replacing existing hardware. Many businesses are turning to hyperconverged infrastructure (HCI)—that includes software-defined compute, network and storage, managed with higher levels of automation—as a way to achieve these benefits and still reduce the demand for hardware and management resources. **Choose this path when you need to keep applications in your data center, but want to gain some cloud-like automation and efficiency in place.**

APP
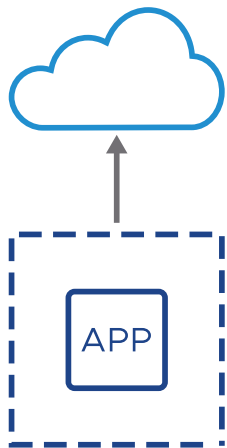
2 **Replatform an app to the cloud.** Your company might have a goal or target to move a certain percentage of applications to the cloud. Replatforming is the process of keeping the application unchanged, while moving it from an existing highly virtualized environment to the cloud. This approach supports cloud migration for bi-directional application migration, as well as consistent policies and unified visibility and monitoring across on- and off-premises environments. **Choose this path when the app is unalterable, and needs moving without expensive rewriting.**

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③ Deploy hybrid apps. Hybrid apps are where portions of an existing app are shifted to the cloud while other portions continue running in the data center. Alternatively, an application remains in its current environment while consuming specific services from a variety of clouds. **Choose this path to gain optimal application architecture for specific business needs while still leveraging unified management from a single view, automation and optimized network performance across diverse environments.**
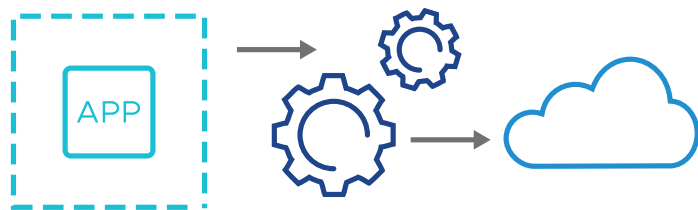
④ Refactor an app. Refactoring an app means changing or rewriting an existing application code so it is optimized to fit modern cloud architecture, container environments, microservices, and cloud services. The cost of this method depends primarily on the development time rewriting code for the app. **Choose this path when no other option exists or when it is strategic (cost justified) to update the application to take advantage of modern hyperscale cloud services.**
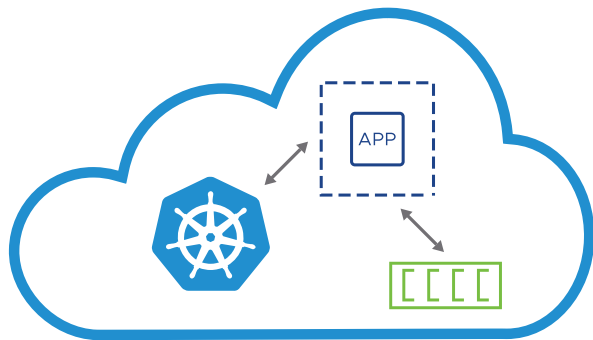
⑤ Create cloud-native apps. Cloud native applications are designed from inception to leverage unique cloud services and commodity infrastructure in a pay-per-use environment. Increasingly, those building cloud-native applications use microservice architectures, and utilize Kubernetes for container orchestration to enable scale and availability of those microservices. **Consider this path for all new applications deployed on premises or in the cloud.**
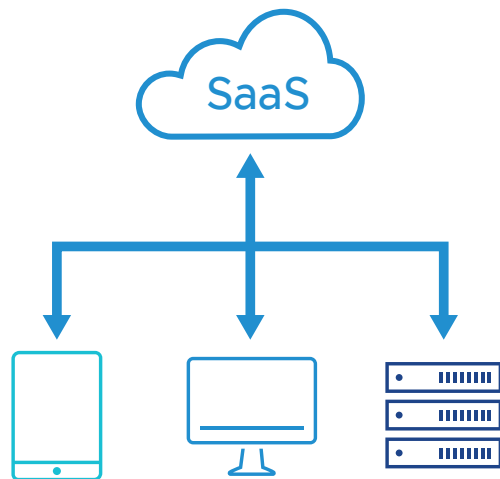
⑥ Choose a SaaS app. Software-as-a-service (SaaS) applications are also viable options to replace many non-strategic commercial off-the-shelf (COTS) applications businesses have historically purchased and hosted internally. SaaS reduces the burden of installing and maintaining infrastructure, middleware and the application itself. The most frequent limitation of this path is a requirement for where sensitive data collected or used by the app is stored. **Choose this path when the application doesn't deliver differentiation to your customers and doesn't need a high degree of customization.**

