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Future-Proof Your IT Architecture and Business with Hybrid Multicloud and AI

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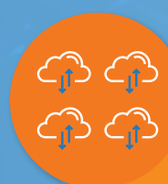
Why Hybrid Multicloud and AI?

Technology creates the foundation for competitive advantage and determines how quickly enterprises can adapt to new circumstances and pivot to new market opportunities. Hybrid multicloud and artificial intelligence (AI) are two key technologies helping organizations advance their digital transformation.



Hybrid Multicloud

This next-generation cloud architecture magnifies the benefits of cloud while simplifying IT operations, data access, interoperability, security, and more.

+

Artificial Intelligence

"AI-powered" enterprises will be the market leaders. To successfully implement an AI strategy at scale, enterprises need a unified information architecture (IA) that encompasses hybrid multicloud, data integration, analytics, governance, and security.

→

Together

Hybrid multicloud and AI create a multiplier effect that accelerates digital transformation.

For additional information, please refer to IBM White Paper: *Architect Business Transformation with AI and Hybrid Multicloud* and IBM InfoBrief: *10-Step Guide to Implementing a Holistic Cloud-AI Strategy*.

Business Drivers of AI for Enterprises

AI has the potential to augment the work of every employee. Organizations are adopting AI in their transformation journeys to be agile, resilient, innovative, and scalable.

There is a direct correlation between AI adoption and superior business outcomes. IDC predicts that by 2025, AI-powered enterprises will see a 100% increase in knowledge worker productivity, resulting in:

Shorter reaction times
Half the response time of peers

Greater product innovation success
25% increase in rate of new product introductions

Improved customer satisfaction
1.5 times higher Net Promoter Score

Delivering a better customer experience is identified as the leading driver for AI adoption among primary business drivers.

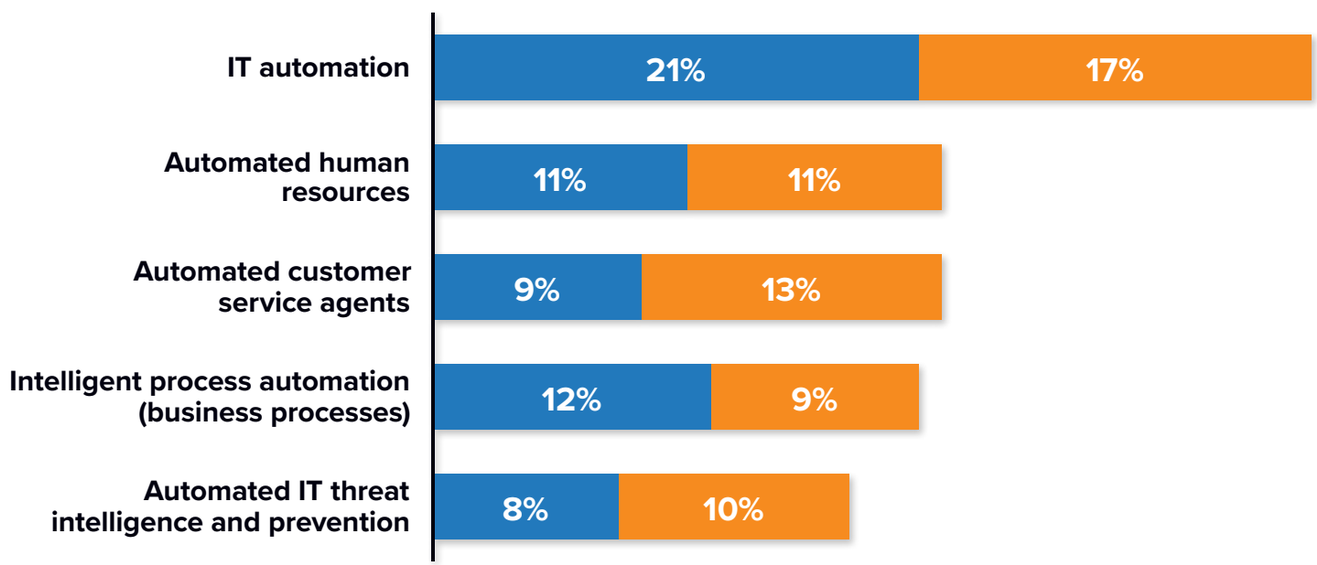
(percentage of respondents)

n = 2,056 | Source: IDC AI StrategiesView, March 2020

AI Solutions: Leading Use Cases

AI can help automate IT operations, business planning, business operations, or call centers and support agility, innovation, and scale like never before.

