

The Business Value of Amazon DynamoDB



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Executive Summary

The pace of business today often demands the ability to reliably handle trillions of requests per day with millisecond response times. Such a requirement calls for a high-performance, non-schematic (NoSQL) database management system (DBMS). A clear example is Amazon DynamoDB, a serverless NoSQL database that offers consistent single-digit millisecond performance at any scale. There are many advantages to a serverless database such as DynamoDB — there are no servers, no versions, no maintenance windows, no downtime maintenance, and no costs for idle resources.

IDC interviewed organizations about their experiences using Amazon DynamoDB databases compared with previous, mostly on-premises and other self-managed, database environments. Based on interviews with organizations currently using Amazon DynamoDB,

IDC calculates that they will realize an average of \$8.48 million of benefits — revenue gains, staff efficiencies, and cost savings — per organization by:

- **Generating higher revenue** by leveraging improved database performance and scalability to address latent business demand and development support efforts
- **Enhancing database agility, performance, and reliability** to ensure that databases reliably meet business needs and support services that fulfill customer expectations
- **Providing cost-effective and efficient database environments** to better align database costs with business growth requirements and database needs
- **Freeing up technical team time** to focus on optimizing applications and enabling business growth



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BUSINESS VALUE HIGHLIGHTS

378%
three-year ROI

8 months
to payback

38%
lower three-year cost of operations

25%
lower cost of equivalent database environments

49%
more efficient technical staff teams

67%
faster to deploy a new database

28%
higher DevOps team productivity

\$38.54 million
higher revenue per organization per year

Situation Overview

There are many ways to record and retrieve data. Often, these involve a rigid schematic approach, such as a relational DBMS. Such a DBMS, while good for complex queries, is generally problematic when it comes to scalability, speed, and flexibility. Also, a relational DBMS must have a schema that defines the data and can only accept data that conforms to that schema. It also is necessarily slowed by internal housekeeping that needs to be performed as data is ingested. For data that must be recorded at high rates of speed, must scale dynamically, and can accept any new data without requiring the data to conform to a fixed schema, the preferred option is a NoSQL DBMS.

Many enterprises have deployed NoSQL DBMSs in their datacenters with hardware that is specifically configured to address the demands of speed and that is sized to the maximum scale needed. But the cost of maintaining such databases is driving enterprises to consider moving to the cloud instead, where scaling can be delivered on demand and costs can be better managed. Even those that have deployed NoSQL DBMSs in the cloud in a way in which they manage the resources themselves find the resulting system to be inadequate in terms of flexibility and resiliency. A better approach involves a NoSQL DBMS that is fully managed and delivered as a cloud service.

Amazon DynamoDB

Amazon offers a fully managed NoSQL DBMS cloud service called Amazon DynamoDB. Amazon staff manage the physical infrastructure with a system that can deliver resources on demand. There are no servers to provision, patch, or manage and no software to install, maintain, or operate. Amazon DynamoDB is serverless, meaning that it automatically scales tables to adjust for capacity with consistent single-digit millisecond performance — and scales down to zero when capacity is not required, reducing cost. Amazon DynamoDB provides zero downtime maintenance, and there are no versions (major, minor, or patch). Amazon DynamoDB also offers built-in encryption in the context of the secure AWS environment to provide data security.

Amazon DynamoDB can easily support hundreds of customers with over 500,000 requests per second, according to Amazon. No user adjustments are required to maintain such performance. Amazon DynamoDB also includes tools that perform analytics, extract insights, and monitor traffic trends. Also, because Amazon DynamoDB is deployed on, and integrated with AWS technology, it enjoys operational efficiencies that are very hard to achieve by any other means. For globally distributed applications, DynamoDB global tables offers

multiregion resiliency with active-active replication and up to 99.999% availability. It is ideal for applications with a globally distributed user base that also need millisecond response times. DynamoDB reliability is supported with managed backups, point-in-time recovery, and more.

AWS also invests in features to make it easier for customers to build, operate, and manage their applications. For example, DynamoDB Streams combines change data capture on a DynamoDB table with a stream-based mechanism for processing those events. This feature is useful for clients building a serverless event-driven application. Another example is Amazon DynamoDB Accelerator (DAX), an Amazon DynamoDB-compatible caching service that delivers fast read performance at scale by providing a fully managed in-memory cache. Using DAX, you can improve the read performance of your Amazon DynamoDB tables by up to 10 times, as reported by Amazon.

After this study was conducted, AWS announced Amazon DynamoDB zero-ETL integration with Amazon OpenSearch Service. This zero-ETL integration gives DynamoDB customers advanced search capabilities, such as full-text and vector search (for generative AI use cases), using OpenSearch Service without the need to write any custom code to extract, transform, and load the data. They also announced other integrations with Amazon Redshift and promised more to come. IDC anticipates that these integrations will further enhance the operational excellence and performance highlighted in this report.

Because DynamoDB is part of AWS, it integrates easily with many other AWS services, such as Amazon S3, Amazon Cloudwatch, and AWS Lambda. The subjects of this study entrust Amazon DynamoDB with some of their most critical data and vital business processes that depend on the smooth and reliable operation of this DBMS.

