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2024 Informatica Report: State of AI and Data with a Modern Data Architecture

Insights from 300 data leaders

Where data & AI come to LIFE

Contents

Executive Summary

Today's data leaders face the challenging responsibility of maintaining the accuracy and completeness of an ever-growing data lake that includes structured, semi-structured, and unstructured data. Scalable artificial intelligence (AI) operating in conjunction with a next-generation data management system is essential for ensuring a trusted data foundation on which a company can manage these vast amounts of data. To be successful, it is critical that these data leaders have continual access to accurate and timely data to effectively train and enhance AI capabilities.

This is a formidable task for organizations that house massive amounts of dispersed data throughout their enterprise. To manage and govern all this data efficiently, creating a golden record or a single source of truth is necessary. Achieving this level of data management requires a modern data architecture matched with a modern application architecture while employing scalable AI. Such integration facilitates next-generation data management, establishing a secure and trusted data foundation.

In this survey, Informatica asked 300 senior-level enterprise, cloud, IT, data and information architect executives from North America, Europe and Asia-Pacific for their insights on their needs for a modern data architecture, migration plans and critical capabilities.

The results demonstrate a significant consensus among data leaders regarding their goals and expectations for modernizing their management platforms to a cloud-first strategy. Some 99% of data leaders identify the top four critical capabilities they seek in a modern

cloud data management platform: AI-powered automation, agility to onboard new data management use cases, flexibility to design modern data architecture patterns and elasticity.

While data leaders have a clear idea of their requirements, they also strongly align on the potential challenges they face. 94% of data leaders cite their top challenges as a lack of a defined data architecture and roadmap, insufficient specialized IT skills or resources and the complexities of cloud modernization and platform selection.

This illustrates that the survey respondents not only understand what is possible with a cloud-first, modern data architecture but also have a clear grasp of what it will take to achieve it.

Key Findings

**Following are key data architecture highlights that emerged from the survey results.**

A significant trend among the surveyed data architects is the heightened need for robust data privacy and security measures. As AI and machine learning continue to permeate various sectors, ensuring the security of data architectures against potential breaches is paramount to maintaining trust and integrity in data handling processes.
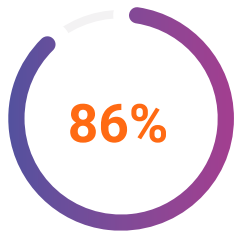
86% 86% of data leaders say the key drivers that influence their decisions the most when selecting a data architecture are avoiding vendor lock-in with a flexible data management platform across the enterprise, the need for improved data management and governance and improving efficiency and operational costs.
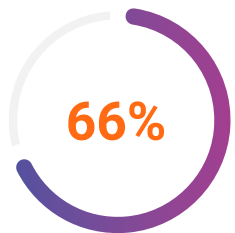
66% 66% of data leaders say the most pressing upcoming issues for data include aligning with emerging data ecosystems, migrating from legacy data systems and enforcing data governance and security measures.
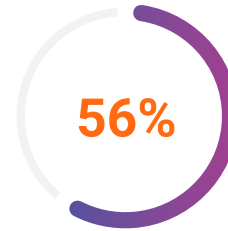
56% 56% of data leaders prioritize trends for increased data privacy and security measures in the realms of generative AI, cloud computing and the explosion of data.
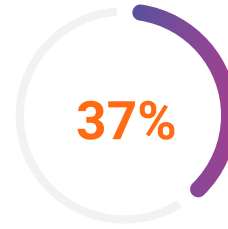
37% 37% of data leaders say their companies plan to remain hybrid with on-premises and cloud services.
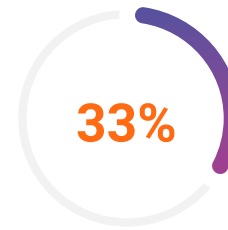
33% 33% of data leaders say their companies have a cloud-first environment for data and analytics.
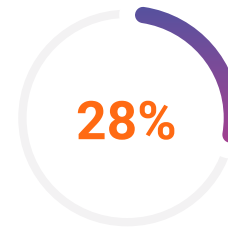
28% 28% of data leaders identified the sudden shift in technology trends as a top challenge.

