



# One Size Doesn't Fit All: Multicloud Strategies for Your Enterprise

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# Executive Summary

**Multicloud deployments are now the norm for enterprise organizations, with a mix of public cloud solutions — SaaS, IaaS, and PaaS — and private cloud environments, either on-premises or with a provider.**

Most organizations leverage different cloud platforms across multiple service providers because no single cloud environment or cloud provider can meet their needs for application, data, and infrastructure support.

The movement of applications and data between these different environments today is at an all-time high. This application “churn” necessitates a new project management office (PMO) and application life-cycle approach. Governance and management models must also change to support this increasingly dynamic and agile environment.

IDC recently completed an in-depth study of 2,200 organizations across the globe to better understand how cloud computing is leveraged as part of their current — and future — IT portfolio. These companies are representative of all major industries by company size.



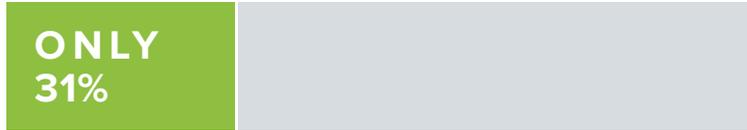
92%

of organizations have both public and private cloud environments installed



88%

do business with two or more cloud service providers



ONLY  
31%

of organizations report having a “single cloud” strategy (vs. 69% with a multicloud strategy)

# Shifting, Disaggregated Application Portfolio

Complexity in application portfolio management rises quickly over the next two years

50%

increase in the number of applications over next two years

47%

of applications will be built using modular development frameworks

51%

expect high application interdependencies (up from 21% today)

58%+

of compute & storage resources at remote/edge or provider datacenters

Each business application already has 4 – 8 other application dependencies

Shifts to modular application design, microservices, containers, and cloud-native applications, along with IOT & edge initiatives, means that customers are increasingly faced with managing a disaggregated and yet highly interdependent application portfolio. Agility in the choice of location for applications, data, and services will depend increasingly on investments in management automation, security, and data integration and protection. Application movement and even repatriation to private cloud environments is high.

Cloud architects and application owners will have to increasingly consider governance models that best fit their requirements for performance, risk management, and agility. This work will involve aligning development teams, IT Ops professionals, security teams, key stakeholders, and executives around a core set of standardize processes and workflows to ensure that today's cloud investments are future-proofed for broad, mainstream consumption and can shift with changes in business priorities.

# Many Clouds, Many Options

Cloud computing has become the underpinning for building an agile IT infrastructure and application portfolio that helps organizations modernize, transform, and reduce time to market.

There are several different types of cloud environments that customers deploy today in support of application deployment, compute and storage.

## PUBLIC CLOUD

### SaaS — SOFTWARE AS A SERVICE

Finished business or consumer applications accessed over the Internet on a subscription basis. All aspects of the application are managed by the provider including security, availability, performance, development, and maintenance.

### PaaS — PLATFORM AS A SERVICE

A hosted application development & deployment environment that includes a set of tools, libraries & services configured as a solution. This typically supports the entire application development lifecycle, including coding, testing, deployment, runtime, hosting, and delivery.

### IaaS — INFRASTRUCTURE AS A SERVICE

Multi-tenant infrastructure shared with other customers. Is configured for resource pooling, automation and orchestration. May also include self-service, catalogs, metering, and chargeback.

## PRIVATE CLOUD

### HOSTED PRIVATE CLOUD

Infrastructure deployed with a hosting provider but NOT shared with other customers. Is configured for resource pooling, automation, and orchestration. May also include self-service, catalogs, metering, and chargeback.

### ON-PREMISES PRIVATE CLOUD

Infrastructure in your datacenters configured for resource pooling, automation, and orchestration. May also include self-service, catalogs, metering, and chargeback.

## NON-CLOUD

### OFF-PREMISES NON-CLOUD

Traditional, standalone infrastructure in a hosting provider's datacenter.

### ON-PREMISES NON-CLOUD

Traditional, standalone infrastructure in your datacenters.

# Substantial Workload Shift to Cloud Environments

## Private cloud a strong focus for on- and off-premises solutions

Just under 30% of all applications globally are placed in a public cloud, while 40% are in private clouds.