The Business Value of Amazon DynamoDB

Study Demographics

IDC conducted in-depth interviews with organizations currently using Amazon DynamoDB to assess the impact on database costs, staff time requirements, performance, and capabilities. Interviews were designed to gather insights about the practical impact of using Amazon DynamoDB in both quantitative and qualitative terms for study participants.

Table 1 provides organizational-level information about the AWS customers that participated in the study. As shown, they have enterprise-level operations on the whole, with averages of 16,450 employees and \$9.92 billion in annual revenue (medians of 5,250 and \$904 million, respectively). While the organizations were all based in the United States, they had distributed business operations that included operating in other geographic markets. Study participants spoke about experiences with Amazon DynamoDB from the perspective of varied industry verticals, including the financial services/banking, biotechnology, healthcare, IT services, and marketing sectors. Please see **Table 1** for additional details about the organizations participating in the study.

TABLE 1
Demographics of Interviewed Organizations

	Average	Median
Number of employees	16,450	5,250
Number of IT staff	2,416	250
Number of business applications	140	100
Annual revenue	\$9.92B	\$904.00M
Countries	United States	
Industries	Financial services/banking (3), biotechnology, healthcare, IT services, marketing	

n = 8; Source: IDC Business Value In-Depth Interviews, January 2024

Choice and Use of Amazon DynamoDB

Study participants provided insight into the drivers of their decisions to use Amazon DynamoDB. Most interviewed organizations described needing to find a database solution that would enable them to overcome limitations imposed by their existing, mostly on-premises, database architectures. They needed to loosen the connection between escalating costs and increasing data volumes and performance requirements. With their businesses generating increasing volumes of data and relying on data-driven insights, they could no longer afford the friction created by database costs that scaled to peak volumes but then left underutilized or idle capacity, nor could they rely on databases that could not match needs in terms of scalability, availability, and raw performance.

Interviewed AWS customers provided specific examples of the factors they weighed up in deciding to invest in Amazon DynamoDB services:

Ability to query at volume (Financial services):

“We needed to have a data store we could query at volume. Amazon DynamoDB being serverless was a huge advantage for those use cases. With Amazon DynamoDB, we avoid the operational overhead of having to continually upgrade a relational database, especially given our data volume.”

Need for increased database performance (Financial services):

“The primary reason we deployed Amazon DynamoDB was to increase performance with in-memory caching, which helps with read-response time as well data import and export ... Amazon DynamoDB also automatically creates replicas in multiple regions, which helps us maintain consistent throughput.”

Scalability and performance (Biotechnology):

“We have a heavy computational workload that relies on databases. With our previous solution, we could run two or three concurrent jobs at once, and today we can have 50 concurrent jobs with Amazon DynamoDB. The databases we used in the past could not have kept up with our pace ... and were expensive and difficult to manage, and we couldn't keep up with performance.”

Need for scalability to match business needs (Marketing):

“As we started onboarding more enterprise customers for sophisticated marketing campaigns that needed to launch at scale in a timely fashion, we needed a solution that could automatically scale based on the cyclical demands of our customers as well as handling the peak in terms of concurrency.”

Table 2 (next page) indicates the extent to which study participants use Amazon DynamoDB to leverage data and run their businesses. At the time of interviews, they reported running an average of 92 Amazon DynamoDB databases to support 82 business applications used by 7,351 employees.

In terms of how study participants are using Amazon DynamoDB, they reported a mix of use cases, demonstrating the flexibility of the AWS services:

- **Production business applications:** 39% of workloads on average
- **Data warehousing:** 23% of workloads on average
- **Development and testing activities:** 16% of workloads on average
- **Backup and disaster recovery:** 11% of workloads on average
- **Streaming data capture, analysis, and routing:** 10% of workloads on average

TABLE 2

Use of Amazon DynamoDB by Interviewed Organizations

	Average	Median
Number of databases	92	21
Number of business applications	82	9
Number of users of applications	7,351	1,900

n = 8; Source: IDC Business Value In-Depth Interviews, January 2024

Business Value and Quantified Benefits of Amazon DynamoDB

Study participants reported establishing more cost-effective and efficient database environments with Amazon DynamoDB. Additionally, they described how improved database performance, scalability, and functionality have enabled them to provide higher-quality and more timely services and solutions to their customers, which has helped them realize improved business results and higher overall organizational productivity levels.

Interviewed AWS customers spoke in detail about the most significant areas of impact from their use of Amazon DynamoDB:

Cost advantages of serverless and operational cost model (Financial services):

“The biggest operational advantage of Amazon DynamoDB is being serverless, which reduces operational costs, upgrade issues, management, and even having to deal with security patches directly. Another is the cost model — pay as we use rather than paying for peak scaling capacity.”

Scalability and ability to meet customer-driven SLAs (Marketing):

“The biggest benefit of Amazon DynamoDB is how it handles scale: the fact that it’s a managed service offering and can scale to handle concurrency and peaks while being able to guarantee stringent SLAs to our customers. The operational overhead tends to be minimal for DynamoDB.”

