The Business Value of Amazon Relational Database Service

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Executive Summary

Historically, enterprises have had to maintain large numbers of application databases on their own, with a hands-on staff dealing with installation, tuning, patching, backing up, and maintaining the database software and the servers on which they run. This is a non-scalable, high-cost, low-value proposition. Whether running databases in one's datacenter or the public cloud, the "do it yourself" approach is fraught with unanticipated downtime and costs. A more efficient alternative involves moving the database to a managed cloud database service, which provides the infrastructure required, scales as needed, and maintains the database software, including patching, in a transparent manner. This study is focused on one such service: Amazon Relational Database Service (Amazon RDS) by Amazon Web Services (AWS), including its six Amazon RDS engines: PostgreSQL, MySQL, MariaDB, SQL Server, Oracle, and Db2.

Through a series of in-depth interviews, IDC conducted research that explored the value and benefits for organizations using Amazon RDS to cost-effectively set up, operate, and scale relational databases in cloud-based enterprise IT environments. This was based on an extensive data set and a specialized Business Value methodology.

IDC calculates that these customers will achieve benefits — revenue gains and cost savings — worth an annual average of $11.7 million per organization and a three-year ROI of 258% by:

- Providing a more cost-effective approach for managing database services and operations than their previous or alternative approaches

- Optimizing core processes, including provisioning, patching, configuring, and updating databases, which improved the efficiency and effectiveness of IT infrastructure, security, developer, and database administrator (DBA) teams

- Lowering instances of unplanned downtime and remediating events more quickly when they occur

- Enhancing the application development process to improve timely delivery of high-quality business applications for end users and customers

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BUSINESS VALUE HIGHLIGHTS

$11.7 million
in annual average benefits per organization

258%
three-year ROI

5 month
payback period

34%
lower annual database costs

38%
fewer instances of unplanned downtime

36%
more efficient IT infrastructure teams

63%
more efficient DBA teams

37%
improvement in maximum number of concurrent users

22%
improvement in database query time

Situation Overview

Most companies don't maintain their physical plant anymore; they hire a building maintenance firm to do that. They don't cook food for their employees' meals; they bring in a catering service. If they use a fleet of vehicles, they don't provide their garaging, mechanical maintenance, and auto repair; they turn to a fleet management service instead. So, why do they still maintain their database servers, including hardware and software, and incur the costs and risks of doing it on their own?

A cloud database service offers a team of highly trained professionals to maintain databases across a range of systems. This relieves companies of the responsibility for the purchase, installation, and upkeep of the hardware and software, ensuring continuous uptime and applying well-developed database maintenance practices across various database servers and instances for uninterrupted and efficient operation. Also, in the cloud, resources can be made virtual and fungible. This means that shifting workloads around for hardware maintenance, adding or reducing resource capacity, and transparently using redundant resources to provide smooth operation, even while applying software patches and upgrades, are all normal aspects of the service.

If a database is maintained in the same environment as its associated applications and shares the same resource environment as other databases, it can simplify the process for users to share and transfer data. AWS offers such an environment, and its relational database management service, Amazon RDS, enables its users to take advantage.

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HIGHLIGHTS CONTINUED

42%
quicker unplanned downtime resolution

30%
more applications released annually

Amazon RDS Overview

Amazon RDS is a cloud database service offered by AWS. It is an easy-to-manage relational database optimized for total cost of ownership with the ability to fine-tune operations to user specifications. Initial deployment is simple. There is no need to acquire and configure a server and storage, install the database software, or apply low-level configuration before getting started. Amazon RDS enables the user to set up a database with just a few clicks.

The amount of data available to organizations is exploding, and maintaining resources to manage all that data is a real headache in a do-it-yourself system. With Amazon RDS, users can scale dynamically and allocate as much storage and server capacity as they need right away. All the user needs to do is tend to the schema design, query construction, query optimization, and database application code. All other things including automatic failover, backup and recovery, software upgrades, isolation and security, industry compliance, scaling, patching, monitoring, and routine maintenance, are covered by the service.

AWS has offered this service for well over a decade with excellent results. Amazon RDS can be used to support MySQL, PostgreSQL, MariaDB, Oracle, SQL Server, and Db2. It also supports a cloud-native option in Amazon Aurora, which provides fully MySQL and PostgreSQL-compatible databases with high performance and availability at a global scale. In addition to offering Amazon RDS for standard configurations of the relational database management systems (DBMSs) mentioned, users can enjoy the benefits of this service for database environments requiring more specific and atypical configurations through Amazon RDS Custom, which features a shared responsibility model where the user manages the host and can customize the operating system, satisfying exacting specifications. Amazon RDS on AWS Outposts allows users to deploy fully managed database instances in on-premises environments for those who prefer an on-premises deployment.

