The Business Value of Amazon Aurora, a Relational Database Service Built for the Cloud

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Executive Summary

Enterprises are increasingly looking to move operational database workloads to the cloud and are confronted with the question of what technology to use going forward. Some are choosing to stick with their existing vendors in this move, but many are choosing other options, including those of managed public cloud providers. The cloud-native, only-pay-for-what-you-use model is very attractive to them.

A leading product in this regard is Amazon Aurora, a cloud-native, MySQL- and PostgreSQL-compatible relational database from Amazon Web Services (AWS). Recently, AWS asked IDC to conduct a research study to determine both the cost and business benefits their customers have enjoyed by adopting Amazon Aurora.

IDC research explored the value and benefits for organizations of using Amazon Aurora to support their business goals and database transformation efforts. The project included six interviews with organizations that were using Amazon Aurora and had in-depth experience and/or knowledge about the benefits and costs associated with usage.

Based on these extensive qualitative and quantitative interviews, IDC calculates that study participants will realize business value worth an annual average of $9 million ($4.4 million per 100 Amazon Aurora databases) by:

- Providing database services that increase the productivity and efficiency of IT, developer, and database staff, allowing them to spend more time on innovation and serving complex business needs
Improving time to market, client retention, and technology growth by giving organizations the ability to scale at need

Decreasing risk associated with unplanned downtime through failover protection and better reliability

Strengthening database performance, query time, error rates, and latency resulting in higher gross annual revenue

Situation Overview

IDC research, including several recent surveys, has shown that enterprises are moving database workloads to the public cloud at an increasing rate. Approximately 90% of enterprises contacted for one such survey indicated that they either are already moving databases to the cloud or have plans to do so within the next three years. This means retiring the licensed database management system (DBMS) products that they run on the premises and moving to cloud equivalents, mostly involving managed database cloud services.

“Lift and shift” approaches, involving deploying the same DBMS in the cloud as enterprises had used on premises, usually in a virtual machine, have proved to be stop-gap measures. The real solution involves moving to a cloud-native database technology, usually delivered as a cloud service. The benefits in the latter scenario are that the cloud database vendor, rather than the user, will maintain the database instance, including the software and infrastructure, and often will tune or assist in tuning it as well. This frees up a good deal of technical staff time to perform more high-value tasks such as helping users write better database applications, developing databases that better meet the needs of the enterprise, and making the entire process more responsive to the business.

Amazon Aurora is a fully managed relational transactional DBMS offered as a cloud service on AWS by Amazon. Since it is designed to run on AWS, it makes highly efficient use of physical infrastructure, so the user only uses, and pays for, what is needed as the database runs.
The Business Value of Amazon Aurora

Study Firmographics

IDC’s research project included six interviews with organizations that were using Amazon Aurora and that had experience with or knowledge about its benefits and costs. During the interviews, companies were asked a variety of quantitative and qualitative questions about Aurora’s impact on their IT and database operations, core businesses, and costs.

Table 1 presents the aggregated firmographics of the organizations that participated in the interviews. The organizations that IDC spoke with had a range of sizes, with an average number of employees at 3,979. Supporting these employees were 1,359 IT staff members that managed 288 unique business applications. The interviewed organizations reported an average annual revenue of $1 billion. The organizations represented the following markets: financial services, software, hosting services, professional services, and online marketplace. (Note: All numbers cited represent averages.)

### Table 1
Firmographics of Interviewed Organizations

<table>
<thead>
<tr>
<th>Firmographics</th>
<th>Average</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of employees</td>
<td>3,979</td>
<td>1,375</td>
</tr>
<tr>
<td>Number of IT staff</td>
<td>530</td>
<td>350</td>
</tr>
<tr>
<td>Number of business applications</td>
<td>188</td>
<td>150</td>
</tr>
<tr>
<td>Number of databases</td>
<td>345</td>
<td>148</td>
</tr>
<tr>
<td>Total storage environment (TB)</td>
<td>8,196</td>
<td>6,055</td>
</tr>
<tr>
<td>Revenue per year</td>
<td>$1B</td>
<td>$0.4B</td>
</tr>
<tr>
<td>Countries</td>
<td>United States (6)</td>
<td></td>
</tr>
<tr>
<td>Industries</td>
<td>Financial services (2), software (1), hosting services (1), professional services (1), and online marketplace (1)</td>
<td></td>
</tr>
</tbody>
</table>

Source: IDC, August 2021
Choice and Use of Amazon Aurora

Interviewed organizations described several reasons for selecting Amazon Aurora as their database service provider. In many cases, customers were looking for the cost effectiveness of a cloud-native database, as they were outgrowing their on-premises database environments. Amazon Aurora also offered a host of out-of-the-box solutions that met the complex compliance, regulation, and security needs of interviewed organizations, as well as offering customers the ability to customize the solution to their specific database needs. It was also noted that Aurora was selected to help meet transformation and customer service goals and, as a result, elevated business profiles.