IT and database capabilities to support business needs (Biotechnology):

“Before Amazon DynamoDB, we had issues with concurrency of jobs, but concurrency has been going up exponentially ... and we don’t have to fall back to IT when making decisions about supporting activities. We’ve got the bandwidth with Amazon DynamoDB to handle whatever is needed.”

Ease of deployment and use (IT services):

“We benefit from speed and agility with Amazon DynamoDB. We have been able to start using it immediately. There is some thought to be given to defining schema, but as soon as that’s done, it can be up and running, and it’s simple to adjust afterward.”

Based on interviews with current Amazon DynamoDB customers, IDC calculates that they will realize benefits worth an annual average of \$92,100 per database (\$8.48 million per organization) in the following areas of value:

• **Business productivity and risk mitigation benefits:**

Amazon DynamoDB enables study participants to better address business opportunities, deliver higher-quality and more timely services to customers, and minimize the operational impact of database outages and performance issues. IDC quantifies the value of higher net revenue and productivity at an average of \$54,000 per Amazon DynamoDB database (\$4.97 million per organization).

• **IT infrastructure cost reductions:**

Amazon DynamoDB has enabled study participants to shift from more on-premises databases to a more consolidated and cost-effective cloud platform based on serverless technologies that provide significantly improved performance relative to costs. IDC calculates that study participants will save \$4,000 per Amazon DynamoDB database (\$365,700 per organization).

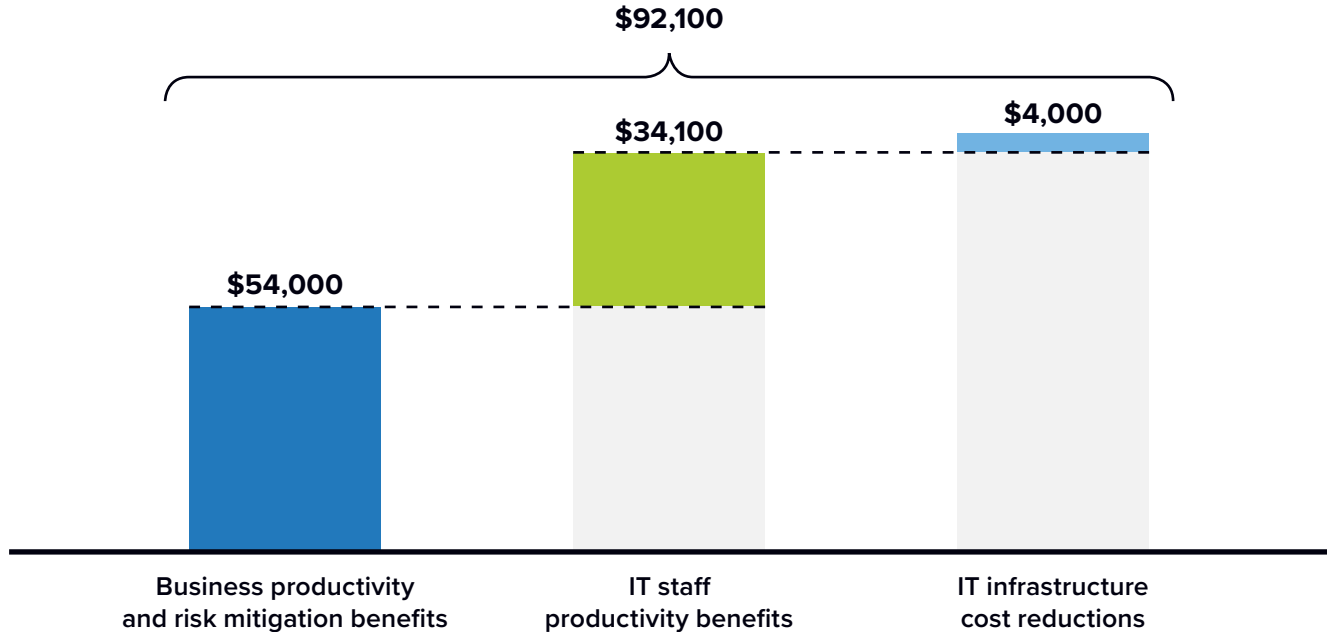
• **IT staff productivity benefits:**

Amazon DynamoDB requires less technical staff time to manage and support databases as a fully managed solution that reduces internal staff touch points associated with patches, updates, and management while also enabling development teams to work more effectively. IDC puts the value of technical and DevOps staff efficiencies and productivity gains at an annual average of \$34,100 per Amazon DynamoDB database (\$3.14 million per organization).

FIGURE 1

Average Annual Benefits per Amazon DynamoDB Database

(\$ per year per Amazon DynamoDB Database)



n = 8; 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.

Cost and Operational Benefits

Amazon DynamoDB use has enabled study participants to establish significantly more cost-effective database environments. The need for organizations to manage database costs — in terms of direct licensing and infrastructure costs and staff time required for management and support — has become acute as data volumes climb and data-driven insights become more integral to business strategies.

