2019 IT ARCHITECTURE MODERNIZATION TRENDS

A SURVEY OF IT EXECUTIVES AT LARGE ENTERPRISES

July 2019

dimensional research

Sponsored by DATASTAX

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Introduction

The world is evolving rapidly. Customers are demanding more, and business results are increasingly scrutinized. Today's technology has the potential to enable new revenue opportunities, smarter cost savings, and better insights to drive strategic planning. There have never been more opportunities for IT and technology visionaries to deliver game-changing innovations that drive direct business outcomes.

However, while the new world is exciting and full of potential, IT executives must first make the decisions on how to invest in innovation and new solutions without reducing support for existing business-critical technology. The only possible way to meet both objectives is through modernization of IT architectures.

But what does this mean for large enterprises? The following report, sponsored by DataStax, is based on an online survey of 304 IT executives working at companies with more than 5,000 employees. The goal of the survey was to understand current experiences with and plans to reduce complexity and cost around architecture modernization.

Key Findings

- **Architecture modernization is necessary — and hard**
  - 100% are modernizing their technology architecture
  - Top goals of modernization include reducing costs, improving customer and employee satisfaction, and gaining data-driven insights
  - 99% report challenges with architecture modernization
  - No standards exist for funding new application development
- **Flexibility in the cloud is key to architecture modernization**
  - 85% have cloud initiatives as part of modernization efforts
  - 72% are moving to a hybrid, multi-cloud infrastructure
  - More than half of all new application architectures will support hybrid or multi-cloud environments
  - 95% have concerns about vendor lock-in
- **Data is driving the need to modernize architectures**
  - 98% report challenges with their corporate data architectures with data silos topping the list
  - 99% say database architecture is important when building hybrid or multi-cloud environments
  - 84% say that they are developing more real-time transactional applications
  - Hybrid and multi-cloud applications are expected to have a deep level of data integration
- **Open source is increasingly valued by large organizations**
  - 82% report that their teams are more receptive to open source today than five years ago
  - 50% report open source is part of their architecture modernization plans
  - 32% prefer open source over commercial software and 30% have no preference
  - C-level IT executives are most likely to prefer open source

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Detailed Findings: Architecture modernization is necessary — and hard

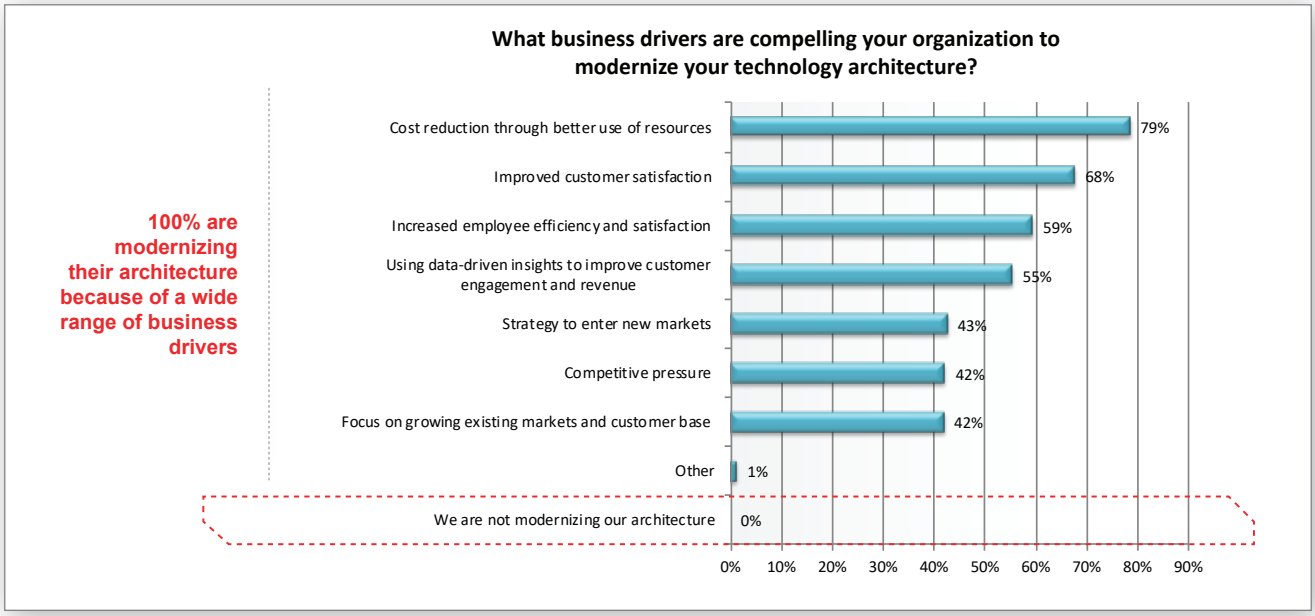
IT leadership reports a wide range of business drivers for modernizing architectures

Architecture modernization is truly a case where "everybody is doing it." All IT leaders (100%) in this study indicated that their teams are in the midst of an initiative to modernize their technology.

