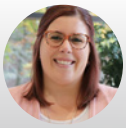
The Business Value of Amazon Aurora

Carl W. Olofson
Research Vice President,
Data Management Software, IDC

Devin Pratt
Research Director,
Data Management, IDC



Megan Szurley
Business Value Manager,
Business Value Strategy Practice, IDC

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BUSINESS VALUE HIGHLIGHTS

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$960,000
average annual benefit per 10 Amazon Aurora databases

434%
three-year return on investment

42%
lower cost of operation

62%
more efficient DBA teams

32%
more efficient IT infrastructure teams

19%
more productive application development teams

58%
less time required to find cause of and optimize slow queries

40%
less database latency

34%
lower database costs per year

54%
less time required to find other database performance issues

29%
lower query performance time

27%
lower error rates

Executive Summary

IDC conducted research that explored the value and benefits for organizations using Amazon Aurora to support their business goals and digital transformation efforts. The project included interviews with organizations that use Amazon Aurora and have experience with and/or knowledge about its benefits and costs.

Based on an extensive data set and employing a specialized Business Value methodology, IDC calculates that these customers will achieve benefits worth an annual average of $8.5 million on a per-organization basis ($960,000 per 10 databases) and a three-year return on investment (ROI) of 434% by:

- Boosting the overall productivity of IT teams, including DBA, application development, and infrastructure teams

- Enhancing database operations by reducing query time performance through lowering latency and error rates
- Improving application development efforts to deliver high-quality and timely business-critical applications throughout the organization
- Mitigating the adverse impacts of unplanned downtime through improved reliability
- Improving business results and outcomes with the above benefits

Situation Overview

There is a major push to shift from deploying workloads on premises to using public cloud services. One of the leading public cloud services is Amazon Web Services (AWS), which offers a broad range of tools and platform service software to users looking for a production-quality implementation of applications and databases in the cloud.

At the same time, many enterprises have been embracing open source relational database management systems (RDBMSs) to replace the proprietary systems they have been using. The two most popular of these are PostgreSQL and MySQL. However, RDBMSs have limited deployment options in the cloud that do not require trade-offs.

AWS addresses these challenges with Amazon Aurora, a cloud-native RDBMS that seamlessly integrates with AWS, delivering optimized operational efficiency and tunability for the AWS environment. Aurora is fully compatible with PostgreSQL and MySQL and can connect dynamically to the AWS analytic RDBMS (Amazon Redshift) using the zero-ETL integration.

Amazon Aurora Overview

AWS offers Amazon Aurora as a serverless, fully managed, and built-for-the-cloud relational database service that provides high performance and availability at a global scale for PostgreSQL, MySQL, and DSQL. In addition to serverless, customers have the choice of provisioned instances. Aurora complies with a broad set of standards, such as PCI DSS, HIPAA eligibility, and GDPR, and has automated backups. Its distributed storage is fault-tolerant and self-healing, and it makes data durable across three Availability Zones

(customers only pay for one copy). It offers high throughput and low latency and has a wide range of applications, from simple web apps to complex enterprise systems.

For PostgreSQL and MySQL, Aurora instantly scales, reads, and writes to meet your application's demands, including horizontal scaling (scale out/in) that seamlessly handles petabytes of data while maintaining the simplicity of operating inside a single database. After IDC completed this study, AWS announced Amazon Aurora DSQL, which is a fully serverless distributed SQL database with zero infrastructure management and automated failovers. Aurora DSQL continuously scales, reads, writes, compute, and storage independently, removing scaling bottlenecks while maintaining performance. Its active-active, multi-region architecture enables the application to read and write to any regional endpoint. Aurora DSQL offers strong consistency, so your applications will always read the same data from any region. These innovations enable organizations to have always-available applications and manage unpredictable workloads and rapid growth with ease.

In addition, Aurora's commitment to price performance is evident in its latest offerings. For I/O-intensive workloads, Aurora offers price predictability and up to 40% improved price performance with I/O-Optimized. This configuration is complemented by optimized reads instances, which offer compelling price-performance with tiered caching delivering up to eight times improved query latency and up to 30% cost savings for read-heavy, I/O-intensive applications, according to AWS. Finally, after IDC completed this study, Aurora announced support for Graviton4-based R8g database instances that improve performance by up to 40% and price-perfomance by up to 29% for on-demand pricing over Graviton3-based instances, according to AWS. These advancements translate directly to cost savings and improved application responsiveness, allowing organizations to do more with less and maintain a competitive edge in their respective markets.

Because organizations operate across multiple regions, Aurora has different capabilities based on applications' requirements. For PostgreSQL and MySQL, to improve your disaster recovery posture, you can create asynchronous replicas in up to five AWS regions and promote any to primary with minimal data loss. Organizations that require the highest level of application resilience need to consider Aurora DSQL. Aurora DSQL offers up to 99.99% single-region and 99.999% multi-region availability and ensures applications are always available, even in the rare event that it is unable to connect to a regional endpoint.

Finally, Aurora is investing in ease of use. It recently launched a quick create vector store in Amazon Bedrock Knowledge Bases, so selecting Aurora PostgreSQL requires a single click. This makes it easy to add GenAI to applications while using domain knowledge stored on Aurora. In addition, Aurora's zero-ETL integration with Amazon Redshift enables near real-time analytics and machine learning using Amazon Redshift on petabytes of transactional data, removing the need to build and manage complex data pipelines that perform extract, transform, and load operations.

For IT and database administrators, Aurora simplifies database management with its fully managed service, reducing operational overhead. Its compatibility with popular open source databases, combined with AWS's robust security and compliance features, has made Aurora a popular choice for deploying modern cloud-native applications. Aurora's ongoing investments in scalability, performance, availability, and ease of use make it an ideal choice.

The Business Value of Amazon Aurora

Study Firmographics

IDC conducted research that explored the value and benefits for organizations using Amazon Aurora to support their business goals and digital transformation. The project included seven interviews with organizations that use Amazon Aurora and have experience with and/or knowledge about its benefits and costs. During the interviews, IDC asked companies a variety of quantitative and qualitative questions about the offering's impact on their IT and database operations, core businesses, and costs.

