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Authors:
Carl W. Olofson
Matthew Marden

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Business Value Highlights

264%
three-year ROI

39%
lower three-year cost of operations

5 months
to payback

$37,400
annual benefits per Amazon RDS database

37%
more efficient DBA teams

60%
more databases per DBA

42%
more productive development teams

86%
faster to deploy new databases

34%
reduced database latency

97%
less unplanned downtime

Amazon Relational Database Service Delivers Enhanced Database Performance at Lower Total Cost

EXECUTIVE SUMMARY

There is a wave of database migrations to the cloud, as enterprises seek to realize the greater efficiencies and cost savings involved in cloud-based data management, especially as cloud-based applications assume an increasingly important role in running the business. The questions naturally arise, which is the best relational database management system (RDBMS) to serve my needs in the cloud? Should I simply move the one that I have used for decades, or is there a better option?

IDC research has shown that the "lift and shift" approach of moving all applications and databases, just as they are, from the internal datacenter to the cloud, without adding any automated management capabilities, has its challenges and is best viewed as a first step to cloud migration. Many enterprises are opting for "cloud-native applications" that are designed to maximize available cloud resources while minimizing continuous utilization and, therefore, controlling cost. Such approaches include refactoring applications to run as microservices rather than as large blocks of code. It seems reasonable to look for a fully managed cloud-native database service that can complement such a move. In fact, even without application refactoring, a considerable benefit is to be realized by using a cloud-native database service when moving functionality to the cloud.

Amazon Relational Database Service (Amazon RDS) is a service designed to enable setting up, operating, and scaling relational databases in the cloud. To understand the impact of Amazon RDS on database costs, operations, and performance, IDC conducted in-depth interviews with organizations supporting business operations with Amazon RDS databases in the Amazon Web Services (AWS) cloud. Study participants reported that they are leveraging Amazon RDS to lower the overall costs, including staff time requirements, and for running their databases while also benefiting from improved database agility, scalability, and performance.

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IDC calculates that the move to managed databases on Amazon RDS allows study participants to achieve average annual benefits of $4.99 million per organization ($37,400 per Amazon RDS database), which would result in a three-year return on investment (ROI) of 264%, by:

- Supporting development activities and business operations with an agile, scalable, and high-performing cloud-based database service that supports the database engines the study participants already use

- Enabling database administrators (DBAs) to work more efficiently, including working more easily across database engines, thereby increasing the number of databases that each DBA team member can manage and administer by an average of 60%

- Requiring less information technology (IT) infrastructure time to manage and support database infrastructure and resources and better developing and deploying applications to staff and customers

- Lowering the cost of running databases with a cloud-based service that can easily scale to accommodate database workload requirements

- Minimizing the effects of unplanned downtime, thereby contributing to greater productivity for business units

SITUATION OVERVIEW

The world of information technology is undergoing a radical transformation, as enterprises move existing workloads to the cloud and create new ones there. This phenomenon has triggered a broad reevaluation of IT assets generally and caused many enterprises to look at how they may best utilize the cloud as a platform. The platform-as-a-service market is expected to grow from about $25 billion in 2018 to about $92 billion in 2023 at a 2018–2023 compound annual growth rate (CAGR) of 29.5%. Data services make up over half of the platform market and are expected to grow even faster at a CAGR of 33% to about $53 billion in 2023. These growth figures demonstrate that benefits provided by the public cloud will lead to an accelerated pace of cloud adoption in the next five years.

A key element in this reevaluation is the concern for how transactional databases will be handled going forward. The cloud offers a great opportunity for enterprises to shed the cost and risk associated with their own in-house management of those databases, as well as their infrastructure. By intelligently allocating database work to fully managed cloud-based database services, they can ensure that their data is managed on systems that are professionally managed, with database and system software that are continually maintained

at the latest release levels for maximum performance, feature/functionality, and security, since cloud database services apply security patches on a very timely basis. Because those patches are based on the direct experience of the cloud database service providers, they often have more precise and timely security corrections than can be realized otherwise.