There are a broad range of business needs driving these modernization efforts. The most frequently reported driver is very pragmatic. Most IT leaders (79%) cited cost reduction through better use of resources as a motivation for architecture modernization.

In addition, more than half of businesses say they are modernizing because they want to improve customer satisfaction (68%), increase employee efficiency and satisfaction (59%), or use data-driven insights to improve engagement and revenue (55%). Other frequently reported drivers for modernization included a strategy to enter new markets (43%), the need to respond to competitive pressure (42%), and the desire to grow their existing markets (42%).

This variety in business drivers for architecture modernization was further emphasized by participants that took time to write in "Other" answers. These included compliance needs, pressure for faster innovation, security improvements to reduce operational risk, and minimizing technical debt.



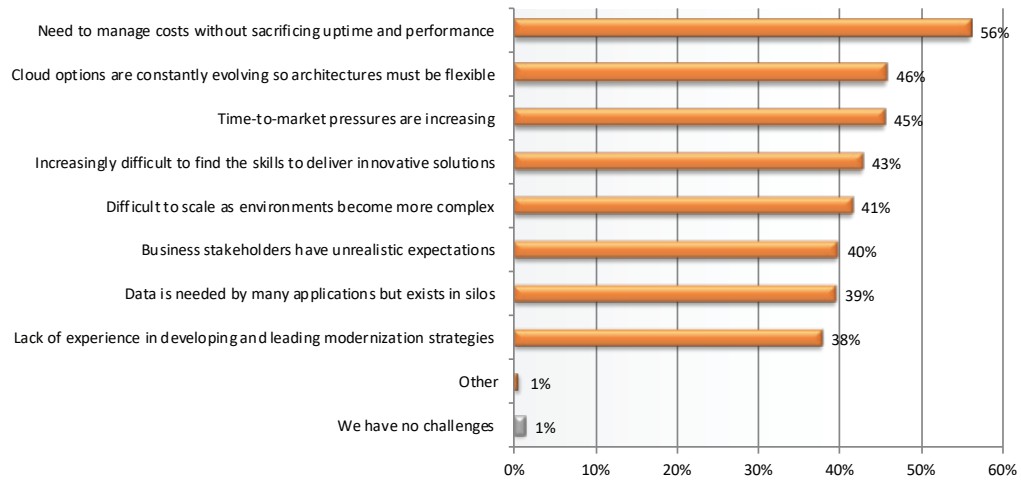
Architecture modernization is challenging

IT leadership also agreed that their technology modernization efforts are difficult. Almost everybody (99%) faces challenges with their technology modernization efforts, with many leaders reporting difficulties in balancing a variety of business and technical needs. The challenge that is faced most frequently by IT leadership is finding the balance between managing costs without sacrificing uptime and performance. More than half (56%) are struggling with this issue.

Other frequently reported difficulties include building flexible architectures that can adapt as cloud technologies evolve (46%), managing pressure to deliver solutions faster (45%), finding expert resources with the right skills to deliver innovative solutions (43%), scaling complex environments (41%), managing the expectations of stakeholders (40%), leveraging data that exists in silos across a wide range of applications and uses (39%), and lacking experience in modernization strategies (38%).

The "Other" responses emphasized the wide range of challenges faced by IT leadership from stakeholder management and establishing proper expectations, to specific technical constraints imposed by internal security requirements.

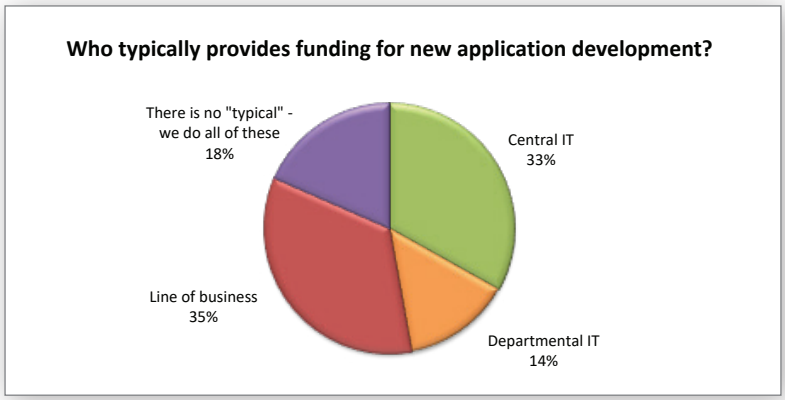
99% face challenges as they modernize their architecture



No standards exist for funding new applications

Any new business initiative will face the question of who will pay for it. Traditionally, IT has held the purse strings and managed all technology investments. Over the years, that approach has changed. Today, line of business teams in many large companies have taken on a direct role in deciding exactly how technology investments are made, often through their budgets.