"Improvements to the data system ensured organizational efficiency and effectiveness."
Senior Manager, Solutions Architect, Financial Services, United States

Adoption of Modern Data Architectures

Modern data architecture patterns, such as data lakehouses, data mesh and data fabrics are gaining prominence. These architectures not only facilitate efficient data management but also enhance the agility and scalability of organizations to leverage real-time analytics and advanced AI applications.

While investing in modern data architecture can be a significant undertaking, data architects worldwide agree it is an effort worth pursuing. Research from Statista and Bernard Marr & Co. estimates that enterprises worldwide will generate 147 zettabytes of data this year and 181 zettabytes by 2025. In comparison, just 41 zettabytes of data were created five years ago, highlighting the exponential growth of big data.

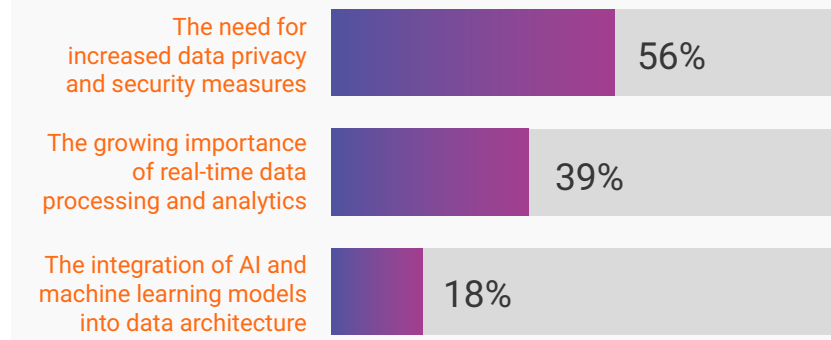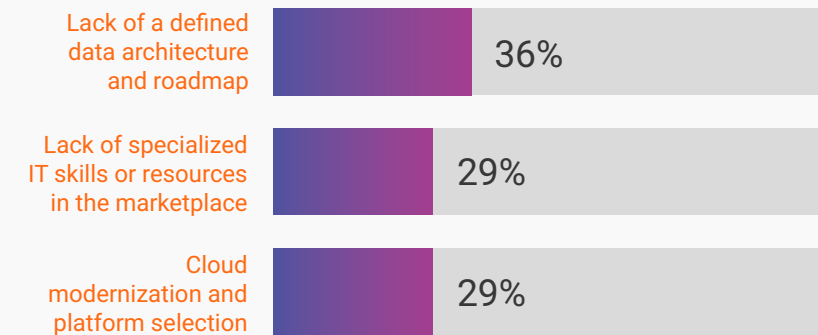**Which of the following trends is impacting data architects the most in the realms of generative AI, cloud computing, and the explosion of data?**

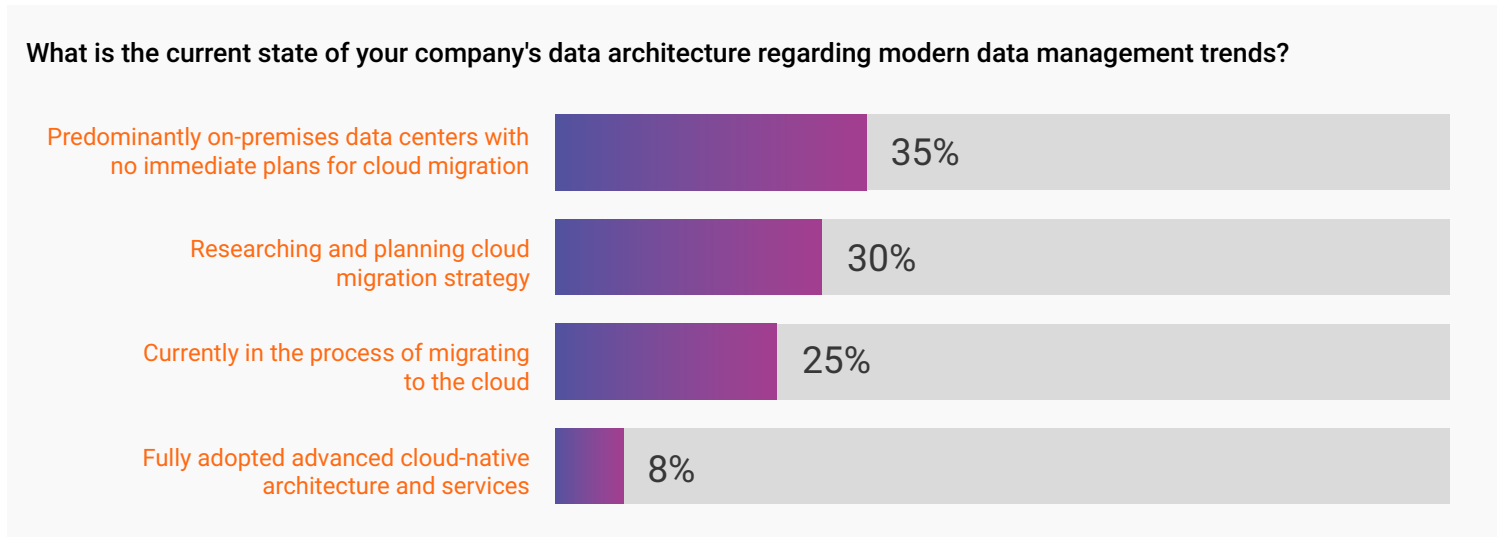|	
The need for increased data privacy and security measures	56%
The growing importance of real-time data processing and analytics	39%
The integration of AI and machine learning models into data architecture	18%