Specifically, customers noted:

- **Greater customization without performance degradation:**
  “We needed some flexibility, more customization without any performance degradation.”

- **Out-of-the-box regulation and compliance support:**
  “Our company has lots of regulation and compliance to adhere to. Aurora out of the box supported a lot of what we needed to do. Also, AWS was already in use in the organization, so we did not have to change cloud providers.”

- **Successful load testing:**
  “We looked at competitors and did load testing and replication lagged. Aurora performed best. We did a load test for a Cyber Monday, and in the load test, the pipes stayed up with Aurora.”

- **Cost efficient move to the cloud:**
  “The biggest reason was cost. We wanted to start moving away from on premises for some of our workloads.”

- **Allowed more time for complex business needs:**
  “We were outgrowing what we had been using. We started working more on databases when we wanted to spend more time on our business.”

- **Efficient way to build a data warehouse:**
  “We were building a new data warehouse for analytics on our data. To do that, we needed to get data out of the Aurora database and into our analytics system. If we had done that with our prior system, it would have required bringing up new servers and cloning the DB server. With Aurora, all we had to do was bring up a separate compute node, and we would already have shared storage.”

Table 2 (next page) provides the organizational usage interviewed organizations attributed to the deployment of Amazon Aurora. Companies noted that Amazon Aurora had a substantial footprint in organizations with 203 databases that amounted to 2,054TB of volume on Amazon Aurora. In addition to the large footprint in databases, Amazon Aurora also supported 85 business applications. Of these, 89% were customized applications and were used by 1,635 employees. Customers also associated 74% of their total revenue with use of the solution.
TABLE 2
Organizational Usage of Amazon Aurora

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Amazon Aurora databases</td>
<td>203</td>
<td>100</td>
</tr>
<tr>
<td>Database volume (TB)</td>
<td>2,054</td>
<td>81</td>
</tr>
<tr>
<td>Number of applications supported by Amazon Aurora</td>
<td>85</td>
<td>78</td>
</tr>
<tr>
<td>Number of employees using applications supported by Amazon Aurora</td>
<td>1,635</td>
<td>700</td>
</tr>
<tr>
<td>Custom-built applications</td>
<td>89%</td>
<td>100%</td>
</tr>
<tr>
<td>Revenue</td>
<td>74%</td>
<td>93%</td>
</tr>
</tbody>
</table>

Source: IDC, August 2021

Business Value and Quantified Benefits

Through quantitative and qualitative interview questions, the IDC Business Value model derived the benefits that organizations gained in using Amazon Aurora services to support their database needs. Interviewed organizations noted efficiencies and productivity gains for their IT staff, mainly due to the ease of scalability and provisioning that Aurora offered, which simplified administrative functions and increased database security. These efficiencies allowed staff to focus on driving business forward, resulting in strong business productivity and yielding higher annual revenue.

Study participants described these benefits in detail:

- **Reliability and durability (financial services):**
  “Before Amazon, we had our own database deployed on premises. We had a lot of problems and limitations with compute and multiple availability zones for various use cases. The system just started to drag at one point and could not guarantee the durability and reliability we needed ... We needed availability, scaling, and the ability to support our use cases for services. We just felt Aurora was superior.”

- **Increased level of service while improving margins (professional services):**
  “Amazon Aurora is more secure, and our margins have improved. It has made a big difference to the business. We can now offer a better level of service than we could before.”

- **Horizontal scalability to support SQL driver (software):**
  “Our organization is very committed to the PostgreSQL driver. We wanted to use these drivers so we wouldn’t have to change code. We needed to migrate to something that was more scalable and supported that driver with minimal movement of IP that was already there and to have more horizontal scalability.”
Uncomplicated scalability (online marketplace):
“We get 60–70% of our revenue in November and December, which creates scaling challenges. We have a small staff and no DBA team. We needed something to scale without complicated admin work.”