Top Enterprise AI Use Cases



Other AI Use Cases:

- AIOps uses AI to simplify IT operations management and accelerate and automate problem resolution in complex modern datacenter and cloud environments.
- AI can also be used for AI itself, with automated data preparation and metadata generation.

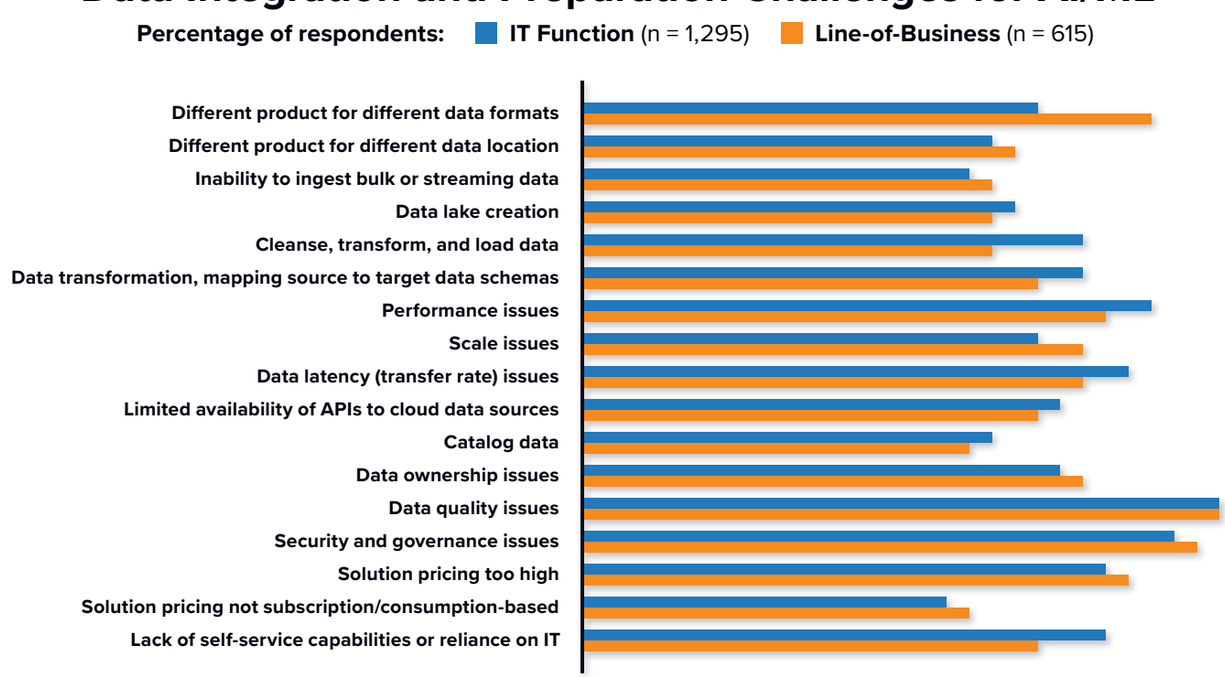
n = 2,056 | Source: IDC AI StrategiesView, March 2020

The Need for IA with AI

Data creation and data types are increasing exponentially, and to make data trusted and ready for AI, it needs an information architecture (IA).

- Data integration and preparation for AI are resource- and time-consuming and the challenges are wide-ranging.
- To get ready for AI, data needs to be collected, organized, analyzed, and infused, all while the cloud and data platform foundations are modernized.
- Businesses can then apply AI to their data where it is hosted. This flexibility allows for AI scalability, as businesses can leave data in secure or preferred environments.

Data Integration and Preparation Challenges for AI/ML



Source: IDC AI StrategiesView, March 2020

Data: The Raw Material for Digital Transformation

Data is the foundation and fuel of the digital economy.