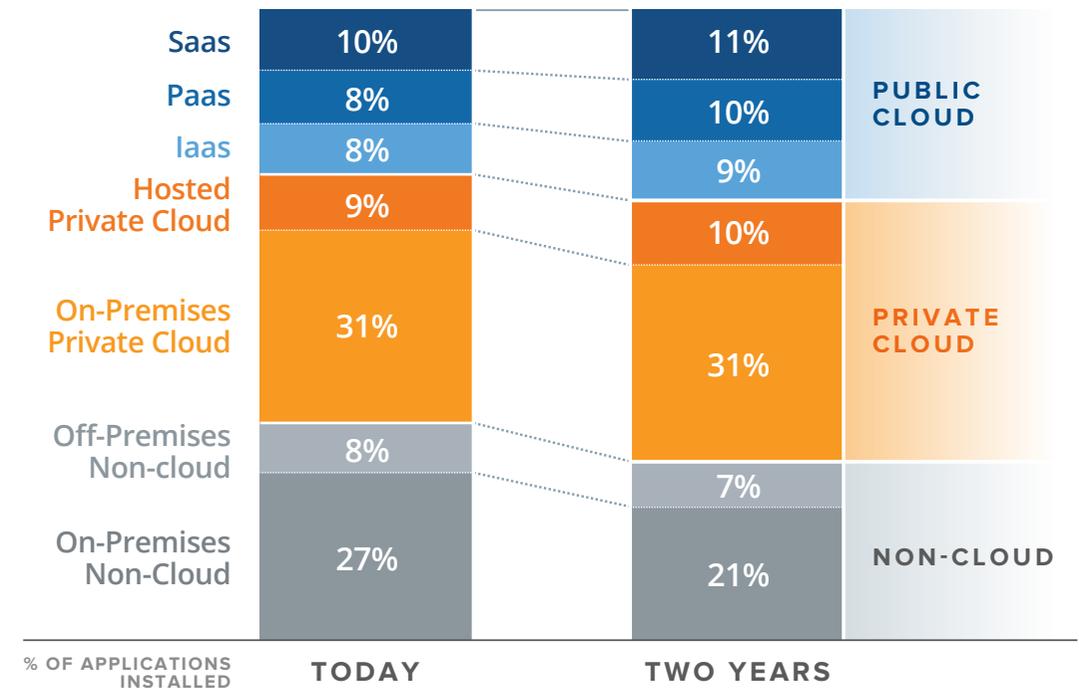
Multicloud and hybrid cloud deployments are now the norm for enterprise organizations. Less than 1/3 of customers describe their cloud approach as “single-cloud.”

While there is growth in both public and private clouds over the next two years, the typical application portfolio does not look dramatically different from today.

There is, however, tremendous movement of applications and data between these different environments, as well as new builds and retirement that drives tremendous application churn.

Customers work with an average of 16 different types of service providers to support their cloud environments.

The complexity of the application portfolio climbs substantially as customers right-size workload placement, invest in new technologies, and move from ad-hoc designs for cloud to mature processes.



# 85% of Customers Report Cloud Repatriation Activities

Movement of applications from public to private or on-premises clouds is very common

## Public Cloud Repatriation Rates

Q. In the last year, has your organization migrated any applications or data that were primarily part of a public cloud environment to a private cloud or on-premises environment?



## Percent of Public Applications Expected to Repatriate Over the Next Two Years (Average)

Q. Using your best guess, what proportion of the public cloud applications installed today will move to a private cloud, hosted private cloud or non-cloud environment over the next two years?