In addition, Amazon RDS continues to add capabilities to accelerate the foundational managed database experience. One area of innovation is in price-performance improvements. As an example, Amazon RDS offers support for AWS Graviton-based instances, including Graviton3-based instances. According to AWS, Graviton3 instances provide up to 30% improved performance and up to 27% improved price performance over Graviton2-based instances for open source databases. Since this study was conducted, Amazon RDS launched support for Amazon EBS io2 Block Express, providing customers with improved price performance with consistent sub-millisecond latency for mission-critical workloads. Another innovation focus area is making upgrades easier and faster, which is especially important for customers who must test compatibility and are sensitive to downtime. Customers can use Amazon RDS Blue/Green Deployments to promote their staging environment to production as fast as a minute with no data loss. Since the study was conducted, customers who've enjoyed the improved performance and availability of Multi-AZ with two readable standbys can now perform minor version upgrades with typically < 1-second downtime when adding an Amazon RDS Proxy or open source proxy to their deployment.

Moreover, AWS says that it has committed to innovating beyond improving the foundational managed database experience. As an example, customers incorporating generative AI into their existing applications running on RDS for PostgreSQL can store, index, retrieve, and search for vectors without additional operational burden. Additionally, following the completion of this study, Amazon RDS invested in zero-ETL integrations with Amazon Redshift, enabling customers to perform analytics on their operational data

without needing to build and manage data pipelines. Overall, with Amazon RDS, customers have access to the best of all industry innovation. By combining the innovation of popular commercial and open source engines and the best of the AWS stack, customers can confidently build using familiar features and functionality while taking advantage of the customization and reliability that AWS-managed capabilities offer.

In this study, we worked with customers using the standard configurations.

The Business Value of Amazon RDS

Study Firmographics

IDC conducted research that explored the value and benefits for organizations using Amazon RDS to cost-effectively set up, operate, and scale relational databases in the cloud. The project included seven interviews with organizations that use Amazon RDS and have experience with and/or knowledge about the benefits and costs of using the platform. During the interviews, organizations were asked 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 6,943 employees and total average annual revenues of $5.9 billion. On average, these organizations had IT teams of 1,634 staff members engaged in supporting 486 IT applications and services for 6,192 end users. All organizations were based in the United States. From a vertical market standpoint, IDC's survey included organizations from the financial services (4), software, waste management, and real estate sectors.

TABLE 1

Firmographics of Interviewed Organizations

	Average	Median	Range
Number of employees	6,943	5,000	1,000–20,000
Number of IT staff	1,634	50	10–8,000
Number of IT users	6,129	2,000	200–20,000
Number of business applications	486	46	5–3,000
Revenue per year	$5.9B	$2.0B	$250M–$27B
Countries	United States (7)		
Industries	Financial services (4), software, waste management, real estate		

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

Choice and Use of Amazon RDS

The organizations that IDC interviewed described the decision criteria involved in their selection of Amazon RDS to set up, operate, and scale relational databases in cloud-based IT environments. In discussing their criteria and decision-making methodologies, IDC interviewees identified a number of benefits that informed their decision. Greater flexibility, easier provisioning, and improved support for monitoring were identified as clear benefits. The platform's ability to alleviate staff costs associated with tasks performed by server and database administrators and simplified licensing were also cited.

Another important benefit was the need for modernization and digital transformation of existing IT database resources. Study participants elaborated on their selection criteria:

Greater flexibility (Real estate organization):
"My organization selected Amazon RDS for the flexibility. Initially, we used it to be able to back up on-premises relational databases to the AWS Cloud. That was the very first reason."

Easier provisioning (Financial services organization):
"My organization selected Amazon RDS for SQL Server and RDS for Oracle for its ease of provisioning resources — it's much faster and more seamless to do in AWS. An added value was the support for monitoring, and a lot of the day-to-day tasks are handled by AWS."

DBA support (Waste management organization):
"The main reason that my organization selected Amazon RDS was because we did not want the cost stress of having to have server and database administrators do basic blocking and tackling. The other reason is that Amazon RDS simplifies licensing for us."

Modernization (Financial services organization):
"In the last three to four years, my organization had a massive tech modernization and debt remediation program. The move to Amazon RDS encompassed both of those programs."

Staff cost savings (Financial services organization):
"My organization selected Amazon RDS for cost savings purposes, particularly in staffing. Having AWS manage our servers helps us avoid internal errors in management."

Table 2 provides a quantitative view of the organizational usage of Amazon RDS across all organizations at the time of interviews. There was an average of 591 database systems in use, serving 3,743 internal and 11,764 external users. More than half (57%) of revenue was supported by Amazon RDS in the survey base. Additional metrics are presented.

TABLE 2

Amazon RDS Usage

	Average	Median
Business applications	56	30
Databases	591	50
Internal users	3,743	1,500
External users	11,764	1,100
TBs	50	6
Percentage of revenue	57%	58%

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

Business Value and Quantified Benefits

IDC's Business Value research evaluates and quantifies the benefits for organizations in adopting Amazon RDS to cost-effectively run and manage relational databases in the cloud. Interviewed organizations found that Amazon RDS improved the efficiency and effectiveness of IT infrastructure, security, and DBA teams in large measure through automated capabilities. This automation served to optimize core processes, including provisioning, patching, configuring, and updating. Importantly, it helped study participants enhance the application development process, thereby improving the timely delivery of high-quality business applications for end users and customers. It also lowered instances of unplanned downtime while speeding up remediation. All of these benefits combined to boost the productivity of end users, thereby improving business results.

