SPOTLIGHT
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**Hybrid clouds are an infrastructure environment that combines and integrates an organization's public and private cloud resources, allowing data and workloads to be shared between them.**

# Hybrid Cloud Directions

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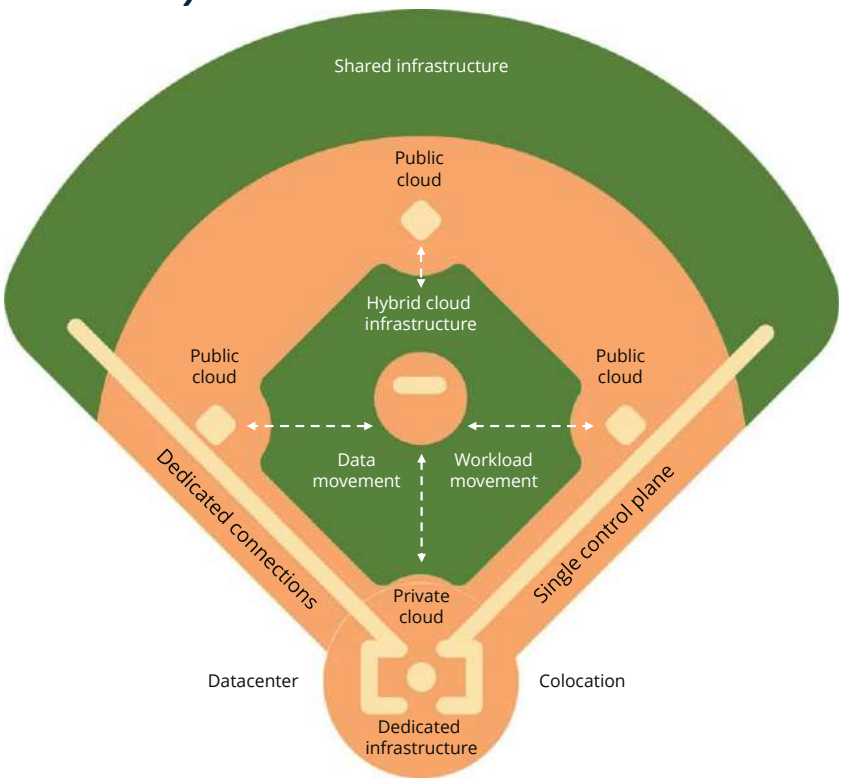
## Introduction

The typical hybrid multicloud consists of public clouds where infrastructure is shared among many organizations; private, dedicated cloud infrastructure designed for just one organization; and hybrid cloud infrastructure that ties them all together as shown in the baseball example in Figure 1.

FIGURE 1: ***Hybrid Multicloud***




*Source: IDC, 2025*

## AT A GLANCE

### KEY STATS

- 88% of cloud buyers are in the process of deploying or are already operating a hybrid cloud.
- 59% of cloud buyers are already committing more than 20% of their overall cloud budget toward the building of hybrid cloud infrastructure.
- 79% of cloud buyers have embraced hybrid multicloud architectures and are now using multiple cloud providers.

Most organizations have data and workloads running in multiple public and private cloud locations for a variety of reasons. Prior to the arrival of hybrid cloud infrastructure, those workloads and associated data were siloed off from each other. Now they can be shared across multiple cloud locations as needed to meet business goals or adhere to regulatory requirements. Hybrid cloud infrastructure facilitates the necessary integration between all the parties involved to simplify multicloud operations with a single control plane. In addition, this infrastructure is further optimized using secure, dedicated connections that bypass the open internet via private circuits. Private clouds optimally reside in datacenters or colocation facilities that are adjacent to the public clouds for better performance and lower latency.

## Definitions

- **Public cloud:** A shared computing environment where resources and services are provided by a third-party cloud service provider characterized by on-demand, self-service provisioning, resource scalability and elasticity, internet accessibility, and a pay-per-use, consumption financial model
- **Private cloud:** A computing environment dedicated to a single organization with a similar operating model as a public cloud characterized by dedicated infrastructure, location flexibility, enhanced security and privacy, and internal control by the organization that operates it
- **Hybrid cloud:** An infrastructure environment that combines and integrates both public and private cloud resources characterized by unified management tooling and dedicated connectivity where data and workloads are shared and flexibly move between public and private clouds as needed
- **Multicloud:** A computing strategy where multiple cloud services and workloads from different public cloud providers are used by a single organization rather than relying on a single cloud provider and is characterized by best-of-breed capabilities, vendor risk mitigation, redundancy and resilience, geographic distribution, and potential cost optimization
- **Edge computing:** A distributed computing paradigm that exists outside of datacenters where compute and storage resources are positioned closer to data sources and end users without reliance on a centralized cloud and is characterized by reduced latency, bandwidth optimization, and enhanced privacy and security, as well as improved reliability when connectivity is lost
- **Control plane:** A management layer that spans cloud computing environments that handle workload and data orchestration, configuration, automation, monitoring and observability, and administrative operations often characterized as a "single pane of glass," so employees don't have to learn how to use multiple cloud portals
- **AI-ready infrastructure:** Technologies optimized for the scale, performance, cost, sustainability, and interoperability requirements of emerging AI workloads that deliver training, fine-tuning, retrieval-augmented generation (RAG), and inference to drive enterprise value

