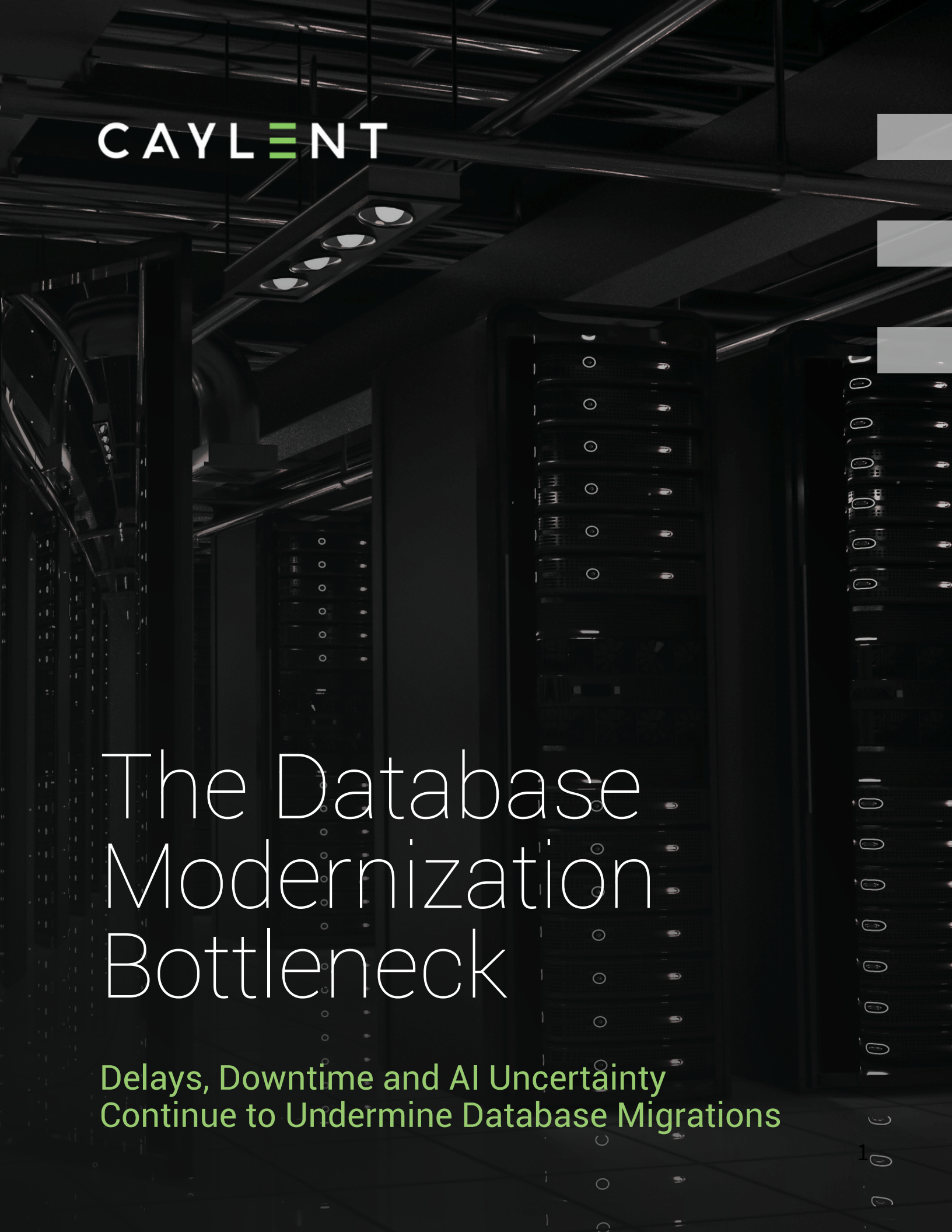

CAYLENT

The Database Modernization Bottleneck

Delays, Downtime and AI Uncertainty Continue to Undermine Database Migrations

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Overview

Database migrations are critical to digital transformation, but all too often, they're slower, more disruptive, and more expensive than expected. As organizations embrace the cloud, automation, and AI, modernizing legacy data platforms is no longer just a backend upgrade – it's a strategic requirement. Legacy databases often hinder agility, scalability, and real-time insight, making them a key obstacle on the path to innovation.

