

Thriving in a Multicloud World



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Glossary

Single Cloud

When a single cloud provider or solution is used for cloud applications or infrastructure.

Multicloud

Low interoperability
Use of two or more cloud providers or solutions for cloud applications or infrastructure with little or no interoperability between them.

High interoperability
Use of two or more cloud providers or solutions for cloud applications or infrastructure to migrate workloads and data between them.

Hybrid Cloud

A cloud computing environment that uses a mix of private and public cloud services with orchestration between the platforms allowing data and applications/solutions to be shared between them.

This model requires high levels of interoperability.

Private Cloud

Also known as “dedicated cloud,” this requires cloud infrastructure in a company’s own datacenter or colocated at a third party that is dedicated solely to the organization it is configured for. Can be managed by the company or a third party and may include self-service catalogs, metering, and chargeback.

Public Cloud

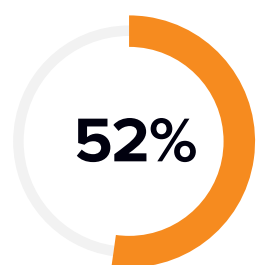
Includes infrastructure as a service (IaaS), software as a service (SaaS), and platform as a service (PaaS).

This is a multitenant cloud infrastructure shared with other customers and delivered over the internet and typically sold on demand under a pay-per-use model.

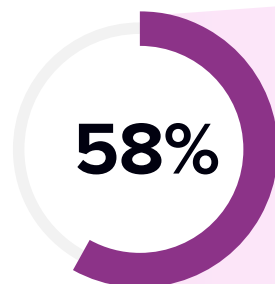
Investments in Digital Enable Organizations to Innovate and Do More With Their Data

Product and service delivery shifts dramatically from physical to digital infrastructure.

DIGITAL INFRASTRUCTURE



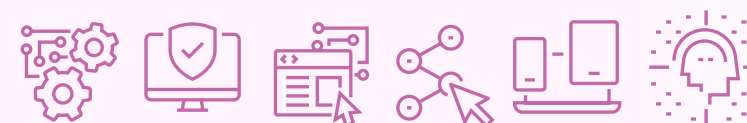
TODAY



IN 5 YEARS

of organizations say their business' current IT/digital infrastructure will require **major transformation over the next five years**

Computers, systems, software, and services



This represents a massive reset in capital investments and underscores how dramatic the impacts on **IT spending and IT transformation** will be in support of changing business goals.

What are your top five business goals over the next year?

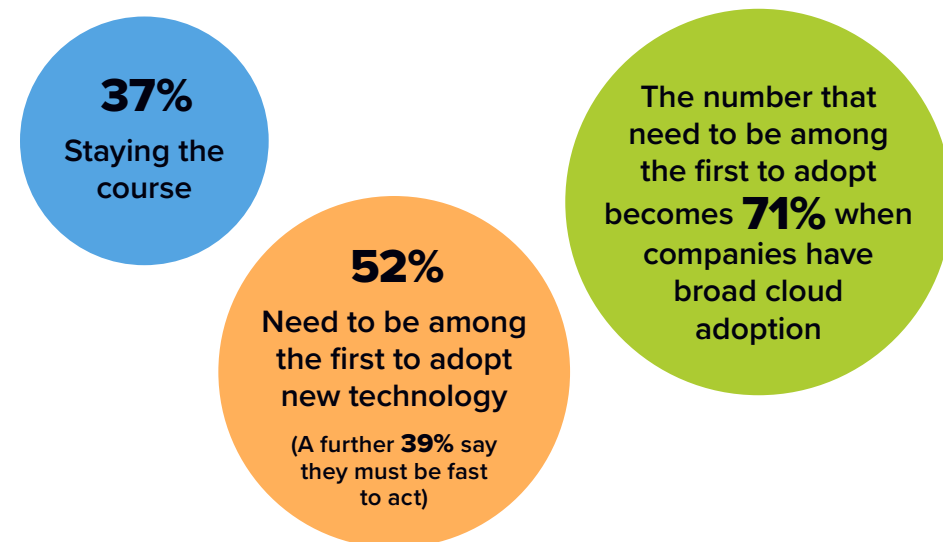


n = 1,357; Source: IDC's *Cloud Pulse 2Q23*, August 2023

Cloud Creates a Foundation for Businesses to Reinvent and Innovate

More organizations want to be reactive to new technologies, with a focus on customer and employee enablement and data-driven results. Cloud enables more rapid adoption of these new technologies.

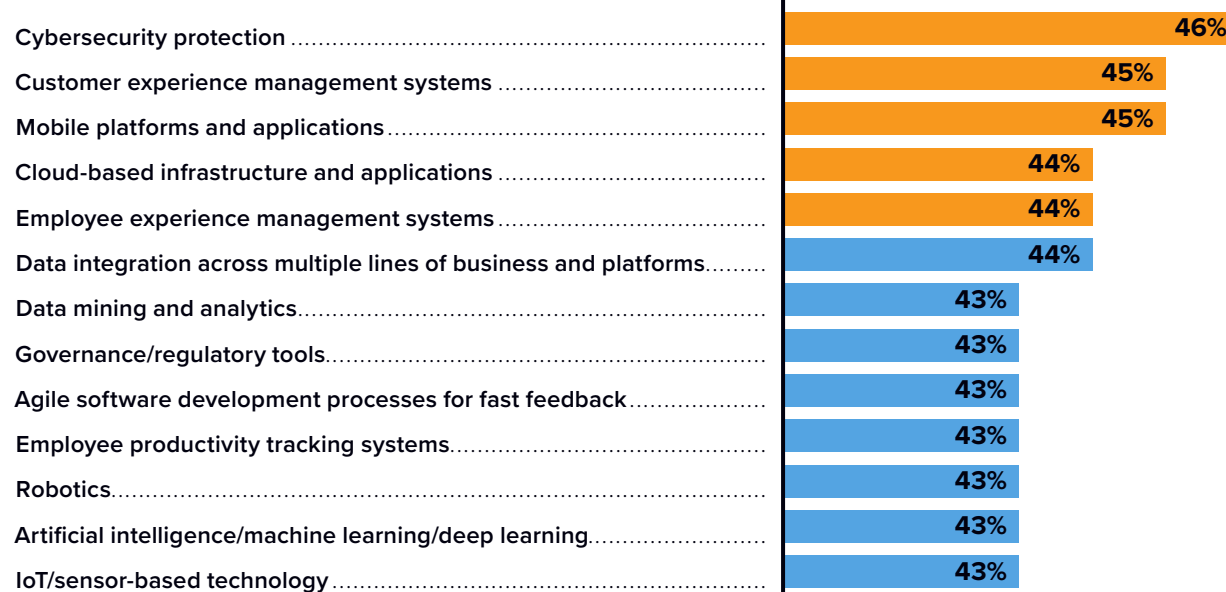
Cloud adoption provides a clear advantage to organizations when it comes to adopting new technologies.