Study participants offered these comments regarding the most significant benefits of Amazon RDS:

Automation and scalability (Financial services organization):
"A really significant benefit of Amazon RDS is the automation provided. It has given my organization the ability to automate and scale freely."

Server management and patching support (Financial services organization):
"A big benefit of Amazon RDS is that my organization does not have to manage the server; that's all handled for us. We don't have to worry about patching or any of it."

**Cost reductions and database improvements (Waste management organization):**
"The biggest benefits of Amazon RDS for my organization are reduced cost, improved speed, simplicity in all of the environments, and reliability."

Managed database services (Financial services organization):
"A significant benefit of Amazon RDS is their managed SQL database services. It has helped with scalability, the ability to import from the existing SQL, and the fact that we can integrate with AI and machine learning."

Figure 1 (next page) presents IDC's calculations of cumulative customer benefits after the adoption of Amazon RDS. As shown, average annual benefits were quantified at $11.7 million per organization ($198,600 per 10 databases). The figure breaks down these benefits further, as shown, in terms of benefits related specifically to IT, business enablement, and performance.

FIGURE 1

Average Annual Benefits per Organization
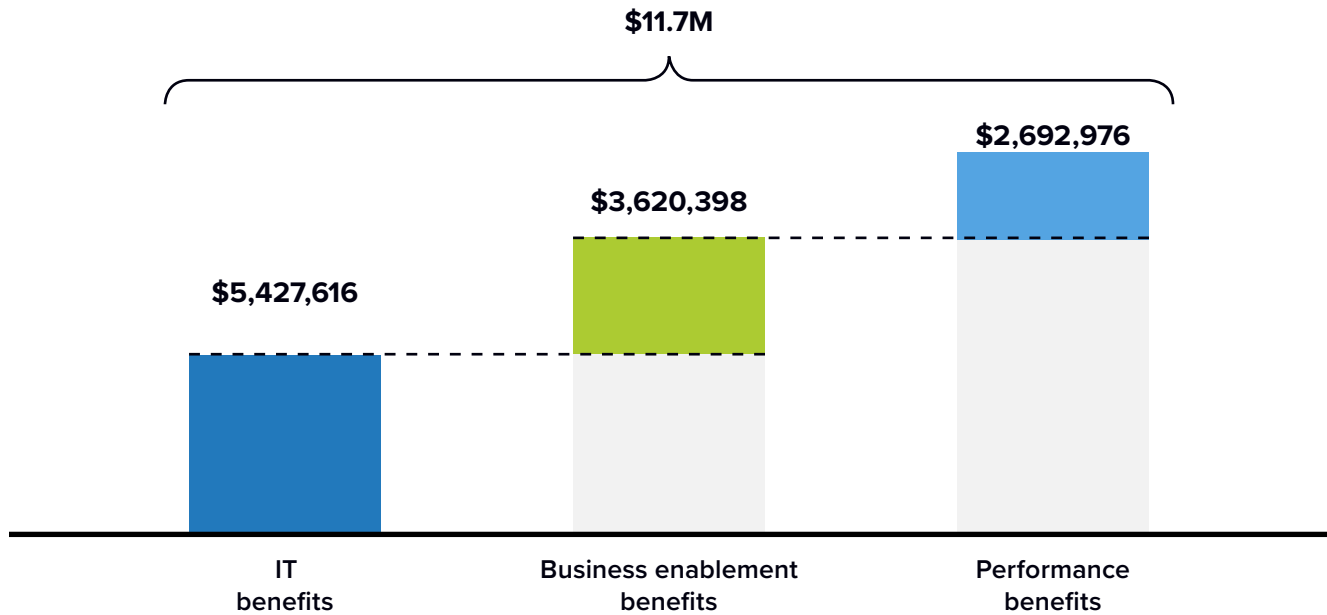
($)

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

For an accessible version of the data in this figure, see Figure 1 Supplemental Data in Appendix 3.

IT Benefits Derived from Amazon RDS

Amazon RDS has been designed as a relational database service that's easy to manage and optimized for total cost of ownership. The platform automates various database management tasks, including provisioning, configuring, managing backups, and patching. Functionality includes the ability to customize databases across eight engines and two deployment options. In their interviews with IDC, study participants discussed various IT-related benefits and value-adds associated with using Amazon RDS in their day-to-day database operations.

Interviewed organizations appreciated the platform's ability to free up DBAs and other IT staff from having to perform low-level work via its range of highly automated functionality. This allowed them to pivot to more strategic work or scale their existing workforce to grow with business demand. They also appreciated security and compliance benefits, including the ability to protect data and encrypt it at rest or in transit.

Study participants elaborated on these benefits:

Day-to-day database maintenance support (Real estate organization):
"A significant benefit of Amazon RDS is that it provides availability, backup, and patching support. This is all day-to-day maintenance that would have needed dedicated employees. Those things are done as part of the Amazon RDS package. We really appreciate the support on such things as uptime, backups, patching, maintenance, network power, and cooling."