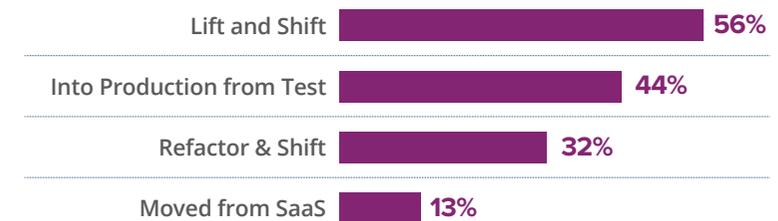


## Top Repatriation Drivers



## Types of Applications Repatriated

MULTIPLE SELECT



# Cloud Repatriation by Organization Type

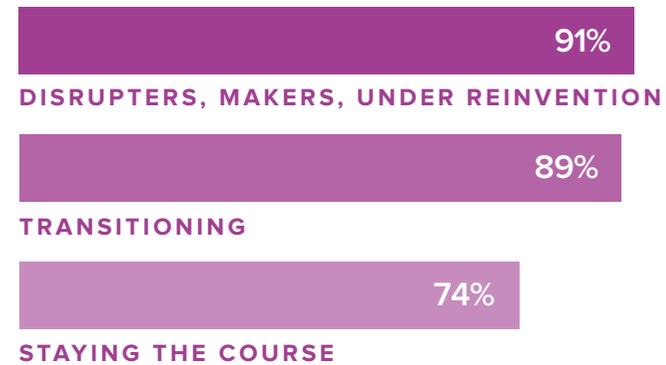
Agile organizations are repatriating workloads at higher rates than less-agile organizations; hybrid cloud is a game-changer for public cloud

## REPATRIATION ACTIVITY BY COMPANY AGE



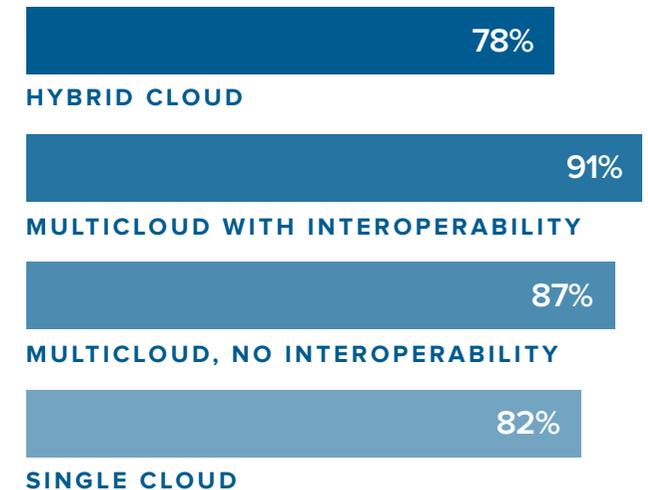
Younger organizations are significantly likely to repatriate public cloud workloads than those that have been in business for 25+ years.

## REPATRIATION ACTIVITY BY COMPANY PERSONA



Company culture is a strong determinant of repatriation. Companies that are self-described market disrupters, market makers, under reinvention, or transitioning have the highest rates of repatriation.

## REPATRIATION ACTIVITY BY HYBRID CAPABILITY



Companies deploying true hybrid cloud capabilities have lower rates of repatriation than those with multicloud environments. These organization can run a single application across multiple cloud environments and hence do not need to move workloads at the same rate as organizations without this capability.

# Customers Default to Multicloud Environments

## The journey begins with private cloud

The interoperability of data and applications between the varied cloud environments is growing in importance, yet the ability to architect for true hybrid capabilities (where a single application runs across multiple cloud environments) remains elusive for most enterprises. Where interoperability does exist, private clouds (either on-premises or with a service provider) is typically the on-ramp to public cloud interoperability.

### Multicloud Adoption by Level of Interoperability Between Different Clouds

n=2211

#### SINGLE CLOUD

Customers use a single cloud provider or solution for their cloud applications or infrastructure.

31%

#### MULTICLOUD LOW INTEROPERABILITY

Customers use two or more cloud providers or solutions for their cloud applications or infrastructure, with little or no interoperability between them.

36%

#### MULTICLOUD HIGH INTEROPERABILITY

Customers use two or more cloud providers or solutions for their cloud applications or infrastructure to migrate workloads and data between them.

22%

#### HYBRID

Customers have multiple cloud environments where a single application runs seamlessly across the different clouds with easy orchestration.