n = 1,357; Source: IDC's *Cloud Pulse 2Q23*, August 2023

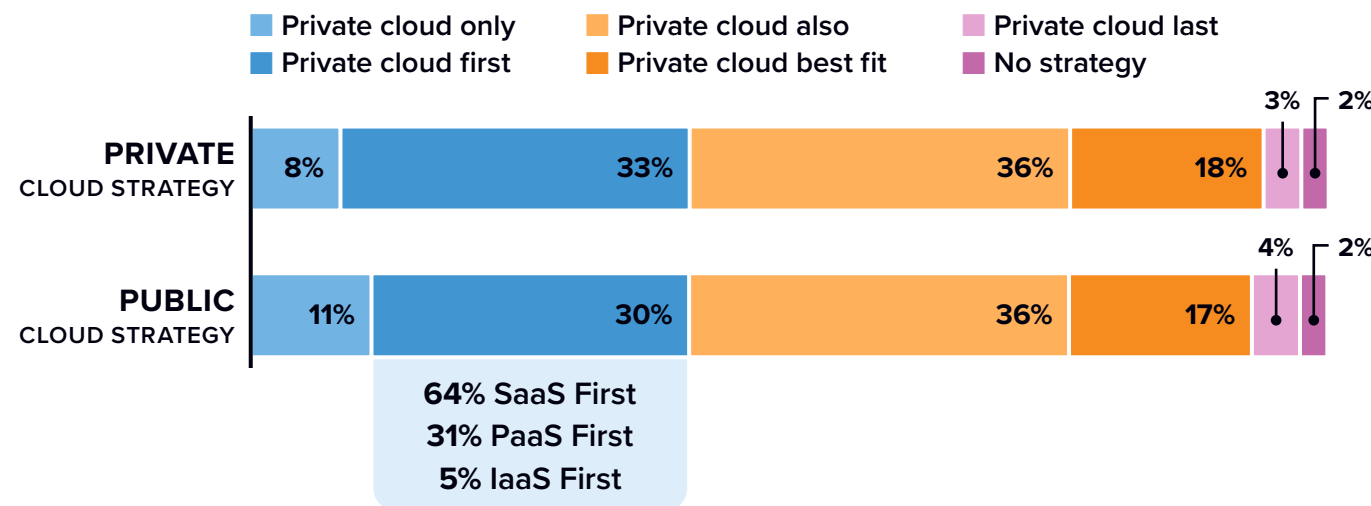
Rate the level of investment in the following technologies over the next five years to meet your organization's business goals.

(% responding 8–10, on a scale of 0 = no investment, 10 = significant investment)



For Most Cloud Buyers Today, the Focus Is on Hybrid and Multicloud

The shift away from legacy infrastructure toward public/private clouds is persistent. Hybrid multiclouds are the keystone for managing increasingly complex silos of application portfolios.



29% of cloud buyers already work with 10 or more cloud or hosted services providers. This will grow to 34% in the next two years.

For most IT organizations, cloud is a **replatforming process** and is not a one-size-fits-all approach. Customers are leveraging both **public** and **private** cloud services to build new functionality and modernize their large installed base of non-cloud applications.

Non-cloud solutions are becoming a smaller part of the overall application portfolio. While customers continue to deploy public cloud infrastructure and PaaS solutions at a rapid rate, they are also significantly increasing investments in private cloud solutions in their own datacenters and with a hosting or managed services providers.

n = 1,357; Source: IDC's *Cloud Pulse* 2Q23, August 2023 | For an accessible version of the data in this figure, see [Supplemental Data](#) in the Appendix.

Customers Are Operating with Increasing Levels of Interoperability from the Core to the Edge

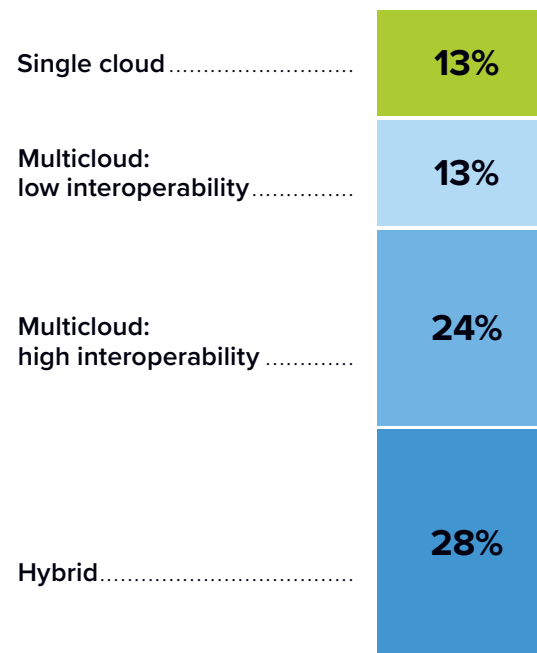
More data and applications are residing in private cloud, but in no way are these assets static.

- ▶ **<14% use single-cloud environments.**
- ▶ Most cloud buyers are focused on **hybrid and multicloud platforms.**
- ▶ Applications are also highly distributed, with **26% of applications stored at the edge.**

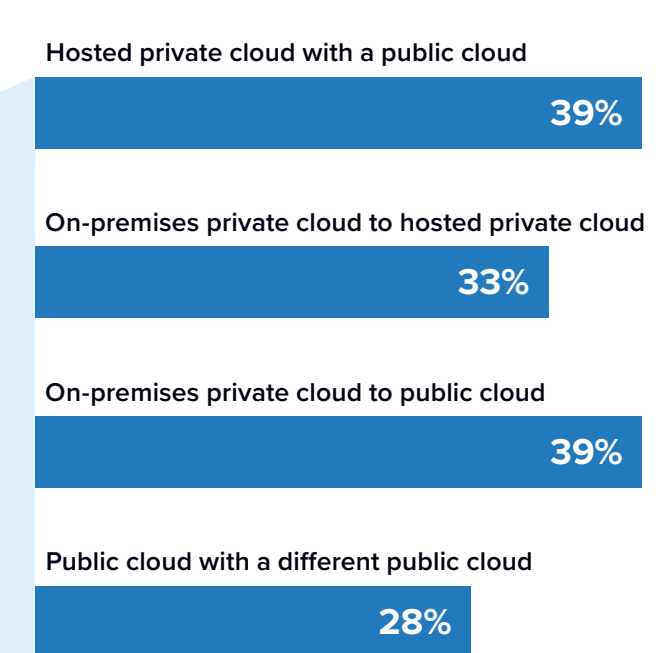
Interoperability of data and applications between private and public clouds and cloud providers is becoming more important.

Where organizations operate with levels of interoperability between clouds, they are **connecting in multiple ways between platforms and providers** they are working with.

Multicloud Adoption by Level of Interoperability



Multicloud Connection Points (Showing Initial State)



Note: Total will not sum to 100% due to rounding. n = 1,700; Source: IDC's *Cloud Pulse 3Q23*, October 2023

The Benefits and Challenges of Hybrid and Multicloud Environments

DRIVING BENEFITS FROM THE CLOUD

Public Cloud

1. Better global reach
2. Better performance
3. Reduced cloud costs

Private Cloud

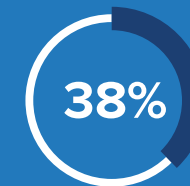
1. Increased security
2. Increased privacy
3. Better performance

Hybrid Multicloud

Breaks down the silos of disparate non-consistent clouds, reducing management complexity, cost, and business risk and adding value through use of public and private clouds.

Benefits include:

- ▶ Access to a wider array of services
- ▶ The ability to more easily scale out services
- ▶ Reduction of single-vendor dependency
- ▶ Increased adaptability of infrastructure



of cloud buyers believe **hybrid cloud delivers better ROI** than private or public cloud solutions on their own.

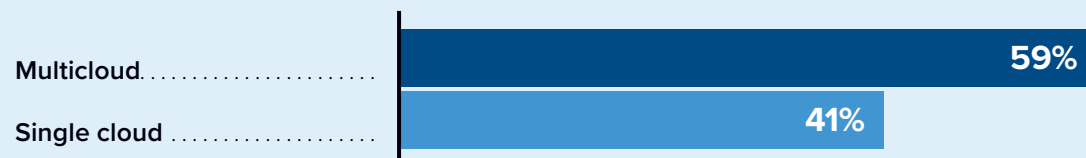
OPERATIONAL CHALLENGES

There are operational challenges with adopting a multicloud approach, including:

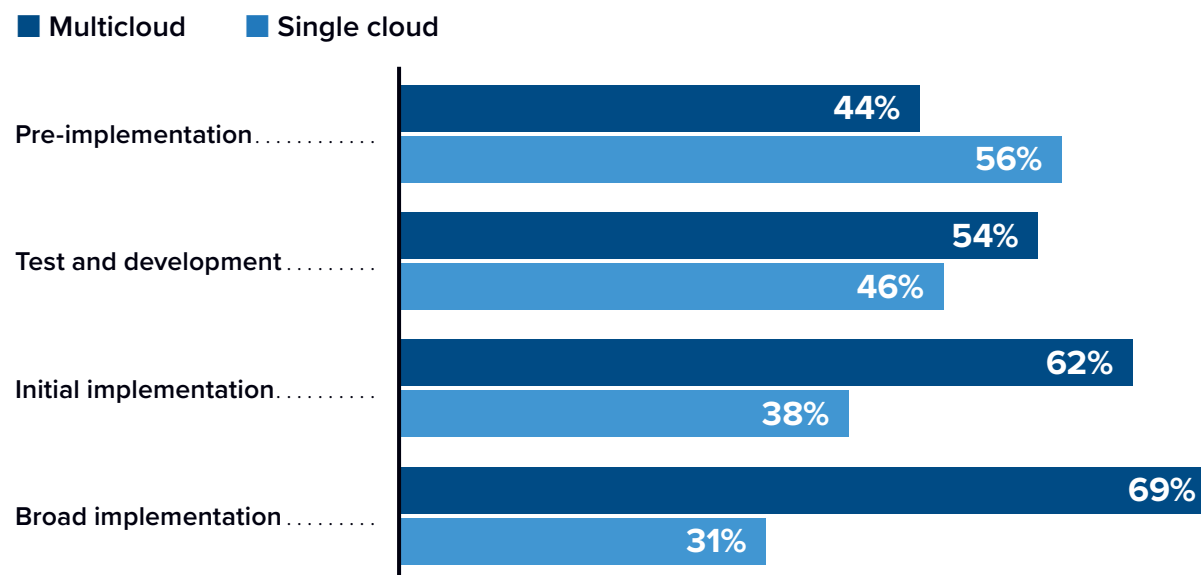
1. Ensuring adequate IT staff, talent, and skills and optimizing IT staff and processes
2. Maintaining consistent security, access control, and compliance
3. Managing application performance and availability

Multicloud Is Seen to Deliver a Better ROI

Overall Cloud Market



Cloud Adoption by Stage

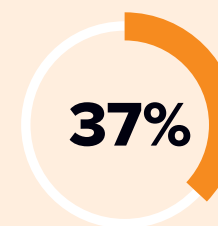


n = 1,100; Source: IDC's *Cloud Pulse 4Q22*, November 2021 | For an accessible version of the data in this figure, see [Supplemental Data](#) in the Appendix.

Multicloud is the preferred architecture of today, offering the opportunity to utilize best-of-breed solutions, cement better risk management, and increase ROI.

42% of companies say **cloud delivers better ROI** when it can **improve business processes**; **21%** measure cloud ROI on its **ability to drive company performance** and **19%** on the **success of customer-facing projects**.

The concerns that most impact ROI are the **cost of external services used for delivering for cloud management** — managed and professional services — and a lack of internal skills and processes.



of companies expect **cloud to bring dividends in one to two years.**

Security, Customer Experience, and Innovation Are the IT Department's Top Goals

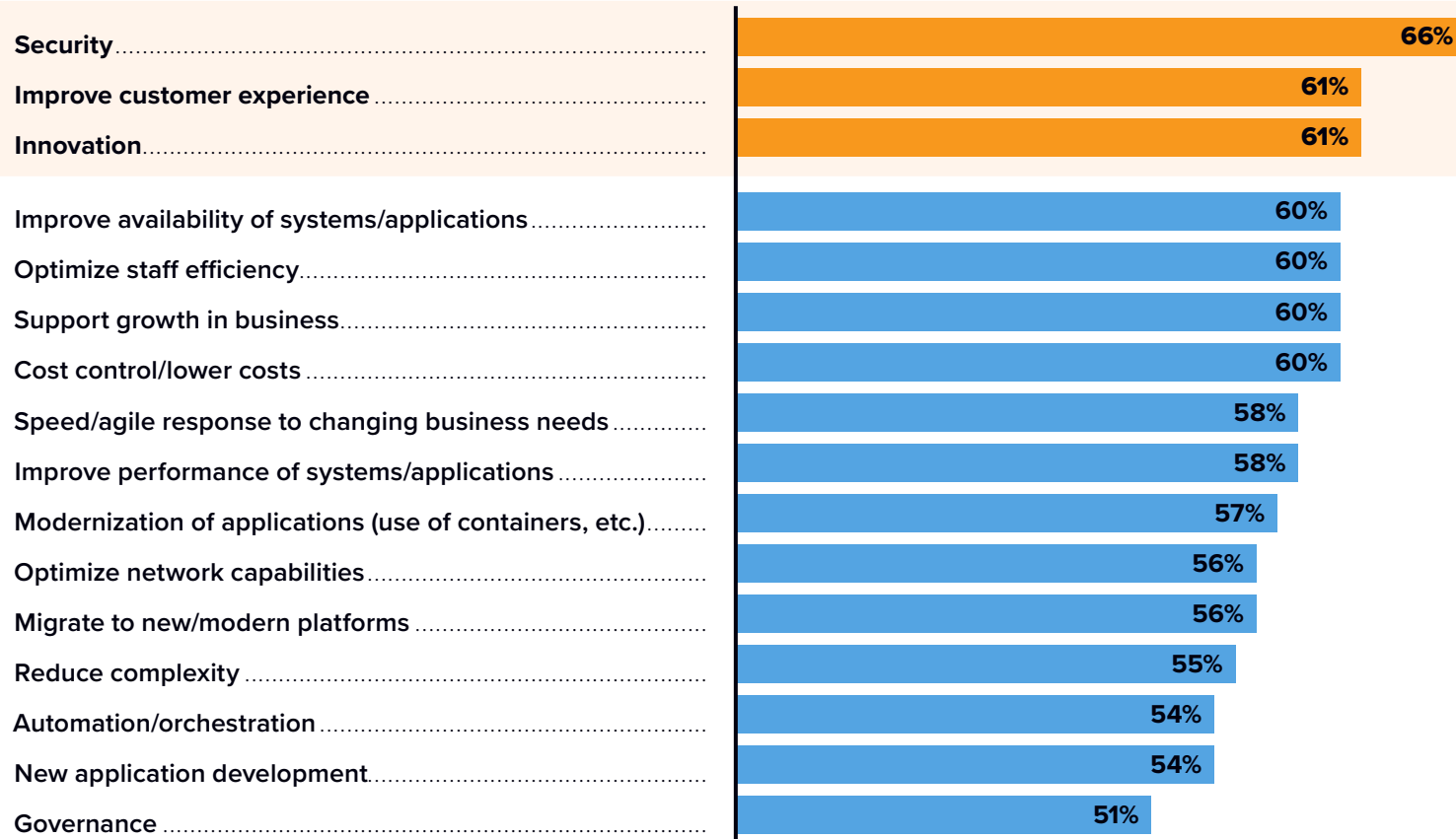
Security, improved (internal) customer experience, and innovation are the top objectives of enterprise IT organizations in the next two years.

While more technical aspects such as application modernization, governance, and automation/orchestration are key for the development of the IT department itself, priorities are focused on the **internal consumer of IT services: line-of-business stakeholders, end users, and so forth.**

Source: IDC's *Cloud Pulse 1Q23*, November 2021

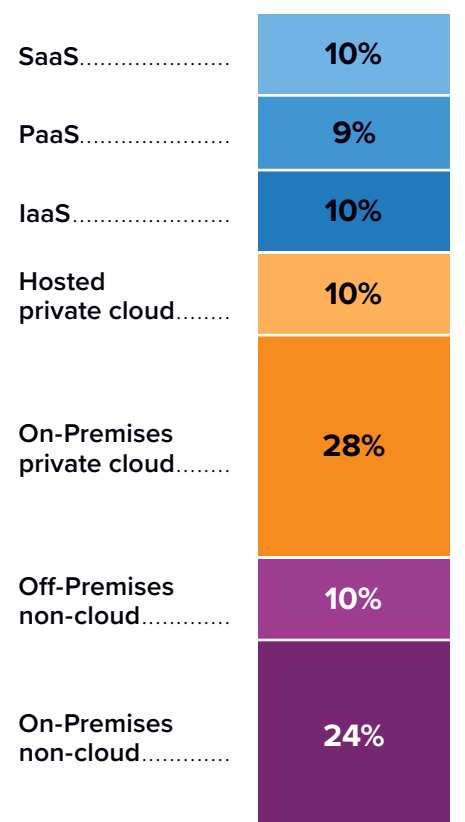
How important are each of the following for your IT organization or investments over the next two years?