Less low-level work (Software organization):
"My organization was already using AWS in the cloud, but we were managing the provisioning of the database servers and clusters with our staff. One aspect of going to Amazon RDS is that it's automated all of that. We didn't have a reduction or change in the footprint, but we did have a major shift in moving staff away from low-level work."

Robust security and compliance functionality (Financial services organization):
"A big benefit of Amazon RDS is in security and compliance. Amazon RDS enables my organization to protect data and encrypt it at rest or in transit. It's able to run instances of AWS into network isolation. In addition, it also controls the actions of the users by giving us a level of permissions for each user."

IDC then validated these anecdotal observations by applying its Business Value methodology to quantify benefits and improvements using the aggregated data sets provided by study participants. A variety of impacts were evaluated, beginning with overall cost-effectiveness as compared against previous or alternative solutions.

Interviewed organizations appreciated the Amazon RDS "pay as you go" model. This enabled them to pay only for the database functionality they consumed rather than having to invest in on-premises or self-managed infrastructure. This resulted in a 34% reduction in annual database costs in terms of both infrastructure and subscriptions (**Figure 2**) for interviewed organizations compared with their previous solutions.

FIGURE 2

Database Costs per Year
($)

$4,406,517

Before/without
Amazon RDS

$2,889,577

With Amazon RDS

34% lower
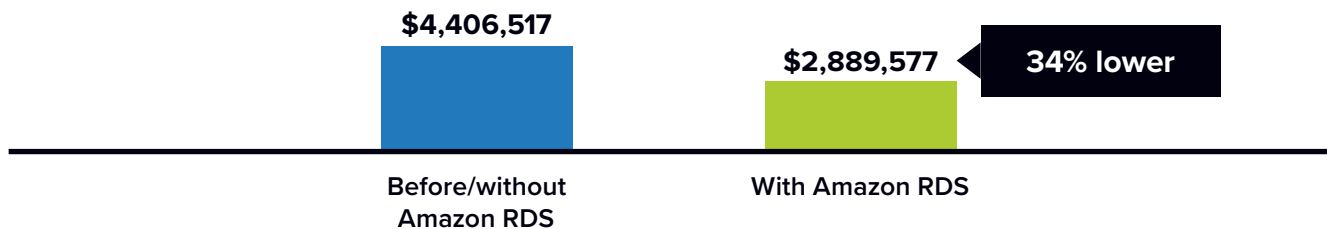
n = 7; Source: IDC Business Value In-Depth Interviews, January 2024

A key benefit of Amazon RDS is that it allows organizations to remove inefficient and time-consuming database administration tasks without providing additional infrastructure or performing time-consuming software maintenance. This enables DBA teams to effectively manage day-to-day activities by leveraging embedded automation functionality for tedious tasks, such as scaling, upgrades, and maintenance.

Table 3 quantifies the benefits for these teams. After adoption, interviewed organizations needed 17.8 fewer DBA full-time employees (FTEs) to manage the equivalent environment of their previous approach, making it easier for staff to scale with organizational growth. Importantly, the automation and service provided by Amazon RDS also helped interviewed organizations avoid the need to hire 4.1 additional FTEs. This improvement resulted in a significant 63% efficiency gain, which IDC valued at $2.2 million annually for each organization.

TABLE 3

DBA Team Efficiency Gain

	Before/Without Amazon RDS	With Amazon RDS	Benefit	Benefit
FTE count	31.0	13.1	17.8	58%
Additional hires needed to manage environment	4.1	n/a	n/a	n/a
Total FTE count	**35.1**	**13.1**	**22.0**	**63%**
Value of staff time per year	$3.5M	$1.3M	$2.2M	63%

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

IDC then drilled down on the database operational efficiencies that also contributed to better DBA team performance. The automated functionality provided by Amazon RDS meant that DBA teams were able to support significantly more databases in their organizations. Simply put, they gained the ability to work smarter, not harder. In fact, as shown in **Figure 3** (next page), Amazon RDS enabled each full-time DBA staff member to manage 167% more databases than their previous or alternative environment.

FIGURE 3

Databases Managed per DBA

(Database per DBA)
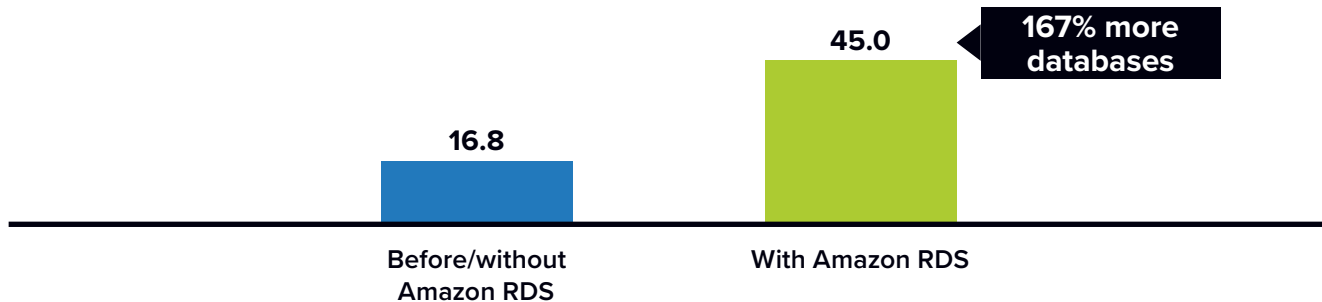
n = 7; Source: IDC Business Value In-Depth Interviews, January 2024