Table 1 (next page) presents the study firmographics. The organizations that IDC interviewed had an average base of 65,388 employees and total average annual revenues of $5.4 billion. On average, these companies had 624 business applications in use. Five companies were based in the United States, with the remainder in Brazil and India. From a vertical market standpoint, IDC's survey included organizations from the financial services (2), healthcare (2), hospitality, manufacturing, and retail sectors, ensuring it captured a broad range of customer experiences and use cases.

TABLE 1

Firmographics of Interviewed Organizations

Firmographics	Average	Median	Minimum	Maximum
Number of employees	65,388	64,322	1,800	200,000
Number of IT staff	18,215	4,000	40	75,000
Number of IT users	60,429	15,000	1,800	200,000
Number of business applications	624	60	16	2,000
Company revenue	$5.4B	$1.6B	$50.0M	$13.3B
Countries	United States (5), Brazil, India			
Industries	Financial Services (2), Healthcare (2), Hospitality, Manufacturing, Retail			

n = 7; Source: IDC Business Value In-Depth Interviews, September 2024

Choice and Use of Amazon Aurora

The organizations that IDC interviewed described the decision criteria involved in their selection of Amazon Aurora to support their business goals and transformation. Study participants provided detailed comments about their decision, representing a broad range of criteria. They called out the platform's real-time response, fail-safe capability, and low latency as important considerations. They also noted that Aurora provided better control over their customer data by supplanting an outdated on-premises SQL database that was costly to update and maintain.

Study participants elaborated on their selection criteria:

Multi-cloud approach (healthcare):

"My organization decided to try Aurora on two AWS hospitals to explore a multi-cloud approach. This shift was driven by a combination of learning, organizational paradigm shift, potential cost savings, and primarily to see if there was a noticeable difference with Aurora."

Failsafe, low-latency option (manufacturing):

"My organization initially used Amazon RDS by default. However, we realized that for a small subset of databases requiring real-time response and [a] fail-safe, we needed to use Amazon Aurora. Aurora quickly delivers the data we need, and its low latency is an attractive option for some of our production applications."

Better control of data (retail):

"My organization selected Amazon Aurora to gain better control over our customer data. We had an outdated on-premises SQL database that was costly to update and maintain. We aimed to make this data more accessible, integrate it with various apps, and reduce management expenses."

Easier maintenance and less downtime (hospitality):

"Two years ago, my organization transitioned to Amazon Aurora to simplify maintenance. With multiple agents across various zones, it automatically handles backups and patches, resulting in significantly less downtime. We now experience almost zero downtime."

Standardization (financial services):

"When my organization selected Amazon Aurora, we were decentralized and facing a shadow IT challenge. We needed to establish usage standards and have our business units use standardized databases. Since we were already migrating several services to AWS, trying Aurora was a natural choice."

Table 2 (next page) provides a quantitative view of the organizational Amazon Aurora usage across all companies at the time of the interviews. Amazon Aurora had a substantial footprint in surveyed organizations, with 88 databases and 29,875 internal users of applications. On average, 77 business applications were using Amazon Aurora at each company. Customers also associated 58% of their total revenue with its use. Additional metrics are provided.

TABLE 2

Amazon Aurora Usage

Amazon Aurora Usage	Average	Median
Business applications	77	12
Databases	88	28
Internal users of applications that Aurora supports	29,875	8,750
% of revenue	58%	52%

n = 7; Source: IDC Business Value In-Depth Interviews, September 2024

Business Value and Quantified Benefits

IDC's Business Value model expresses the benefits for organizations using Amazon Aurora services to support their database infrastructure and operations. IDC applied interview data from Amazon customers to this model to arrive at an array of quantified post-deployment benefits. The IDC data sets derived from customers confirmed that Amazon Aurora was cost-effective and boosted the productivity of IT and IT-related teams, including DBA, application development, and infrastructure teams. In addition, the automation that Amazon Aurora provided helped interviewed organizations scale databases with their business needs and decrease the complexity of database maintenance.

Study participants offered these comments on the most significant benefits of Amazon Aurora:

Less costly than previous approach (retail):

"Amazon Aurora is significantly less costly than running on-prem databases — fractions of the cost, like 1/5 of the total footprint we had before. Operationally speaking, Amazon Aurora is less of a headache to manage, the uptime is best in class, and it's very configurable to use in operations."

Lower cost of operations (financial services):
"Amazon Aurora is faster than regular databases. We are seeing economies of 37% cost reduction. This is measured spend on mainframes, hardware, and on-premises infrastructure."

Automation and scalability (healthcare):
"A significant benefit of Amazon Aurora is that it is organizationally and financially friendly. Once we moved it off MySQL, the cost savings [were] instantaneous. We saw financial benefits immediately."

Maintenance support (hospitality):
"The most significant benefit of Amazon Aurora is [making] IT and maintenance operations easier."

Increased DBA productivity (manufacturing):
"The big benefits of Amazon Aurora are in business operations. My organization sees efficiencies of 10% to 20% in overall life-cycle cost of creating, administering, and launching them. That would be a productivity gain of about 20% for our database administration team."

Figure 1 (next page) presents IDC's calculations of cumulative customer benefits after the adoption of Amazon Aurora. As shown, average annual benefits were $8.5 million per organization ($960,000 per 10 databases).