(% responding 8–10, on a scale of 0 = not important, 10 = very important)

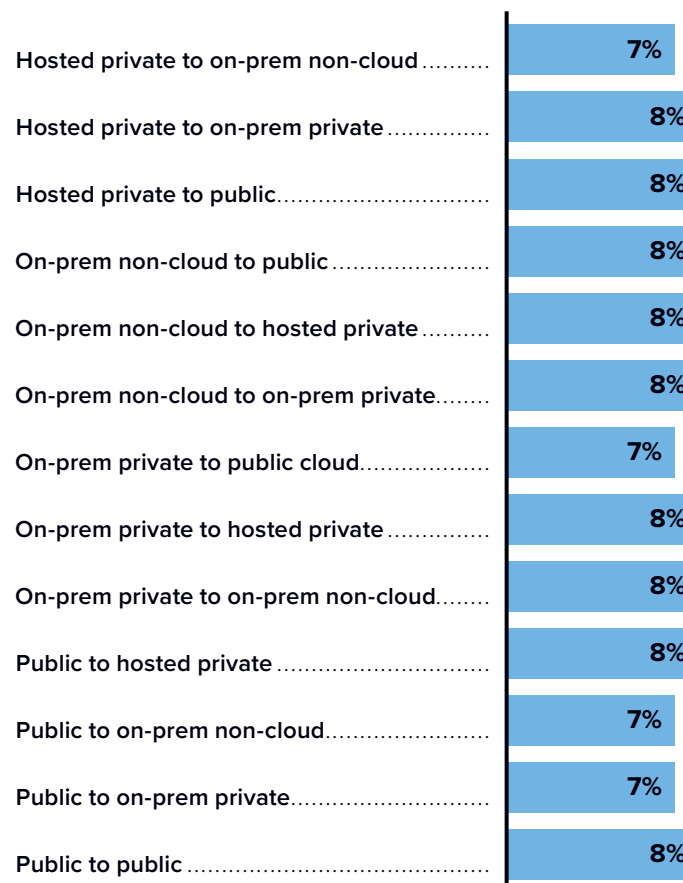


Portability and Choice of Venue Are Essential When Considering Workload Movement

Where applications are deployed



Where applications are moving to



The drivers behind application and workload movement are shifting to more traditional IT priorities:



42% of cloud buyers' applications have **already moved to the cloud.**

38% of cloud buyers' applications are **already cloud native**, and

37% are already architected to **run across different cloud environments.**

Note: Total will not sum to 100% due to rounding. n = 1,700; Source: IDC's *Cloud Pulse 3Q23*, October 2023

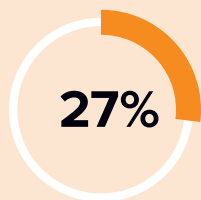
A Considerable Amount of Cloud Budget Is Spent on Application and Data Migration

Migrating applications can be costly:



of companies experienced an **overspend** of their total cloud budget in 2022.

For larger, more established enterprises with legacy IT, **migrating applications and data accounts for almost 12% of spend on cloud management.**



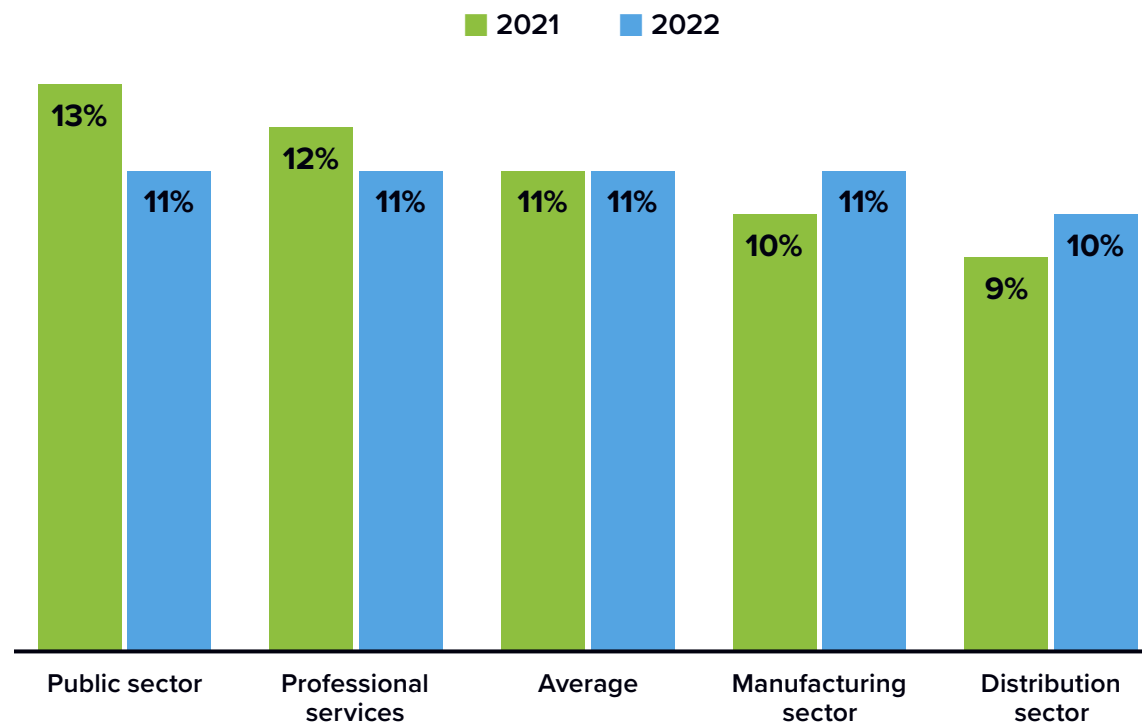
of the average cloud migration budget is spent on **migrating applications between non-cloud environments and either public or private clouds.**

Once applications are in some form of cloud environment, migration costs become smaller.

How much do you spend on each of these activities?

(Sample shown for those selecting “migration of applications and data”)

Industry Vertical Spend on Migration Varies



n = 1,350; Source: IDC's *Cloud Pulse 4Q22*, December 2021 | For an accessible version of the data in this figure, see [Supplemental Data](#) in the Appendix.

The Increased Importance of the Application Drives New Resiliency Requirements

Comprehensive security measures are the most important consideration for new cloud investments.

Investments in **disaster recovery and backup** also remain strong as additional emphasis is placed upon **application performance and availability**.

43% of cloud buyers that deploy disaster recovery services **run full IT recovery services**.