What do you consider to be the top challenges facing enterprise data architects in the adoption and management of modern data architecture, analytics and AI?

Lack of a defined data architecture and roadmap	36%
Lack of specialized IT skills or resources in the marketplace	29%
Cloud modernization and platform selection	29%

Informatica's respondents were asked which trends are most impacting data architects in the realms of generative AI, cloud computing and the explosion of data. Of these, 56% cited the need for increased data privacy and security measures as paramount, 39% emphasized the growing importance of real-time data and 18% noted the integration of AI and machine learning (ML). Totals exceeded 100% because respondents could select multiple trends.

The top challenges facing enterprise data architects in the adoption and management of modern data architecture, analytics and AI included the lack of a defined data architecture and roadmap (36%). Additionally, 29% cited a lack of specialized IT skills or resources and challenges with cloud modernization and platform selection.

What is the current state of your company's data architecture regarding modern data management trends?

Predominantly on-premises data centers with no immediate plans for cloud migration	35%
Researching and planning cloud migration strategy	30%
Currently in the process of migrating to the cloud	25%
Fully adopted advanced cloud-native architecture and services	8%

When asked specifically about their organization's data architecture regarding data management trends, 35% of respondents stated they still predominantly use on-premises data centers with no immediate plans for cloud migration. Another 30% are researching and planning a cloud migration, 25% are currently in the process of migrating to the cloud and just 8% have completed the migration to a fully cloud-native architecture.

A senior manager, data architect at a soft-drink bottler in Japan said, "It was hard to access data because it was spread out. The migration made things easier by putting all the data in one place." The company has nearly completed its migration to become fully cloud native.

The senior director of enterprise architecture – commercial systems

at a U.S.-based retail service company said, "We had difficulties with changing data formats. The migration made things better by making the data formats simpler and easier to work with."

"The modernization process is helping us eliminate security threats with enhanced encryption and access controls."
Director, Solutions Architecture,
IT services, United Kingdom

Cloud-First Strategies

Cloud computing continues to dominate, with many companies adopting a cloud-first approach for their data and analytics frameworks. The survey reveals that 33% of companies maintain a cloud-first environment that supports ongoing migration and modernization efforts towards cloud-native architectures.

There are numerous reasons why a company might choose to modernize its data architecture. A third of respondents (33%) worldwide identified avoiding vendor lock-in with a flexible management platform across the enterprise as the top driver influencing their purchase decisions. Close behind, 27% cited the need for improved data management and governance, while 26% prioritized improving efficiency and reducing operational costs.

Interestingly, the least-mentioned drivers were aligning with the existing IT strategy and roadmap (3%) and security and compliance concerns (1%). This suggests that data architects are more focused on forward-looking, vendor-neutral solutions rather than products that integrate with existing, on-premises operations.

When selecting a specific data architecture for your organization, which key drivers influence your decision most?