In terms of direct database costs, study participants focused on how Amazon DynamoDB has allowed them to move away from expensive and time-consuming capital investment cycles for on-premises infrastructure. With Amazon DynamoDB, they benefit not only from having on-demand access to database capacity but also from the serverless infrastructure foundation of Amazon DynamoDB services. Additionally, customers consistently commented favorably on the performance-to-cost ratio of Amazon DynamoDB compared with their previous database environments. They also noted establishing cost-effective backup and disaster recovery environments for their databases through ready access to cost-effective cloud capacity.

Interviewed customers spoke about the cost benefits of Amazon DynamoDB:

Strong price-to-performance value proposition (Marketing):

“Amazon DynamoDB performance is significantly better than the alternatives, as is the price-to-performance ratio ... Instead of having multiple databases, maybe three instances, we’ve been able to standardize on DynamoDB. We can run a single instance and get the same kind of performance ... We’re saving 20% on database costs with Amazon DynamoDB.”

Performance and cost of operations (Financial services):

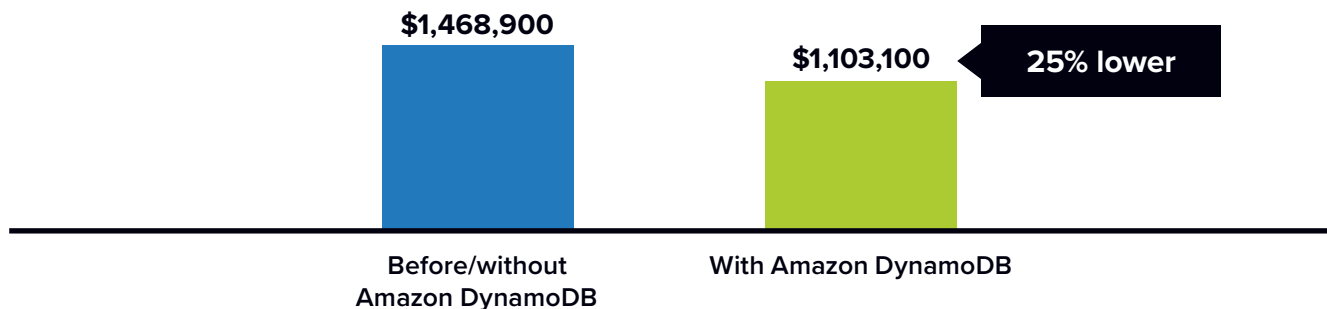
“We needed higher performance for NoSQL databases. We were using NoSQL databases on premises, but in terms of the number of resources we had to continually pour in to ensure performance and to scale in relation to demand, it was difficult to continue on premises at a reasonable cost ... We would need 250 servers on premises for our current environment.”

Ability to deliver improved service levels with analytics (Healthcare):

“With Amazon DynamoDB, we’ve been able to add enhancements to more applications. We’ve also looked at analytics further, and that’s helped us improve performance and disaster recovery. Finally, we’ve been able to work faster using analytics to uncover bottlenecks and latency ... With Amazon DynamoDB, we spend less than half of what we otherwise would.”

Figure 2 shows the extent to which study participants have optimized database-related costs with Amazon DynamoDB. On average, they provide equivalent database capacity at a 25% lower cost, thereby saving more than \$465,000 per organization per year on average compared with their previous, mostly on-premises, database environments.

FIGURE 2
Annualized Cost of Equivalent Databases
(Annualized cost)



n = 8; Source: IDC Business Value In-Depth Interviews, January 2024

In addition to direct cost savings, study participants tied having a fully managed database platform with Amazon DynamoDB to requiring much less technical staff time on a day-to-day basis for database monitoring, management, and support. As a result, technical staff teams can refocus their efforts on more strategic aspects of using databases to drive business outcomes.

Interviewed AWS customers described the impact on their technical teams responsible for databases:

Reduce operational overhead (Biotechnology):

“From the IT organization, the impact of Amazon DynamoDB has been significant. It’s really lowered the operational overhead for my team, where we can focus on optimizing applications and enabling the business instead of being stuck in the weeds and being the bottleneck for the business ... Our staff is more than 50% more efficient now.”

Significant staff efficiencies (Retail):

“We use different databases in house, but Amazon DynamoDB has faster turnaround than the others, so the time savings and labor savings are significant ... Our staff are more efficient, and we’ve avoided two new hires.”

Shift to focus on innovating (IT services):

“With Amazon DynamoDB, our IT and technical teams responsible for databases are working on less day-to-day maintenance and actually working on innovating ... We’ve avoided five hires with Amazon DynamoDB.”

Figure 3 shows that efficiencies are especially notable for database responsibilities that AWS handles either mostly or entirely, including technical staff time required to implement patches and upgrades (82% more efficient on average). However, day-to-day management responsibilities for the storage and server environments upon which databases run also require substantially less staff time on an ongoing basis (66% more efficient storage management, 64% more efficient server management, and 56% more efficient database management). These broad efficiencies reflect the extent to which the fully managed layer of support offered by Amazon DynamoDB enables these teams and shifts their focus from time-consuming day-to-day activities inherent to on-premises database environments.