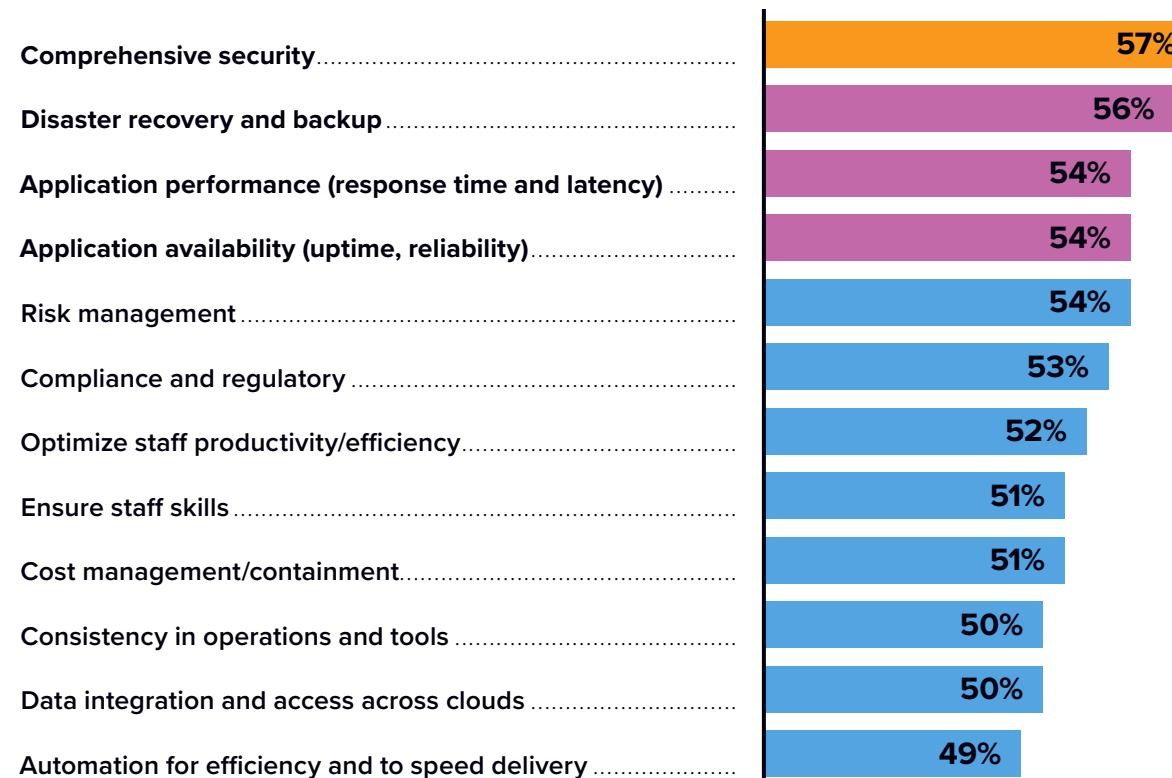
38% carry out **continuous monitoring far behind**.

Excessive downtime in the cloud created challenges for 18% of cloud buyers in 2023.

n = 1,351; Source: IDC's *Cloud Pulse 1Q23*, March 2023

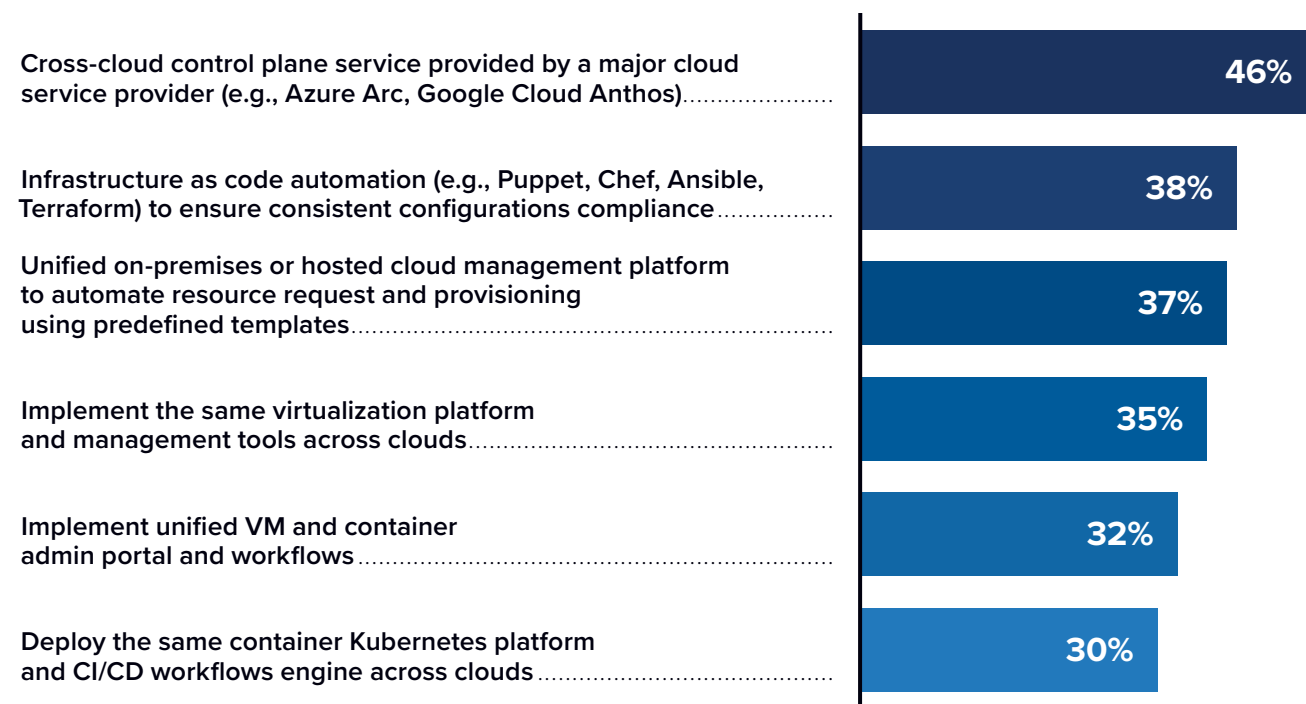
Thinking about the cloud investments your organization will make over the next two years, rate how important each of the following will be in meeting your organization's business needs.

(% responding 8–10, on a scale of 0 = not important, 10 = very important)



Ensuring Configuration Compliance and Application Performance Is Key When Migrating Workloads

What methods are used to ensure configuration compliance and application performance when migrating or moving workloads across different cloud environments?



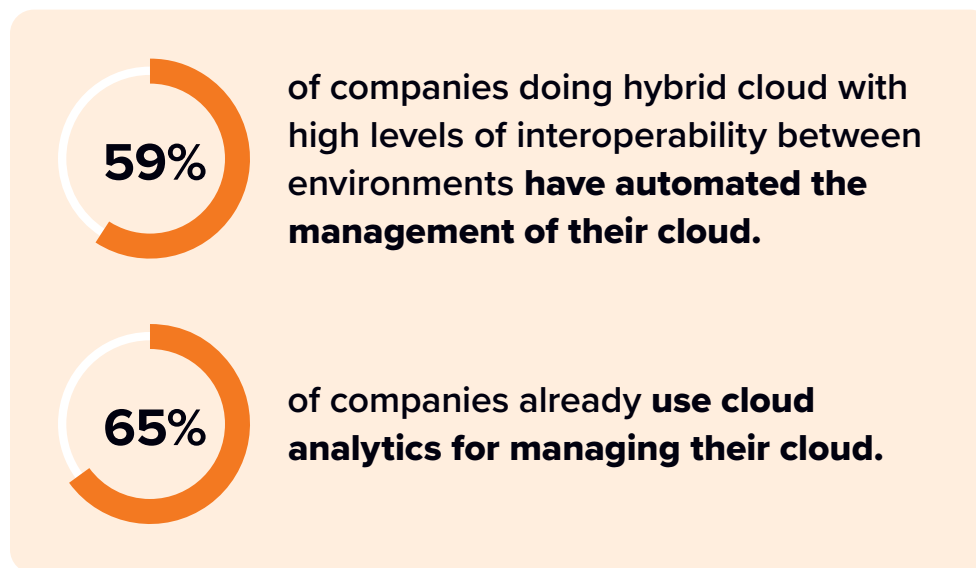
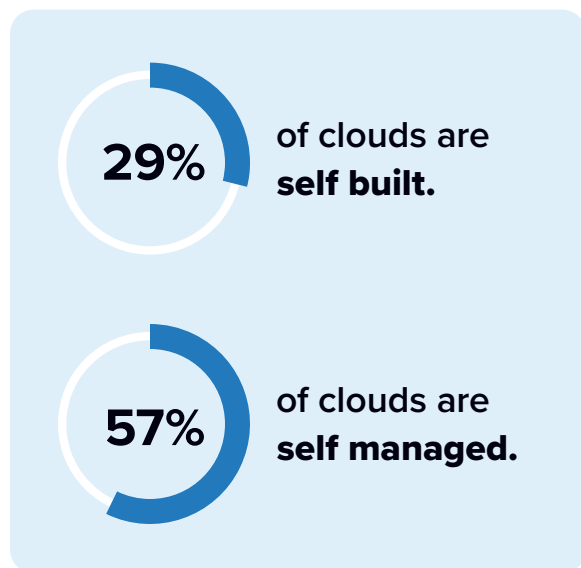
n = 1,115; Source: IDC's *Cloud Pulse 1Q23*, March 2023

Cloud control planes are critical to many companies migrating workloads across cloud platforms and providers.