Driver	Percentage
Avoiding vendor lock-in with a flexible datamanagement platform across the enterprise	33%
The need for improved data management and governance	27%
Improving efficiency and operational costs	26%
Aligning with the existing IT strategy and roadmap	3%
Security and compliance concerns	1%
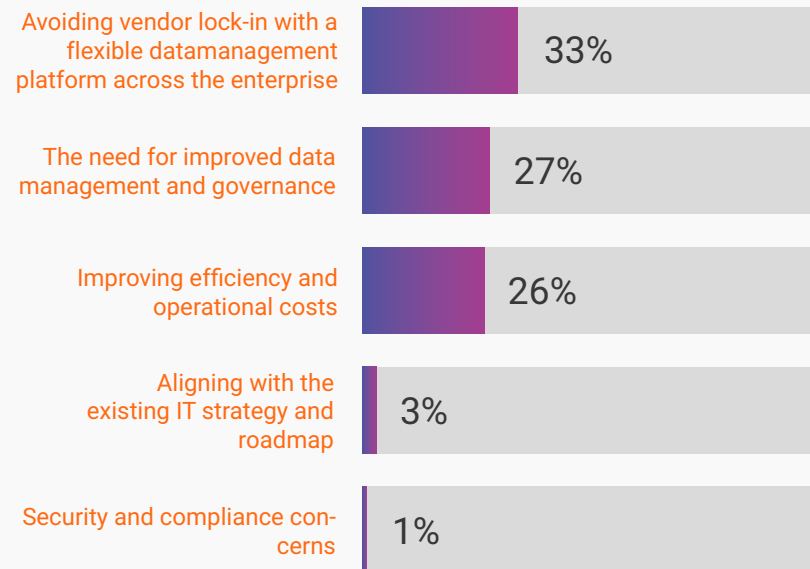
AI-Powered Automation

AI-powered automation within data management platforms is another critical capability that is becoming indispensable. This trend is primarily driven by the need to efficiently handle the exploding volumes of data, fostering quicker decision-making processes and reducing operational bottlenecks.

Regarding the critical capabilities sought in a modern cloud-native data management platform, 33% of data architects highlighted AI-powered automation. Additionally, 25% valued the agility to onboard new data management use cases, while the flexibility to design modern data architecture patterns and elasticity were noted by 21% and 20% of respondents, respectively.

"We updated our data system to solve problems with managing information."

Senior Enterprise Architect Manager,
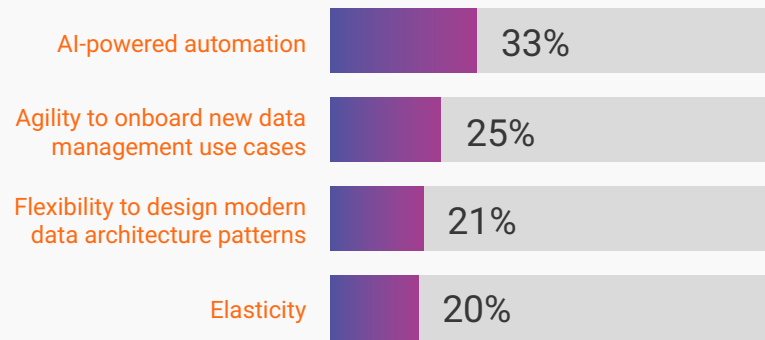Chemical Manufacturer, United States

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Sometimes, the primary driver for modernizing data architecture is to bring simplicity and ease of use from a state of chaos. The director of enterprise architecture at a Canadian financial services firm remarked, "Our initial data model was too complicated. It is now simplified to make it easier to understand and work with." Similarly, the senior manager of enterprise architecture at a U.S. retailer stated, "We simplified processes by transitioning to a less complex system."

A senior cloud solution architect manager at a major software developer in Japan shared, "Legacy systems held us back. Now, things work better because we moved past those old limitations." These examples demonstrate the desire to bring order to chaos is a universal motivator.

Additionally, a director and senior managing enterprise architect at a large bank in Canada noted, "With forecasting features now in place, our company can predict future models more accurately, helping to manage inventory and plan effectively."

The value of AI and ML is also frequently discussed. A senior manager of enterprise architecture at a telecommunications service provider in Australia explained, "Advanced machine learning now allows our systems and computers to learn more and make better decisions on their own."

What critical capabilities are you seeking in a modern cloud data management platform?