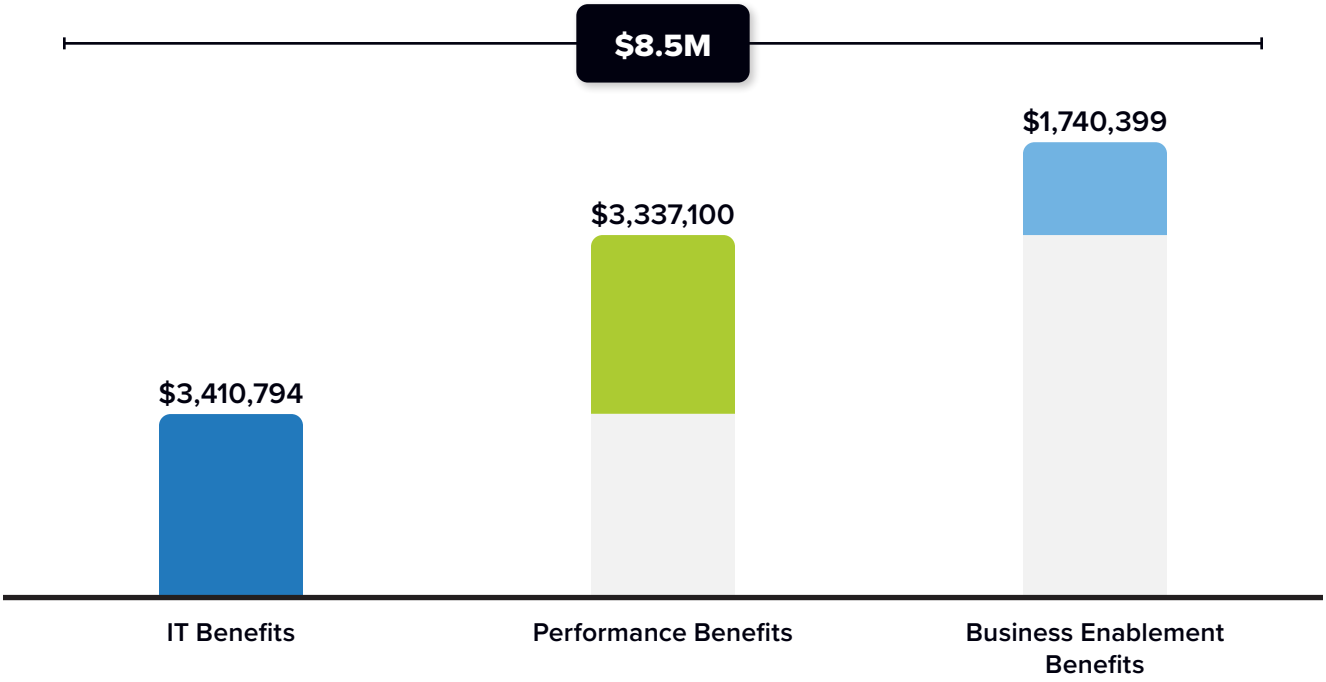
The figure breaks down these benefits further in terms of:

- **IT benefit:**
  IT benefits include database cost savings and increased efficiency for DBA and IT teams.
- **Performance benefits:**
  Amazon Aurora enabled development teams to improve productivity and reduce the impact of unplanned downtime.
- **Business enablement benefits:**
  Interviewed organizations were able to reduce operational costs, improve the productivity of end users, and recognize higher net revenue by using Amazon Aurora.

FIGURE 1

Average Annual Benefits per Organization

($)



n = 7; Source: IDC Business Value In-Depth Interviews, September 2024

For an accessible version of the data in this figure, see Figure 1 Supplemental Data in Appendix 2.

IT Staff and Cost Benefits from Amazon Aurora

Amazon Aurora is a fully managed, cloud-based relational database service that offers greater database throughput and scalability. For IT teams, this core functionality greatly enhanced their ability to manage and optimize database performance throughout the organization. In their comments to IDC, study participants appreciated various aspects of the platform's capabilities, especially its auto-scaling functionality and sizable post-deployment decrease in operational costs. They noted a significant alleviation of excessive workloads within their DBA teams. Study participants also appreciated the ease of providing encryption, network access, and identity management.

Study participants made these detailed comments:

Lower costs (financial services):

"We save at least 20% to 25% in costs at the bare minimum. The huge benefit of auto-scaling gives us the confidence to manage increased proportional volumes."

Predictive maintenance (manufacturing):

"Predictive maintenance is a big benefit of Amazon Aurora. My organization can assess, based on operating cycles, what the operating profile of the equipment is from now until the end of its life. That gives us an idea of when it might be a good idea to replace a certain part. We anticipate this to be a big driver of future productivity gains. As we scale up, we plan to move a lot more databases to Aurora."

Trusted security partner (manufacturing):

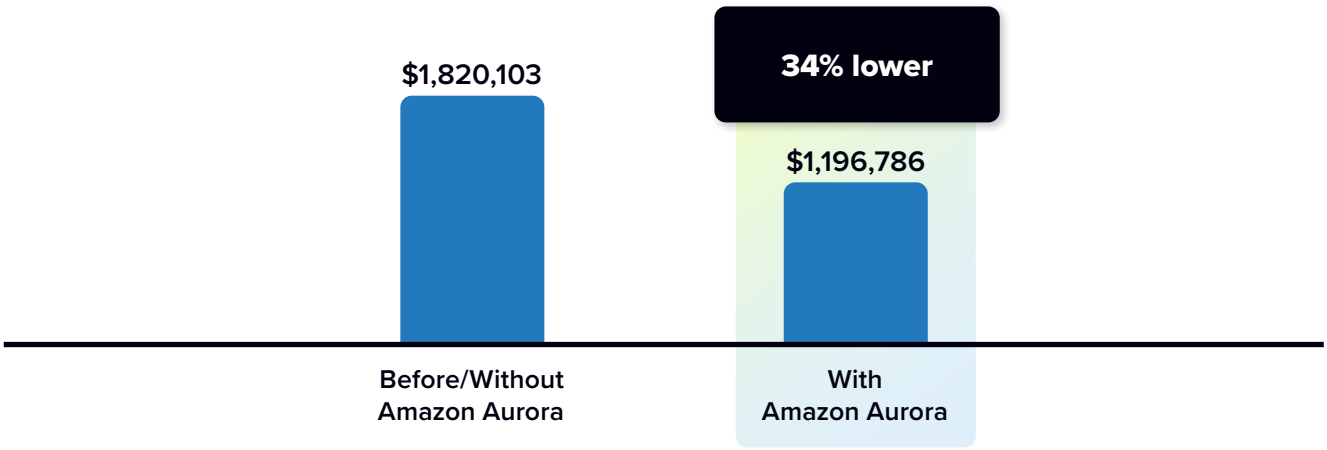
"Encryption, network access, and identity management [are] done easily with Aurora because AWS takes care of the security of our databases. Previously, security would be on us, and they would have to have extra tools and layers in place. We rely on our partner AWS to secure the databases to which we are migrating our data."

IDC applied its Business Value methodology to validate this anecdotal reporting by quantifying a series of specific benefits, beginning with operational costs. Organizations found that Amazon Aurora helped reduce over-provisioning during seasonal spikes, which reduced expenses by enabling them to only pay for resources that were used. IDC calculated that Amazon Aurora reduced annual database costs by $623,000 in terms of licensing, subscriptions, and provisioning, as **Figure 2** shows. This constituted an overall cost reduction of 34%.