There is a wide variety of database cloud service platforms from which to choose; some are based on technology that has existed for decades, and others are based on brand-new approaches. Some utilize proprietary software, and others take advantage of the commonality and ubiquitous support afforded by open source. While some enterprises are seeking extremes in database size and performance, others are looking for a reliable, dependable service at a reasonable price.

AMAZON RDS OVERVIEW

Amazon Web Services offers a set of cloud-based relational database services under the name of Amazon Relational Database Service. Amazon RDS supports six database engines — the open source MySQL, PostgreSQL, and MariaDB, as well as Oracle, Microsoft SQL Server, and Amazon's own cloud-native RDBMS, Aurora (which is available in both MySQL- and PostgreSQL-compatible forms). AWS manages RDS in such a way as to enable customers to get the performance and SLAs they require while containing operational cost. At the same time, because deployment details are managed by AWS, databases on RDS are easy to define and set up, saving both time and effort for the user, without requiring the kind of deployment expertise necessary when deploying databases in a datacenter on the premises.

Recently, AWS contracted with IDC to examine the experiences of some of its customers to determine in concrete, quantifiable terms the benefits they have experienced. This study is based on that work. The comparisons were like to like, that is, between databases of the same type deployed in the on-premises datacenter versus the public cloud.

THE BUSINESS VALUE OF AMAZON RDS

Study Demographics

IDC conducted research that explored the value and benefits for organizations of using Amazon Relational Database Service. Interviews were in-depth in nature and covered a variety of quantitative and qualitative questions about the impact of Amazon RDS on database, IT, and business operations.

Table 1 presents study demographics. Organizations interviewed had an average of 57,230 employees, indicating the involvement of several large companies (median of 2,094). This workforce was supported by an IT staff of 300 engaged in managing 91 business applications. Study participants had deployed an average of 133 Amazon RDS databases at the time of interviews, making up about half of their database environments. Study participants reported running various database engines, including Oracle, SQL Server, PostgreSQL, and MySQL, in their Amazon RDS environments

The sample of organizations included experiences from the United States (4), Canada, and South Korea as well as a good mix of vertical markets, namely, education services, financial services, higher education, manufacturing, professional services, and software.

TABLE 1 Firmographics and Use of Amazon RDS

	Average	Median
Number of employees	57,230	2,094
Number of IT staff	300	170
Number of business applications	91	73
Annual revenue/budget	$12.47 billion	$857.4 million
Total number of databases	266	30
Number of Amazon RDS databases	133	22
Number of TBs, Amazon RDS databases	109	19
Countries	United States (4), Canada, and South Korea	
Industries	Education services, financial services, higher education, manufacturing, professional services, and software	

Source: IDC, 2020

Reasons for Choosing Amazon RDS

Interviewed organizations discussed their reasons for choosing Amazon RDS. AWS customers cited various factors tied to the cost and performance of running Amazon RDS databases in the AWS cloud, which they concluded would help them optimize database costs, reduce risk, and improve database performance. At base, they required databases that they could cost effectively scale to match business demand in a cost-effective but high-performing manner. Study participants elaborated:

- **Ease of setting up multiple availability zones and overall agility:** *"The biggest reason we chose Amazon RDS is multi-availability. With a normal database, it is a lot of work to set up replicated databases. With Amazon RDS, it is just a checkbox or a drop down."*

- **Benefits of an opex cost model, along with flexibility:** *"We were looking at the capital expense of maintaining our servers on premises and compared that to the opex model of going to the cloud with AWS and Amazon RDS. Also, we have a lot more flexibility and can leverage new technologies that are made readily available via Amazon."*

Business Value and Quantified Benefits

IDC's research shows that the use of Amazon RDS has enabled interviewed organizations to establish more cost-effective, scalable, and high-performing database environments across various types of database workloads and database engines. With Amazon RDS, study participants require less IT and DBA staff time to manage and support databases while enhanced agility enables development efforts that serve to improve application and service experiences for employees and customers. Study participants spoke to what they perceive to be the most significant benefits of using Amazon RDS:

- **Ease of use, flexibility, and the ability to ensure high availability:** *"Amazon RDS is easy to use and requires less management work than typical databases, so there is a bit more flexibility .... The whole premise for us around Amazon RDS and Aurora is simplicity and the ability of nonspecialist staff to support database operations."*

- **Flexibility in terms of resource consumption using an opex model:** *"We can use resources temporarily instead of purchasing equipment. For example, if we needed a new VM with more than four cores in our server farm, we would have previously had to go to management who might say we cannot justify more than four cores without a formal request. Those types of limitations are gone. We can try things and then shut down the resources."*

Based on interviews with study participants, IDC projects that they will achieve value worth an average of $4.99 million per year over three years ($37,400 per database) in the following areas (see Figure 1):

- **IT staff productivity benefits:** Amazon RDS required less DBA and IT infrastructure staff time to deploy, manage, and support database resources, freeing up staff time to take on other projects. In addition, improved database agility and performance benefit developers who work with databases as they deliver new applications and features to employees and customers. IDC projects that interviewed organizations will realize the highest share of value attributable to Amazon RDS through time savings and productivity gains for these teams worth an annual average of $4.16 million per organization ($31,100 per database).

- **IT infrastructure cost reductions:** Amazon RDS costs less than running comparable databases on premises or with another infrastructure, resulting in lower infrastructure and database licensing costs. IDC puts the value of cost savings compared with running like database workloads at an annual average of $575,900 per organization ($4,300 per database).

- **Risk mitigation and business productivity benefits:** Amazon RDS experiences fewer unplanned outages and disruptions, thereby limiting the impact of outages on employees and business operations. IDC calculates the value of higher user productivity at an annual average of $260,100 per organization ($1,900 per database).

FIGURE 1 Annual Average Benefits per Organization — Amazon RDS

Average annual benefits: $4.99 million per organization
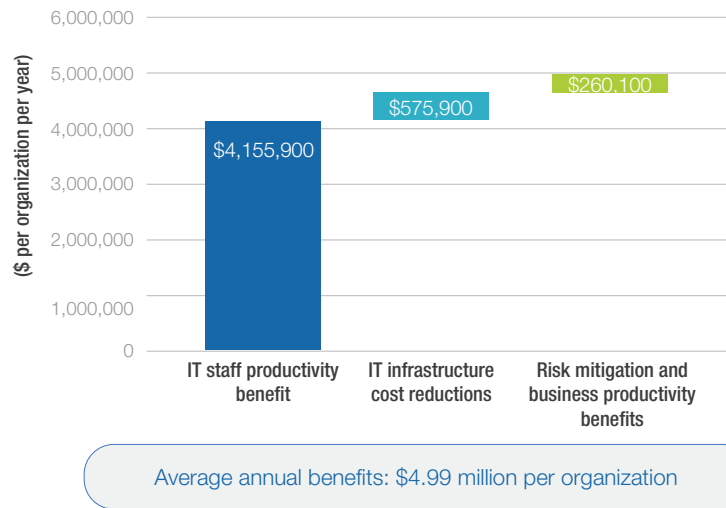
Source: IDC, 2020

## Cost-Effective and Efficient Databases

Amazon RDS provides six database engines, namely, Amazon Aurora (with MySQL and PostgreSQL compatibility), MySQL, MariaDB, Oracle, Microsoft SQL Server, and PostgreSQL. As such, the code, applications, and tools that interviewed organizations were already using could be maintained for routine tasks such as provisioning, patching, backup, recovery, failure detection, and repair, creating efficiencies right out of the gate. This has allowed them to use existing staff to handle these various database engines, and knowledge and licenses for existing databases can often be leveraged to their advantage.

Interviewed companies also reported reducing overall database costs with Amazon RDS. Moving to a "pay-as-you-go model" allows them to pay for the databases they consume, rather

than taking on the expenses of building out an on-premises or self-managed infrastructure to match expected database demand. Several interviewed organizations noted the benefit of moving to an opex model for their database consumption, noting the benefit of no longer needing to make up-front capex investments. Further, interviewed organizations noted using a mix of AWS on-demand instances (59% on average by organization) and AWS reserved instances (41% on average) for their Amazon RDS capacity to maximize cost efficiencies depending on the type of database workload.