But database modernization remains one of the most difficult and failure-prone initiatives in enterprise IT. Migrating workloads across platforms – whether from on-premises to cloud or between cloud environments – often requires sorting through years of deeply embedded systems, inconsistent data structures, and tightly connected processes. Add to that, concerns around cost overruns, licensing lock-in and growing uncertainty about how to effectively leverage AI, and it's no surprise that timelines slip and teams struggle.

Industry research confirms these roadblocks, with one recent study showing only 46% of data migration projects were delivered on time and just 36% kept to the budget forecast. These setbacks don't just delay IT goals – they disrupt the customer experience, operations, and the bottom line.

In this report, Caylent unpacks insights from more than 300 IT leaders across industries who have managed recent database migrations. Their experiences paint a clear picture of their current state – and why a smarter, faster, and more strategic approach to modernization is long overdue.

Delays Are the Norm, Not the Exception

Respondents were asked how much longer their most challenging database migration project took compared to the original plan. The results make it clear: delays are not the exception, they're the standard.

6%	Only **6%** completed their most challenging migration on time
85%	Nearly **85%** said it took between 1 week and 6 months longer than planned
19%	delays of 1-2 weeks
31%	delays of 3-4 weeks
21%	delays of 1-3 months
10%	delays of 4-6 months
4%	delays of more than 6 months

Unfortunately, migration delays are not isolated incidents. They're systemic. Most organizations struggle to accurately scope the time, effort, and resources required for database modernization – a warning sign for both IT and business leaders.

Numerous patterns likely contribute to these delays:

- Underestimating complexity, particularly with legacy systems or undocumented dependencies
- Lack of automation in critical stages like data movement and code conversion
- Insufficient testing leading to defects found late in the migration process
- Insufficient resourcing, planning, or executive alignment
- Overconfidence in internal capabilities or timelines without factoring in disruption or downtime risks

And the consequences can go beyond schedule slips: delays increase costs, stretch teams thin, and heighten business disruption. They also erode confidence in IT-led transformation efforts. To reverse the trend, organizations need to treat database migrations as mission-critical initiatives, not back-office tasks.

This means investing in areas like:

- Realistic project scoping and timeline modeling
- Purpose-built tooling to accelerate repetitive or error-prone tasks
- Automation and AI where it can reduce manual lift
- External expertise where internal experience is limited

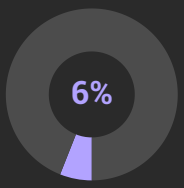
With better planning and the right support, organizations can reduce friction and finally bring their modernization timelines closer to reality.

Industry Spotlight

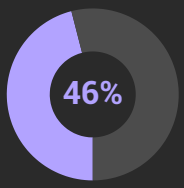
Across industries, the most common delays identified were in the 3- to 4-week range. **Healthcare and pharmaceuticals respondents reported 40% of delays within that range, more than any other industry.** This may reflect added time trying to manage complex compliance requirements, sensitive data systems, and tightly integrated clinical applications during migration.

Downtime Disruptions Are Costly

Respondents were asked how much downtime their organization experienced during their most challenging database migration, and what business impacts resulted from that disruption. The findings underscore how technical delays often translate into real operational and financial consequences.

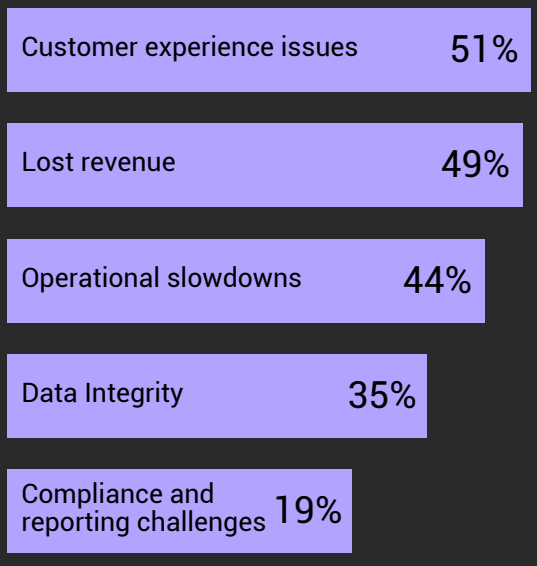


Only 6% achieved zero downtime



Nearly half (46%) experienced 5+ hours of downtime during migration

Downtime led to:



Database migrations aren't just backend projects, they're deeply tied to business continuity and customer experience. When downtime occurs, it isn't confined to the IT team. It affects sales, service, customer trust and beyond. Even a few hours of disruption can ripple across the organization, especially when critical systems are unavailable during transition. Downtime is not technical, it's reputational.