Resource management improvements (financial services):
“We no longer maintain the infrastructure and the database management system itself for time and attendance. We still run other workloads on premises, but we will not need to upgrade and maintain infrastructure for this workload. We just consume it as a service and spend significantly less on database engineering resources internally.”

Ability to provision storage correctly (hosting service):
“Our organization no longer needs to do more sharding to our databases, admin, and maintenance. We can make changes quickly on server size, which helps optimize that side of the costs. Compared to previous databases, I think we were overprovisioning storage, using only about half the storage.”

IDC categorized the benefits organizations using Amazon Aurora database services recognized into four main categories: direct staff benefits, business enablement, IT cost savings, and business benefits. Figure 1 illustrates that the organizations that participated in this study each recognized an average annual benefit of $9 million, or $4.4 million per 100 Amazon Aurora databases.

**FIGURE 1**
Average Annual Benefits
($ benefits)

- **Direct staff benefits**: $7.5M
- **Business enablement**: $818,000
- **IT cost savings**: $543,000
- **Risk mitigation**: $154,000

Total: $9M

- **Per organization**
  - Direct staff benefits: $818,000
  - Business enablement: $543,000
  - IT cost savings: $154,000
  - Risk mitigation: $402,500

Total: $4.4M

- **Per 100 Amazon Aurora databases**
  - Direct staff benefits: $267,000
  - Business enablement: $75,700

Total: $4.4M

Source: IDC, August 2021
Database and Staff Cost Efficiencies

An important aspect of using Amazon Aurora is that it scales with the unique needs of organizations. This customizable scalability helps organizations provision database resources with ease, resulting in cost avoidances in database resources. Organizations were no longer overprovisioning during seasonal spikes and instead were paying for what they used. A participant noted, “With Amazon Aurora we only pay for what we use. That is a huge benefit. Previously our organization was paying for server instances and paying 25% more.”

Table 3 demonstrates that interviewed organizations recognized a cost avoidance of $708,250 per year when using Amazon Aurora over their prior solutions.

<table>
<thead>
<tr>
<th>TABLE 3 Database Cost Avoidances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before/Without Amazon Aurora</td>
</tr>
<tr>
<td>Cost of equivalent database resources per year</td>
</tr>
</tbody>
</table>

Source: IDC, August 2021

In addition to database cost avoidance, interviewed organizations noted significant productivity and efficiency gains for employees that use Amazon Aurora database services. Study participants recognized that Amazon Aurora created staff efficiencies because it simplified work for staff with out-of-the-box functionality. Most notably, database administration (DBA) and security teams benefited tremendously from Amazon Aurora’s streamlined approach. As a result, time was freed up for employees to shift the focus from mundane and routine tasks and empowered them to work on more creative, complex business tasks that enabled their businesses to drive forward.

Participants stated the following benefits:

- **Increased effectiveness of DBA staff:**
  “With Aurora, [we] only have a few people that have to focus on the common admin duties — the minutia — allowing others to focus on the big stuff. The staff is the same size, but they work on more advanced support.”

- **Blended operational ecosystem:**
  “We do not have to worry about optimization and scaling. Amazon just does that. It also simplifies the decision of what database to use. If an application requires a transactional database, it is always Aurora. Also, by fitting into the Amazon ecosystem it just makes it easier, operationally, to extend the functionality of applications because of the way everything blends together in the ecosystem.”

- **Scalability with less hands-on work:**
  “Aurora scales and handles our seasonal 30% upgrade for traffic so we do not need to look for additional scaling capabilities. Automation changes how we operate, with less maintenance and administration and less hands-on work. We can scale for a day for load testing.”
IDC found that the operational impact of Amazon Aurora extended to how interviewed companies provisioned and scaled database storage needs. Participants indicated that Amazon Aurora helped modernize how they provisioned their databases in that they can scale up and down with ease, often with one click. This gave the ability to scale with need, rather than overprovisioning storage. Ultimately this led to decreased database costs for storage, but also for database management. Aurora also proved to be effective in provisioning new databases by eliminating the back and forth between employees when creating the new database. Instead, it automated tasks, which ultimately decreased the time it took to create a database.