This research shows that there is no general industry standard in how to find budgets for new IT solutions in today's business environment. It is just as common (35%) for business units, sales, finance, or other line of business functions to be responsible for funding new applications as it is for a centralized IT organization (33%) to do so. In some large companies, the responsibility for finding money comes from a departmental IT team (14%). And in others (18%) there is no "typical" way to fund new application development.



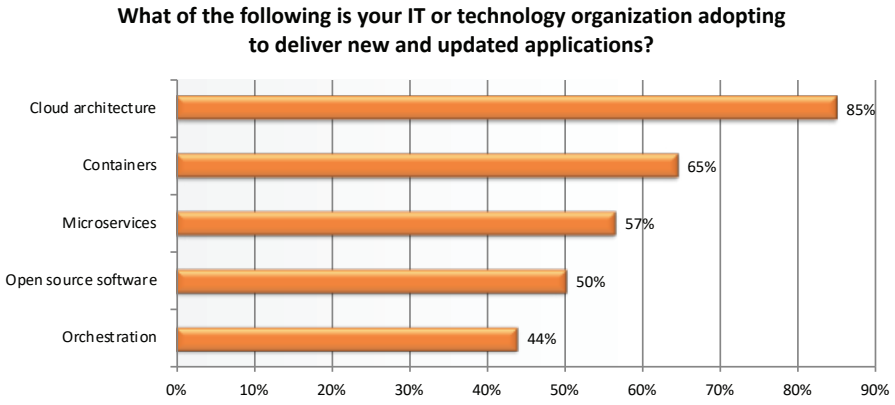
Detailed Findings: Flexibility in the cloud is key to architecture modernization

Cloud is top technology used for modernization

In the dynamic world of technology innovation, one of the most dramatic changes seen in recent years has been the adoption of cloud architectures. It was only a few years ago that most IT organizations viewed cloud as an interesting but very high-risk option. Few were willing to embrace cloud for anything significant. Cloud use focused primarily on development environments and non-critical departmental solutions.

The change in attitudes toward cloud architecture could not be more extreme. Today, IT leadership views cloud use as key to their technology modernization initiatives. It is the technology that is most frequently part of technology architecture modernization (85%), more than any other including containers (65%), microservices (57%), open source (50%), or orchestration (44%).

Cloud is top technology for architecture modernization

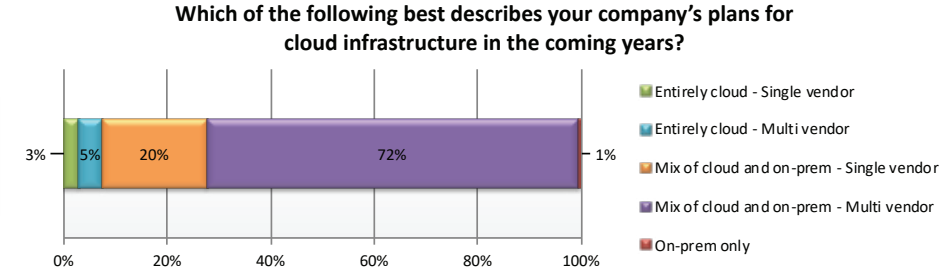


The future of cloud infrastructure will be hybrid, multi-vendor

Putting a bit of data or compute power into a single cloud provider without any integration to on-prem systems is fairly straightforward. However, the cloud infrastructure of the future will not be this simple. Applications will be built on hybrid environments that integrate on-prem environments to cloud systems and enable cloud solutions to connect to each other.

