White Paper

Accelerate Innovation and Resiliency with Consumption-Based Infrastructure Services

Sponsored by: VMware

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IDC OPINION

Digital is a permanent, yet dynamic fixture in our world. Individual consumers and employees in schools, companies, and governments are always asking whether there is some digital-based capability/enhancement that could improve their lives and desired outcomes. Entire industries want to intelligently leverage data to their advantage and can do so because they have faster access to digital technologies.

In today's digital-first world, business outcomes and innovations are increasingly tied to the ability to develop and ship software as quickly as possible. Companies want to experiment, "fail fast," and iterate quickly with software, a pattern of use that aligns well with greater use of consumption-based services for digital infrastructure. These same companies also recognize that consumption-based services can play a key role in boosting overall business resiliency. Therefore, the ability to better align IT resources with usage as demand and outside market forces, like those that developed during the COVID-19 pandemic, makes it easier for companies to deploy resources where needed and adapt to unpredictable swings in scale and disruptions planning processes.

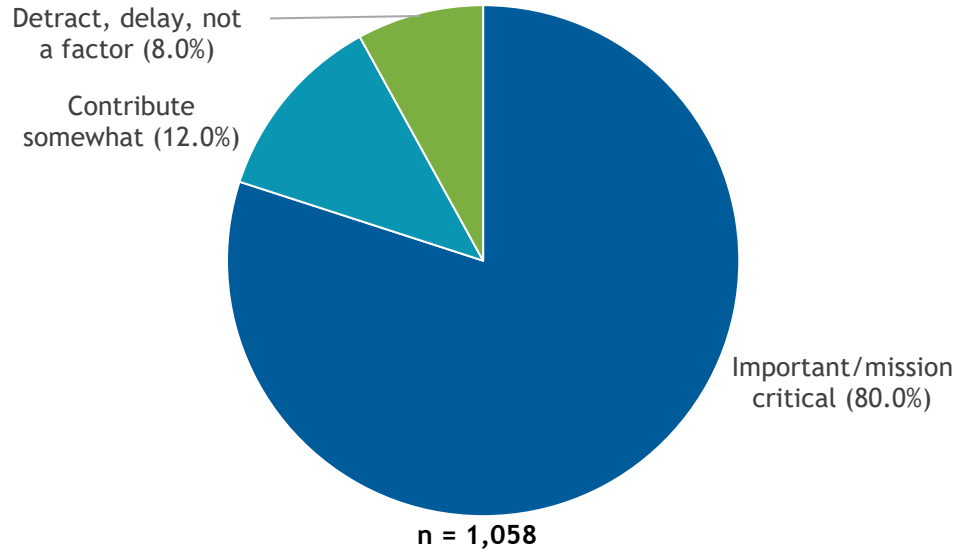
SITUATION OVERVIEW

As organizations evaluate their operations after the pandemic, most are focusing on two key learnings: managing a multicloud world is complex, and business resiliency and agility are top priorities. Clearly, organizations need to leverage digital infrastructure to simplify operations without jeopardizing resiliency or inhibiting innovation, but how are these goals achieved? Recent surveys reveal some of the steps that IT organizations are considering meeting these goals. IDC research demonstrates that enterprise organizations are prioritizing digital infrastructure resiliency as a foundational element of their IT strategy. Customers are looking for richer levels of visibility, cross-cloud control, and advanced data management and protection that spans the entire edge-to-core continuum. IDC conducted a survey in 1H22 and asked IT decision makers how important digital infrastructure is to enabling business goals (see Figure 1).

FIGURE 1

The Importance of Digital Infrastructure

Q. How important is digital infrastructure to enabling business goals?



Note: Data is weighted by country GDP.

Source: IDC's *Future of Digital Infrastructure 2022 Global Sentiment Survey,* June 2022

Over 80% of IT decision makers believe that digital infrastructure is very important to help their organization achieve its business goals. The need for agility and operational resiliency continues to drive these investments.

Shifting Operating Models

Integrated Stacks

To achieve the digital resiliency goals, customers are shifting to cloud architectures on premises and connecting these architectures to the public cloud. A cloud must operate as a cohesive unit, and thus integrated cloud software stacks that combine compute, storage, networking, and management are gaining traction. Some customers are also buying these cloud stacks with certified hardware or with managed services attached. However, stacks of technology are only one piece of a cloud transformation. The technology must come with a change in operating model and in IT roles and organizations.