FIGURE 3
Database Efficiencies by Responsibility
 (Percent improvement with Amazon DynamoDB)



n = 8; Source: IDC Business Value In-Depth Interviews, January 2024

Study participants reported significant overall efficiencies for their technical staff teams responsible for infrastructure and databases with Amazon DynamoDB services. On average, they attributed efficiencies of 49% for these teams to the use of Amazon DynamoDB, which frees up the equivalent of 9.7 full-time employees (FTEs) of staff time per organization to support growing database environments and focus on other IT and business activities (see table 3).

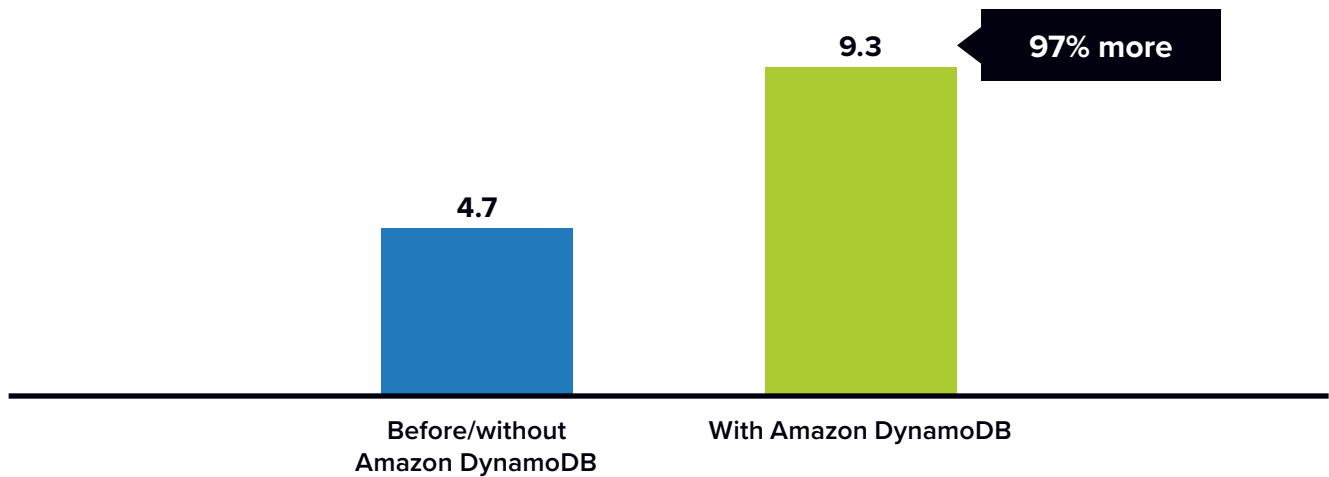
TABLE 3
Impact on ITOps Staff Efficiencies

	Before/Without Amazon DynamoDB	With Amazon DynamoDB	Benefit	Benefit
Equivalent FTEs required for same workloads	19.7	10.0	9.7	49%
Staff hours per Amazon DynamoDB database per year	401	203	198	49%
Value of equivalent FTE time required (\$ per organization per year)	\$1.97M	\$1.00M	\$0.97M	49%

n = 8; Source: IDC Business Value In-Depth Interviews, January 2024

These efficiencies also reflect significant gains in productivity levels. As shown in **Figure 4**, each technical team member can run and support almost double the number of databases on average with Amazon DynamoDB (97% more), demonstrating the practical impact on team capacity.

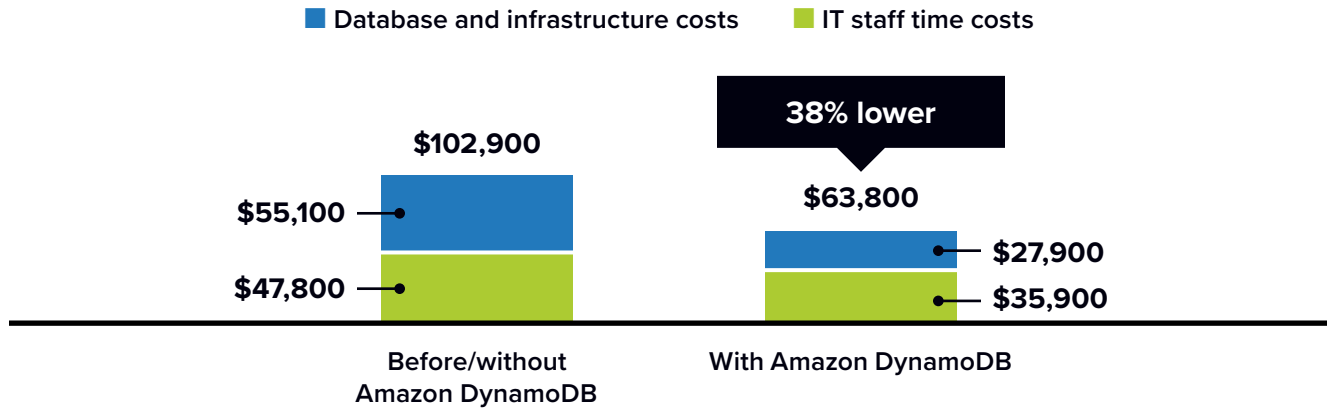
FIGURE 4
Number of Databases per ITops Staff Member
(Number of Databases per DBA)



n = 8; Source: IDC Business Value In-Depth Interviews, January 2024

Taken together, these database cost and staff efficiency benefits create a compelling value proposition for Amazon DynamoDB from a cost-of-operations perspective. IDC's analysis shows that over three years, study participants will reduce total costs by an average of 38%, which reflects an average cost reduction of \$39,100 per Amazon DynamoDB database over three years (see **Figure 5**, next page).