A good control plane provides:

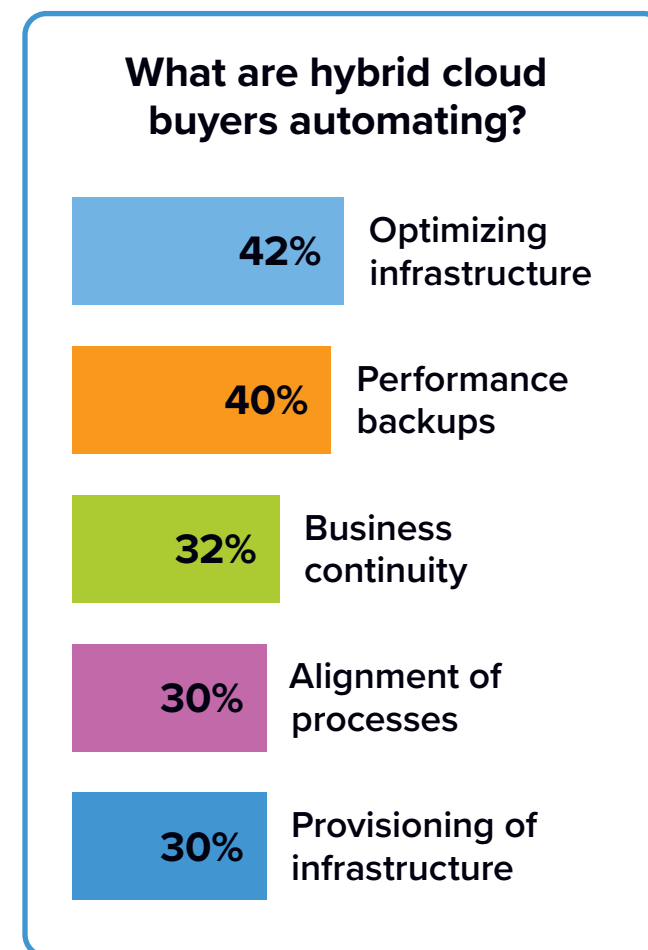
- ▶ Container/microservice management capabilities
- ▶ Enhanced security features
- ▶ Real-time monitoring and reporting
- ▶ The ability to automate tasks and workflows
- ▶ The ability to control cloud network resources
- ▶ The ability for cloud users to manage their cloud at scale

Managing Hybrid Clouds and Multiclouds Can Be Complex and Often Requires Automation



44% of cloud buyers prefer to have a **single software platform** that can run consistently across multiple different hardware infrastructures.

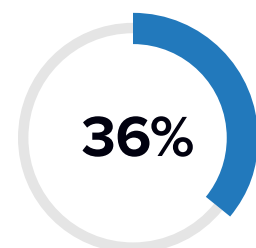
65% of hybrid cloud companies have deployed **cloud infrastructure analytics** to help with managing their clouds.



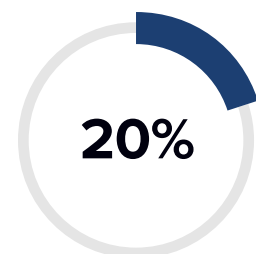
n = 350; Source: IDC's *Cloud Pulse 4Q22*, November 2022. n = 351; Source: IDC's *Cloud Pulse 1Q223*, March 2023.

FinOps Benefits Go Beyond Hybrid and Multicloud Cost Control

The right approach to measuring, monitoring, and accounting for cloud can enhance business collaboration, provide more scalable cloud options, and drive efficiency, which can also lead to benefits in areas such as sustainability.



of cloud buyers **have already deployed FinOps.** This figure is expected to **grow to 65% in 2024.**



of companies with a **single-cloud environment have deployed FinOps** compared with **39% of hybrid cloud companies.**

n = 1,350; Source: IDC's *Cloud Pulse 4Q22*, November 2022

Main Benefits of FinOps

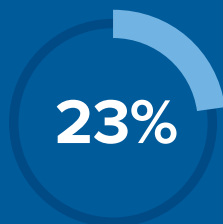
- 1 Better collaboration across IT and the business.
- 2 Greater efficiency across the IT team.
- 3 Better scalability of cloud.
- 4 Better cost management.
- 5 Faster deployment of cloud.



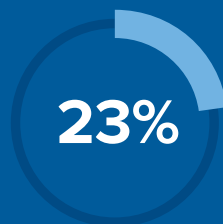
Only 40% of businesses claim to **have a handle on cloud costs/optimization.**

The biggest challenges exist with the **optimization of cloud resources** and the selection of suitable **cloud financial insight tools.**

Top Security Services



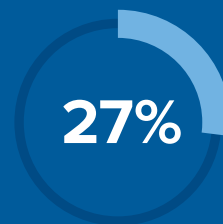
Antivirus



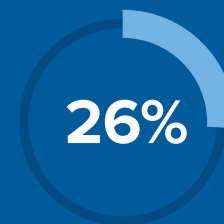
Web application
firewall



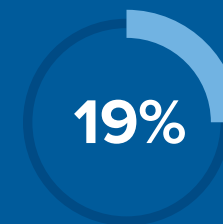
Encryption of
confidential data
stored in the cloud



Secure
configuration
management



Advanced
antimalware/
anti-advanced
persistent threat



Security
information and
event management

Security services for cloud run the entire threat landscape.

Customers are investing well beyond basic firewall and antivirus capabilities. Critical capabilities include:

Understanding where
breaches have occurred
(and may still be occurring)

Constantly monitoring configurations
of operating systems, applications,
and networks

Understanding data encryption
in motion and at rest, log
analytics, and predictions

Understanding the
relative risk of exposure
outside the firewall

Tracking
user
access

No single provider can offer all these services.

Customers are turning to managed services providers for a full suite of security solutions.

n = 1,351; Source: IDC's *Cloud Pulse 1Q23*, March 2023

Top Professional Services

54% of cloud buyers use cloud-related professional services.



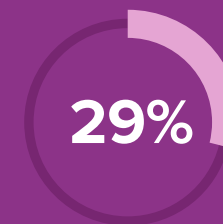
Security



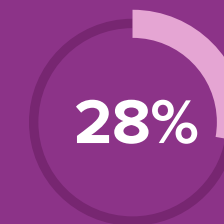
Data integration



Cloud operations
(monitoring and
day-to-day operations)



Training
(IT/technical)



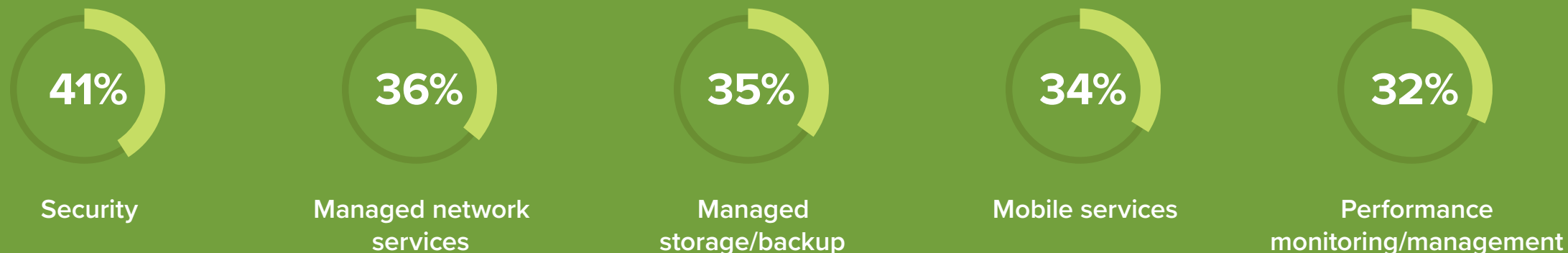
Cyber risk
assessment

Professional services for cloud has been one of the fastest growing areas in the service provider community.