As shown in Figure 2, moving away from an on-premises capex model to delivering databases through Amazon RDS via the AWS cloud carries costs that are 32% lower than for like database workloads. Specific functionalities of Amazon RDS have also proven beneficial in terms of cost, with one study participant commenting on the ability to auto scale: *"We use autoscaling with Amazon RDS, which gives us better control over scaling up or down and costs about 10–20% less. Also, it allows us to have more capacity as we shift our applications to read-write splitting, and we can avoid having to shard our databases."*

### FIGURE 2 Database Costs per Year
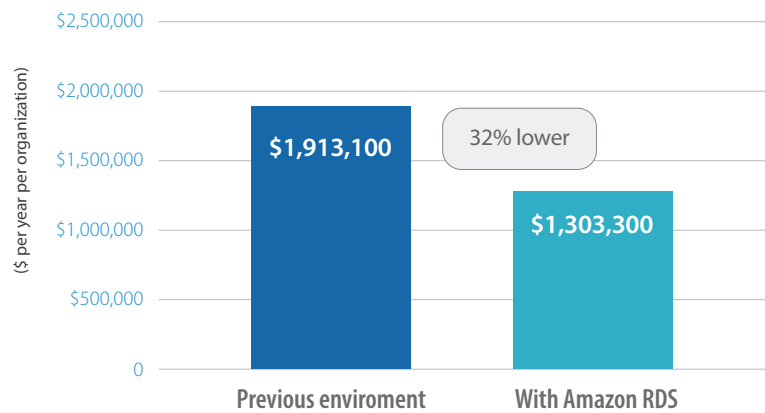
Source: IDC, 2020

In addition, study participants described how Amazon RDS has improved the efficiency of running these databases for DBA and IT infrastructure teams. They noted time savings in day-to-day activities and being able to more efficiently deliver database agility and manage risks associated with business continuity. Study participants can directly apply these efficiencies to shift valuable staff time to activities that can provide differentiation for their businesses, with one interviewed organization explaining: *"Rather than having to maintain replication and make sure backups are running, their time spent is about optimizing queries."*

Interviewed Amazon RDS customers commented on these and other benefits:

- **Minimizing the need for day-to-day support:** *"When our databases were on premises, we had system administrators handling day-to-day support and DBAs focusing on layered support on top of databases. With Amazon RDS, the SAs are really not very involved at all and most of the support is done by DBAs, including determining sizing and database parameters."*

- **Extending capabilities of existing DBA teams:** *"I am proud of the fact that we can support many more database types with the same DBA staff with Amazon RDS. Oracle people with 15 years of experience are now supporting MySQL and PostgreSQL databases. They can do this because they do less of the mundane, mechanical things they used to do without Amazon RDS."*

- **Half the engineering time for double the workloads:** *"In terms of our engineering time … we previously dedicated one-fourth of an engineer's time to managing the services, but today with Amazon RDS, we have double the number of databases to manage, and it takes roughly one-eighth of an engineer's time to manage twice the number of databases."*

Figure 3 demonstrates the significant impact for interviewed organizations on the ability of DBA teams to carry out day-to-day tasks. Time savings for these tasks often come back to automation that Amazon RDS offers, including automated patching and updates and near-real-time delivery of new database capacity at the push of a button. Efficiencies ranged from 56% for database deployment and migration to 58% for database configuration and 70% for essential database patching and upgrades.