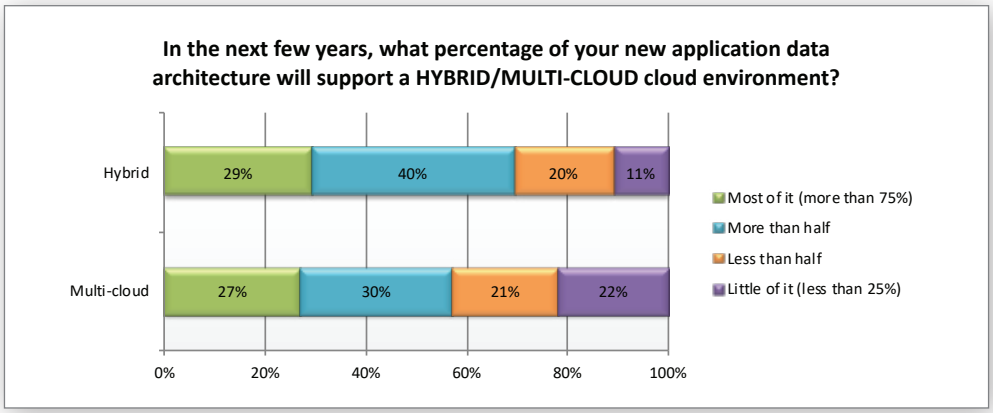
Most large companies have plans for complex cloud architectures that include multiple cloud providers (77%). The majority have plans for hybrid architecture that combines both on-prem and cloud environments (92%). Both of these types of cloud environments add complexity to the environment.

Almost three-quarters are planning for a hybrid, multi-vendor cloud infrastructure



To make it even more difficult for IT teams, most (72%) say that their future cloud infrastructure will include BOTH layers of complexity and will combine hybrid with multi-cloud.

It should be emphasized that these hybrid with multi-cloud environments will not be the exception, they will be the norm. IT leadership at large companies report that the majority of new applications will support these complex environments. More than two-thirds (69%) say that more than half of their new application data architecture will support a hybrid cloud environment. Similarly, well over half (57%) say that new application data architectures will support a multi-cloud environment.



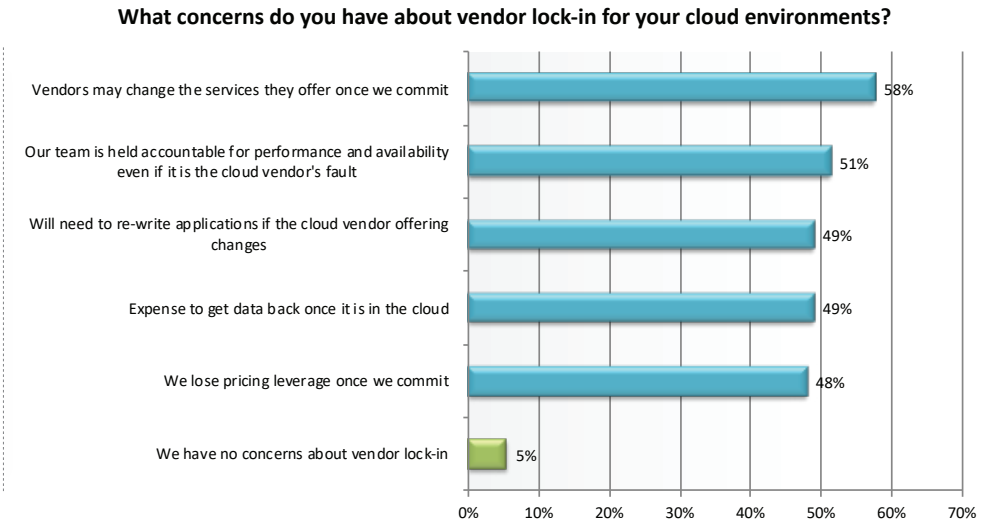
Significant levels of concern about vendor lock-in for cloud environments

The broad adoption of complex cloud architecture should not be interpreted as a sign that IT leadership views cloud use as a simple or an easy solution. There are many concerns about technical, security, and business risks related to cloud adoption.

One of the most consistent concerns reported by IT leadership is the potential for vendor lock-in, when it becomes difficult or even impossible to bring infrastructure and data back on-prem or move it to another provider. Embracing cloud architecture has many clear benefits, but it does mean giving up a certain level of control. Business-savvy, IT executives understand that this issue must be managed.

Cloud vendor lock-in creates risks that savvy IT executives must include in their architecture strategies. Almost all (95%) report concerns about the potential for lock-in with their cloud vendors. These include cloud vendors that change their services after a long-term commitment is made (58%), worries about the reputation of their IT team as they will blamed when the cloud vendor has an issue even though they have no control to fix it (51%), risk that applications will need to be re-written if the vendors change their offering (49%), potentially huge costs to get data back in-house once it is in the cloud (49%), and loss of pricing leverage once a vendor commitment is made (48%).