The statements below showcase these operational benefits that organizations recognized:

▶ Ability to monitor resources and scale:
   “It just takes one click to scale up and down. Storage is autoscale, so we are not purchasing storage we won’t use. Also, on the compute scale, the IT department can monitor resources and scale up and down.”

▶ Ease in provisioning new databases:
   “Provisioning new databases is the key. Staff can make a request and submit a ticket, and they have all the information needed to automate on that ticket to provision a new database in any environment. Before they needed up to one week; now it is down to one day. Aurora eliminates all the back and forth between DBAs and application engineers.”

IDC found that Amazon Aurora database services helped IT teams manage their IT infrastructure with more efficiency and agility, allowing these employees to focus on bigger initiatives within their organizations. Largely due to the efficient manner that IT infrastructure was managed, organizations reported that the team had on average responded to 58% less customer service requests per month than with their prior database solution. Table 4 further quantifies these improvements. As shown, Amazon Aurora increased the efficiency of IT operations by 45%, resulting in a benefit of $3.6 million in staff time per year.

**TABLE 4**

<table>
<thead>
<tr>
<th>IT Infrastructure Management Efficiencies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Before/Without Amazon Aurora</strong></td>
</tr>
<tr>
<td>Total FTE count</td>
</tr>
<tr>
<td>Value of staff time per year</td>
</tr>
</tbody>
</table>

Source: IDC, August 2021
The benefits that the IT infrastructure team achieved also extended to data security staff. As shown in Table 5, security staff were able to achieve a large benefit of $1.2 million per year, a 54% efficiency over their previous database solution. Organizations attributed this efficiency to leveraging the multiple out-of-the-box security options that Amazon Aurora offers, including Cloud Watch, encryption capabilities, and key management. This allowed the team to effectively monitor their database, set up permissions and standards quickly, and adhere to the strict compliance needs of their industry and organization. An Amazon Aurora customer noted, “Amazon Aurora is very secure. We have our databases isolated. We host a lot of services for our clients, and they have their own virtual infrastructure on their own private network. Not only can we provide this enterprise grade-level service on Aurora, we can do it with a higher level of security.”

**TABLE 5**  
**Database Security Staff Efficiencies**

<table>
<thead>
<tr>
<th></th>
<th>Before/Without Amazon Aurora</th>
<th>With Amazon Aurora</th>
<th>Benefit</th>
<th>Benefit (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total FTE count</td>
<td>23</td>
<td>11</td>
<td>12</td>
<td>54</td>
</tr>
<tr>
<td>Value of staff time per year</td>
<td>$2.3M</td>
<td>$1.1M</td>
<td>$1.2M</td>
<td>54</td>
</tr>
</tbody>
</table>

Source: IDC, August 2021

In addition, the interviewed organizations noted that the DBA staff became increasingly more effective because they were able to quickly deliver new applications or changes. They were able to improve access to data while customizing it to the specifications of their organization. Importantly, this created high-value, insightful data for organizations to respond to and make decisions on. IDC calculates that the DBA staff gained the most operational benefit for organizations. As shown in Table 6, this team was 61% more efficient with Amazon Aurora, a $594,000 staff time benefit annually.

**TABLE 6**  
**DBA Staff Efficiencies**

<table>
<thead>
<tr>
<th></th>
<th>Before/Without Amazon Aurora</th>
<th>With Amazon Aurora</th>
<th>Benefit</th>
<th>Benefit (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total FTE count</td>
<td>14</td>
<td>5</td>
<td>8</td>
<td>61</td>
</tr>
<tr>
<td>Value of staff time per year</td>
<td>$973,000</td>
<td>$379,470</td>
<td>$594,000</td>
<td>61</td>
</tr>
</tbody>
</table>

Source: IDC, August 2021
IDC also found that DBA teams gained significant efficiencies through database maintenance. One company stated, “Monitoring and maintaining databases have been simplified. The console streamlines processes as well. It has been awesome.” Figure 2 illustrates the efficiencies the DBA team realized when maintaining Amazon Aurora. Across the board, Amazon Aurora simplified and streamlined maintenance tasks such as deployment, backups, patching, configuration, and migration/testing by large margins.