While customers often initially need help migrating data and applications from their own datacenters to their cloud provider, they quickly realize that they also need to be able to integrate disparate data sets and related application components. More recently, customers are also looking for professional services that help them to overcome threats to the business, from cloud performance and security to the development of human capital.

n = 1,259; Source: IDC's *Cloud Pulse 4Q22*, November 2022

Top Managed Services



Traditional managed services have focused on providing customers with 24 x 7 support and acting as an extension of their internal IT team.

Attention for managed service providers has turned to security, network services, and storage and backup as more organizations undertake hybrid and multicloud deployments that place the network front and center in terms of performance and delivery. Increasingly challenging cloud deployments are also driving a focus on performance monitoring and management — pain points that often pave the way for managed service provider conversations when it comes to cloud.

n = 1,259; Source: IDC's *Cloud Pulse 4Q22*, November 2022

Cloud Service Providers Offer an Array of Managed Services

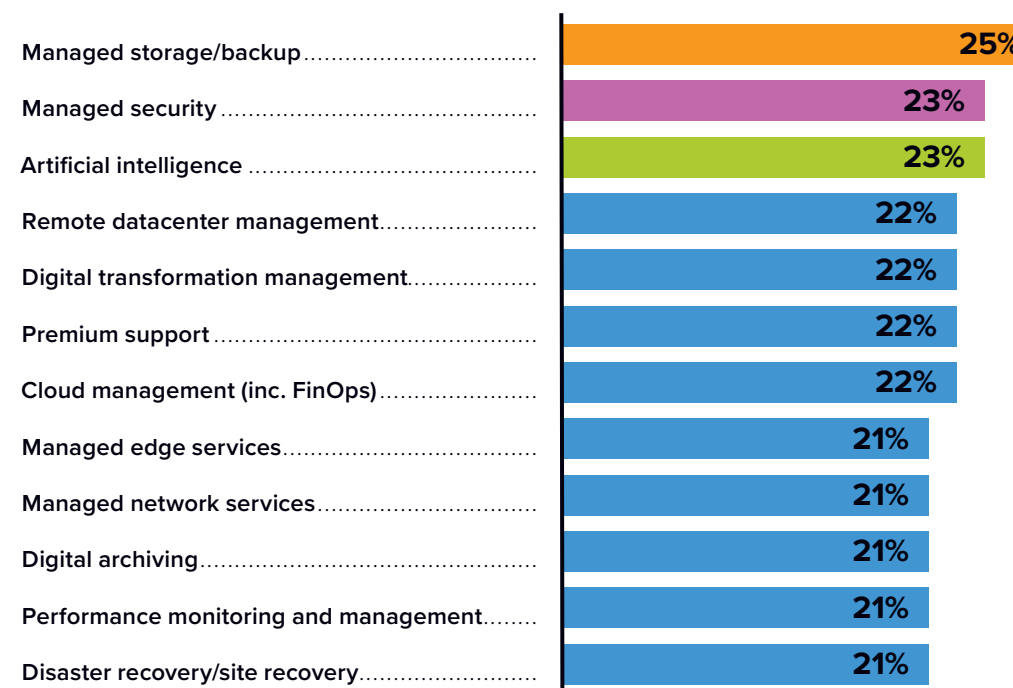
Diverse requirements are creating demand for managed infrastructure components in conjunction with on-demand services.

Managed storage and backup has become the most important managed service offered for cloud consumers today as organizations become more concerned about resiliency.

Managed security for workloads operating in the cloud is complex. Service providers can offer specialist implementation and support.

Artificial intelligence projects are being driven by the board as organizations seek benefits from both the use of generative AI and AI capabilities for automation that help drive efficiency and speed up delivery.

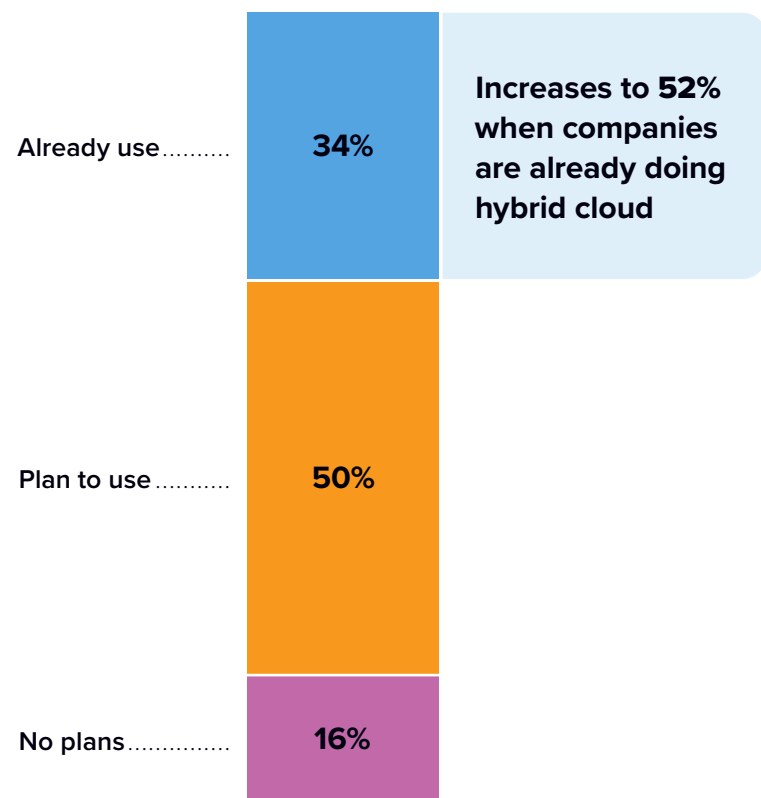
Which of the following managed services does your organization offer today, and what percentage of your revenue do they represent?



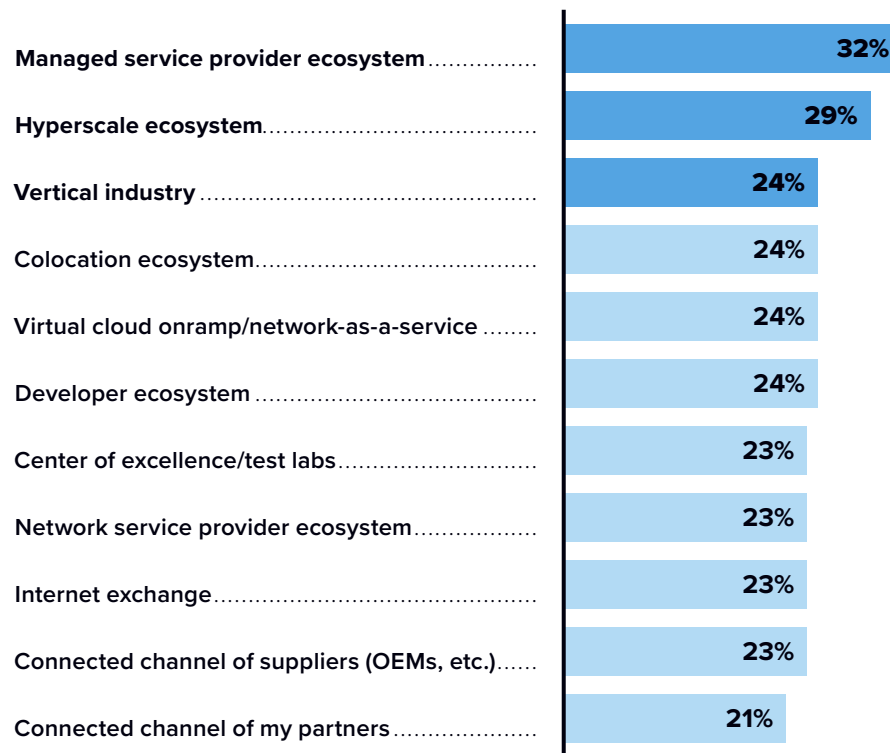
n = 400; Source: IDC's *Service Provider Pulse*, September 2023

Ecosystems Offer Valuable Connectivity Benefits and Access to Services

Do you use an ecosystem today for accessing cloud services, and will you in 12 months?