These findings suggest that many organizations are still treating migration as a purely technical exercise, without fully accounting for downstream business impact. High levels of downtime point to gaps in pre-migration planning, testing environments, or tooling that can support real-time or near-zero-downtime cutovers.

The Database Modernization Bottleneck

To improve outcomes, organizations must:

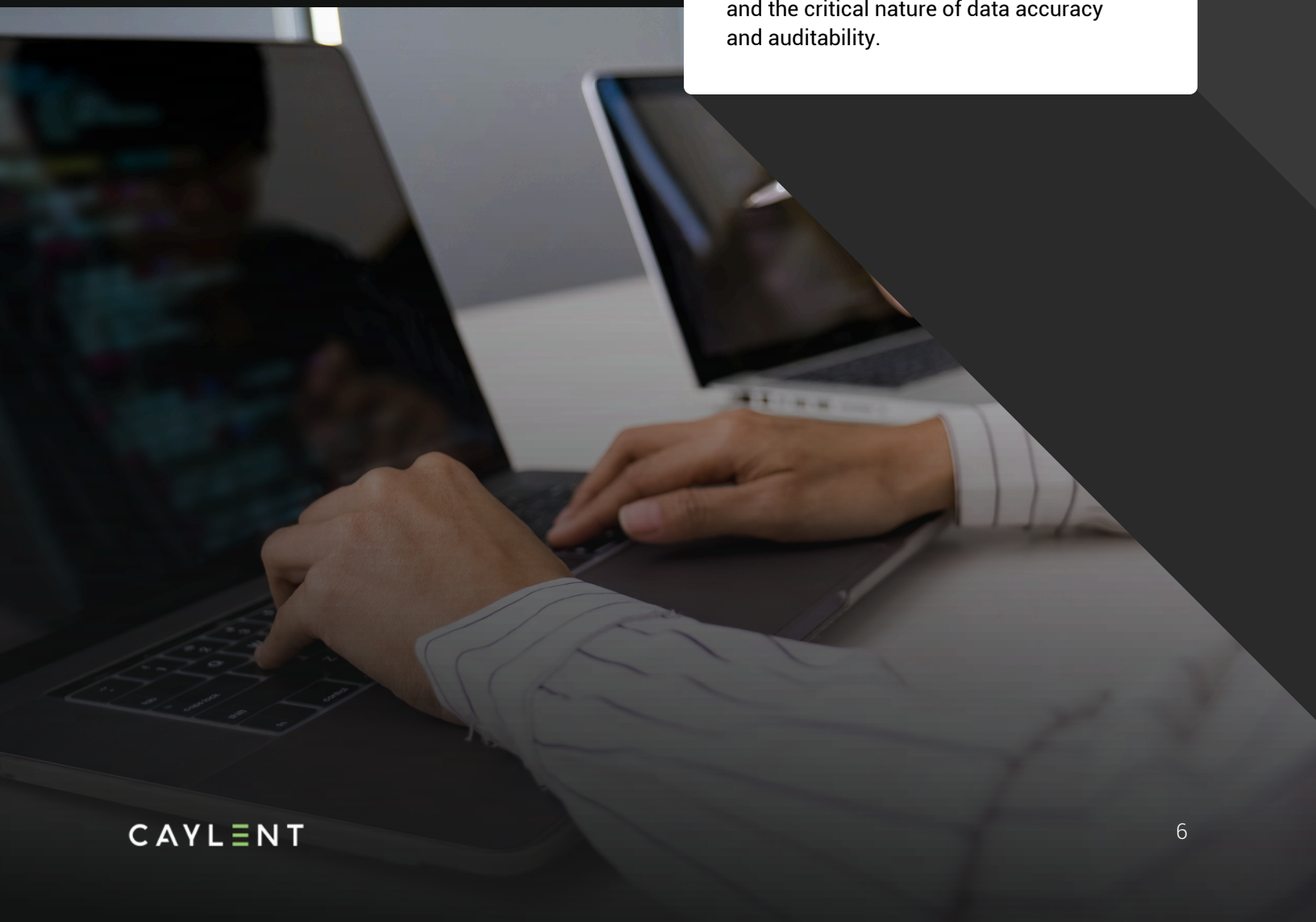
- Involve business stakeholders early in migration planning to assess acceptable risk and impact
- Invest in tooling that supports live data replication or phased cutovers, rather than one-time switchovers
- Validate as much of the logic that was impacted by the migration as possible ahead of production release
- Simulate migrations in staging environments to uncover failure points ahead of time
- Use automation to speed up the slowest and riskiest parts of the process (e.g., data movement and validation)

The message is clear: reducing downtime is not a "nice to have." It's a business imperative.