IDC then developed additional granular performance data by identifying and measuring a series of key performance indicators (KPIs) associated with typical operations. Interviewed organizations reported that they benefited from robust Amazon RDS support and automation to make database-related tasks more efficient. As seen in **Figure 4**, after adoption, patching and upgrades required 62% less staff time. In addition, configuration and backups needed 59% less staff time. These improvements freed up staff to work on more strategic tasks and focus more on supporting business-related goals and projects.

FIGURE 4

Database KPIs

(Percentage less staff time needed)

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

Study participants also reported that, after the adoption of Amazon RDS, their IT infrastructure teams derived positive impacts. As with DBA staff, these teams also benefited from less involvement with low-level maintenance-related tasks. Improvements in efficiency were based on shifting to a cloud-based delivery model and automation functionality, as previously described.

Table 4 quantifies these benefits. After adoption, interviewed organizations experienced a 32% efficiency gain, requiring 12.5 fewer FTEs to manage the equivalent IT environment. These highly skilled individuals were often repurposed to focus on business innovation. This improvement resulted in an annual business value of $1.3 million for each organization.

TABLE 4

IT Infrastructure Team Efficiency Gain

	Before/Without Amazon RDS	With Amazon RDS	Benefit	Benefit
FTE count	33.6	22.7	10.9	32%
Additional hires needed to manage environment	1.6	n/a	n/a	n/a
Total FTE count	**35.2**	**22.7**	**12.5**	**36%**
Value of staff time per year	$3.5M	$2.3M	$1.3M	36%

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

IDC then looked at benefits for security teams. Interviewed organizations took advantage of Amazon RDS monitoring, patching, encryption, and access control functionality, which greatly improved their efficiency in managing security-related threats and breaches to IT systems and operations and end users. After adoption, interviewed organizations saw a 45% efficiency improvement, resulting in an annual business value of $753,798 for each organization (**Table 5**, next page).

TABLE 5

Security Team Efficiency Gain

	Before/Without Amazon RDS	With Amazon RDS	Benefit	Percent Benefit
FTE count	16.6	9.1	7.5	45%
Value of staff time per year	$1.7M	$906,667	$753,798	45%

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

Database Performance Benefits From Adopting Amazon RDS

In their detailed conversations with IDC, study participants zeroed in on specific benefits from Amazon RDS related to key aspects of their database operations.

These benefits extended throughout the organization to business unit end users and included but were not limited to:

- Improved applications development

- Fewer incidents of unplanned downtime

- Better database performance for end users

Interviewed organizations appreciated that Amazon RDS reduced instances of underutilized resources via autoscaling, which helped reduce outages and/or related impacts. They also noted that the platform allowed them to easily add or remove Amazon RDS databases, thereby helping to resolve performance bottlenecks. Once again, they reinforced the notion that lower-level tasks could be offloaded, thereby paving the way for more focus on the managed digital experiences they wanted to deliver to customers.

Study participants explained these benefits in greater detail:

Fewer outages from autoscaling (Financial services organization):
"Amazon RDS has reduced instances of overutilized resources. This helps reduce outages and/or other impacts. Without autoscaling, it's easier to overlook instances where we might need more compute or memory resources."

Performance support (Financial services organization):

"My organization appreciates the fact that we can add or remove Amazon RDS databases as we choose. It gives us a diagnosis of how to resolve any types of performance bottlenecks through the DevOps they have out there. We have also found that Amazon RDS improves throughput and curates the processing that is needed. It's durable and performs the needed backups and database snapshots."

**Increased time to work on customer experiences (Software organization):**

"The attractive thing about using Amazon RDS is that my organization can hand off lower-level undifferentiated work, such as provisioning, patching, scaling, and availability, to Amazon RDS to handle. Our staff can now focus on handling the managed experience we want to deliver in our application to our customers."

IDC verified these anecdotal observations with quantified data. Database agility benefits related to Amazon RDS were particularly important for application developers who relied on database functionality to carry out their daily tasks. AWS customers reported that enhanced agility and scalability supported faster delivery of new applications and features to end users. In addition, Amazon RDS enabled development teams to work more productively, resulting in easier provisioning, less latency, and overall better performance. In fact, the participating organizations released 30% more applications and 22% more features annually after adopting Amazon RDS.

Table 10 in Appendix 2 quantifies the benefits achieved by participants in terms of productivity gains. After adoption, interviewed organizations saw a 5% productivity boost for their development teams. To put it differently, these teams of 219 developers can now work at the equivalent level of having an additional 10.2 FTEs on staff. This resulted in an annual productivity-based business value of $1 million for each organization.