**Figure 2**

**DBA Team Efficiencies**

(% more efficient)

<table>
<thead>
<tr>
<th>Task</th>
<th>Benefit (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database deployment</td>
<td>73%</td>
</tr>
<tr>
<td>Database backup and restore</td>
<td>65%</td>
</tr>
<tr>
<td>Database patching</td>
<td>58%</td>
</tr>
<tr>
<td>Database configuration</td>
<td>56%</td>
</tr>
<tr>
<td>Database migration/testing</td>
<td>37%</td>
</tr>
</tbody>
</table>

Source: IDC, August 2021

Moreover, organizations stated that Amazon Aurora helps them handle usage spikes quickly, often without the need to provision additional resources. This scalability helped organizations create and deploy new databases in less than a day and 94% quicker than their previous solution (see Table 7). IDC also calculated that organizations need 95% less staff time to do so.

**Table 7**

**Agility/Scalability Metrics**

<table>
<thead>
<tr>
<th>Before/Without Amazon Aurora</th>
<th>With Amazon Aurora</th>
<th>Benefit</th>
<th>Benefit (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time to create and deploy new database (days)</td>
<td>5</td>
<td>0.3</td>
<td>4</td>
</tr>
<tr>
<td>Staff time to create and deploy new database (hours)</td>
<td>27</td>
<td>1.0</td>
<td>25</td>
</tr>
</tbody>
</table>

Source: IDC, August 2021
IDC then looked at how Amazon Aurora impacted the application development teams of the interviewed companies. Table 8 demonstrates that these teams were able to increase productivity by 19% due to the effective provisioning and scaling that Amazon Aurora gave their organization. IDC valued this productive gain per organization at $4.3 million per year. Owing to this gain in productivity, application developers were able to focus on innovation, creating more robust applications and features, enabling organizations to better respond to customer needs.

**TABLE 8**

Application Development Staff Productivity

<table>
<thead>
<tr>
<th></th>
<th>Before/Without Amazon Aurora</th>
<th>With Amazon Aurora</th>
<th>Benefit</th>
<th>Benefit (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total FTE count</td>
<td>225</td>
<td>268</td>
<td>51</td>
<td>19</td>
</tr>
<tr>
<td>Value of staff time per year</td>
<td>$22.5M</td>
<td>$26.7M</td>
<td>$4.3M</td>
<td>19</td>
</tr>
</tbody>
</table>

Source: IDC, August 2021

As shown in Figure 3, development teams were able to create 17% more applications and 28% more features with Amazon Aurora. In addition, the development life cycle of these new applications and features also decreased by a large margin. This further illustrates the productivity that application developers were able to gain with Amazon Aurora.

**FIGURE 3**

Application Development KPIs

(% more efficient)

- **Creating new applications/features per year**
  - Applications: 17%
  - Features: 28%

- **Development life cycle for new applications/features**
  - Applications: 22%
  - Features: 31%

Source: IDC, August 2021
Amazon Aurora Risk Mitigation Benefits

Interviewed organizations indicated that not only were they able increase productivity and staff efficiencies with Amazon Aurora database services but were also able to do so with far less revenue-impacting downtime. Organizations benefited from quicker provisioning with Amazon Aurora, which ultimately lead to less downtime because their resources were no longer having critical ceiling capacity challenges. Amazon Aurora also offered interviewed organizations failover protection, which helped them resolve downtime, triage, and troubleshooting problem quicker, without large impacts on staff, employees, or revenue.

Customers indicated:

- **Decreased downtime resulting in an operational win:**
  “Downtime, triage, and troubleshooting have gone down dramatically — a 90% reduction in those areas. That is a big operational win. The provisioning is really simple. Aurora deploys with one click, and it would be secure and horizontally scalable.”

- **Cost savings from zero downtime failover:**
  “Aurora’s built-in zero downtime failover saves us an estimated $100,000 annually during normal operations. Savings could cost $200,000 to $500,000 per year if we needed to do a failover without Aurora during Cyber Monday peak traffic.”

- **Ability to add capacity results with less resource exhaustion:**
  “With Amazon Aurora, there are fewer downtime and degradation issues. Resource exhaustion and capacity ceilings were probably the main causes for interruptions, and that problem doesn’t really exist with Aurora. When you get close, you just add capacity.”

- **Triage simplified by no cluster and database issues:**
  “The biggest benefit is not having to deal with cluster and database issues and outages. The two areas were often challenging to distinguish from a triage or resolution angle. It is much simpler now.”