10%

#### Multicloud Connection Points

n=728

##### On-premise private cloud to hosted private cloud

46%

##### On-premise private cloud to public cloud

42%

##### Hosted private cloud with a public cloud

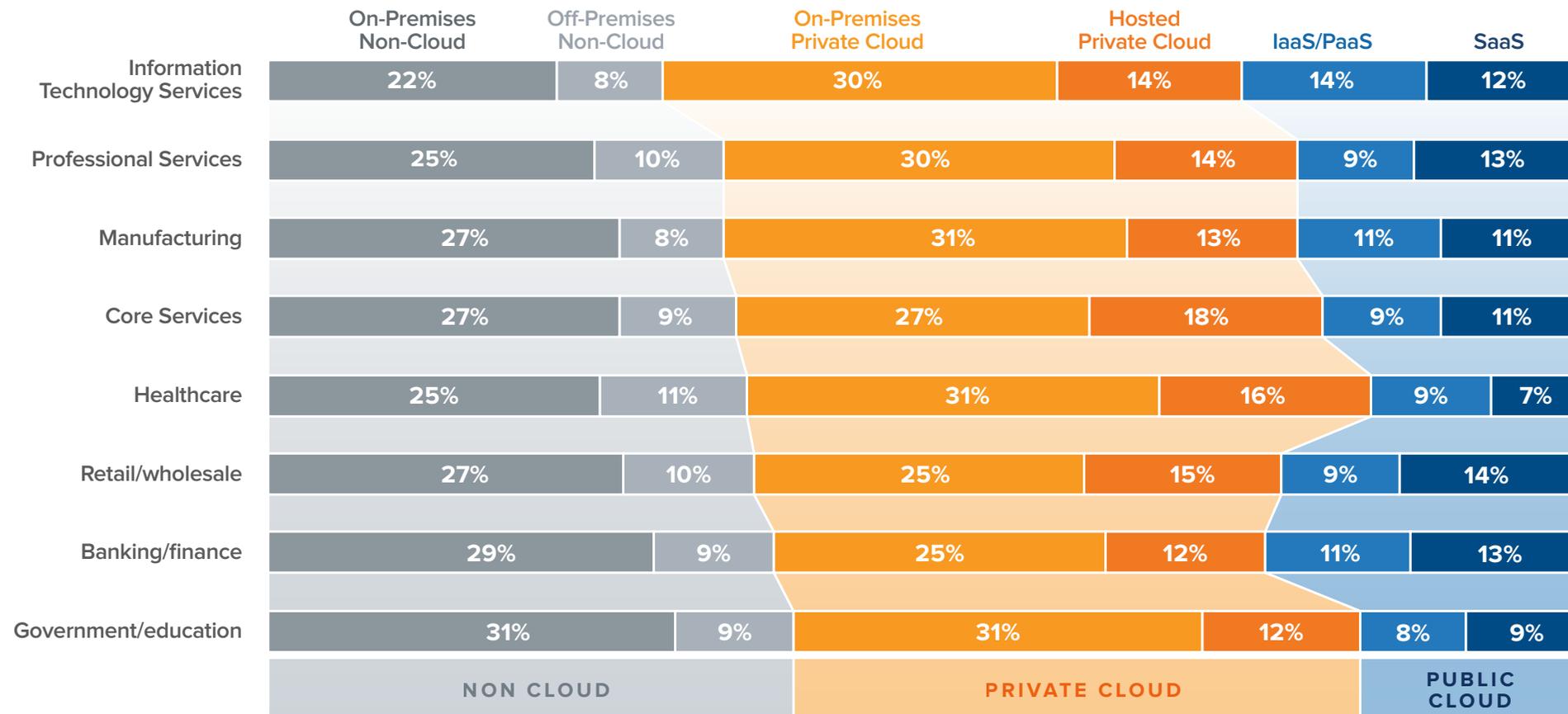