FIGURE 5
Three-Year Cost of Operations per Amazon DynamoDB Database
 (\$)



n = 8; Source: IDC Business Value In-Depth Interviews, January 2024
 For an accessible version of the data in this figure, see [Figure 5 Supplemental Data](#) in Appendix 3.

Business Benefits

Interviewed organizations attributed an improved ability to use their database environments to support and drive business activities to Amazon DynamoDB. They cited the importance of improved database agility, availability, and performance to serving their customers and addressing potential business opportunities. They noted that Amazon DynamoDB has significantly reduced the extent to which friction related to their database environments inhibits business success.

Interviewed Amazon DynamoDB customers consistently reported achieving enhanced database agility, including the ability to ensure database capacity and new functionalities as required to support business activities.

This helps them respond to business needs in a robust way without engaging in overprovisioning of database and other resources, which often characterized their efforts to scale to meet business demand with on-premises database environments:

Ability to keep up with pace of business (Biotechnology):

“We have tight SLAs with healthcare providers that refer patients to us, and we have to return those test results in a timely fashion ... We tried other database solutions, but the performance and scalability were not up to the job. But Amazon DynamoDB can keep up with us.”

Burstable scalability (Financial services):

“We needed to be able to provide burstable database volume rather than having to manage a relational database with overscaling or having physical instances. Amazon DynamoDB has made the physical side of scaling much easier.”

Figure 6 reflects the strides in database agility and scalability achieved by study participants. On average, they can deploy a new database in two-thirds less time (67% faster), which contributes to being 20% faster to market for new products and services.

FIGURE 6

Impact on Database Agility

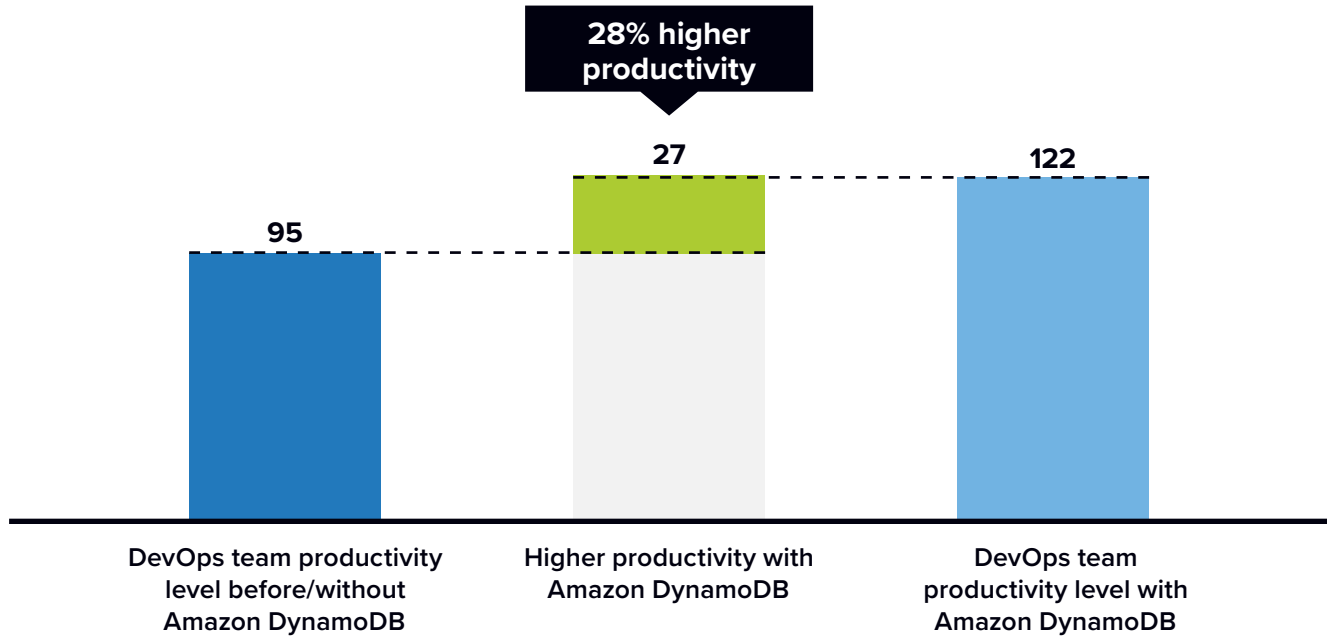
(Percent improvement with Amazon DynamoDB)



n = 8; Source: IDC Business Value In-Depth Interviews, January 2024

DevOps teams gain directly from enhanced database agility. Developers rely on the ability to access not only new databases and robust data but also compute, storage, and other IT resources to move through development steps from coding to testing to deployment. With Amazon DynamoDB, they face fewer obstacles as they use data to build applications and provide new functionality to users and customers. As a result, these teams are significantly more effective with Amazon DynamoDB, achieving an average productivity gain of 28% (see **Figure 7**, next page).