Interviewed organizations also saw improvements in several core database performance metrics. This improved performance was evident throughout entire organizations and helped end users perform their day-to-day tasks more efficiently and with less friction. After adoption, the maximum number of concurrent users increased by 37% (see **Figure 5**, next page). Essentially, this meant more database availability for end users, including analytics teams and other heavy data users. In addition, query performance time was 22% faster with 19% greater database throughput, thereby making database resources more reliable and better performing for end users. Additional metrics are presented.

FIGURE 5

Database Performance KPIs

(Percentage of improvements)

Maximum number
of concurrent users **37%**

Query performance time **22%**

Database throughput **19%**

Database latency **11%**
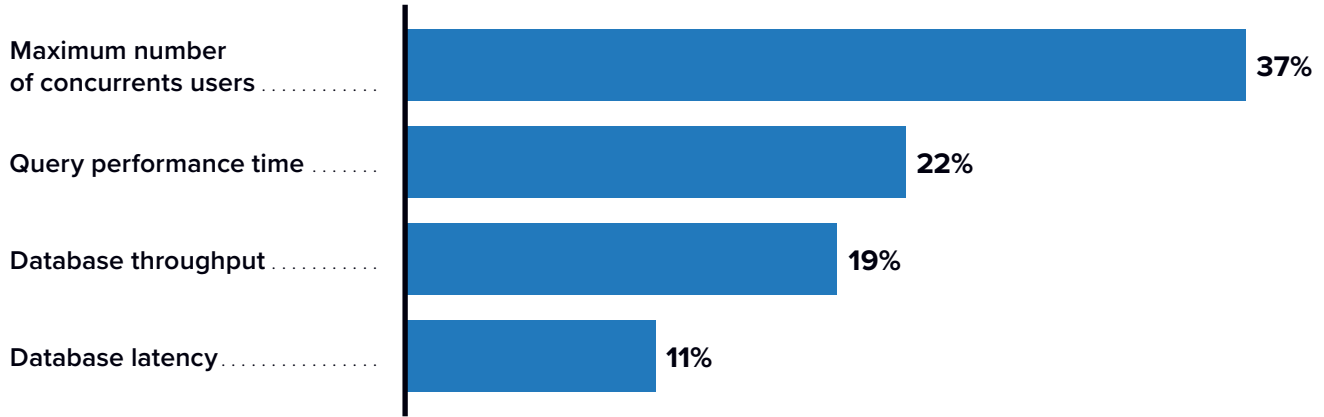
n = 7; Source: IDC Business Value In-Depth Interviews, January 2024

Another major benefit reported by study participants was a substantial reduction in unplanned downtime. Interviewed organizations noted that Amazon RDS was easier to scale with organizational needs. As a result, Amazon RDS reduced the frequency of unplanned downtime outages occurring while improving the time required for staff to resolve any outages that did occur. This, in turn, enabled greater end-user productivity levels.

Table 6 (next page) provides metrics on these impacts. As shown, there was a substantial reduction in the frequency of downtime events, declining from 21 to 13 outages annually. This represented a significant improvement of 38% fewer outages. In addition, the time required to resolve unplanned downtime events when they occurred was substantially reduced by 42%. In aggregate, these improvements resulted in end-user productivity loss avoidance, which IDC valued at $1.9 million per year.

TABLE 6

Unplanned Downtime — End-User Productivity Impact

	Before/Without Amazon RDS	With Amazon RDS	Benefit	Benefit
Number of outages per year	21.0	13.1	7.9	38%
Mean time to resolution, hours	6.0	3.5	2.5	42%
Users impacted by downtime	1,925	1,925	n/a	n/a
Percentage of productivity loss factor	32%	32%	n/a	n/a
Number of FTEs	41.8	15.1	26.7	64%
Value of lost productive time per year	$2.9M	$1.1M	$1.9M	64%

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

Business Enablement Benefits From Amazon RDS

IDC found that the organizations interviewed were able to achieve significant business gains from the deployment and use of Amazon RDS. This was enabled by the staff and performance improvements described previously. In the aggregate, the IT, DBA, and end-user benefits that study participants experienced from adoption fostered better business operations and results. Interviewed organizations realized higher revenue by better addressing business opportunities and fine-tuning their business operations for better efficiency. Study participants cited specific benefits to their organizations, such as fostering organizational growth by being able to better scale the business and increasing the number of customer renewals. Better achieving compliance program goals for clients in key industries was also cited as a key benefit.

Study participants elaborated:

Organizational growth (Financial services organization):
"With Amazon RDS, our business has been able to scale in ways that weren't previously possible. It has opened a lot of new possibility by enabling us to share data with Amazon Redshift, something my organization would not have been able to do without Amazon RDS."

More customer renewals (Software organization):
"My organization has noticed that with Amazon RDS, fewer customers are not renewing. We gained the ability to scale our business with fewer people and deliver better service."

Increased compliance for customers (Financial services organization):
"Amazon RDS is helping my organization achieve compliance program goals for our clients in key industries when it comes to threat detection or other kinds of compliance and security that we must adhere to on a day-to-day basis in the financial environment."