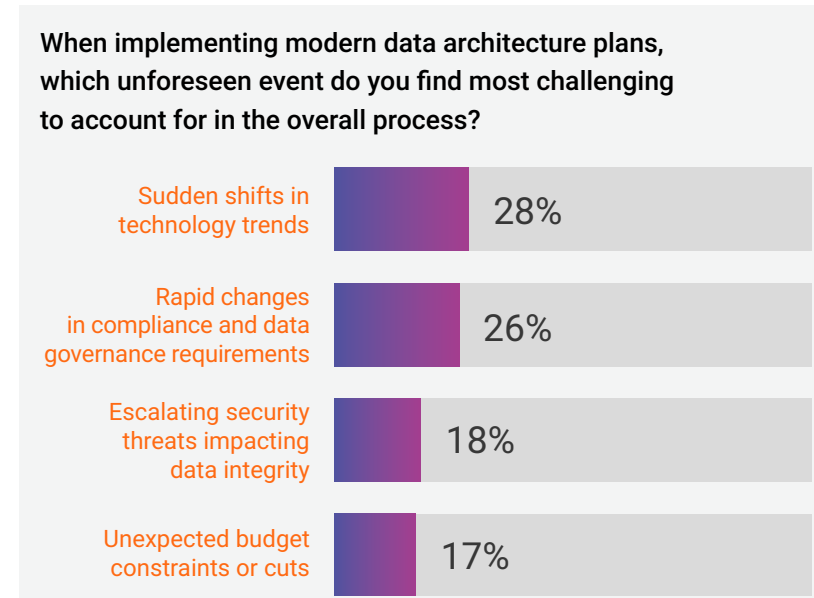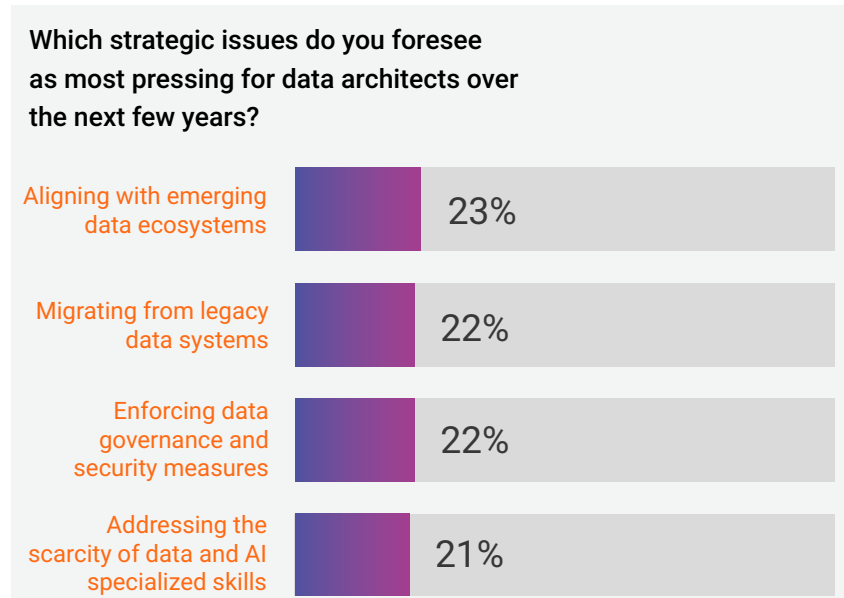|	
AI-powered automation	33%
Agility to onboard new data management use cases	25%
Flexibility to design modern data architecture patterns	21%
Elasticity	20%

Strategic Modernization Efforts

Finally, the strategic effort to modernize data platforms to enable real-time analytics and adopt IoT and AI/ML analytics is widespread among organizations. These initiatives are being budgeted and prioritized to stay competitive in a data-driven world, reflecting a broader commitment to technological advancement.

Data architects face numerous considerations as they modernize their environments. According to a recent survey, 23% of respondents identified aligning with emerging data ecosystems as their most pressing strategic issue for the near future. This was closely followed by migrating from legacy data systems and enforcing data governance and security, both cited by 22% of respondents. Addressing the scarcity of data and AI-specialized skills was a concern for 21%.
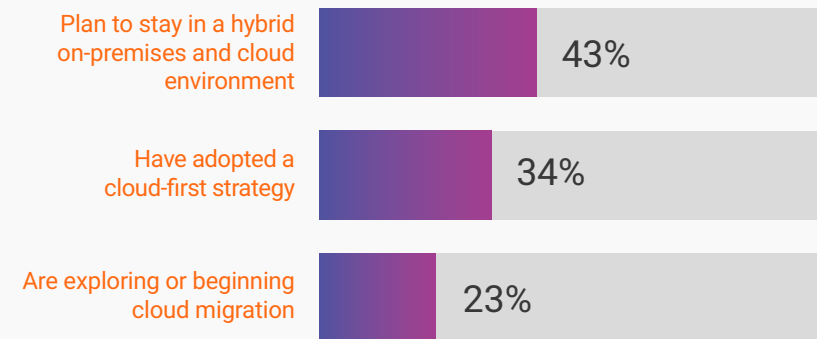
As with any upgrade, data architects must prepare for potential challenges during the transition. The top concerns cited by data architects included sudden shifts in technology trends (28%) and rapid changes in compliance and data governance requirements (26%). Escalating security threats impacting data integrity were noted by 18%, while unexpected budget constraints or cuts were mentioned by 17%.