FIGURE 3 Database Administrator Efficiencies by Activity

| Activity	% improvement
Databased patching/upgrades	70%
Database configuration	58%
Database migration	56%
Database deployment	56%
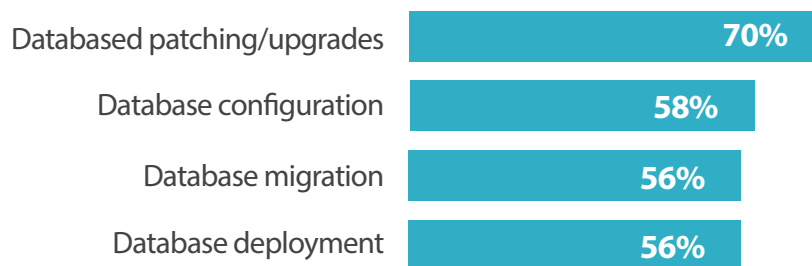
Source: IDC, 2020   *(% improvement)*

These efficiencies not only move DBA staff members away from what can be more mundane day-to-day tasks but also contribute to a significant overall efficiency gain for DBA teams. In turn, these efficiencies allow DBA teams to support more databases, contributing to making overall database operations more efficient. On average, study participants have increased the

capacity of their DBA teams by 60% with Amazon RDS (see Figure 4), reflecting a significant overall efficiency for teams responsible for delivering robust database services. One study participant commented: *"Our DBA activities have gone down 30–40% with Amazon RDS, which frees us up for other things like migrations to Aurora. There is more time and space to focus on that. This will also help with the upcoming addition of developer staff and the more long-term migration to [a data analytics platform]."*

FIGURE 4 Database Costs per DBA
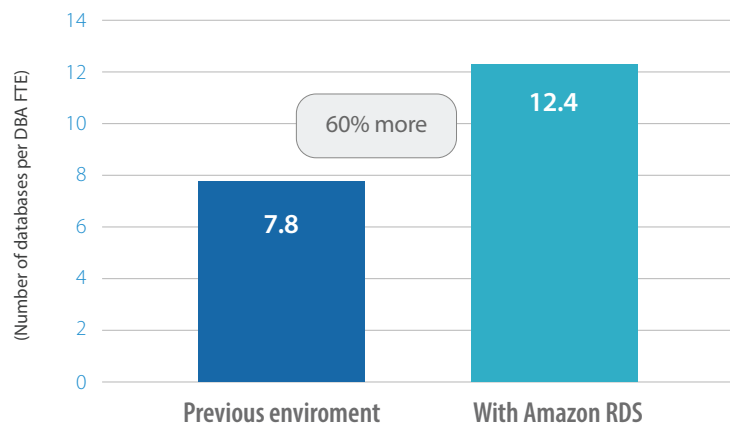
Source: IDC, 2020

Table 2 demonstrates the overall impact of the use of Amazon RDS on interviewed organizations' DBA teams. Overall, these Amazon customers reported that their DBA staff are 37% more efficient, which allows them to support significantly more database workloads with the same teams or frees up substantial amounts of DBA time to contribute to other business and IT projects and initiatives.

TABLE 2 Database Administrator Staff Impact

	Previous Environment	With Amazon RDS	Difference	Efficiency with Amazon RDS (%)
FTEs per year per organization	17.1	10.7	6.4	37
Staff hours per database per year	242	151	91	37
Equivalent cost of DBA time per organization per year	$1.71 million	$1.07 million	$0.64 million	37

Source: IDC, 2020

The combination of lower database costs and more efficient DBA teams enables study participants to run equivalent database workloads at a much lower total cost with Amazon RDS. One interviewed organization cited both cost savings and staff efficiencies, saying: "We can only say that the TCO in the cloud with Amazon RDS is far less than running the same databases on premises." The result is that interviewed Amazon RDS customers can run databases at a 39% lower cost over three years, resulting in significant cost savings and avoidances across their database environments (see Figure 5).