FIGURE 2

Database Costs per Year

($)



n = 7; Source: IDC Business Value In-Depth Interviews, September 2024

Companies also reported additional one-time cost benefits. Interviewed organizations noted that Amazon Aurora helped reduce or retire server and storage resources. As **Table 3** shows, total one-time cost avoidances for server/storage resources totaled $274,479.

TABLE 3

One-Time IT Cost Avoidances

Cost Avoidances	With Amazon Aurora
Retired/repurposed/avoided servers	$246,571
Retired/repurposed/avoided storage	$27,907
Total	**$274,479**

n = 7; Source: IDC Business Value In-Depth Interviews, September 2024

IDC then looked at impacts on DBA teams. Study participants reported that Amazon Aurora enabled these teams to efficiently maintain and monitor the performance and availability of their databases by providing automation for operational areas such as backups, patching, failover, and data insights. Automation features also came into play with CloudWatch and integrated security features, such as encryption, network access, and identity management. The platform easily migrates PostgreSQL and MySQL databases to and from Aurora using standard tools.

IDC calculated that, of all the teams it evaluated, the DBA staff gained the most operational benefit for organizations. As one study participant working in the healthcare market noted: *"The DBA team in my organization has gone from maintaining to learning. They're learning Amazon Aurora in and out, making them more marketable for professional development."*

As **Table 4** (next page) shows, the DBA team was 62% more efficient with Amazon Aurora. This meant that interviewed organizations needed 12.4 fewer FTEs than their previous approach to managing the same environment, and their staff could more easily scale with organizational growth. This improvement resulted in a substantial annual business value of $1,979,822 for each organization.

TABLE 4

DBA Team Efficiency Gain

Efficiency Gain	Before/ Without Amazon Aurora	With Amazon Aurora	Difference	Benefit
FTE count	32.2	**12.4**	19.8	62%
Value of staff time per year	$3,215,537	**$1,235,714**	$1,979,822	62%

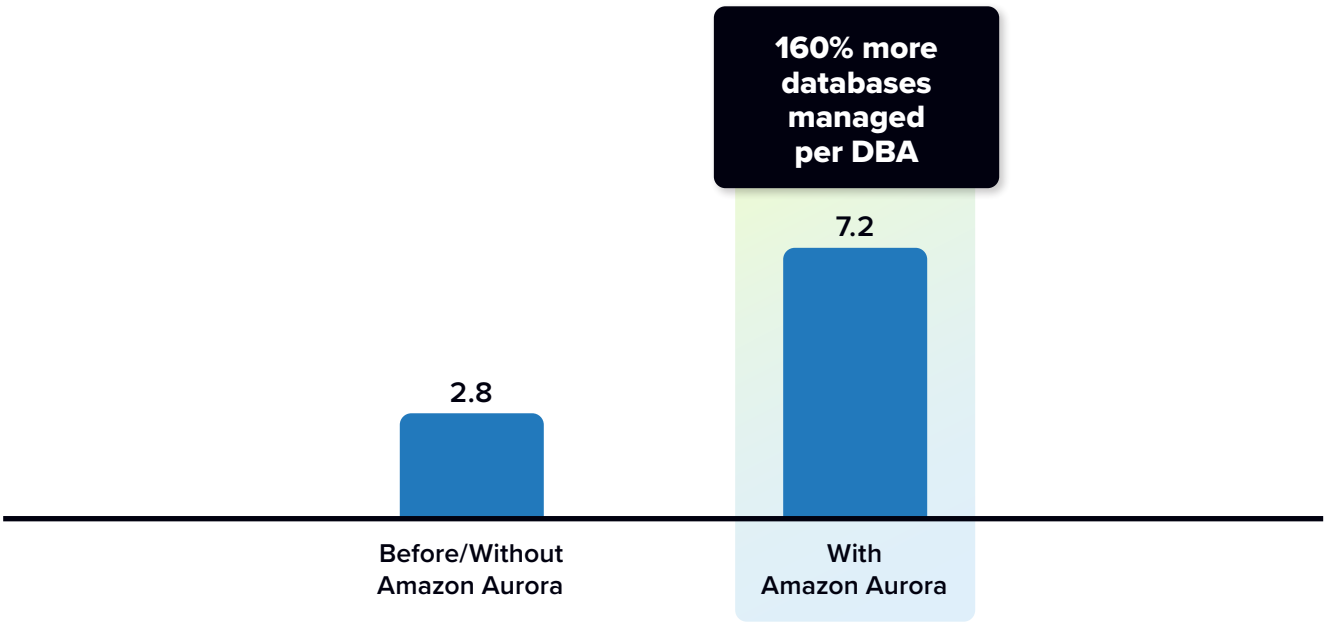
n = 7; Source: IDC Business Value In-Depth Interviews, September 2024

Drilling down on benefits for DBA teams, the efficiencies they gained from Amazon Aurora meant that DBA teams could support and manage significantly more database resources. As one study participant working in the financial services market noted: "The work of our DBA team has reduced at least 35% with Amazon Aurora. As a result, they have a much better work/life balance. They're very happy." As **Figure 3** shows, after the adoption of Amazon Aurora, DBA teams were able to manage 160% more databases per team member.