## Challenges

It's important to keep in mind that with all the benefits of a hybrid cloud strategy, organizations will confront new complexities related to management, security, and integration between their private cloud infrastructure and their chosen public cloud vendor. A lack of native or standard API-based workload integrations between different clouds makes it difficult to seamlessly move virtual machines (VMs), containers, or various PaaS-based workloads between

them. When it comes to a hybrid multicloud strategy, organizations will deal with even greater levels of complexity than 1:1 hybrid cloud scenarios as they manage multiple, public clouds with differing capabilities and levels of security and compliance. These challenges can only be overcome with hybrid infrastructure that includes management and integration capabilities that connect private clouds to multiple, heterogeneous public clouds.

Network performance issues can negatively impact the movement of data and workloads across a hybrid cloud infrastructure. This is often due to using the open internet to communicate between private and public clouds. It's important to utilize a dedicated, high-speed, low-latency, private circuit between those computing environments to mitigate this connectivity challenge. While it is not always possible, employing those same kinds of dedicated connections in between public clouds to take advantage of best-of-breed workload scenarios is advisable.

The complexity of managing a private cloud plus one or more public clouds using multiple dashboards or cloud portals requires an unprecedented level of employee training. This is further compounded by the fact that more than 15% of cloud buyers seriously lack the critical skills needed to operate even one public cloud. Roughly 50% of cloud buyers only possess a moderate amount of the cloud skill needed.

The rise in interest rates around the globe has impacted organizations' ability to invest in broad styles of cloud computing. This economic environment has favored the more pay-as-you-go, opex business model utilized by public clouds while delaying capex investments in private and hybrid clouds.

A subset of organizations must meet regulatory and compliance requirements that necessitate them to keep their data within the borders of their particular country or region. While half of this kind of data sovereignty solution can be accomplished with dedicated, private cloud infrastructure, developing a hybrid architecture is trickier. The private cloud must be paired with a sovereign cloud that resides within the appropriate location as opposed to one or more global cloud regions.

## Trends

A variety of trends that span private, public, and hybrid cloud buying decisions and architectures will directly impact hybrid cloud adoption. It starts with 82% of cloud buyers planning to modernize their cloud estate. What started with lifting and shifting existing VMs is evolving to include the modernization of workloads and the underlying infrastructure they depend on. This ranges from taking dependencies on PaaS layer services to cloud-native migrations to containers. This modernization may also include access to GPUs and the high-performance infrastructure needed to support AI operations.

Currently, 88% of cloud buyers are in the process of deploying or already operating a hybrid cloud. In addition, 59% of cloud buyers are already committing more than 20% of their overall cloud budget toward the building of a hybrid cloud. Half of cloud buyers plan to allocate between 10% and 40% of their budgets on cloud spend. Moving beyond 1:1 hybrid clouds, 79% of cloud buyers have embraced hybrid multicloud architectures and are now using multiple cloud providers. An interesting countertrend is that overall satisfaction with public cloud vendors is down and 9% of cloud adopters are migrating out of the public cloud.

Application deployment locations continue to be split between traditional IT infrastructure at 22%, private clouds at 21%, and public clouds at 57%, with a slow decline in traditional IT deployments over the next four years. More than two-fifths (42%) of apps are architected to run across hybrid environments. Almost half (48%) of those apps are built using containers/microservices, and 50% of those apps are built using virtual machines.

When it comes to security, the most important factors driving security spending include security breaches at 17% of IDC's *Cloud Pulse Survey* respondents, with demand for generative AI and digital transformation tied at 10%. The three biggest security threats on the minds of cloud buyers include security breaches and attacks at cloud service providers at 41%, increased vulnerabilities from shared infrastructure at 38%, and deploying, monitoring, and managing cloud-native security tools across clouds at 37%.

Related to business continuity and disaster recovery, over half of cloud buyers report they experienced as many as 10 IT outages last year across datacenters, networks, and public clouds, with 40% of outages caused by internal ITOps failures. Of these cloud buyers, 70% are using cloud-based disaster recovery where public clouds back up data from private clouds, traditional IT, across cloud regions, from availability zones, and between separate public cloud providers.

## Benefits

### Hybrid Cloud Advantages

The benefits of a hybrid cloud architecture begin with an organization's ability to distribute workloads and data across public and private cloud environments to meet the performance and latency requirements of their employees, partners, and customers. This means VMs and containerized workloads can be seamlessly moved between private and public clouds via hybrid cloud infrastructure if the software infrastructure is the same on both sides. Private cloud workloads requiring burstable scalability have the flexibility to utilize hybrid cloud integrations to leverage a public cloud to dynamically scale resources up or down without the expense of over-provisioning private infrastructure.