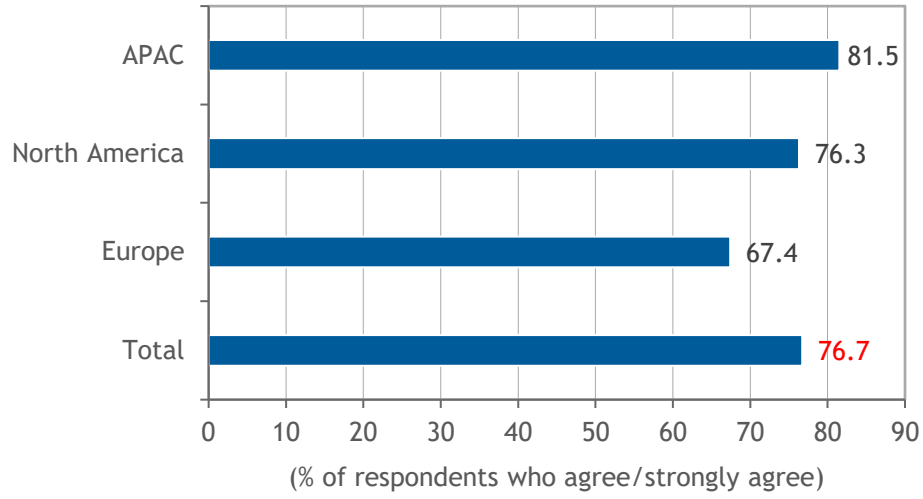
Cloud Operational Models

The shift to a cloud operating model is permeating all aspects of IT. According to IDC's June 2022 *Future of Digital Infrastructure 2022 Global Sentiment Survey,* about 77% of the respondents agree that shifting to purchasing digital infrastructure as a service, including consumption models and remote support, is a critical element of their future strategy (see Figure 2).

FIGURE 2

Momentum Continues for as a Service Driven by Transition to Digital Infrastructure

Q. *Shifting to purchasing digital infrastructure as a service, including consumption models and remote support, is a critical element of our future strategy — to what extent do you agree with following statements as they apply to your digital infrastructure strategy over the next two years?*



n = 1,058

Source: IDC's *Future of Digital Infrastructure 2022 Global Sentiment Survey,* June 2022

Hybrid Cloud and Multicloud Expansion

As cloud technology and operating models spread, enterprises are finding that their footprint is more widely dispersed than ever. Most enterprises have on-premises resources combined with a public cloud today. Many are expanding to use multiple clouds because of customer requirements and geographical and market expansion or to leverage unique innovation. And the newest trends are pushing more compute toward various network edges. However, as this diversification is happening, major challenges are presented in terms of consistency, manageability, and portability. Each of these environments may be running different technologies, each requiring different tooling and teams to manage. This also means workloads cannot be easily migrated from cloud to cloud without significant effort and application code changes.

Containers and Microservices Modernization

Containers and Kubernetes are a new way to ship and orchestrate applications, typically on top of existing virtualized and cloud infrastructures. Many new applications are designed for containers and microservices, but enterprises are also migrating existing apps to containers. IDC's current data shows that half of the containerized existing applications are lift and shift, and the other half are refactored to some extent. Since containers and Kubernetes are open technologies, they can be more portable in hybrid cloud and multicloud scenarios. However, portability is not always automatic with containers as there are several factors such as API lock-in or data gravity that could impede portability. Portability

aside, containers are bringing more efficient and application-centric agility while providing a common technology platform across disparate locations for easier management.

The Rise of Consumption-Based Models in the Enterprise

As enterprises begin to shift toward cloud models and containers (as discussed previously), they are increasingly turning to consumption-based models to make the transition. These consumption-based models are highly associated with public cloud, but they are not limited to that. Recent years have seen the emergence of local cloud as a service (public cloud platforms that run on premises) and remotely managed private cloud platforms. There are many reasons that adopters of consumption-based models attribute to the success of these models in their environments.