Organizations that build migrations around continuity and resilience will not only reduce risk, but position themselves for faster, smoother modernization in the future.

Industry Spotlight

All industries reported a negative revenue impact due to downtime, while **63% of entertainment and leisure respondents found a negative impact on customer experience,** likely given the sector's reliance on real-time digital engagement and service availability; **and 67% of utilities, energy and extraction companies saw impact on compliance and reporting,** emphasizing the segment's strict regulatory environment and the critical nature of data accuracy and auditability.



Migrations Are Common but Rarely Straightforward

Taking a step back, respondents were asked what types of database migrations their organizations had undertaken in the past two years and which of those migrations proved the most challenging. The results show a wide range of modernization activity, with most organizations tackling more than one type of migration.

Most common types of migrations:

58% **Cross-cloud**
56% **On-premises to cloud**
55% **Database version upgrades**

Most challenging migration type:

27% **On-premises to cloud**
25% **Database version upgrades**
24% **Cross-cloud**

Modernization is happening across the board, but it's far from seamless. Even the most common migration paths come with steep learning curves. Notably, the top three most frequent migration types are also the top three most challenging. This signals that even the most routine modernization paths, such as moving from on-premises to cloud or upgrading database versions, continue to present significant friction.

Several underlying challenges may be contributing to these difficulties:

- **Legacy complexity:** On-premises systems are often deeply customized and poorly documented, making cloud migrations especially risky and time-consuming.
- **Version mismatches:** Upgrading databases can break compatibility with applications or integrations that rely on deprecated features.
- **Cross-cloud confusion:** Even among mature organizations, shifting from one cloud platform to another introduces nuances in security, tooling, and performance that are difficult to predict.

These findings suggest that many organizations may underestimate the technical and organizational complexity of migrations or may lack the right tools and support systems to navigate them smoothly. While modernization is widespread, success is far from guaranteed without stronger planning, automation, and human expertise.

Industry Spotlight

On-premises to cloud migration was cited as the most challenging migration type by respondents in multiple industries, **including utilities, energy and extraction (67%), manufacturing (39%), and healthcare and pharmaceuticals (27%),** where legacy systems and regulatory pressures can add complexity.

Top Migration Drivers: Licensing Costs, Control, and Cloud Readiness

Respondents were asked to rank their organization's primary motivations for undertaking database migrations. The results reveal a practical focus: most organizations are prioritizing cost reduction and greater control over their technology stack. While innovation strategies are still on the radar, the most immediate drivers center on reducing licensing spend, escaping restrictive vendor contracts, and improving scalability.

Top three motivations (ranked):

34%
Remove vendor lock-in

28%
Reduce spend on database licensing

13%
Increase scalability

Cost and control remain powerful motivators for database modernization and for good reason. Reducing spend on database licensing and escaping restrictive vendor contracts can free up significant budget and unlock greater flexibility across the organization. In today's economic climate, these savings aren't just strategic, they're essential.

But while these goals are valid, they also highlight a broader trend: many modernization efforts are still reactive. Instead of starting with a vision for how data can enable faster innovation, more agility, or greater AI readiness, organizations are often driven by the need to cut costs or address legacy risk.

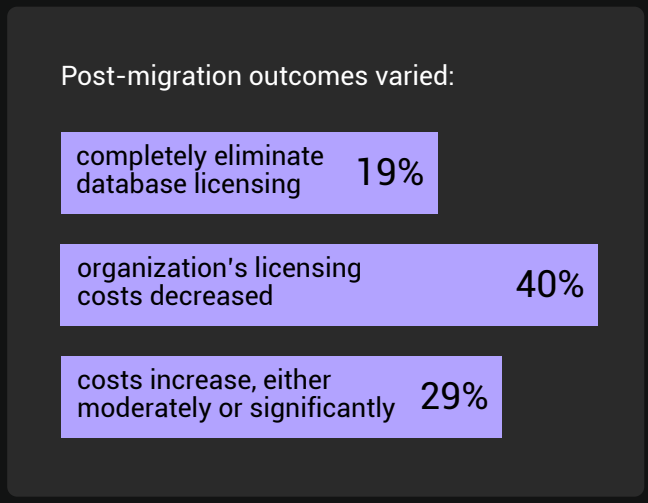
This mindset can limit the long-term value of modernization. When projects are scoped narrowly around cost savings, they may overlook opportunities to build a more scalable, future-ready foundation for growth.