FIGURE 7
DevOps Team Productivity Gains
 (Equivalent development team productivity, FTEs)



n = 8; Source: IDC Business Value In-Depth Interviews, January 2024
 For an accessible version of the data in this figure, see [Figure 7 Supplemental Data](#) in Appendix 3.

Study participants also linked enhanced database performance and reliability to enablement of their broader business efforts. They operate in competitive markets, which puts the onus on them to ensure high standards for their customer-facing activities, and incremental improvements with Amazon DynamoDB help them establish and maintain these standards.

Interviewed AWS customers noted:

Foundation for enterprise-level services and solutions (Marketing):

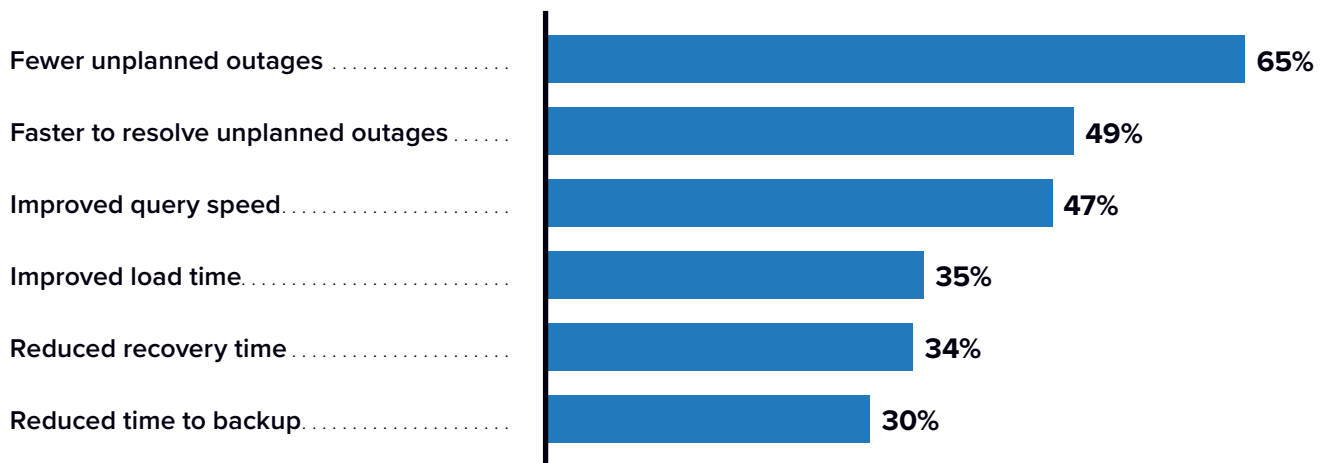
“With Amazon DynamoDB, we’re able to support enterprise-grade customers and Fortune 500 companies that have very stringent throughput requirements. We’re able to offer them a fully managed solution through Amazon DynamoDB where they’re able to better understand the target audiences in real time.”

Reduce friction associated with downtime, improve reliability (Healthcare):

“In terms of development, Amazon DynamoDB has helped us reprioritize engineers’ time. If we need a quick hotfix or security patch, we’re able to bring it in quickly with less impact on downtime. We’re also able to add in new capabilities.”

Figure 8 demonstrates the array of database performance improvements achieved by study participants through use of Amazon DynamoDB services. Benefits range from improved database availability (65% fewer outages, 49% faster resolution of outages) to improved database performance (47% faster queries, 35% faster data load times) to reduced data-related risk (34% faster data recovery time, 30% faster backup times). Taken together, these metrics reflect the breadth of database-related performance improvements achieved by AWS customers.

FIGURE 8
Performance and Availability Improvements
 (Percent improvement with Amazon DynamoDB)



n = 8; Source: IDC Business Value In-Depth Interviews, January 2024

Overall, database scalability and performance improvements with Amazon DynamoDB help study participants better address latent business demand and generate new business opportunities. A healthcare organization commented: *“Our business operations are affected from a scalability and growth/functionality perspective with Amazon DynamoDB. Different departments can share data, and data is also integrated: Business units and our data scientist/business intelligence teams can connect different sources of data to other Amazon tools, such as RedShift.”* As shown in **Table 4** (next page), interviewed AWS customers linked substantial revenue gains — **\$38.54 million per organization per year** — to their use of Amazon DynamoDB, demonstrating the importance of having efficient, high-performing databases to their overall business activities.

TABLE 4
Demographics of Interviewed Organizations

	Average per Organization	Average per Amazon DynamoDB Database
Higher revenue per year	\$38.54M	\$418,400
Assumed operating margin	15%	15%
Higher net revenue per year	\$5.78M	\$62,800

n = 8; Source: IDC Business Value In-Depth Interviews, January 2024

ROI Summary

IDC's analysis of the financial benefits and investment costs for study participants of using Amazon DynamoDB is below in **Table 5**. On average, IDC calculates that interviewed AWS customers will realize three-year discounted benefits worth \$20.0 million per organization (\$217,100 per Amazon DynamoDB database) in database cost savings, database staff efficiencies, higher user productivity, and higher net revenue. These benefits compare with three-year discounted investment costs of \$4.18 million per organization (\$45,400 per Amazon DynamoDB database). These average benefits and investment costs would yield a **three-year ROI of 378%** and a typical payback period of eight months, both of which emphasize the strong value proposition for study participants of using Amazon DynamoDB services.