IDC calculated that, with Amazon Aurora, companies encountered considerably less revenue-impacting unplanned downtime (see Table 9, next page). The reliability of Amazon Aurora helped ensure database availability for interviewed organizations at critical times in their business, especially in handling seasonal traffic spikes. This is because organizations were provisioning resources more effectively. In fact, with Amazon Aurora, interviewed organizations reported 56% less outages per year. When those outages did occur, they were able to resolve them 47% quicker than with their previous database solution. This resulted in eliminating approximately $200,000 in net revenue loss per year, a 91% improvement over their previous database approaches.
### TABLE 9
Unplanned Downtime: Revenue Benefit

<table>
<thead>
<tr>
<th></th>
<th>Before/Without Amazon Aurora</th>
<th>With Amazon Aurora</th>
<th>Benefit</th>
<th>Benefit (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of outages per year</td>
<td>3.5</td>
<td>1.5</td>
<td>1.9</td>
<td>56</td>
</tr>
<tr>
<td>Time to resolve per outage (hours)</td>
<td>3.3</td>
<td>1.8</td>
<td>1.6</td>
<td>47</td>
</tr>
<tr>
<td>Percentage of outages impacting revenue</td>
<td>0.3</td>
<td>0.1</td>
<td>0.2</td>
<td>61</td>
</tr>
<tr>
<td>Revenue loss per hour of outage</td>
<td>$488,870</td>
<td>$488,870</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total revenue loss per year per organization — unplanned downtime</td>
<td>$1.5M</td>
<td>$132,990</td>
<td>$1.3M</td>
<td>91</td>
</tr>
<tr>
<td>Total net revenue loss per year per organization — unplanned downtime — IDC model*</td>
<td>$220,670</td>
<td>$19,950</td>
<td>$200,720</td>
<td>91</td>
</tr>
</tbody>
</table>

* The IDC model assumed a 15% margin. Source: IDC, August 2021

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### Business Enablement Benefits of Amazon Aurora

Interviewed organizations were able to distinguish distinct business benefits that they were achieving as a result of using Amazon Aurora, leading to measurable impacts on their business results. Notably, organizations saw that their book of business was running quickly and efficiently, as well as expanding. Amazon Aurora allowed organizations to focus more on core business and innovation, largely because they were able to provision and scale with efficiency.

Study participants commented on these benefits:

- **Expanding business due to Aurora integration:**
  “Not all of that (business expansion) is directly because of Aurora, but the database architecture no longer holds back the business, which has been ready to expand. We would not have had that kind of growth without Aurora; it is fully integrated with our business now.”

- **Business enablement through database optimization:**
  “We have fewer DBAs on the cloud side working on optimization and scaling. Our management work is focused on creating databases for high-volume services. It helps us make the business go faster.”

- **Scaling problems eliminated, allowing focus on other business objectives:**
“For the business side, it is all about the seasonal scaling. If we cannot scale during that two-month period, our business suffers. With Aurora, scaling problems are eliminated, and the Christmas season became less volatile from an infrastructure position. We are not concerned with the storage load, sharding, and again database scaling. We can focus on growing revenue.”

- **Decreased time to market:**
  “Amazon Aurora shortens our time to market. It used to take us time to build out the associated infrastructure and set up the relational databases for each client. Now, we essentially offer dedicated instances to each client and have shortened the time to set the instances up to a few hours.”

- **Increased client retention due to consistent availability:**
  “Client retention has gone up from mid-80s to low 90s, and some of that is related to scalability and more consistent availability.”

- **Business and technology growth due to scalability:**
  “The major benefit is being able to scale up better. Aurora supports both growth in the business and growth in our technology base.”

Interviewed organizations saw overall improvement in database performance with Amazon Aurora, which enabled their businesses to drive forward and innovate to meet customer needs and expectations, often leading to better customer retention. Notably, study participants reported that their databases’ performance improved by 38%, with less latency (33%) and fewer errors (27%). They also noted that Amazon Aurora databases improved query performance time by 33%. These metrics are important because they specifically illustrate how interviewed organizations achieved higher productivity and innovation (see Figure 4).