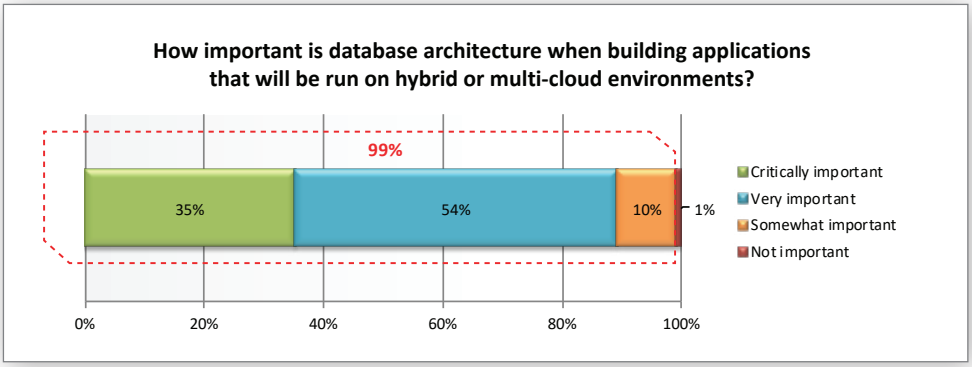
95% have concerns about vendor lock-in for their cloud environments



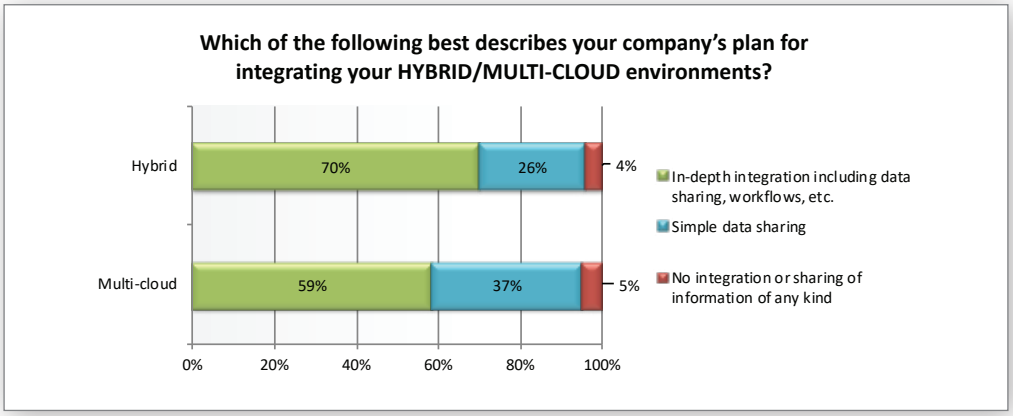
Detailed Findings: Data architecture is critical to modernization efforts

Database architecture matters

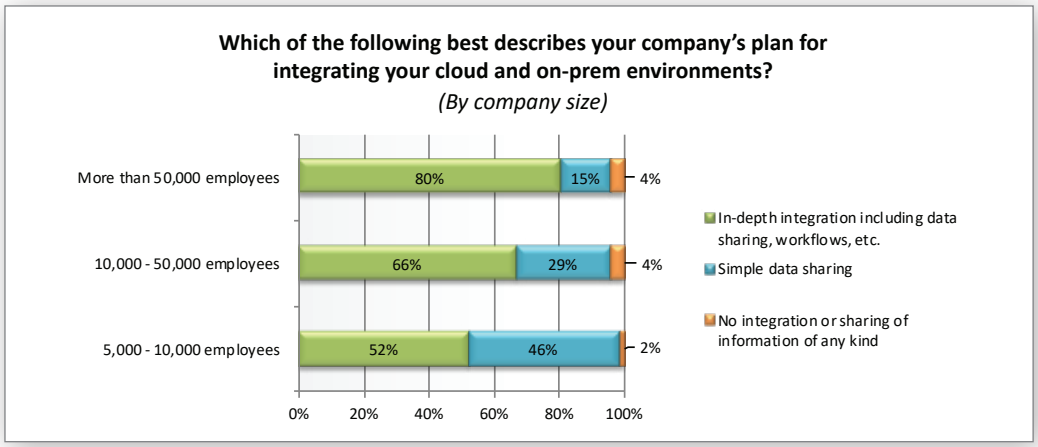
Database architecture can be uncoordinated, lack consistent policy enforcement for data access or updates, and not provide a coherent way for users to find the data they need. To leverage data effectively, organizations need to design a multi-cloud architecture that unifies data silos, accelerates migration, enables developers, and improves compliance, data security, performance and uptime. IT leadership is in violent agreement (99%) about the importance of database architecture, with the vast majority (89%) characterizing the importance as "critical" or "very."