Which strategic issues do you foresee as most pressing for data architects over the next few years?

Aligning with emerging data ecosystems	23%
Migrating from legacy data systems	22%
Enforcing data governance and security measures	22%
Addressing the scarcity of data and AI specialized skills	21%

When implementing modern data architecture plans, which unforeseen event do you find most challenging to account for in the overall process?

|	
Sudden shifts in technology trends	28%
Rapid changes in compliance and data governance requirements	26%
Escalating security threats impacting data integrity	18%
Unexpected budget constraints or cuts	17%

Architecture Trends by Industry

Taking a closer look at trends across various industries, we can gain valuable insights into what data leaders are prioritizing today. Let's examine each sector:

Financial services sector

Plan to stay in a hybrid on-premises and cloud environment	43%
Have adopted a cloud-first strategy	34%
Are exploring or beginning cloud migration	23%

Healthcare sector sector

Plan to stay in a hybrid on-premises and cloud environment	33%
Have adopted a cloud-first strategy	28%
Are exploring or beginning cloud migration	39%

In the financial services sector, nearly half of data leaders report they will retain at least some of their data on-premises. This is unsurprising, as much of their data represents business-critical intellectual property, which they prefer to control directly. However, client-related data can safely reside in the cloud, making it faster and easier for customers to access.
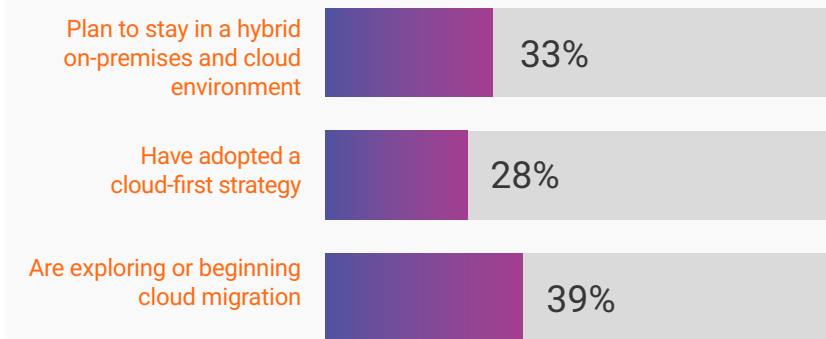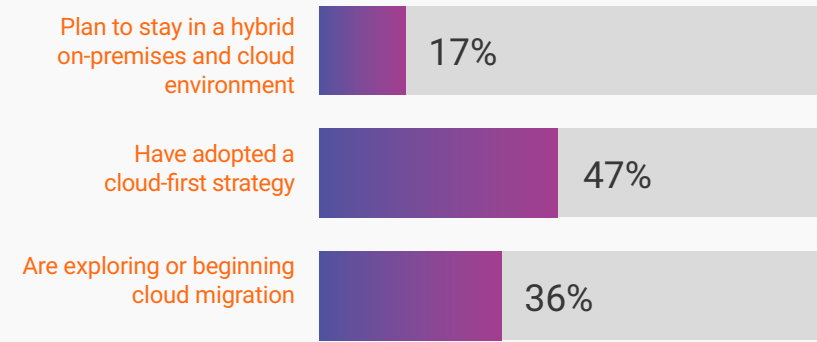
In the healthcare sector, a distributed model can be more appealing. For the pharmaceutical industry, cloud-based, high-performance computing capabilities significantly reduce capital expenditures.