Industry Spotlight

Making data AI-ready ranked consistently low as a driver across all industries. **In fact, not a single respondent from entertainment and leisure or utilities, energy and extraction ranked this as their top priority.** These sectors may still be focused on foundational modernization before adopting more advanced analytics or AI initiatives.

The Database Licensing Dilemma

As noted above, 28% of respondents ranked reducing database licensing spend as a primary reason for undertaking migration. Respondents were also asked how database licensing costs changed after their most challenging migration.



Reducing licensing costs is one of the clearest and most measurable benefits of database modernization, but these results show it's not a guaranteed outcome. While many organizations succeed in lowering costs, others can experience increases after migrating.

This disconnect often stems from oversimplified cost models or incomplete planning. Organizations may underestimate the pricing structure of cloud-native services, overlook hidden fees tied to data egress or storage, or fail to fully exit legacy licensing agreements.

Additionally, vendors like Microsoft and Oracle often raise licensing fees when their databases move to the cloud, driving up sunk costs and locking organizations into long-term contracts. These tactics make it nearly impossible to capture the full financial benefits of migration. The real cost savings come when you modernize your database instead of simply lifting and shifting it.

Moving to open-source compatible databases eliminates these licensing traps and creates a foundation for lasting cost reduction.

These tradeoffs highlight a broader reality: modernization is not just about moving away from legacy platforms. It's about making smarter long-term decisions. Choosing the right platform, partners, workload placement, and migration timing all influence the financial outcome.

To avoid licensing surprises, organizations should:

- Conduct detailed pre-migration cost modeling, including usage-based pricing scenarios
- Revisit vendor contracts and termination clauses before initiating the migration
- Align migrations with broader architectural decisions, not just short-term savings goals
- Consider open-source or hybrid models where appropriate for long-term flexibility

Ultimately, licensing savings are possible, but companies need a strategy that balances immediate cost savings with the right long-term modernization choices.

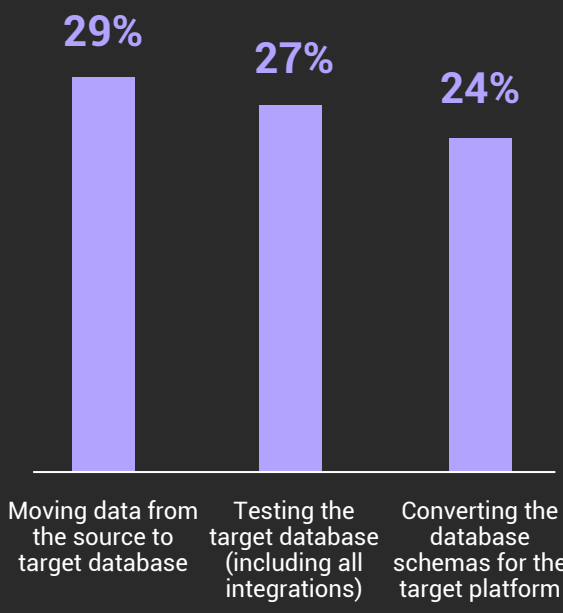
Industry Spotlight

26% of healthcare and pharmaceuticals respondents significantly decreased their licensing spend, while 32% of finance and financial services respondents moderately increased their spend, highlighting the fact that these costs can rise or decrease, depending on organizations' approach.

Missed Opportunities: Migrations Ripe for AI

To better understand where teams are spending the most time during migration projects, respondents were asked to estimate how they allocated their efforts across key tasks. Each respondent entered percentages that totaled 100%, providing a clear view of where the most manual work takes place.

Respondents said the top three time-intensive tasks in their most challenging migration were, on average:



While database migrations are mission-critical, they are also extremely labor-intensive. The bulk of the migration effort will include highly repetitive, technical tasks that are essential but time-consuming and prone to error when done manually.

These results reveal a clear opportunity: much of this work could be streamlined with the right mix of automation and AI-powered tooling. Yet many teams are still relying on manual processes or basic scripting to move data, validate integrations, and refactor database logic.

This pattern contributes directly to delays, burnout, and uneven outcomes. Teams spend weeks on tasks that could be completed in a fraction of the time.