Data residency, data sovereignty, and regulatory compliance requirements have the attention of the C-suite, meaning organizations must keep workloads with sensitive data at the customer location while less sensitive workloads can run in the public cloud. The ability for organizations to replicate workloads and data from their private cloud environment to a public cloud and back again facilitates an effective disaster recovery and business continuity strategy while protecting the organization against ransomware attacks. Running a hybrid infrastructure also gives organizations resiliency where the private cloud continues to operate in the event the network or public cloud goes down or is otherwise unavailable.

Generative AI initially found a home in public clouds and AI factories with massive compute and GPU resources. Organizational data privacy concerns are now driving this to private clouds requiring a buildout of new infrastructure to facilitate enterprise AI. In this hybrid infrastructure, organizations download and utilize pretrained large or small language models (LLMs/SLMs) and then fine-tune those models with their enterprise data to drive organization-specific insights and automation.

### Hybrid Multicloud Advantages

Some clouds do things better than others. Whether it's storage, networking, serverless, compute, streaming analytics, compliance, data sovereignty, or AI, organizations can take advantage of the best-of-breed offerings from various public cloud vendors by adopting a hybrid multicloud architecture.

Vendor lock-in can happen when an organization takes tight dependencies on a specific public cloud vendor's PaaS or SaaS offerings. It's difficult for an organization to move workloads in this type of scenario. An organization can avoid this by selecting services that work the same way across public clouds such as IaaS virtual machines or containers. This reduces the risk of potential service degradation as well as a spending risk where an organization has no choice but to pay more for a service if a public cloud chooses to increase prices. With public cloud service offerings changing and

deprecating at a fast pace, today's best choice may not be the best choice in the future. Retaining flexibility is key to future proofing an organization's workloads.

In the same way a 1:1 hybrid cloud strategy facilitates disaster recovery and enhances business continuity, leveraging multiple public clouds to distribute workloads can further boost resiliency. Organizations can maintain uninterrupted operations by failing over workloads from a public cloud that is experiencing a security breach or an outage to one that is operating normally. This reduces workload downtime risk as well as exposure to cybersecurity attacks. In addition, by leveraging multiple public clouds that reside in different geographic regions, organizations can boost performance and reduce latency by distributing workloads closer to their internal users or external customers.

## Considering Nutanix

A pioneer in hyperconverged infrastructure (HCI), Nutanix is a global leader in cloud software, offering a unified platform to run applications and manage data across private clouds in on-premises datacenters, public clouds, and edge locations. Its software-defined architecture combines compute, storage, virtualization, and networking and adapts to various hardware and cloud options.

Nutanix Cloud Clusters (NC2) is designed to facilitate the creation of a hybrid cloud by extending Nutanix's hyperconverged infrastructure platform to public cloud environments. The intention is to enable organizations to run their workloads across on-premises datacenters, colocation facilities, and public clouds. NC2 is deployed directly on public cloud bare metal infrastructure to give organizations the same Nutanix experience and services running in the public cloud as they're accustomed to in their on-premises environment. Through Nutanix Central, organizations can manage both private and public cloud-based clusters from a single interface, eliminating the need to learn and maintain separate tools for different environments. NC2 enables workload portability between cloud environments. Organizations can migrate VMs between private cloud Nutanix clusters and NC2 clusters in one or more public clouds without refactoring applications or changing operational processes. Organizations benefit from a cloud operating model that works identically, regardless of where infrastructure resides, complemented by Nutanix unified security policies across clouds. In addition to accelerating cloud migration, customers gain the ability to modernize by deploying Nutanix AI, database services, and its Kubernetes platform while integrating with native public cloud services for future innovation.

## Conclusion

Hybrid cloud infrastructure is already showing itself to be a game changer for organizations needing to integrate their public and private cloud resources beyond just internet connectivity. With unified management tooling, deep integration, and secure, dedicated connectivity, organizations will have all the flexibility they need to move data and workloads between their public and private cloud estates as needed.

IDC believes the hybrid cloud market is important and will continue to grow, and to the extent that Nutanix can address the challenges described in this document, the company has a significant opportunity for success.

Hybrid cloud delivers management flexibility to organizations with private clouds and one or more public clouds.

# About the Analyst

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Rob Tiffany is research director within IDC's Worldwide Infrastructure Research organization and part of the Cloud and Edge Services practice. He leads research on dedicated cloud infrastructure strategies and trends to deliver actionable insights to technology providers and enterprise decision-makers. Based on his background in building cloud and edge solutions to digitally transform companies, Rob is uniquely positioned to deliver guidance on the public, private, hybrid, and multicloud infrastructures needed to succeed with next-generation workloads.

## MESSAGE FROM THE SPONSOR

Nutanix Cloud Clusters (NC2) simplifies the ability for customers to operate apps, data, and AI across datacenters, edge locations, and public clouds of their choice with a hybrid multicloud platform optimized for all workloads. Organizations can accelerate their cloud adoption by quickly migrating to the cloud without rearchitecting, and modernizing with Nutanix AI, database services, and its Kubernetes platform, while integrating with native cloud services. With a common operating model customers can manage their entire infrastructure as one unified cloud with consistent interfaces, constructs, and policies to manage IT, automate VMs and containers, and deliver unified networking and security with the same level of resilience Nutanix is widely known for.

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