Ecosystems most in use for the delivery of cloud services



Service compatibility, ease of integration with the business or a partner’s business, high performance multicloud, and service connectivity are the main considerations cloud buyers have when considering what ecosystems they will work with.

Note: Numbers don't add up to 100 due to rounding. n = 1,700; Source: IDC's *Cloud Pulse 3Q23*, October 2023

Applications Are Disaggregated Yet Highly Interdependent

- ✔ **Shifts to modular application design, cloud-native applications, Internet of Things, and edge deployments**, along with needs for embedded AI capabilities, illustrate that customers will be faced with managing a disaggregated but highly interdependent application portfolio. Agility in the choice of location for applications, data, and services will depend on investments in management automation, security, and data integration and protection.
- ✔ **Cloud architects and application owners will have to consider governance models that best fit their requirements for performance, risk management, and agility.** To ensure that today's cloud investments are future proofed for broad, mainstream consumption and can shift with changes in business priorities, this work will involve aligning:

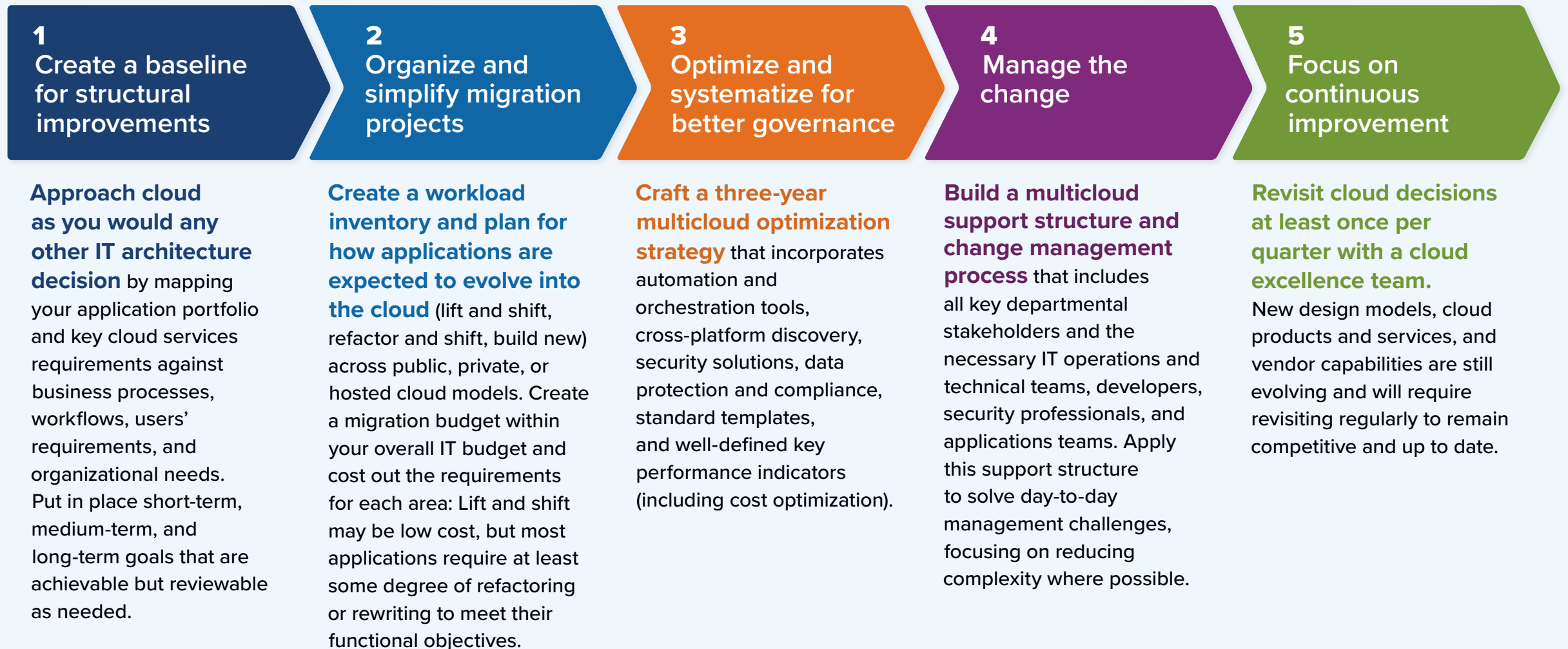


Management complexity rises quickly over the next two years

- ▶ **>30%** growth will occur in the typical application portfolio.
- ▶ **57%** of applications are expected to migrate to a new location in the next year.
- ▶ **54%** of applications are already subject to digital sovereignty compliance.
- ▶ **50%+** of all applications will be located remotely or at the edge — a trend driven by the need for compliance, performance, and reduced network costs.
- ▶ **43%** expect high application interdependencies (up from **15%** today). Each business application already has an **average of 14** other application dependencies.

n = 1,357; Source: IDC's *Cloud Pulse 2Q213*, August 2023

Essential Guidance: Five Steps to Simplify Your Multicloud Strategy



Appendix: Supplemental Data

The tables in this appendix provide accessible versions of the data for the complex figures in this document. Click “Return to original figure” below each table to get back to the original data figure.

SUPPLEMENTAL DATA FROM PAGE 6

	Private Cloud Strategy	Public Cloud Strategy
Private cloud only	8%	11%
Private cloud first	33%	30%
Private cloud also	36%	36%
Private cloud best fit	18%	17%
Private cloud last	3%	4%
No strategy	2%	2%

n = 1,357; Source: IDC's Cloud Pulse 2Q23, August 2023

[Return to original figure](#)

SUPPLEMENTAL DATA FROM PAGE 12

Industry Vertical Spend on Migration Varies

	2021	2022
Public sector	13%	11%
Professional Services	12%	11%
Average	11%	11%
Manufacturing Sector	10%	11%
Distribution Sector	9%	10%

n = 1,350; Source: IDC's Cloud Pulse 4Q22, December 2021

[Return to original figure](#)

SUPPLEMENTAL DATA FROM PAGE 9

	Multicloud	Single Cloud
Overall Cloud Market	59%	41%
Cloud Adoption by Stage		
Pre-implementation	44%	56%
Test and development	54%	46%
Initial implementation	62%	38%
Broad implementation	69%	31%

n = 1,100; Source: IDC's Cloud Pulse 4Q22, November 2021

[Return to original figure](#)

About the IDC Analyst



Penny Madsen

Senior Research Director,
IDC BuyerView Research, IDC

Penny Madsen is a senior research director for IDC's BuyerView research, focusing on Cloud Pulse, which provides quarterly insights into cloud adoption and investment trends. Her research covers software and infrastructure trends, offering insights that help leading vendors and infrastructure providers to develop strategy for future customer deployment scenarios.

[More about Penny Madsen](#)

Message from the Sponsor



Nutanix is a global leader in cloud software and a pioneer in hyperconverged infrastructure solutions, making clouds invisible and freeing customers to focus on their business outcomes.

Simplicity is the foundation of everything we do. At the heart of our hybrid multicloud platform, we automate infrastructure operations, simplify application delivery within clouds, and unify management across private and public clouds. This enables businesses to manage all of their clouds through a transparent, one-click interface. With hyperconverged infrastructure at the core, businesses can leave behind the complexity, security risks, and lost time and embrace an elegant platform that just works.

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