IDC then quantified these benefits, beginning with revenue-related impacts. With the advantages of better database scalability, availability, and performance, interviewed organizations were able to better serve their customers and make more informed, strategic decisions. In **Table 8**, these annual revenue gains related to the use of Amazon RDS (**Table 7**) were quantified. Factoring in an operating margin of 15%, interviewed organizations stated that they were able to achieve additional net revenue of $2.2 million per year.

TABLE 7

Business Enablement — Higher Revenue

	Per Organization	Per 10 Databases
Total additional gross revenue per year	**$14.3M**	**$242,468**
Assumed operating margin	15%	15%
Total additional net revenue, IDC model	**$2.2M**	**$36,370**

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

Interviewed organizations also found that Amazon RDS helped them significantly reduce day-to-day costs of operations. As shown in **Table 8**, the total annual operational cost avoidance accruing from the use of Amazon RDS was calculated at $1.4 million.

TABLE 8

Business Enablement — Operational Cost Avoidance

	Per Organization
Annual operational cost avoidance	$1.4M

n = 7; Source: IDC Business Value In-Depth Interviews, February 2024
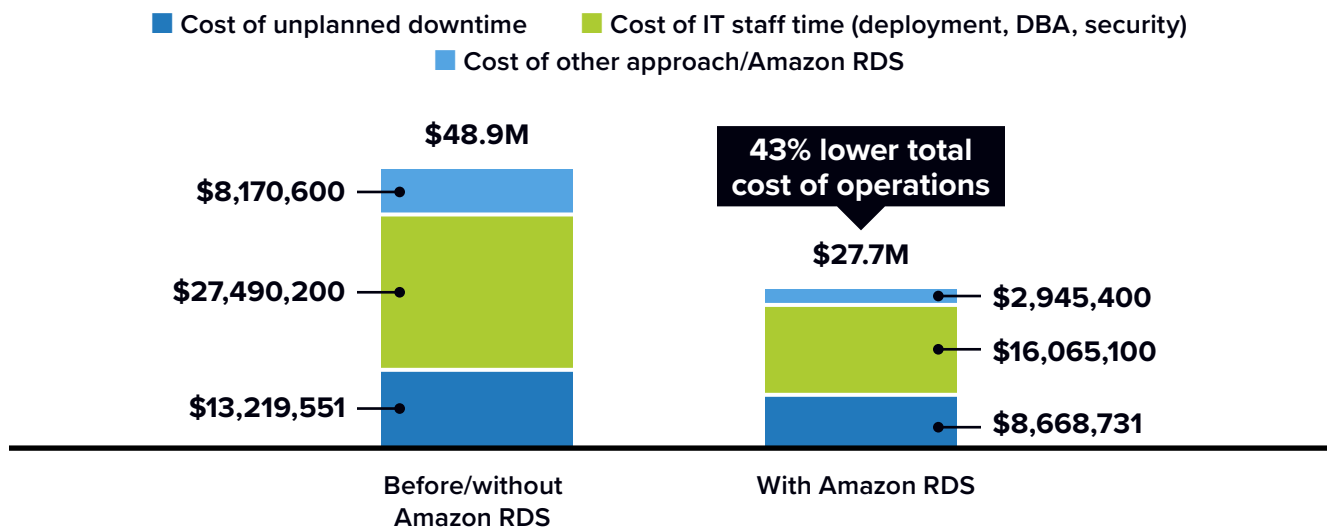
IDC quantified these end-user productivity gains. Factoring in a 15% operating margin, end users were able to work with the equivalent productivity level of having six additional FTEs on staff, which was valued at $389,665 per year.

Cumulative Cost of Operations

To assess overall cost-effectiveness, IDC calculated the cumulative costs of operations for surveyed organizations. The previously described database staff and infrastructure-related efficiencies enabled interviewed organizations to more cost-effectively deploy and manage database workloads. With a cloud-driven approach, enterprises were able to avoid the cost and risk of in-house management and infrastructure while ensuring that their data was professionally managed with continually maintained and optimized databases and system software. In addition, with the "pay as you go" model, organizations only paid for database resources actually consumed while shedding the expense of building an on-premises or self-managed infrastructure.

The calculations shown in **Figure 6** factored in IT staff management costs for various teams, including DBA and security. It also included costs associated with lost productivity and unplanned downtime, as well as baseline costs for previous or alternative approaches. As shown, over a three-year period, Amazon RDS costs were 43% lower.

FIGURE 6

Amazon RDS Three-Year Cost of Operations Analysis per Organization
($)

■ Cost of unplanned downtime ■ Cost of IT staff time (deployment, DBA, security)
■ Cost of other approach/Amazon RDS

Before/without Amazon RDS — $48.9M
- $8,170,600
- $27,490,200
- $13,219,551

With Amazon RDS — $27.7M — 43% lower total cost of operations
- $2,945,400
- $16,065,100
- $8,668,731

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

For an accessible version of the data in this figure, see Figure 6 Supplemental Data in Appendix 3.