FIGURE 5 Three-Year Cost of Operations per Database
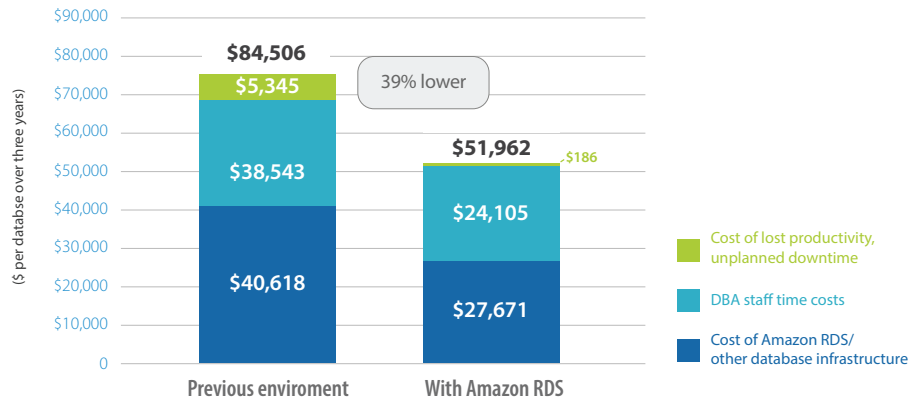
Source: IDC, 2020

Improvements in efficiency also extended to IT infrastructure teams that benefit from moving to a cloud-based delivery model and the automation afforded by Amazon RDS. For example, as previously noted, study participants require less time from engineering teams supporting the deployment and maintenance of database infrastructure resources. Table 3 presents IT infrastructure staff impact, which showed a 29% average efficiency, thereby freeing up valuable IT resources for other projects

TABLE 3 IT Infrastructure Staff Impact

|	Previous Environment	With Amazon RDS	Difference	Efficiency with Amazon RDS (%)
FTEs per year per organization	44.6	31.8	12.9	29
Staff hours per database per year	629	448	181	29
Equivalent cost of IT infrastructure staff time per organization per year	$4.46 million	$3.18 million	$1.29 million	29

Source: IDC, 2020

Access to Agile and Scalable Database Resources

Interviewed companies also benefited from having more agile and scalable database resources. With Amazon RDS, study participants can scale databases up or down with ease as needed as their business requirements change. In this context, study participants cited valuable benefits such as the simplification of business continuity and disaster recovery (DR) plans, being able to scale databases much faster to meet business demand, improved security through automation, and easier deployment of server resources. Study participants commented on these and other benefits:

- **Much reduced friction in deploying servers:** *"Deploying a test server is much faster with Amazon RDS. For example, a random test server may take 3–5 minutes to set up, almost instantaneous, compared with a few hours previously."*

- **Ability to scale databases in minutes:** *"Scaling our databases now takes about 3 minutes with Amazon RDS, before it would take about half a day .... Also, restoring a database snapshot previously was slow — up to 24 hours. Now, it can be done in about 3 minutes."*

This agility translates to much improved ability to provide and access new database capacity. Interviewed organizations faced much less friction in deploying new database resources with Amazon RDS. Figure 6 shows that they have reduced the time required to deploy a new database by an average of 86%, better ensuring the scalability and flexibility of their database environments.

FIGURE 6 Database Agility — Time to Deploy New Database
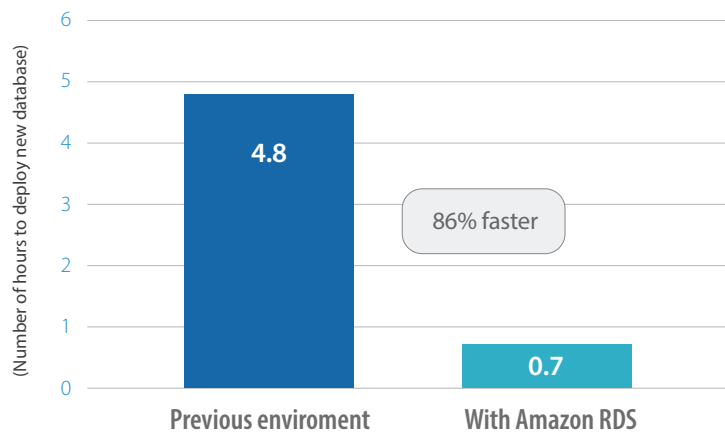
Source: IDC, 2020

Database agility benefits related to the use of Amazon RDS are especially important for application developers who rely on databases to do their jobs. Amazon RDS customers reported that enhanced agility and scalability supported faster delivery of new applications and features to line-of-business units. As shown in Table 4, post-deployment productivity levels for application development teams increased 42% as a result, marking a significant increase in the value of these development teams to their organizations.