IDC has conducted multiple surveys in this space to understand the top drivers for consumption models. Often when adopters discuss the successful implementation of a consumption model, they focus on two categories: operational and business benefits. In IDC surveys, adopters provided context about the benefits of utilizing a consumption model, and the benefits include:

- **Reduce the complexity of managing infrastructure and enable IT to focus on driving business outcomes.** Relying on vendors and partners to manage and orchestrate capacity and service-level requirements simplifies the operational challenges of the IT staff.
- **Increase the ability to enable development through IT agility.**
- **Improve utilization of the assets** (reducing over- and under-provisioning alignment of usage to budgets is a top benefit of adopting a consumption model).
- **Improve application/system performance.**
- **Increase the ability to scale to meet business demand.** The pandemic has taught us that organizations have to be able to pivot quickly. The better optimized their environment, the faster organizations could react.
- **Reduce IT staff workloads.** Enterprises can focus on business-enabling tasks instead of the day-to-day management of the environment.
- **Provide metrics and support that accelerate decision making and responsiveness.**
- **Streamline the time to spin up new capacity and reduce procurement cycles.**

Adopters of as-a-service models recognize that utilizing these offers provides the flexibility, transparency, and metrics they need to manage their IT infrastructure. By offering services that provide the data protection requirements needed to meet regulatory and security compliance as well as predictable SLAs, these models are addressing IT organizations' pain points and enabling IT organizations to focus on business outcomes instead of managing IT infrastructure. The pandemic also exposed many organizations' weaknesses in their ability to quickly adapt infrastructure and scale, resulting in increased investments in this area during the recovery.

In today's digital economy, business outcomes and innovations are increasingly tied to the ability to develop and ship software as quickly as possible. This includes the capability to experiment, "fail fast," and iterate quickly with software, a pattern that fits well with consumption-based services. Consumption-based services also better align IT resources with usage as demand and outside market forces such as the pandemic cause unpredictable swings in scale. Enterprise IT capacity planning was already difficult in the best of times, and as market forces have grown more volatile, it is nearly impossible to confidently plan for. Organizations have made the connection that as-a-service models improve agility and responsiveness, as well as conserve capital. Consumption-based models enable

organizations to focus on business outcomes instead of managing IT infrastructure. This realization is the reason that IDC expects an acceleration in the adoption of consumption-based models.

However, while consumption-based models align well with the changes happening in IT, there are still some notable challenges with adopting these services. The biggest challenge for most organizations is financial management during the transition to a cloud or managed service. Migrations to cloud are notoriously difficult to predict and often face delays due to unforeseen technical complexities and corresponding cost increases. Unpredictable timing becomes a challenge because enterprises are generally migrating from traditional infrastructure and software licenses. It can be difficult to plan the shutdown of the infrastructure capex and the software licenses to align with the start of the cloud service. Enterprises ideally want to squeeze the most out of their existing investments and migrate during an optimal time, such as during a refresh or renewal cycle.

Another challenge as enterprise deployments spread into hybrid cloud and multiclouds is cost transparency and optimization. Each environment may have a different tech stack and cost basis, which can complicate cost views across multiple environments. The other challenge is providing views on cost targeted toward different roles to guide behavior. For example, it can be difficult to map infrastructure costs to a particular app or an individual service of an app. Without this information, high-level cost information is of little use to a developer. Often developers get a reputation that they do not care about costs and waste cloud resources. But, in many cases, developers do understand about optimizing costs but are not provided actionable data at the level they need.

Costs and pricing transparency are the key reasons that IDC recommends including stakeholders from all segments of the business: IT, finance, and line of business at the early stages of implementation. It's critical that all the three groups are aligned on key topics about usage, budgets, and timelines. Addressing key concerns about consumption-based models will be important to overcome objections to the shift from traditional-buying behaviors. Adopters of consumption-based models recognize key business benefits that ensure the cloudlike flexibility and cost metrics needed to build a more agile and resilient environment.

VMWARE PROFILE

VMware Cloud Foundation+

VMware Cloud Foundation (VCF) is a unified hybrid cloud platform for managing VMs and orchestrating containers. VCF is a fully software-defined datacenter (SDDC) platform that includes virtual compute, storage, and networking with vSphere, vSAN, and NSX-T technologies. VCF extends the core vSphere hypervisor using a standardized architecture that can be deployed consistently across public clouds and datacenters and managed using existing vRealize tools and skills. VCF's highly automated deployment process using the SDDC Manager helps streamline configuration and deployment. VCF uses the same SDDC stack used in VMware-based public clouds such as VMware Cloud on AWS, Azure, Google Cloud, and IBM Cloud.