Architecture Trends by Industry

Manufacturing sector

Plan to stay in a hybrid on-premises and cloud environment	17%
Have adopted a cloud-first strategy	47%
Are exploring or beginning cloud migration	36%

Software industry

Plan to stay in a hybrid on-premises and cloud environment	47%
Plan to use a cloud-first strategy	25%
Are exploring or beginning cloud migration	27%

Traditional manufacturing operations greatly benefit from using cloud-based resources, though production lines still require on-premises solutions. Smaller manufacturers can leverage cloud-based resources to manage their supply-chain cybersecurity needs.
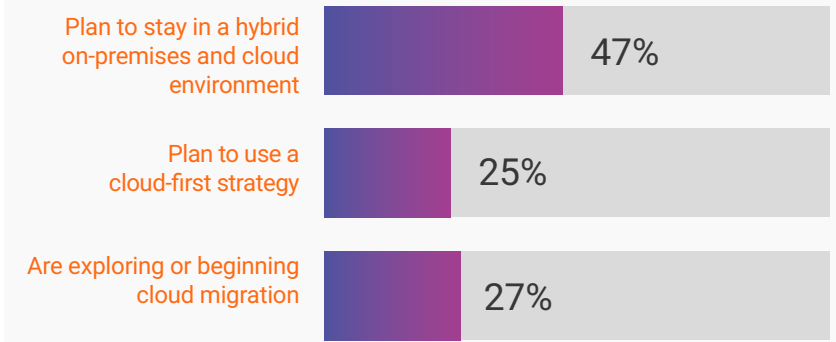
Although the software industry might seem like a natural fit for cloud-based resources, a substantial amount of data falls into the intellectual property category, which some developers prefer to keep closer at hand. As a result, cloud-first migration is progressing more slowly in this sector than in others.

Users' Perspectives

Data leaders recognize that modernizing to a cloud-first strategy is crucial for deploying, operationalizing and scaling data within their organizations and for their customers.

"The new system addresses issues before they escalate to prevent disruptions."
Senior Enterprise Architect,
Healthcare, Australia

"Improved natural language processing now helps our computers understand human language better, making communication and data analysis easier."
Head of the Unified Cloud and Platform Architecture,
Software Development, Japan

"We increased the speed of processing data by modernizing our data structure."
Director of Enterprise Architecture Management,
Life Sciences, Germany

"Effortless collaboration among our teams enhances productivity."
Senior Cloud Solutions Architect Manager,
Software Development, Japan

"The new IT infrastructure has reduced working complexity."
Senior Manager, Technology Architecture,
Public Utility, Canada

"Improvements to the data system ensured organizational efficiency and effectiveness."
Senior Manager, Solutions Architect,
Financial Services, United States

"By improving inventory management, our application can enhance stock availability, reduce excess inventory and increase operational efficiency."
Director of Enterprise Architecture,
IT Services, United Kingdom

"To gain better data insights, we enhanced our analytics capabilities."
Lead Expert, Enterprise Network Architect,
Financial Services, Germany