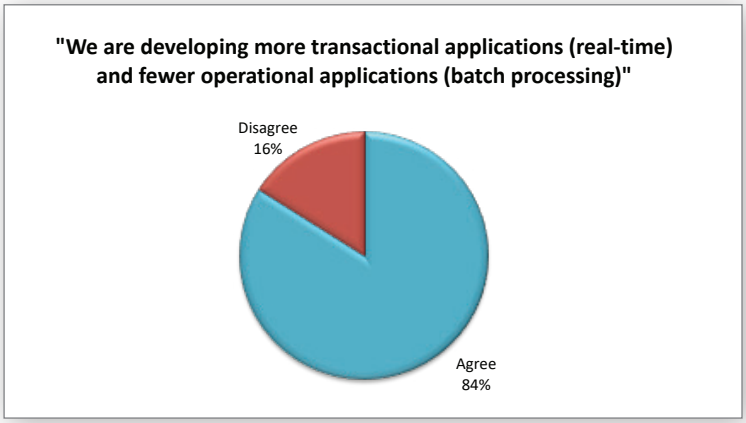
It is not surprising that data architecture is so important in hybrid and multi-cloud environments, particularly considering the deep level of integration planned for these environments. Companies expect to build a deep level of integration including data sharing, workflows and more in both their hybrid (70%) and multi-cloud (59%) environments. Only a small percentage of companies (4% for hybrid and 5% for multi-cloud) report that their complex cloud environments will not share data.



These plans for in-depth integration become even more pronounced at the largest companies. For example, when considering only companies with 50,000 employees or more, the majority (80%) report plans for the deepest level of integration of their hybrid environments.



Data architecture is also becoming more important because of the types of applications that are being built. IT leaders (84%) consistently report that the applications they are increasingly developing are transactional applications that need real-time data while having less of a demand for operational applications that can be handled using simpler batch processing approaches.

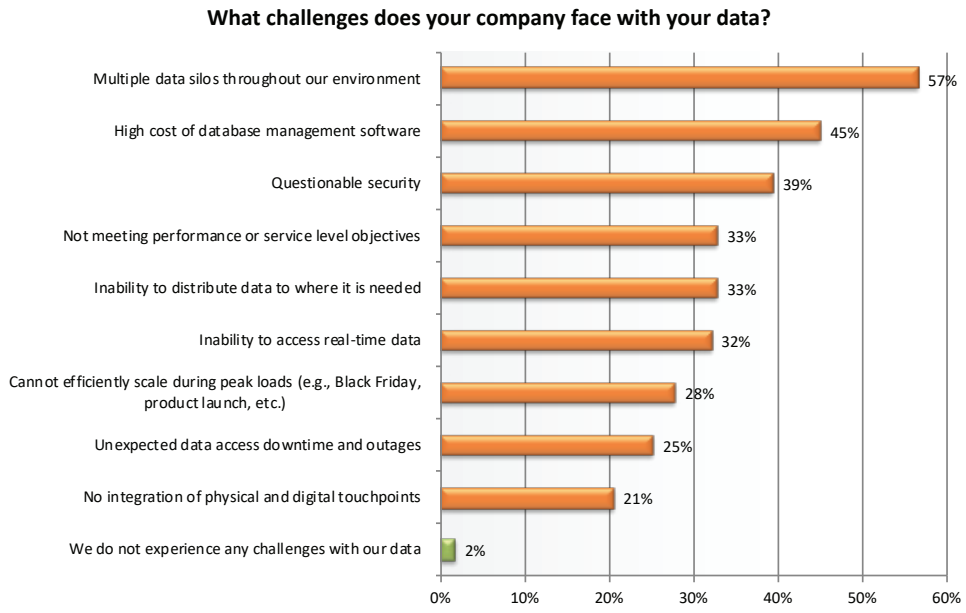


New data demands create new challenges for IT teams

The changes needed in data architecture are creating significant issues for IT organizations. Almost all large companies (98%) report that they are facing challenges with their data with the most frequently reported problem being a need to manage multiple data silos (57%).

Other issues reported include the high cost of database management software (45%), concerns about data security (39%), performance issues (33%), inability to distribute data where it is needed (33%), lack of access to real-time data (32%), scalability (28%), and more.