TABLE 4 Application Development Team Impact

	Previous Environment	With Amazon RDS	Difference	Productivity Gain with Amazon RDS (%)
Equivalent productivity of development team in FTEs per organization	59	83.7	24.7	42
Equivalent value of development team per organization per year	$5.9 million	$8.37 million	$2.47 million	42

Source: IDC, 2020

The Benefits of Reliable and High-Performing Databases

Study participants reported that Amazon RDS provided them with reliable and high-performing databases. For example, Amazon RDS can replicate data to a different availability zone (AZ) or region, and is designed to enhance reliability for critical production databases, including automated backups, database snapshots, and automatic host replacement. The solution is also designed to support demanding database applications, offering two SSD-backed storage options: one optimized for high-performance OLTP applications and the other for cost-effective general-purpose use. In this context, study participants cited other valuable features and capabilities such as robust performance during peak use, the use of memory optimization to speed up queries, and better throughput for IOPS. Study participants commented on these and other benefits:

- **Leveraging capabilities of Amazon RDS for improved query performance and database throughput:** *"Query performance time and throughput are the most improved areas with Amazon RDS. Our belief is we have an opportunity to use resources at AWS that have greater I/O than we have on premises. For things like IOPS, we can get better throughput."*

- **Memory–optimized instances to speed up queries:** *"We would be limited by our network connections running databases on premises. That is no longer a concern with Amazon RDS. We switched to memory optimization with Amazon RDS and saw huge improvements there....*

Query speed has improved by 40%. This is what we were most looking to improve — largely from memory optimization."

Interviewed organizations reported that with Amazon RDS, they were able to improve business continuity by reducing the frequency of unplanned outages that affected companywide applications and services. Study participants cited the features and capabilities described previously such as automated failover and more effective disaster recovery, both of which minimize the operational impacts of database outages and outage-related risk. One study participant commented on this benefit: *"For us, a real benefit of Amazon RDS is about downtime. We were experiencing an average of about four outages per month previously.... Some of the issues were related to development and testing, so they were not solely about the infrastructure. But we have no downtime now with Amazon RDS and we're operating at 99.999% availability. We can attribute that to RDS load balancers and monitoring in general."* Table 5 shows unplanned downtime productivity data, reflecting a 97% reduction in impactful unplanned downtime with Amazon RDS and, as importantly, a bare minimum of operational impact of less than 1 minute of productive time lost per user per year due to database-related outages in the Amazon RDS cloud.

TABLE 5 Unplanned Downtime Impact

|	Previous Environment	With Amazon RDS	Difference	Benefit (%)
Number of outages per year	31.5	1.1	30.4	97
Minutes of lost productive time per user per year	7.08	0.24	6.84	97
Database availability*	99.99%	100%		
FTEs, lost productive time per organization per year	3.6	0.1	3.5	97
Value of lost productive time per organization per year (based on FTEs)	$251,700	$8,700	$243,000	97

* Database availability is measured by 12 hours per day, 5 days per week, and 52 weeks per year.
Source: IDC, 2020

Study participants also reported that Amazon RDS increased their database performance, with attendant impacts on the productivity of business operations. Improvements in key database performance metrics are shown in Figure 7. Interviewed organizations reported reducing database latency by an average of 34% and improving query performance by 21%. One study participant noted the impact of improved performance from a business perspective: *"I can give anecdotal evidence about the performance impact of Amazon RDS. Three years ago, our site fell*

over during one of our heaviest traffic days as there was just not enough capacity. Last year, we had the biggest, baddest workload we ever had on that day and had consistent user experience all day." These types of improvements help study participants ensure that their databases are integrated aspects of their business operations that deliver data and insights as needed.