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VMware Cloud Foundation is the ideal hybrid cloud platform for flexibility and choice
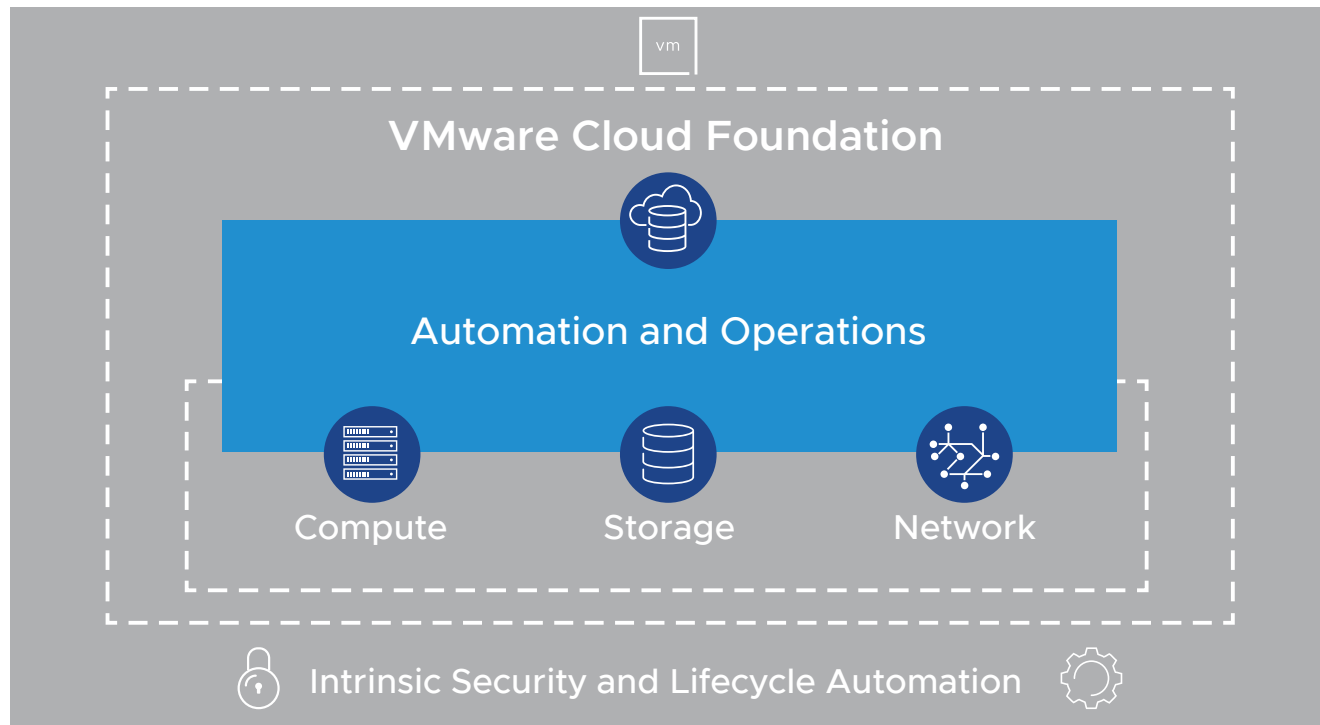
Built on one of the most widely deployed cloud infrastructures in the world, VMware Cloud Foundation™ is an integrated hybrid cloud solution for the data center and the foundation for cloud services and edge offerings. It is a unified cloud infrastructure that combines the essential capabilities for hybrid cloud as a single integrated solution or as interoperable and modular components that support existing investments within the data center. VMware Cloud Foundation is integral to VMware's HCI leadership position, and was mentioned in the Gartner Magic Quadrant for Hyperconverged Infrastructure: "VMware Cloud Foundation (VCF) offers users a full-stack HCI experience, with a complete set of software-defined services for compute, storage, networking, security and cloud management."[4]

4 Gartner, Inc. Magic Quadrant for Hyperconverged Infrastructure, John McArthur, et al, January 2019.

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Hybrid cloud is the new normal

Modern companies need a cloud strategy that supports the modern apps they need to compete and the legacy apps that are keeping the business running. VMware Cloud Foundation delivers the essential cloud infrastructure capabilities for some of the broadest, most demanding hybrid cloud strategies, enabling consistent infrastructure and consistent operations for private cloud, public cloud and edge scenarios.

Edge   Private Cloud   Public Cloud

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VMware Cloud Foundation

Automation and Operations

Compute   Storage   Network

Intrinsic Security and Lifecycle Automation

Whatever the state of your cloud strategy, one requirement is clear: It must support the legacy apps that keep the business running, as well as the modern apps that the business needs to compete.

Conclusion

VMware builds upon 20 years of success in the cloud hosting and security market, and VMware Cloud Foundation is one of the most broadly deployed, most trusted cloud infrastructures in the world today. It evolves VMware's market-leading server virtualization, VMware vSphere,® by extending the core hypervisor with integrated software-defined storage, networking and security that can be consumed flexibly on premises or as a service in the public cloud. Now more than ever, it is essential that businesses approach their IT landscape with a holistic and application-centric vision. Wherever your path takes you, when you're building a cloud strategy, VMware can help.

Learn more

INFOGRAPHIC: GUIDE TO HYBRID CLOUD

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