"By improving inventory management, our application can enhance stock availability, reduce excess inventory and increase operational efficiency."
Director of Enterprise Architecture,
IT Services, United Kingdom
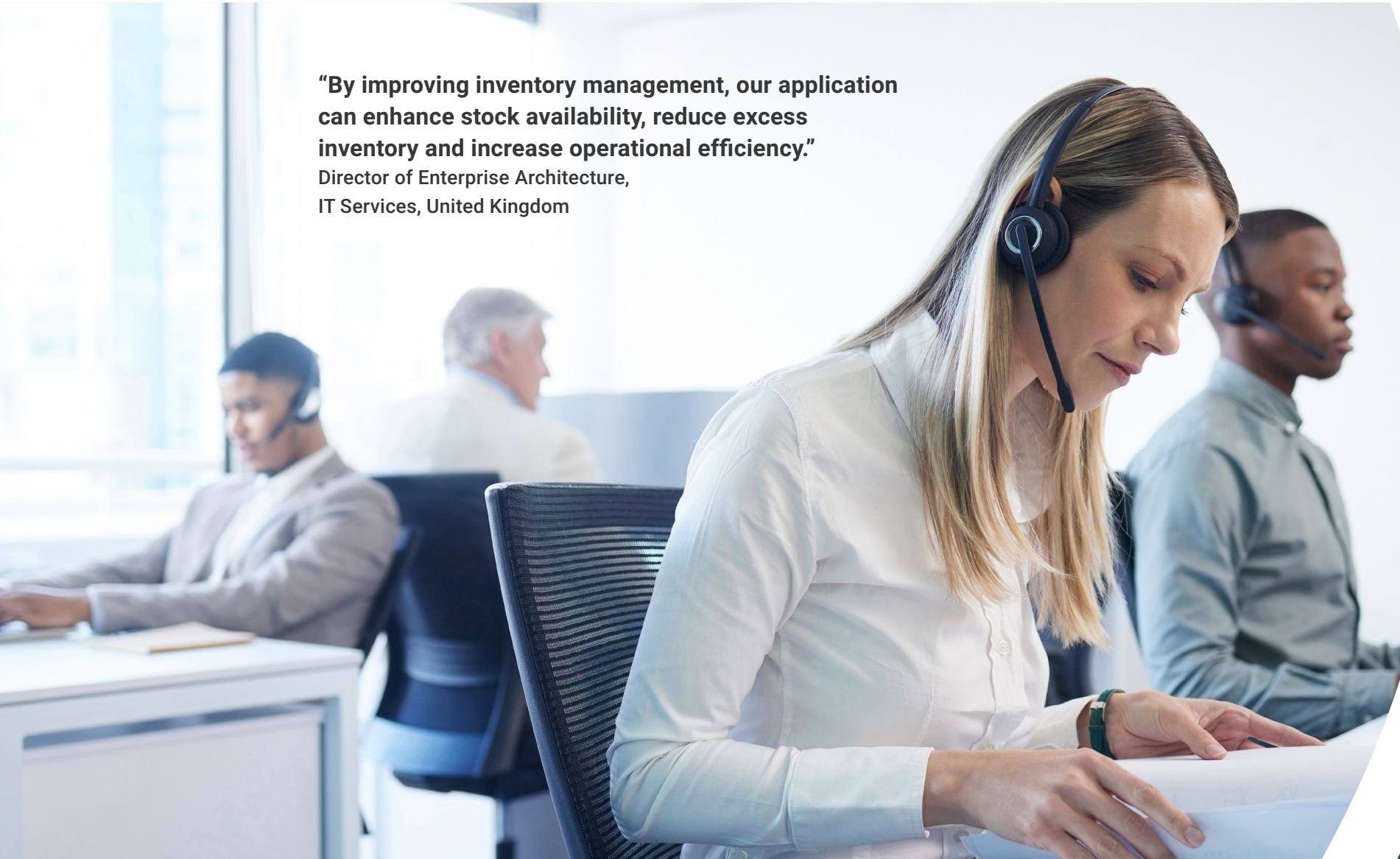
Conclusion

As the quantity of data enterprises collect and manage increases, so does the complexity of data governance and compliance controls. By modernizing the data architecture and enhancing it with scalable AI capabilities, data architects can better organize and process corporate data.

Delivering business value stems from the convergence of a foundation in AI and analytics; governance that enables effective, efficient and compliant management of data products; and robust data management, all built on a modern data architecture. Data products can be implemented using various patterns, such as data mesh, data fabric, microservices or event-driven architectures. The choice depends on your organization's existing technology infrastructure, modernization efforts and specific data product requirements.

Data leaders emphasized their need for robust cybersecurity controls and increased data privacy while relying more on real-time data. They also aim to align with emerging data ecosystems, focusing on best-in-class offerings rather than merely adding onto their existing computing environments. Compliance and cybersecurity hold equal importance to migrating from legacy systems, particularly when those systems result in vendor lock-in.

Currently, the trend is to move toward a cloud-native environment rather than maintaining a hybrid cloud/on-premises setup, although the hybrid model remains strong. When data architects find a model where improved data management and governance in the cloud come with enhanced efficiency, lower operating costs and AI-powered automation, the case for a cloud-native environment becomes compelling.

About Us

Informatica (NYSE: INFA) brings data and AI to life by empowering businesses to realize the transformative power of their most critical assets. When properly unlocked, data becomes a living and trusted resource that is democratized across your organization, turning chaos into clarity. Through the **Informatica Intelligent Data Management Cloud™**, companies are breathing life into their data to drive bigger ideas, create improved processes, and reduce costs. Powered by **CLAIRE®**, our AI engine, it's the only cloud dedicated to managing data of any type, pattern, complexity, or workload across any location — all on a single platform.

Where data & AI come to

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