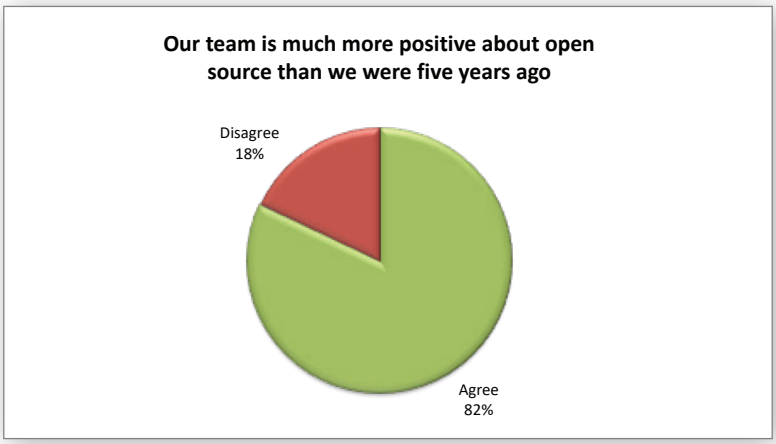
98% report challenges with corporate data — data silos top the list



Detailed Findings: Open source software is increasingly valued

Attitudes towards open source software have shifted dramatically in the past five years

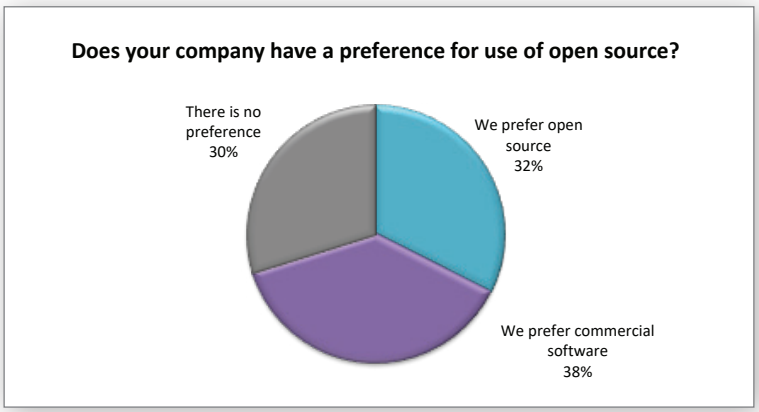
Open source software has been widely accepted at large enterprises at the operating system level for a long time, but there has traditionally been some hesitation about using open source for building application functionality. IT leadership is now reporting that in the past few years they have seen a significant change in attitudes and use of open source software. The majority (82%) agree that their teams are much more positive about open source today than they were just five years ago.



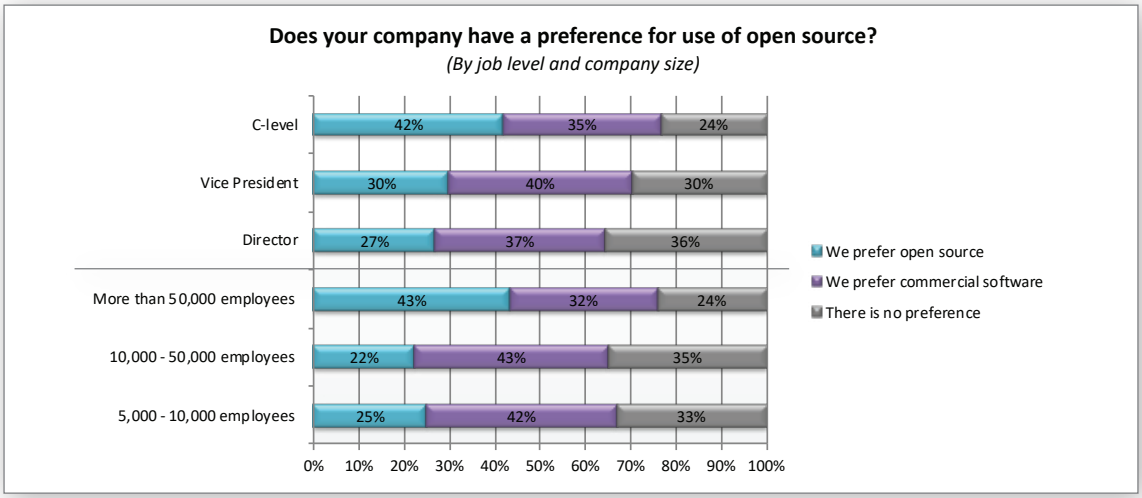
This attitude is being seen in actual use of open source for application delivery. Half of IT leadership (50%) say that their teams will be using open source for their application modernization efforts.

Many large companies have a preference for open source

It is remarkable that attitudes towards open source have changed enough that today one-third of large companies (32%) are reporting that they have a preference to use open source over commercial software options. Close to a third (30%) say that they don't have a preference. Only 38% say that they prefer commercial software.