FIGURE 3

Databases Managed per DBA

(Databases per DBA)



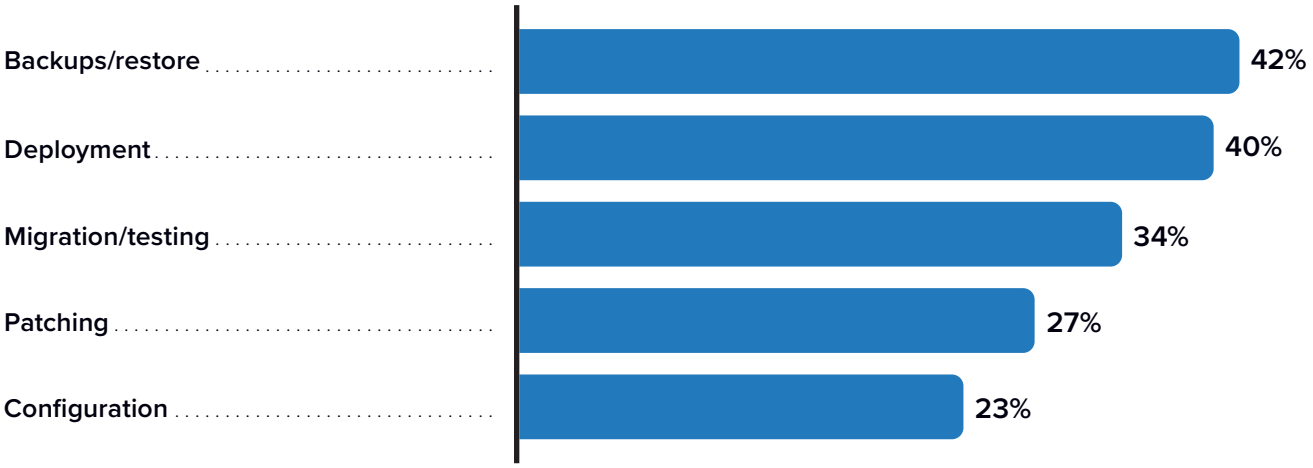
n = 7; Source: IDC Business Value In-Depth Interviews, September 2024

Interviewed organizations found that the automation and tools that Amazon Aurora provided enabled their staff to perform tasks that were previously manual with greater speed and efficiency. IDC further evaluated these DBA benefits by identifying and measuring KPIs commonly associated with these operations. As **Figure 4** shows, after adoption, the greatest improvements were in backups/restore (42%), deployment (40%), and migration/testing (34%). Additional metrics are provided.

FIGURE 4

Database KPIs

(% less staff time needed)



n = 7; Source: IDC Business Value In-Depth Interviews, September 2024

In utilizing Amazon Aurora, IT infrastructure teams also benefited from the platform's ability to automate maintenance-related tasks that were previously manual and overly time-consuming. These typically included tasks such as scaling, provisioning, and database setup. IDC calculated that, after adoption, teams could create a new database 72% faster.

As a result, IT infrastructure teams at interviewed organizations recognized a 32% efficiency gain, meaning that they required 11.2 fewer FTEs to manage equivalent environments. This improvement resulted in an average annual business value of $1,121,815 for each organization (**Table 5,** next page).

TABLE 5

IT Infrastructure Team Efficiency Gain

Efficiency Gain	Before/ Without Amazon Aurora	With Amazon Aurora	Difference	Benefit
FTE count	34.7	**23.5**	11.2	32%
Value of staff time per year	$3,471,577	**$2,349,762**	$1,121,815	32%

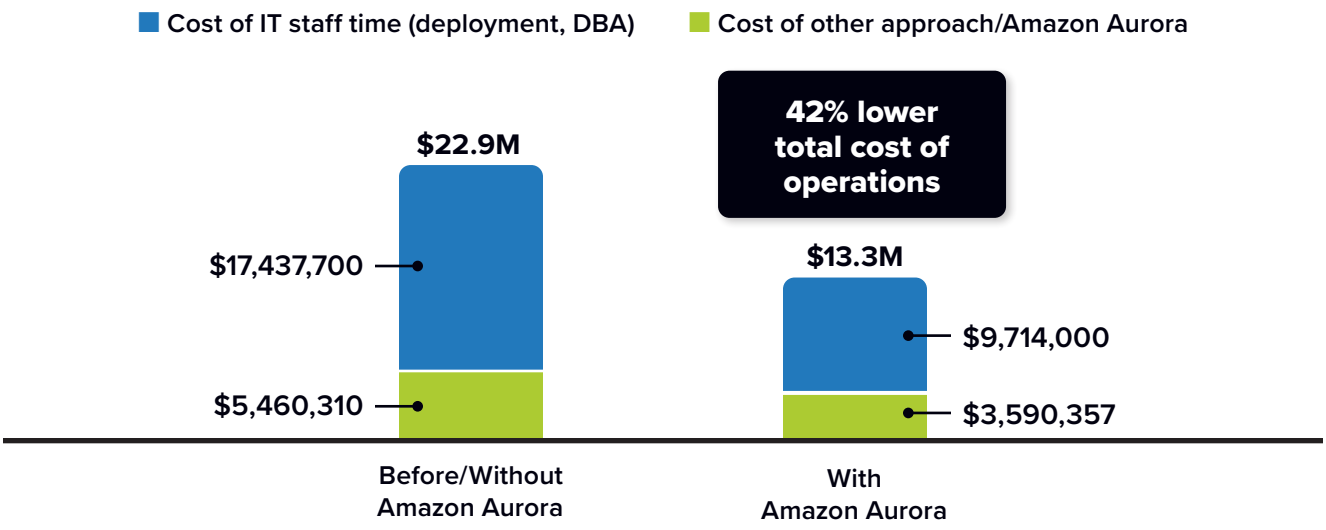
n = 7; Source: IDC Business Value In-Depth Interviews, September 2024

IDC then calculated how Amazon Aurora impacted the cumulative cost of operations for the surveyed organizations. This factored in IT staff management costs and other costs involved in previous or alternative approaches. These database staff and cost efficiencies enabled interviewed organizations to more cost-effectively deploy, migrate, and manage database workloads. **Figure 5** provides IDC's calculations for the three-year cost of operations on a per-organization basis. As shown, after adoption, TCO was 42% lower.

FIGURE 5

Amazon Aurora Three-Year Cost of Operations Analysis per Organization

($)



n = 7; Source: IDC Business Value In-Depth Interviews, September 2024

For an accessible version of the data in this figure, see Figure 5 Supplemental Data in Appendix 2.

Database Performance Benefits from Amazon Aurora

In their detailed conversations with IDC, study participants discussed how their organizations benefitted from using and deploying Amazon Aurora in terms of additional database performance benefits. Interviewed companies appreciated that Amazon Aurora provided the ability to effect instantaneous database rollbacks. They also highlighted and appreciated the features of real-time response and self-healing storage across multiple nodes, which significantly accelerated workload performance. Further, they noted that Amazon Aurora helped significantly improve time to market.