FIGURE 7 Database Performance Gains

Reduced database latency	**34%**
Faster query performance time	**21%**
Increased database throughput	**18%**
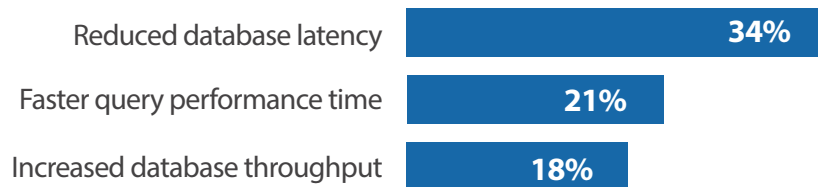
Source: IDC, 2020   *(% of improvement)*

ROI Summary

IDC's analysis of the financial and investment benefits related to study participants' use of Amazon RDS is presented in Table 6. IDC calculates that, on a per organization basis, interviewed organizations will achieve total discounted three-year benefits of $11.91 million in staff time savings, productivity gains, and reduced database costs ($89,200 per database) based on projected total discounted investment costs over three years of $3.27 million per organization ($24,500 per database). IDC calculates that at these levels of benefits and investment costs, the interviewed organizations will achieve a three-year ROI of 264% and break even on their investment in five months.

TABLE 6 ROI Summary

Three-Year ROI Analysis	Per Organization	Per Database
Benefit (discounted)	$11.91 million	$89,200
Investment (discounted)	$3.27 million	$24,500
Net present value (NPV)	$8.64 million	$64,700
ROI (NPV/investment)	264%	264%
Payback period	5 months	5 months
Discount factor	12%	12%

Source: IDC, 2020

CHALLENGES/OPPORTUNITIES

AWS is the largest public cloud services platform available. Many enterprises have chosen to deploy their applications on AWS, and many ISVs have developed software-as-a-service (SaaS) applications to run on AWS. It is certainly both attractive and practical for enterprises that have applications on AWS, and that use SaaS offerings on AWS, to manage their data using AWS-managed RDBMSs. This fact gives RDS a major advantage in the marketplace.

A key challenge comes from the argument, made by some, that one's RDBMS should be independent of the cloud services platform so that data can be moved elsewhere in a seamless manner if desired. AWS needs to make people comfortable that their data is portable and can be easily migrated or replicated between the AWS cloud and other environments. The opportunity is for AWS to prove that the benefits derived from managing all applications and databases in one environment clearly outweigh other options. At the same time, continuous innovation by AWS should ensure its continued dominance in this space.

CONCLUSION

Organizations must find approaches to delivering database services to their businesses that match and complement their overall cloud strategies. Many enterprises are opting for cloud-native applications designed to maximize available cloud resources while minimizing continuous utilization, thereby optimizing their costs, making it logical that they also look for a cloud-native database service. Amazon RDS is a database service designed to enable setting up, operating, and scaling cloud-based relational databases for organizations pursuing this type of cloud-native approach.

IDC's study demonstrates the strong value that organizations can achieve by running various database workloads and engines in Amazon RDS. This value relates to cost and operational efficiencies as well as business and operational benefits tied to improved database agility, scalability, and performance. With Amazon RDS, organizations spend less to run equivalent database workloads; benefit from better use of DBA, IT, and developer time; and suffer lower business operational losses from database-related outages. Overall, IDC projects that study participants will realize average annual benefits worth $4.99 million per organization ($37,400 per Amazon RDS database), which would result in a three-year return on investment of 264% through their use of Amazon RDS databases in the AWS cloud.

APPENDIX

Methodology

IDC's standard ROI methodology was utilized for this study. This methodology is based on gathering data from current users of the Amazon Relational Database Service as the foundation for the model. Based on interviews with organizations using the solution, 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 staff time savings and productivity benefits as well as database-related cost reductions.

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 a three-year period. ROI is the ratio of the net present value (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:

- Time values are multiplied by burdened salary (salary + 28% for benefits and overhead) to quantify time savings and productivity gains. 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 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.

- Because IT solutions require 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.

IDC Research, Inc.

5 Speen Street
Framingham, MA 01701
USA
508.872.8200
Twitter: @IDC
idc-insights-community.com
www.idc.com

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