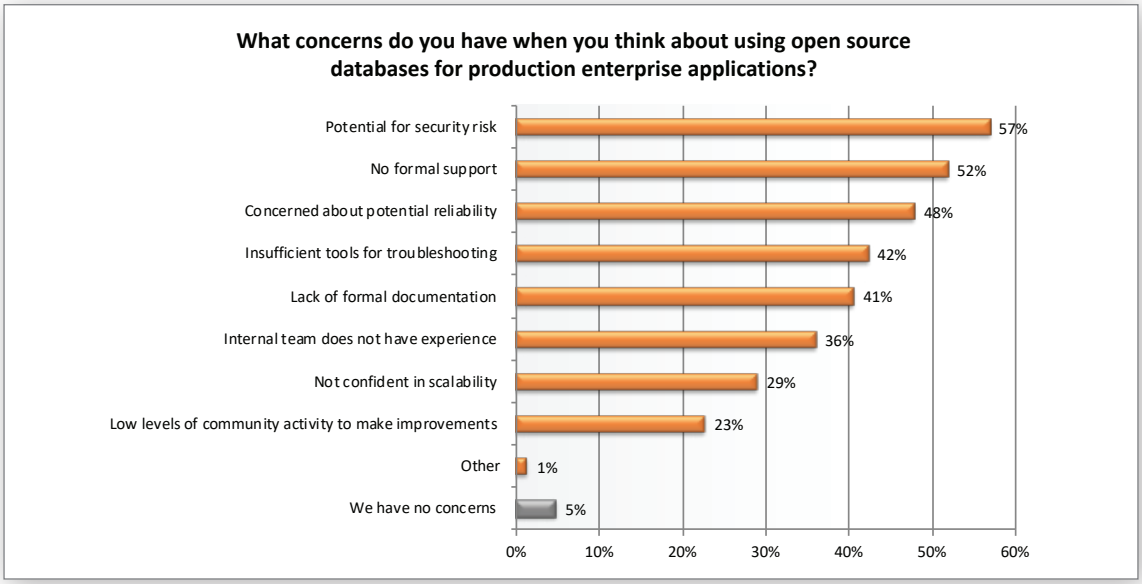
This preference for open source becomes even more pronounced among top executives and very large companies. CIOs and other C-level technology executives are the most likely to say that they prefer open source (42%) as are IT leaders at companies with more than 50,000 employees (43%).



Concerns about open source databases must be addressed

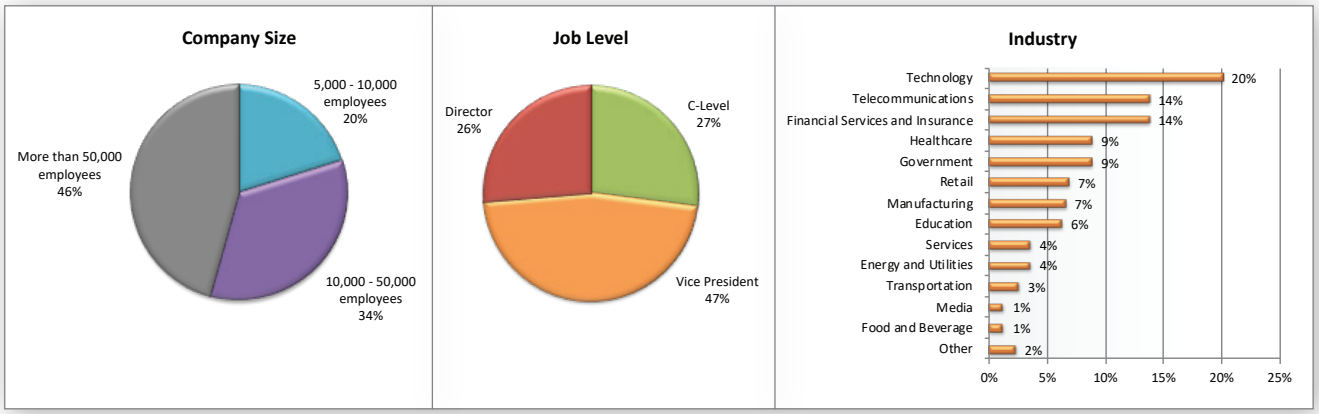
With attitudes towards open source changing, particularly among executives, there is a wider range of technology options available to architecture decision makers. However, IT leadership is clear that this is not all clear sailing. Open source solutions must be chosen strategically to ensure that they meet the needs of the organization.

For example, there are concerns about open source databases for use with production enterprise applications. IT leadership will require that these are addressed before approving the use of open source. In particular, security (57%), access to formal support (52%), reliability (48%), tools for troubleshooting (42%), and documentation (41%) are cited as issues that they need to consider when selecting open source databases.



Survey Methodology and Participant Demographics

An online survey was sent to independent sources of IT executives working at large companies. A total of 304 qualified participants completed the survey. All worked in IT leadership and decision-making roles at a company with more than 5,000 employees. Participants included a mix of job levels, company sizes, and industries.



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