Study participants explained these benefits in greater detail:

Instantaneous database rollbacks (healthcare):

"Performing rollbacks was a big process for my organization prior to using Amazon Aurora. Now, it's not a processed rollback or a snapshot — it's instantaneous instead of labor-intensive. It used to take about 6 hours. Now it's instantaneous."

Increased workload speed (manufacturing):

"Amazon Aurora provides real-time response [and] self-healing storage across multiple availability nodes. We're able to speed up some workloads by 30% to 40%, making a productivity gain of 15% to 20% for some users."

Increased production speed (retail):

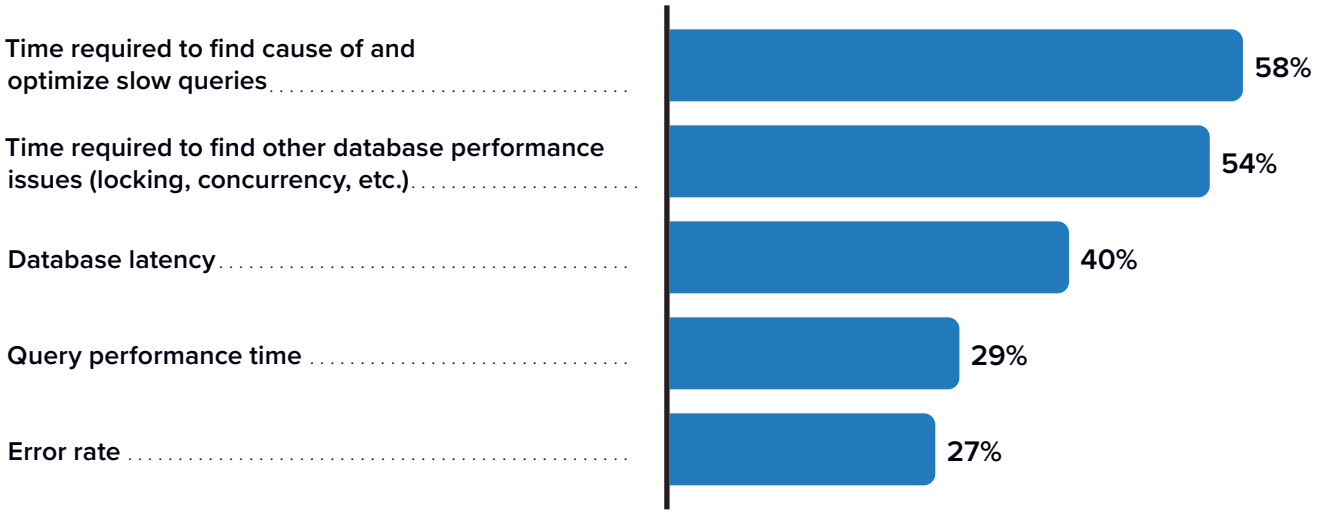
"The most significant benefit of Amazon Aurora is that it has increased our speed to market. We have data that's available, [and] we can connect it to places where it needs to be connected, test it, and put it into production rapidly. We trust it. We have confidence that it's going to be up and reliable to deliver analysis that we need or to deliver a customer experience that relies on its underlying data."

Study participant data sets confirmed substantial improvements in several core database performance metrics (see **Figure 6,** next page). After adoption, companies required 58% less time to find the cause of and optimize slow queries, and Amazon Aurora reduced the time required to find other database performance issues by 54%. In addition, database latency was 40% lower.

FIGURE 6

Database Performance KPIs

(% Less/Lower)



n = 7; Source: IDC Business Value In-Depth Interviews, September 2024

IDC then examined the benefits for application development teams. The reliable use of business-critical applications is a critical dependency in today's environments. With the conferred advantages of efficient provisioning, fewer database performance issues, and reduced latency, these teams were able to increase their productivity with Amazon Aurora and roll out high-quality applications to end users and customers more expeditiously. As one study participant previously noted, this has enabled them to go to market faster.

Table 6 (next page) demonstrates that development teams at interviewed companies saw a 19% productivity boost, as teams of 170.8 developers could work at the equivalent productivity level of having 33.1 additional FTEs. This resulted in a substantial annual productivity-based business value of $3,313,520 for each organization (**Table 6**).

TABLE 6

Development Team Productivity Gain

Productivity Gain	Before/ Without Amazon Aurora	With Amazon Aurora	Difference	Benefit
Equivalent productivity level, FTEs	170.8	**203.9**	33.1	19%
Value of staff time per year	$17,080,000	**$20,393,520**	$3,313,520	19%

n = 7; Source: IDC Business Value In-Depth Interviews, September 2024

One of the top-of-mind challenges for IT relates to risk management, which involves avoiding and minimizing the effects of unplanned downtime. IDC gathered and analyzed data related to this impact. Interviewed organizations noted that Amazon Aurora was easier to scale and provision as organizational needs and business priorities shifted. As a result, using Aurora lowered the frequency of unplanned downtime outages while reducing the time needed to resolve them with features such as automated failover.

IDC calculated the impact of these improvements on end-user productivity. The boost from reducing the frequency of outages meant that end users could be more productive and focused. IDC calculated a 75% reduction in the number of annual outages and a 33% improvement in remediation turnaround when outages did occur. Using this data, IDC calculated the annual business value of minimizing lost productive time at $525,701, as **Table 7** (next page) shows. Additional granular metrics are presented.

TABLE 7

Unplanned Downtime Impact — End-User Productivity Impact

Productivity Impact	Before/ Without Amazon Aurora	With Amazon Aurora	Difference	Benefit
Number of outages per year	20.7	**5.3**	15.4	75%
MTTR, hours	1.8	**1.2**	0.6	33%
Users impacted by downtime	963	**963**	N/A	N/A
% of productivity loss factor	47%	**47%**	N/A	N/A
Productivity loss per organization per year in FTEs	9.0	**1.5**	7.5	83%
Value of lost productive time per year	$633,253	**$107,553**	$525,701	83%

n = 7; Source: IDC Business Value In-Depth Interviews, September 2024

Business Enablement Benefits with Amazon Aurora

Interviewed companies reported that, over time, the benefits they gained from adopting Amazon Aurora improved business operations and results. In part, these benefits were based on better database performance, increased stability, enhanced end-user experiences, and less latency. In addition, interviewed companies realized higher revenue by better addressing business opportunities through improvements in database operation. This fostered better decision-making.