To improve outcomes, organizations should consider:

- Investing in AI-assisted tooling for code and schema conversion
- Automating testing and validation workflows wherever possible
- Standardizing and templatizing common migration processes to reduce manual lift
- Incorporating automation early in project planning, not just as a last resort when delays set in

Migrations will always involve some complexity, but they don't have to be this slow. By targeting the most time-intensive tasks with smart tooling, organizations can reduce risk, accelerate timelines, and free their teams to focus on higher-value work.

Industry Spotlight

Finance and financial services had the largest number of respondents say testing was their most time-intensive task.

AI and Automation: Growing Use, Mixed Confidence

Respondents were asked whether they used automation or AI tools during their most challenging migration and how effective those tools were. They were also asked to describe their overall attitude toward using AI in database migration projects.

The good news – adoption is growing and having a positive impact:

60% Used AI during migration

54% GenAI

6% data movement automation tools

77% of these said AI was effective or highly effective

BUT concerns remain:

- Still unsure what AI tools or features to look for — 53%
- Concerned about accuracy or bias — 44%
- Overwhelmed by terminology and capabilities — 25%
- Do not see value or prefer human-led processes — 21%

The use of AI and automation in database migration is clearly gaining ground, but confidence and clarity are lagging. While many IT leaders are experimenting with AI, there's still widespread uncertainty about how to evaluate tools, trust outputs, and integrate AI effectively into workflows.

These results suggest a critical gap between interest and implementation. Teams are eager to adopt automation and generative AI, especially to reduce manual lift but lack the guidance and guardrails needed to do so confidently. Concerns about accuracy, transparency, and complexity are creating friction, particularly for teams with limited prior AI experience.

The Database Modernization Bottleneck

This hesitation isn't just a technology problem. It's a trust and education problem. Without clear best practices, success stories, and vendor transparency, many organizations will either delay adoption or use AI tools too narrowly to realize their full benefits.

To move forward, organizations and vendors alike must:

- Provide clearer onboarding and documentation around AI tools, including use cases and limitations
- Promote transparency in how AI outputs are generated, especially for code translation or recommendations
- Offer practical frameworks for when and where to apply automation during migrations
- Enable hybrid approaches that combine AI with human oversight, reinforcing trust without sacrificing efficiency

AI has the potential to transform how database migrations are executed, but without the right support, that potential will remain largely untapped.

Industry Spotlight

Manufacturing (73%) and utilities, energy and extraction (67%) expressed the most trust in AI tools and believe they can improve efficiency and data insights. Both sectors deal with high volumes of structured, repeatable data tasks where AI can deliver clear, measurable gains.

Rethinking the Path Forward

This study exposes fundamental flaws in traditional migration strategies: chronic delays, operational disruption, and pervasive uncertainty driven by insufficient expertise and poor understanding of migration complexities.

The solution lies in strategic investment – organizations must harness AI-powered tools and specialized human-led knowledge to fundamentally transform their approach. By building this essential foundation of expertise, confidence, and technological capability, organizations can turn migration from a source of risk into a catalyst for competitive advantage.

Methodology

This report is based on a survey of 308 U.S.-based IT leaders, each of whom had direct experience managing at least one major database migration within the past two years. The survey was conducted in July 2025 and did not include Caylent customers.

Respondents represented a broad mix of industries – education, finance and financial services, entertainment and leisure, healthcare and pharmaceuticals, manufacturing, and utilities, energy and extraction – and held senior roles ranging from IT managers to CTOs.

More than half of respondents (52%) reported having more than 50 database workloads in their organization, while nearly 20% said they have hundreds or thousands, underscoring the scope and complexity companies face as they work to modernize their data environments.

About Caylent

As an AWS Premier Tier Services Partner, Caylent is shaping the future where AI transforms industries responsibly and with excellence. We help companies build the solutions they need to succeed in today's market while enabling organizational evolution to thrive in a rapidly changing technology landscape. Our AI-enabled delivery methodology combined with our deep AWS experience turns our customers' ideas into impact, faster.

Caylent's achievements include being named AWS Migration Consulting Partner of the Year, GenAI Industry Solution Partner of the Year, and Industry Partner of the Year - Financial Services in 2024, Application Modernization Partner of the Year in 2023, AWS Innovation Partner of the Year in 2022, and AWS Rising Star Partner of the Year in 2021. Caylent's services include migrations, modernization, custom software development and generative AI. Learn more at https://caylent.com/