**Figure 4**

Database Performance Metrics (% improvement)

<table>
<thead>
<tr>
<th>Metric</th>
<th>Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall database performance</td>
<td>38%</td>
</tr>
<tr>
<td>Query performance time</td>
<td>33%</td>
</tr>
<tr>
<td>Database latency</td>
<td>33%</td>
</tr>
<tr>
<td>Error rate</td>
<td>27%</td>
</tr>
</tbody>
</table>

Source: IDC, August 2021
To determine overall financial impacts, IDC quantified business result improvements by looking at changes in total revenue. Interviewed organizations reported that they were able to add additional revenue after adopting Amazon Aurora databases through improved business operations and enablement. **Table 10** shows that the average total additional gross annual revenue that accrued after deployment of Amazon Aurora was $1,067,00 per organization, or $525,000 per 100 Amazon Aurora databases.

**TABLE 10**
**Business Operations and User Impact**

<table>
<thead>
<tr>
<th></th>
<th>Per Organization</th>
<th>Per 100 Amazon Aurora Databases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total additional gross revenue per year</td>
<td>$7.1M</td>
<td>$3.5M</td>
</tr>
<tr>
<td>Assumed operating margin</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>Total additional net revenue per year — IDC model</td>
<td>$1.0M</td>
<td>$525,000</td>
</tr>
</tbody>
</table>

Source: IDC, 2021

**Table 11** (next page) presents IDC’s analysis of the financial and investment benefits related to study participants’ use of Amazon Aurora databases. IDC calculates that on a per-organization basis, the interviewed organizations will achieve total discounted three-year benefits of $20.9 million (10.3 million per 100 Amazon Aurora databases) based on improved IT and business staff efficiencies, database cost avoidances, risk mitigation, and business enablement. These benefits compare with projected total discounted investment costs over three years of $3.9 million on a per-organization basis ($1.9 per 100 Amazon Aurora databases). With the previously stated benefits and investments, IDC calculates that interviewed organizations will achieve a three-year ROI of 439% and break even on their investment in approximately 13 months.
### TABLE 11
Three-Year ROI Analysis

<table>
<thead>
<tr>
<th></th>
<th>Per Organization</th>
<th>Per 100 Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefit (discounted)</td>
<td>$20.9M</td>
<td>$10.3M</td>
</tr>
<tr>
<td>Investment (discounted)</td>
<td>$3.9M</td>
<td>$1.9M</td>
</tr>
<tr>
<td>Net present value (NPV)</td>
<td>$17M</td>
<td>$8.4M</td>
</tr>
<tr>
<td>ROI (NPV/investment)</td>
<td>439%</td>
<td>439%</td>
</tr>
<tr>
<td>Payback (months)</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Discount factor</td>
<td>12%</td>
<td>12%</td>
</tr>
</tbody>
</table>

Source: IDC, August 2021
**Challenges/Opportunities**

The market for managed cloud database services is a competitive one, with offerings both from public cloud platform providers and by third parties. To be successful, AWS must continue to deliver strong and consistent value to customers, ahead of what any competitors may provide. AWS will discover additional opportunities by innovating in the database arena, expanding functionality, and increasing the value of its database portfolio, including Amazon Aurora, as new needs arise.

**Conclusion**

IDC sees a growing tidal wave of database movement to the cloud. The demand for operational databases that are offered as cloud services, such as Amazon Aurora, will continue to grow strongly for the foreseeable future. Operational databases perform the transactions that keep businesses running, and as such, their efficient and reliable operation is critical to overall business success. These customers chose Amazon Aurora and are more than glad that they did.

*IDC believes that, for the customers interviewed for this study, Amazon Aurora has demonstrated the following benefits over former on-premises deployments:*

- Markedly improved performance
- Reduced staff time performing mundane, low-value tasks
- Dramatically reduced revenue losses due to unplanned downtime
- Significantly higher staff productivity
- Substantially greater agility, including the ability to iterate applications faster
- Overall related cost reduction of almost a third

All in all, these users realized a complete payback on their investment in just over a year. Given these facts, any enterprise looking to move operational database operations to the cloud must give Amazon Aurora serious consideration.
Appendix

Methodology

IDC’s standard ROI methodology was utilized for this project. This methodology is based on gathering data from current users of Amazon Aurora.

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

- **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.

- **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.

- **Calculated the ROI and payback period.** IDC conducted a depreciated cash flow analysis of the benefits and investments for the organizations’ use of Amazon Aurora 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 efficiency and productivity savings. For purposes of 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 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*
About the Analysts

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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 (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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Consulting Manager, IDC

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More about Megan Szurley
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