But the explosive growth of data presents monumental challenges:

- Storage
- Security
- Access
- Sharing
- Analytics

Global datasphere in 2024:

140 ZB

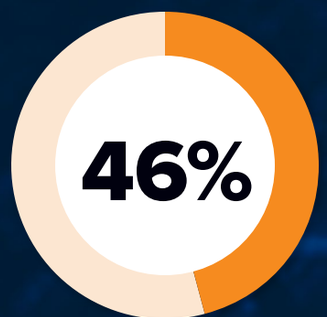
Enterprises must carefully design their IT architecture to weave in the best practices of performance, reliability, availability, and security.

Source: Worldwide Global DataSphere Forecast, 2020–2024: The COVID-19 Data Bump and the Future of Data Growth

Cloud: The Ideal Platform to Manage Data

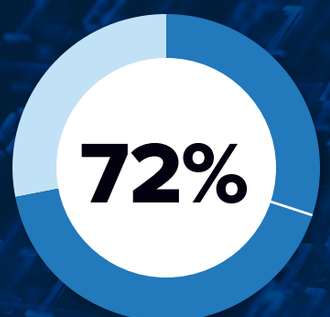
To devise a data-centric IT architecture, enterprises must leverage cloud computing.

- Cloud provides vast scalability, availability, agility, flexibility, and automation.
- Higher ROI and lower total cost of ownership: Cloud replaces capex with opex and offers pay-as-you-go services.
- Cloud democratizes emerging technologies and powerful ecosystems.



of enterprises are running production applications in clouds.

Two years from now...



of applications will reside in clouds.

42% in private cloud
30% in public cloud

n = 2,000 | Source: IDC Cloud Pulse Q1, March 2020

But One Public Cloud Isn't Enough

Placing all enterprise data in the public cloud is not a panacea. Instead, good risk management involves placing data and applications in multiple public cloud vendors.

Having multiple cloud vendors gives enterprises **leverage during price negotiations.**

Latency and performance issues can only be addressed with **geographically distributed cloud datacenters,** which require multiple vendors.

Security and regulatory compliance force enterprises to place some data and workloads in certain regions or private clouds.

Top 10 Desired Outcomes from Investments in Cloud:

1. Disaster recovery and backup
2. Comprehensive security
3. Risk management
4. Application performance
5. Compliance and regulatory
6. Automation
7. Availability and reliability
8. Data integration and data access across cloud environments
9. Cost management
10. Maximize resource utilization

n = 2,000 | Source: IDC Cloud Pulse Q1, March 2020

Challenges of Multiple Clouds

Managing multiple clouds leads to complexity in security, compliance, performance, and cost.

→ **Fragmented silos:**
Occurs between applications and data

→ **Data gravity:**
A phenomenon that occurs when applications are forced to reside where the data is

→ **Prohibitive egress expenses:**
Incurred when large amounts of data are transferred between clouds

→ **Management complexity:**
Proprietary tools for each cloud provider increase total cost of ownership

Most Pressing Operational Challenges in Multicloud Environments

(percentage of respondents)

n = 2,000 | Source: IDC Cloud Pulse Q1, March 2020

Unify and Simplify with Hybrid Multicloud

A hybrid multicloud creates a unified information architecture resulting in an architecture that is infrastructure-agnostic.

Benefits:

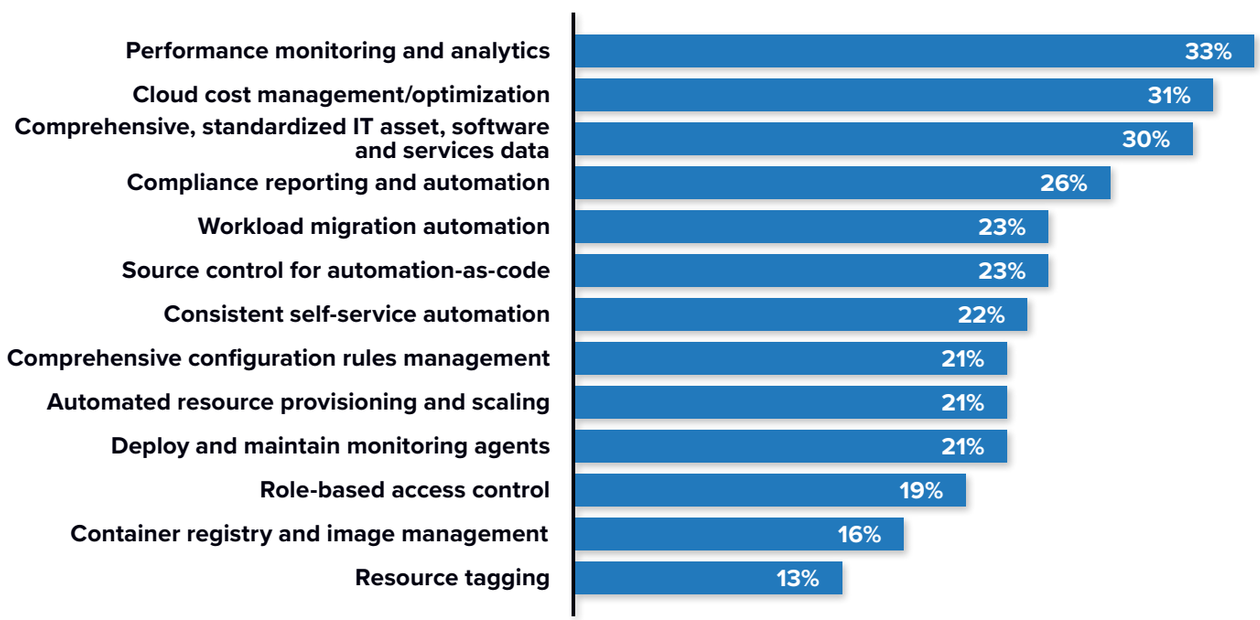
→ Portability and interoperability:
Portability of applications and interoperability between heterogeneous environments are greatly simplified and enhanced.

→ 360-degree visibility:
Enables discovery, monitoring, managing, and securing all enterprise applications, data, and hardware across heterogeneous cloud environments.

→ Diverse sources of data:
Applications and developers can access data from diverse sources. Such a frictionless architecture results in deeper insights, smaller total cost of ownership, and faster development of innovative products.

Most Important Management Capabilities to Support a Multicloud/Hybrid Cloud Strategy

(percentage of respondents)



n = 2,000 | Source: IDC Cloud Pulse Q1, March 2020

How to Build a Hybrid Multicloud

Here's a prescriptive approach to building a hybrid multicloud:

(Note that these steps are neither rigid nor sequential.)

→ Modernize applications

- Use modular architecture.
- Employ cloud-native stack that leverages containers, orchestration tools such as Kubernetes, microservices, open source technologies (Linux, Red Hat OpenShift), and common APIs.

→ Standardize and automate processes

→ Establish best practices and teams with new organizational structure for DevOps and MLOps

→ Focus on portability, interoperability, and management

- Portability means "Build once, deploy anywhere."
- Management goal: a single dashboard to monitor, provision, manage, and secure all clouds.

→ A hybrid multicloud environment should be an abstraction of public clouds, private clouds, and even legacy datacenters

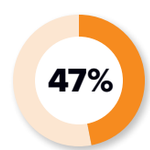
30% of enterprise workloads are containerized

and

54% of enterprises are making significant investments in cloud management tools.

18% of applications are being built using modular frameworks today

while



47% of applications will be built using modular frameworks two years from now.

n = 2,000 | Source: IDC Cloud Pulse Q1, March 2020

The Synergistic Relationship Between Hybrid Multicloud and AI

To realize AI at the scale necessary to support leading use cases, businesses need a unified hybrid multicloud and information architecture that democratizes data, applications, tools, and frameworks along with AI-powered end-to-end automation.

AI and data tools that can operate on a hybrid multicloud platform allow organizations to take advantage of their data and applications across any cloud (public, private, on-premises). As enterprises modernize for an AI and hybrid multicloud world, they will find there is less "assembly required" in expanding the impact of AI across the organization.