Study participants elaborated below:

Better data access for end users (healthcare):

"In healthcare, databases take a hit almost minute-by-minute. It brought instant stability, which made the users able to access their data immediately. Latency issues were gone. Once they hit "enter," it's coming back, no matter how big the query is."

Data-backed decision-making (financial services):
"The data quality, data management, speed of reporting, and analytics that we generate out of Amazon Aurora is great. This enables my organization to view reports quickly and make informed decisions."

Enhanced mobile experience (hospitality):
"Performance and user experience is much better with Amazon Aurora, especially web experiences. Our mobile application is directly linked to the database. This ensures a good user experience for our mobile audience."

IDC then drilled down on business enablement benefits. Interviewed organizations found that they were able to increase their go-to-market speed and make better-informed decisions because Amazon Aurora improved database performance. IDC quantified total revenue improvements from business enablement in **Table 8**. On a per-organization basis, IDC's calculations of revenue from business enablement amounted to $4,609,490 in total additional gross annual revenue per organization. Additionally, IDC's financial model applied a 15% operating margin assumption that showed a net annual revenue average of $691,424 per organization.

TABLE 8
Business Enablement — Higher Revenue

Higher Revenue	Per Organization	Per 10 Databases
Total additional gross revenue per year	$4,609,490	$521,267
Assumed operating margin	15%	15%
Total additional net revenue, IDC model	$691,424	$78,190

n = 7; Source: IDC Business Value In-Depth Interviews, September 2024

Business enablement benefits extended to reductions in hiring costs. Interviewed organizations reduced their need to hire because Amazon Aurora was easy to use, manage, and maintain. They also viewed Amazon as a trusted partner that helped reduce manual work by automating key database operations. As a result, annual hiring costs were reduced by $1,150,000 (**Table 9,** next page).

TABLE 9

Business Enablement — Hiring Cost Reduction

Hiring Cost Reduction	FTEs Avoided	Annual Cost Avoidance
Hiring cost reduction (annual)	16.4	$1,150,000

n = 7; Source: IDC Business Value In-Depth Interviews, September 2024

IDC then looked at business enablement in terms of end-user productivity. Here, the improved query speed and reduced latency that Amazon Aurora provided enabled interviewed organizations' end users (e.g., nurses, analytics professionals, and quality assurance staff) to work with greater productivity and on-the-job effectiveness. IDC quantified business enablement in terms of end-user productivity gains. As **Table 10** shows, end users were able to work with the equivalent productivity level of having two additional FTEs on staff, which IDC valued at $160,847 in staff time per year.

TABLE 10

Business Enablement — End-User Productivity Gain

Productivity Gain	Before/ Without Amazon Aurora	With Amazon Aurora	Difference	Benefit
Equivalent productivity level, FTEs	71	**87**	15	22%
Net equivalent productivity level, FTEs	71	**74**	2	3%
Value of staff time per year	$4,987,500	**$5,148,347**	$160,847	3%

n = 7; Source: IDC Business Value In-Depth Interviews, September 2024

ROI Summary

To sum up the presented financial and business-related benefits for study participants using Amazon Aurora, IDC calculated an average three-year ROI. As **Table 11** shows, IDC projects that these companies will achieve three-year discounted benefits worth an average of $20,089,100 per organization through better database performance, enhanced staff efficiencies, improved business results, and cost savings. Meanwhile, the total three-year discounted costs are $3,759,600 per organization. These benefits and investment costs will result in an average three-year ROI of 434%, with a payback period of six months.

TABLE 11

Three-Year ROI Analysis

ROI Analysis	Per Organization	Per 10 Databases
Discounted benefits	$20,089,100	$2,271,788
Discounted investment	$3,759,600	$425,157
Net present value (NPV)	$16,329,500	$1,846,632
ROI	**434%**	**434%**
Payback	**6 months**	**6 months**
Discount factor	12%	12%

n = 7; Source: IDC Business Value In-Depth Interviews, September 2024

Challenges/Opportunities

AWS enjoys a strong leadership position in the public cloud space, and this fact, combined with the ongoing popularity of PostgreSQL and MySQL, set up Amazon Aurora for continued success as a leading relational database solution in the public cloud. Nonetheless, challengers abound, and users have a broad choice of alternative cloud-native RDBMS services. Therefore, AWS must continue to innovate and deliver high-quality software and services to its Aurora customers to maintain that momentum.

One particular challenge is GenAI's emerging role in database management. AWS enjoys a strong position in this regard but must show advances in GenAI-augmented database design, SQL generation, end-user queries, and blended, structured, and unstructured search and retrieval. All technology suppliers in this space face these challenges.

Conclusion

IDC's research highlights the significant benefits organizations experience with Amazon Aurora, a fully managed relational database service. Organizations using Aurora reported an average annual benefit of $8.5 million per organization and a three-year ROI of 434%. These benefits stem from improvements in IT team productivity, enhanced database operations, reduced latency, and streamlined application development.

Aurora's features, such as automated scaling, fault-tolerant storage, and full compatibility with PostgreSQL and MySQL, contribute to its operational efficiency. Organizations noted reduced downtime, lower operational costs, and better data management as key advantages. Aurora's ability to scale resources dynamically based on application needs ensures it can handle a wide range of workloads efficiently. Additionally, its seamless integration with other AWS tools, such as Amazon Redshift, using zero-ETL integration, enables near real-time analytics on transactional data without the need for complex data pipelines.

Overall, Aurora continues to evolve as a cost-effective and reliable solution for organizations seeking to improve database performance, reduce operational complexity, and support their digital transformation initiatives. In addition, Amazon Aurora DSQL expands Aurora's capabilities by offering a serverless distributed SQL database with multi-region strong consistency. It provides high availability with zero infrastructure management, making it suitable for data-driven applications with single- or multi-region operations.

Appendix 1: Methodology

Table 12 presents a summary of IDC's Business Value calculations.