ROI Summary

In summary, **Table 9** presents IDC's ROI analysis for study participants' use of Amazon RDS. As shown, IDC projects that these organizations will achieve three-year discounted benefits worth an average of $28 million per organization ($473,479 per 10 databases) through better database performance, enhanced staff efficiencies, and improved business results. These benefits will cost organizations a total three-year discounted investment of $7.8 million per organization ($132,240 per 10 databases). These respective benefits and investment costs are projected to result in an average three-year ROI of 258% with a payback period of five months.

TABLE 9

Three-Year ROI Analysis

	Per Organization	Per 10 Databases
Discounted benefits	$28.0M	$473,479
Discounted investment	$7.8M	$132,240
Net present value	$20.2M	$341,239
ROI	258%	258%
Payback (months)	5 months	5 months
Discount factor	12%	12%

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

Challenges/Opportunities

The range of data types and amounts of data under business management is expanding all the time, requiring more physical resources, better operational tuning, and higher degrees of performance. This is becoming even more important in a world where more and more organizations are looking for ways to unify their data with analytics and AI/ML. Amazon RDS will be challenged to respond to these developments with broader and more sophisticated management methods and approaches with hardware to address that kind of demand. However, with such challenges also come great opportunities to establish, over time, a position as a premier provider of data management, regardless of size, format, and a growing demand for computing power.

Conclusion

Migrating workloads to the cloud poses special challenges and can be fraught with peril regarding operational disruption and unrealistic expectations of performance and cost. Picking a DBMS you trust or perhaps have been using and then pairing it with a cloud environment can be a real challenge. IDC's research summarized here shows that Amazon RDS offers the means of getting the most out of both your DBMS and the cloud.

Many of those who have migrated to the cloud experienced very little cost savings, and some have even reported increases in cost. However, the Amazon RDS users we encountered reported truly impressive benefits, with a net positive ROI of 258% over three years. Downtime, with its associated negative effects, was cut in half, and database-related operational costs were cut by $1.3 million on average. The users interviewed also praised the increased agility that this configuration gave them, making them more effective in adjusting their systems to meet shifting data objectives.

There can be little doubt that anyone considering moving databases to the cloud and who is focused on Oracle Database, Microsoft SQL Server, IBM Db2, or open source PostgreSQL, MySQL, or MariaDB needs to consider Amazon RDS very seriously as the database platform to adopt.

Appendix 1: Methodology

IDC's standard ROI methodology was utilized for this project. This methodology is based on gathering data from current users of Amazon RDS as the foundation for the model.

Based on interviews with organizations using Amazon RDS, IDC performed a three-step process to calculate the ROI and payback period:

1. **Gathered quantitative benefit information during the interviews using a before-and-after assessment of the impact of Amazon RDS.** In this study, the benefits included IT cost reductions and avoidances, staff time savings and productivity benefits, and revenue gains.

2. **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 RDS and can include additional costs related to migrations, planning, consulting, and staff or user training.

3. **Calculated the ROI and payback period.** IDC conducted a depreciated cash flow analysis of the benefits and investments for the organizations' use of Amazon RDS over three years. ROI is the ratio of the net present value 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:

- Time values are multiplied by burdened salary (salary + 28% for benefits and overhead) to quantify efficiency and productivity savings. For this analysis, IDC has used assumptions of an average fully loaded salary of $100,000 per year for IT staff members and an average fully loaded salary of $70,000 per year for non-IT staff members. IDC assumes that employees work 1,880 hours per year (47 weeks x 40 hours).

- The net present value of the three-year savings is calculated by subtracting the amount that would have been 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.

- Further, because Amazon RDS requires a deployment period, the solution's full benefits are not available during deployment. To capture this reality, IDC prorates the benefits monthly and then subtracts the deployment time from the first-year savings.

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

Appendix 2: Additional Tables

TABLE 10

Development Team Productivity Gain

	Before/Without Amazon RDS	With Amazon RDS	Benefit	Benefit
Equivalent productivity level, FTEs	219.0	229.2	10.2	5%
Value of staff time per year	$21.9M	$22.9M	$1.0M	5%

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

TABLE 11

Business Enablement — End-User Productivity Gain

	Before/Without Amazon RDS	With Amazon RDS	Benefit	Benefit
Equivalent productivity level, FTEs	254	291	37	15%
Net equivalent productivity level, FTEs	254	259	6	2%
Value of staff time per year	$17.8M	$18.2M	$389,665	2%

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

Appendix 3: 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	$5,427,616
Business enablement benefits	$3,620,398
Performance benefits	$2,692,976
Total	**$11.7M**

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

Return to original figure

FIGURE 6 SUPPLEMENTAL DATA

Amazon RDS Three-Year Cost of Operations Analysis per Organization

	Before/Without Amazon RDS	With Amazon RDS
Cost of unplanned downtime	$8.2M	$2.9M
Cost of IT staff time (deployment, DBA, security)	$27.5M	$16.1M
Cost of other approach/Amazon RDS	$13.2M	$8.7M
Total	**$48.9M**	**$27.7M (43% lower total cost of operations)**

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

Return to original figure

About the IDC Analysts

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Megan Szurley is a senior research analyst 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.

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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 (SDM) markets, including database management systems (DBMS), 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..

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