VCF is available with integrated VMware Tanzu Standard, enabling vSphere to host both VM and container workloads. Tanzu Standard includes both the core Tanzu Kubernetes Grid distribution and the multicluster Tanzu Mission Control manager. VCF with Tanzu allows container- and Kubernetes-based workloads to be deployed and managed using the same set of VMware management tools that existing VM admins are familiar with today. It provides access to all standard Kubernetes APIs and allows developers to manage VMs via Kubernetes APIs, if desired. Integrations with Tanzu Mission

Control and Tanzu Observability allow DevOps teams to extend control across multicluster, multicloud deployments and have deep visibility into the application stack.

The VCF+ edition is a subscription-based edition of VCF that also includes additional functionality. VCF+ includes the VMware Cloud Console, a SaaS cloud-based management platform that provides unified management and insight into multicloud VMware deployments. Being SaaS based means quick and easy deployment, and the process is also nondisruptive with no VM downtime or migration needed. Connecting VCF+ to the cloud also opens the opportunity to deploy additional add-on cloud services through the Cloud Console, with SaaS-based disaster recovery, ransomware protection, and capacity planning available today or in development. The cloud-based subscription purchasing models for VCF+ are cloud enabled with keyless entitlement including add-on services that can help customers leverage flexible opex consumption and align purchasing with these models. VMware also offers a disconnected subscription version of the full-stack solution called VMware Cloud Foundation-Subscription (VCF-S), which utilizes term licensing and has been optimized for secure or air-gapped environments where a cloud or an internet connection is not required as part of the deployment.

VMware Cloud

VMware Cloud is a distributed multicloud platform spanning datacenter, edge, and multiple public cloud infrastructures that is based on the same stack as VMware Cloud Foundation. It brings together many of VMware's public cloud offerings such as the VMware-operated VMware Cloud on AWS, certified VMware clouds on major VMware cloud partners including Microsoft Azure and Google Cloud, and VCF deployments managed by VMware-certified cloud partners including Dell Technologies. VMware Cloud provides consistent workload performance and portability across the full range of `customer digital infrastructure environments since all the offerings build on the same SDDC architecture. VMware Cloud also features the VMware Cloud Console, a single monitoring and management environment for VMware Cloud infrastructure, regardless of where it's deployed.

CHALLENGES/OPPORTUNITIES

IDC recognizes multiple challenges for many organizations as they transition to new platforms. The biggest challenge for most organizations is financial management during the transition to a cloud or managed service. Migrations to cloud are notoriously difficult to predict and often face delays due to unforeseen technical complexities and corresponding cost increases. Unpredictable timing becomes a challenge because enterprises are generally migrating from traditional infrastructure and software licenses. In addition, overcoming internal silos with an organization is another significant barrier that requires internal cooperation and agreement about both timelines and budgeting.

Another challenge is the importance of including stakeholders from all segments of the business: IT, finance, and line of business at the early stages of implementation. It's critical that all the three groups are aligned on key topics about usage, budgets, and timelines. Addressing key concerns about consumption-based models will be important to overcome objections to the shift from traditional-buying behaviors and closing the opportunity. IDC recommends that VMware focus on these challenges to overcome objections and increase market growth.

CONCLUSION

Although the world has firmly planted itself in a digital-first economy, the economic and business outlook post-pandemic has remained challenging due to inflation, supply chain issues, geopolitical tensions, and a potential recession. Disruptive and complex macroeconomic, microeconomic, and technology currents flow rapidly across one another, creating choppy winds for business and technology leaders to navigate.

Organizations must be able to quickly invest in and broadly adopt innovative technologies to participate in increasingly digital-first markets. They need to generate profitable revenue growth from empathetic customer experiences; enable an intelligent, empowered, and well-connected workforce; and demonstrate an ability to adapt operating models to complex customer requirements. All of this will be built on digital infrastructure that makes full use of the advantages of consumption-based services.

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