41%

##### Public cloud with a different public cloud

37%

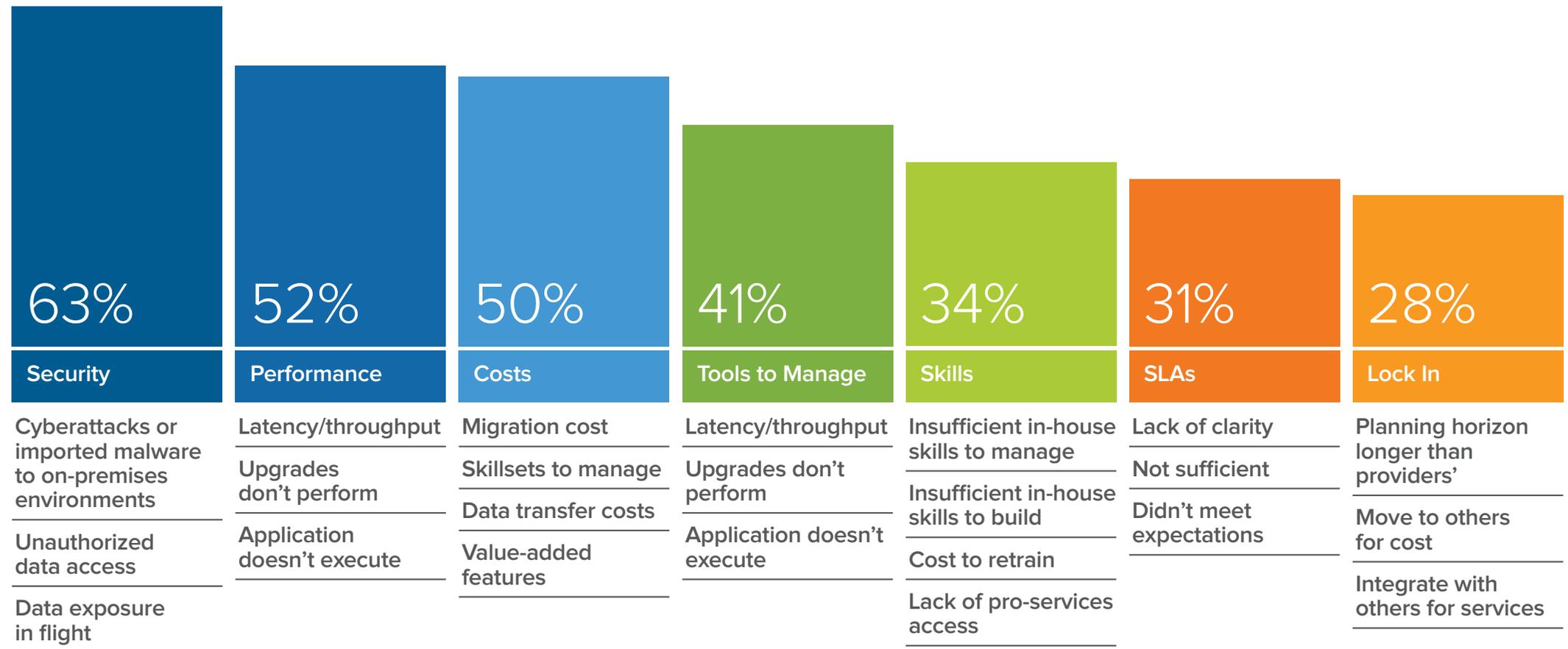
# Industry Adoption of Cloud is Broad

Government and education lag overall, banking/finance, retail, and IT services lead in public cloud