TABLE 12

Specific Calculations: Benefits from Use of Amazon Aurora

Category of Value	Average Quantitative Benefit	15% Margin Applied	Calculated Average Annual Value*
Annual IT cost avoidances	$357,374 annual IT cost avoidance	No	$357,374
One-time IT cost avoidances	$274,479 one-time IT cost avoidance	No	$91,493
IT infrastructure team efficiency gain	32% more efficient, worth 11.2 FTEs, $100,000 salary	No	$975,096
DBA team efficiency gain	63% more efficient, worth 19.8 FTEs, $100,000 salary	No	$1,720,887
Development team productivity gain	19% more productive, worth 33.1 FTEs, $100,000 salary	No	$2,880,155
Unplanned downtime, end-user benefit	83% more productive time, worth 7.5 FTEs, $70,000 salary	No	$456,946
Business enablement — higher revenue	$691,424 additional revenue per year	Yes	$600,994
Hiring cost reduction	$1,150,000 in hiring avoidances per year, worth 16.4 FTS, $70,000 salary	No	$999,595
Business enablement — end-user productivity gains	3.2% more productive, worth 2 FTEs, $70,000 salary	Yes	$139,810
Total average annual benefits	**$8.2M per organization per year**		

n = 7; Source: IDC Business Value In-Depth Interviews, September 2024

IDC utilized its standard ROI methodology for this project. This methodology is based on gathering data from current users of Amazon Aurora as the foundation for the model. Based on interviews with organizations using Amazon Aurora, IDC performed a three-step process to calculate the ROI and payback period:

1. **IDC gathered quantitative benefit information during the interviews using a before-and-after assessment of the impact of Amazon Aurora.** In this study, the benefits included IT cost reductions and avoidances, staff time savings and productivity benefits, and revenue gains.
2. **IDC created a complete investment (three-year total cost analysis) profile based on the interviews.** Investments go beyond the initial and annual costs of using Amazon Aurora and can include additional costs related to migrations, planning, consulting, and staff or user training.
3. **IDC calculated the ROI and payback period.** It conducted a depreciated cash flow analysis of the benefits and investments related to the organizations' use of Amazon Aurora over a three-year period. ROI is the ratio of the NPV and the discounted investment. The payback period is the point at which cumulative benefits equal the initial investment.

IDC bases the payback period and ROI calculations on a number of assumptions, which are summarized as follows:

- IDC multiplies the time values by burdened salary (salary + 28% for benefits and overhead) to quantify efficiency and productivity savings. For the purposes of this analysis, IDC assumes an average fully loaded $100,000 per year salary for IT staff members and an average fully loaded salary of $70,000 for non-IT staff members. IDC assumes that employees work 1,880 hours per year (47 weeks x 40 hours).
- IDC calculates the net present value of the three-year savings by subtracting the amount that organizations would have realized by investing the original sum in an instrument yielding a 12% return to allow for the missed opportunity cost. This accounts for both the assumed cost of money and the assumed rate of return.
- Because Amazon Aurora requires a deployment period, the full benefits of the solution are not available during deployment. To capture this reality, IDC prorates the benefits on a monthly basis and then subtracts the deployment time from the first-year savings.

Note: All numbers in this document may not be exact due to rounding.

Appendix 2: Supplemental Data

This appendix provides an accessible version of the data for the complex figures in this document. Click "Return to original figure" below each table to get back to the original data figure.

FIGURE 1 SUPPLEMENTAL DATA

Average Annual Benefits per Organization

	$
IT Benefits	$3,410,794
Performance Benefits	$3,337,100
Business Enablement Benefits	$1,740,399
Total	**$8.5M**

n = 7; Source: IDC Business Value In-Depth Interviews, September 2024

Return to original figure

FIGURE 5 SUPPLEMENTAL DATA

Amazon Aurora Three-Year Cost of Operations Analysis per Organization

	Before/Without Amazon Aurora	With Amazon Aurora
Cost of IT staff time (deployment, DBA)	$17,437,700	$9,714,000
Cost of other approach/Amazon Aurora	$5,460,310	$3,590,357
Total	**$22.9M**	**$13.3M (42% difference)**

n = 7; Source: IDC Business Value In-Depth Interviews, September 2024

Return to original figure

About the IDC Analysts

Carl W. Olofson
Research Vice President, Data Management Software, IDC

Carl Olofson has performed research and analysis for IDC since 1997 and manages IDC's Database Management Software service, as well as supporting the Data Integration Software service. Carl's research involves following sales and technical developments in the structured data management markets, such as database management systems, dynamic data management systems, database development and management software, and dynamic data grid managers, including the vendors of related tools and software systems. Carl also contributes to Big Data research and provides specialized coverage of Hadoop and other Big Data technologies. Carl advises clients on market and technology directions as well as performing supply- and demand-side primary research to size, forecast, and segment the database and related software markets.

Devin Pratt
Research Director, Data Management, IDC

Devin Pratt is a Research Director within IDC's AI, Automation, Data & Analytics (AAD&A) practice, where he oversees the database management tools and technologies software market. His primary research centers on the evolution of database management tools and technologies, covering both current and future capabilities across various relational, non-relational, and dynamic database systems designed for operational or analytic data workloads. Additionally, Mr. Pratt's research encompasses related technologies used for data modeling, database development, optimization, and maintenance. By analyzing market trends, buyer behaviors, and the business value of these technologies, Mr. Pratt's research helps vendors enhance their products and refine marketing strategies, while also guiding end-users in selecting data management solutions for challenges such as cloud migration and AI-driven data initiatives..

More about Devin Pratt

About the IDC Analysts (continued)

Megan Szurley

Business Value Manager, Business Value Strategy Practice, IDC

Megan Szurley is manager for the Business Value Strategy Practice, responsible for creating custom business value research that determines the ROI and cost savings for enterprise technology products. Megan's research focuses on the financial and operational impact of these products for organizations once deployed and in production. Prior to joining the Business Value Strategy Practice, Megan was a consulting manager within IDC's Custom Solutions division, delivering consultative support across every stage of the business life cycle: business planning and budgeting, sales and marketing, and performance measurement. In her position, Megan partners with IDC analyst teams to support deliverables that focus on thought leadership, business value, custom analytics, buyer behavior, and content marketing. These customized deliverables are often derived from primary research and yield content marketing, market models, and customer insights.

More about Megan Szurley

IDC Custom Solutions

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IDC Research, Inc.
140 Kendrick Street, Building B, Needham, MA 02494, USA
T +1 508 872 8200

idc.com @idc @idc

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