As mentioned before, open source platforms and cloud-native architecture accelerate development, enable portability, and simplify interoperability between clouds.

To harness all the compute horsepower, AI programmers also need a special set of software frameworks (such as TensorFlow, MXNet, Caffe, Watson, and PyTorch) and programming languages, general and specialized (such as Python, Java, R, and Prolog). These requirements are better met in a hybrid multicloud environment.

Reflecting the symbiotic relationship, AI can improve hybrid multicloud as well. AI can be used to simplify and automate the management of cloud, especially a heterogeneous cloud environment. Hence the emergence of AIOps — use of AI in IT operations.

Conclusion

Hybrid Multicloud:

- → Abstracts underlying infrastructure, simplifies IT management, enables portability and interoperability of applications, and provides frictionless access to data from multiple sources. Best development practices include open source development and DevOps/MLOps adoption.
- → With hybrid multicloud, enterprises can infuse and operationalize AI at scale. AI can greatly simplify management of hybrid multicloud through AIOps.

AI:

- → Is a transformative technology that will drastically improve business decisions, processes, automation, and customer experience.
- → However, there is no AI without IA, meaning information architecture.
- → Your IA should be data-centric, cloud-native, and implemented through hybrid multicloud, which consists of multiple public clouds, private clouds, and even legacy IT on-premises.

Together:

AI and hybrid multicloud create an innovation multiplier effect that will help enterprises reimagine their business models, accelerate digital transformation, and achieve strategic goals.

Register for the full white paper: *Architect Business Transformation with AI and Hybrid Multicloud*

Get the white paper

Explore how IBM can help you unlock the full potential of cloud and AI:

ibm.com/cloud/yourcloud

About the Analysts

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Chris covers research on cloud computing to provide insights into technology trends, customer needs, and opportunities. In his role as a thought leader and content creator, Chris provides detailed analyses, surveys, and reports on cloud computing and emerging technologies such as artificial intelligence, as well as market direction.

More about Chris Kanthan

Ritu Jyoti
Program Vice President, Artificial Intelligence Research, Global AI Research Lead, IDC

Ritu is responsible for leading the development of IDC's thought leadership for AI research and management of the Worldwide AI Software research team. Her research focuses on the state of enterprise AI efforts and global market trends for the rapidly evolving AI and machine learning (ML) innovations and ecosystem. Ritu also leads insightful research that addresses the needs of the AI technology vendors and provides actionable guidance to them on how to crisply articulate their value proposition, differentiate, and thrive in the digital era.

More about Ritu Jyoti

Michelle Bailey
GVP/GM and Research Fellow, Datacenter and Cloud, IDC

Michelle's focus is on articulating the short- and long-term impacts of emerging and disruptive technologies for enterprise IT vendors, IT professionals, and cloud service providers. This includes building market models, conducting voice-of-the-customer research, and leveraging advanced data analytics capabilities to provide clients with prescriptive guidance on how digital transformation will impact their business, as well as providing recommendations for how to future-proof their organizational strategy. Michelle is a sought-after speaker at industry and user events around the world and is frequently quoted in leading business and technology publications.

More about Michelle Bailey

Message from the Sponsor

IBM AI Ladder

IBM's AI Ladder is a prescriptive approach to the AI journey. "AI Ladder" represents the stages of development-cycle of AI applications.

The Rungs of the AI Ladder:

Collect data of every type, regardless of where it lives, and make it accessible.

Organize data into a business-ready foundation with built-in governance, protection, and compliance.

Analyze data in smarter ways and leverage AI models to gain new insights and to make smarter decisions.

Infuse AI throughout the business to create intelligent workflows across business and IT operations.

Journey to AI

IBM and Red Hat Cloud

IBM's hybrid multicloud platform is designed to support a full range of applications, with the needed focus on portability, interoperability, and management mentioned on slide 11.

Linux, Kubernetes, and containers provide the foundation of the hybrid cloud stack and combine with Red Hat OpenShift to create a common platform across on-premises and cloud.

It is a unified open IT architecture that allows enterprises to run and move workloads wherever optimal, across all of your clouds and datacenters, and make data ready for AI.

Learn More

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