# Cloud Is Not a One-Size-Fits-All Solution

## Top IaaS concerns

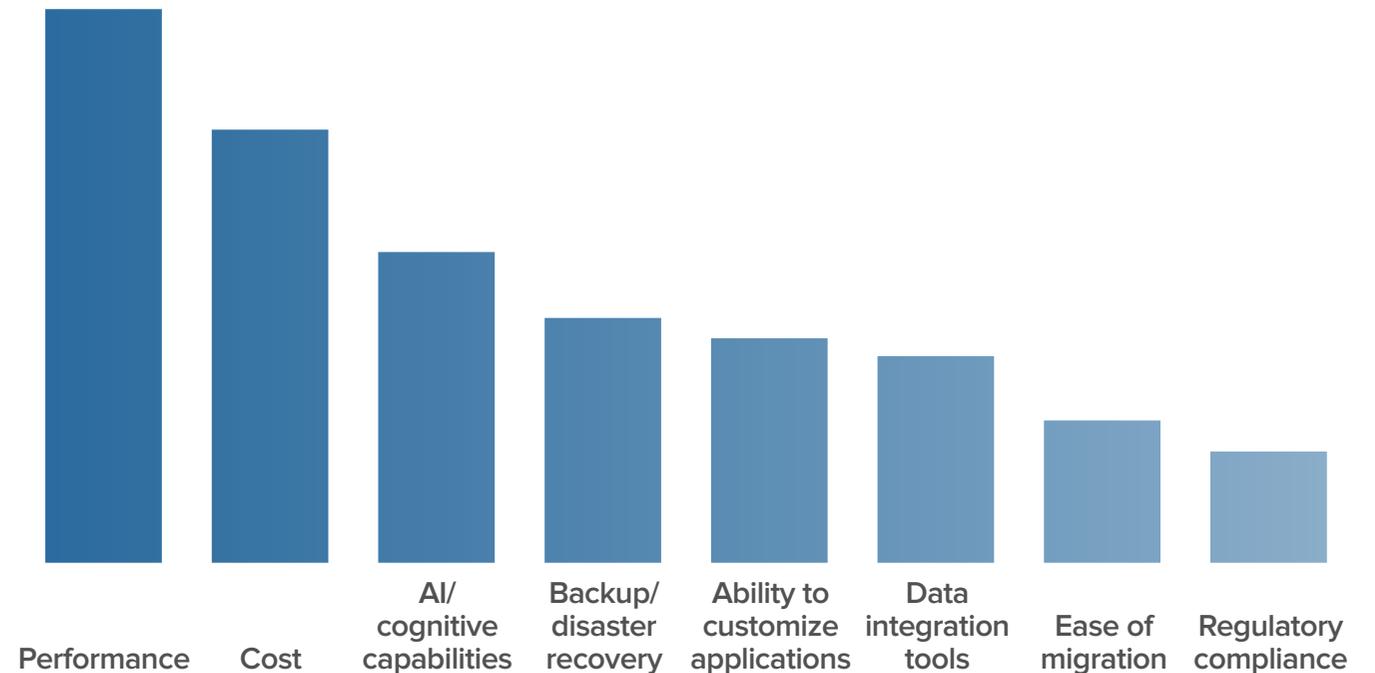


# Architectural Considerations for Cloud Selection

## Architectural considerations for cloud vary by application type and public or private cloud models

Performance vs. cost is the key tradeoff that customers make in private and public cloud architectures. Performance, which is ultimately measured by latency and availability, will change based on compute and memory resources storage design & IOPS, speed of network, and local I/O requirements for edge workloads.

AI/Cognitive capabilities are becoming more important for driving efficiency, particularly for analytic workloads. Backups/DR capabilities are common across all cloud environments.



# Simplify Your Future Multicloud Strategy

## Automation is key to achieving multicloud at scale and ensuring governance

Security and regulatory compliance are table stakes for any IT portfolio. The complexity of managing across multiple localities & environments for both test and production environments requires investments in automation capabilities & tools.

Cross-platform auto-discovery, multi-platform data protection, standard templates, API best practice and well defined KPI's will be critical to application performance and cost optimization.

## Focus on continuous improvement

Revisit your cloud roadmap once per quarter with your cloud engineering or cloud excellence team.

Vendors and their roadmaps will change, market dynamics will change and new design models will evolve. This will ensure that you remain up to date in the market and are competitive with your industry peers.

## Set in place a mid-term vendor strategy

No single vendor can offer everything that one customer needs across applications, infrastructure, management, security and services.

Engage with vendors and third-party providers that have made partnering a business priority across operational and technical solutions and have a customer service mindset.

## Prepare your organization for structural and architectural improvements

A key outcome of a well-built multicloud environment is architectural consistency.

Get ready by mapping your business applications to current workflows and business processes. This will be critical to understanding where to place investments and new architectural considerations.

Prepare to make some changes to your current workflow processes – most customers try to shoehorn cloud into their current workflow approach and realize later that legacy platform decisions hampers their ability to drive digital innovation and exploit modern tools and approaches.

## Hire those that thrive in change

Change management will be a large part of your day to day responsibilities – educating, communicating and re-educating both IT practitioners and business leaders at your company on short term and long-term goals and expectations.

IT operations, developers, security professionals and applications teams will all be involved in building a successful multicloud strategy. Communicating your roadmap and reinforcing collaboration and the importance of technical and non-technical staff skills will set the tone for the new IT organization.

Learn more about hybrid multicloud IT infrastructure solutions at [www.ibm.com/it-infrastructure/solutions/hybrid-cloud](http://www.ibm.com/it-infrastructure/solutions/hybrid-cloud)