TABLE 5
Three-Year Average ROI Analysis

	Per Organization	Per Amazon DynamoDB Database
Benefit (discounted)	\$20.00M	\$217,100
Investment (discounted)	\$4.18M	\$45,400
Net present value (NPV)	\$15.82M	\$171,700
ROI (NPV/investment)	378%	378%
Payback	8 months	8 months
Discount rate	12%	12%

n = 8; Source: IDC Business Value In-Depth Interviews, January 2024

Challenges/Opportunities

The demands of business today — with data flowing constantly from an ever-growing number of sources, and with such technology as generative AI producing even more data for management — Amazon DynamoDB must continue to advance to maintain its leadership position. In addition, there will be a secondary arms race among NoSQL DBMS suppliers involving how intelligent they can make their products using generative AI. This is a challenge, but it is also an opportunity, because with the multifaceted nature of AWS, Amazon can evolve its technologies to offer more complete data and information services than anyone who only owns part of the solution.

Conclusion

The benefits of Amazon DynamoDB enjoyed by the customers in this study are clear and compelling. It is to be expected that anyone moving from a self-managed configuration, either on prem or in the cloud, will experience measurable benefits, and these customers did as well. But DynamoDB went beyond, giving customers better performance, easier operation, and the peace of mind that comes from knowing that the database that contains mission-critical data is in the hands of trained experts who get the most out of the technology every day. Another benefit, not commonly available with other managed cloud database services, is its easy integration with other Amazon DBMSs, including Aurora and Redshift, and the ability to oversee all the AWS-native databases together with ease.

Data is the lifeblood of any enterprise and is not to be trifled with. Choosing Amazon DynamoDB has given these customers greater confidence in their future and in their choice, not just from a technical perspective but from a business perspective as well. As shown by this IDC study, participants' choice of Amazon DynamoDB has yielded significant benefits in terms of database costs, scalability, and functionality, enabling them to provide higher-quality and more timely data-driven services and solutions to customers. IDC calculates that interviewed AWS customers will realize a three-year ROI of 378% and break even on their investment in Amazon DynamoDB in an average of eight months.

Appendix 1: Methodology

IDC's standard Business Value/ROI methodology was utilized for this project. This methodology is based on gathering data from organizations currently using Amazon DynamoDB NoSQL database services.

Based on interviews with organizations using Amazon DynamoDB, 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 using Amazon DynamoDB.** In this study, the benefits included database and infrastructure cost savings, staff time savings in managing databases and infrastructure, development and other productivity gains, and net 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 DynamoDB 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 DynamoDB over a three-year period. 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 manager productivity savings. For the purposes of this analysis, based on the geographic locations of the interviewed organizations, 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.
- 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.

Appendix 2:

Business Value Calculations

Table 6 provides a detailed view of the quantified benefits that study participants will achieve through their use of Amazon DynamoDB, which IDC puts at an annual average of \$8.48 million per organization.

TABLE 6

Average Annual Benefits

Category of Value	Average Quantitative Benefit	Calculated Average Annual Value*
Database and infrastructure cost savings	25% more cost efficient, saving \$365,700 per year	\$365,700
Technical team staff efficiencies	49% more efficient, 9.7 FTE efficiency, \$100,000 salary assumption	\$834,700
Application development productivity gains	28% higher productivity, 27 FTE productivity gain, \$100,000 salary assumption	\$2.30M
Higher net revenue	\$38.54 million in higher revenue per year, 15% margin assumption	\$4.97M
Total average annual benefits	\$8.48M per organization	

*Includes 5.0 months deployment time in year 1
n = 8; Source: IDC Business Value In-Depth Interviews, January 2024

All dollar figures in this White Paper are in \$ USD.

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

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 Amazon DynamoDB Database

	\$ per year per Amazon DynamoDB Database
Business productivity and risk mitigation benefits	\$54,000
IT staff productivity benefits	\$34,100
IT infrastructure cost reductions	\$4,000
Total	\$92,100

n = 8; Source: IDC Business Value In-Depth Interviews, January 2024

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FIGURE 5 SUPPLEMENTAL DATA

Three-Year Cost of Operations per Amazon DynamoDB Database

	Before/without Amazon DynamoDB	With Amazon DynamoDB
Database and infrastructure costs	\$47,800	\$35,900
IT staff time costs	\$55,100	\$27,900
Total	\$102,900	\$63,800 (38% difference)

n = 8; Source: IDC Business Value In-Depth Interviews, January 2024

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Appendix 3: Supplemental Data (continued)

FIGURE 7 SUPPLEMENTAL DATA

DevOps Team Productivity Gains

	DevOps team productivity level before/without Amazon DynamoDB	DevOps team productivity level with Amazon DynamoDB	Higher productivity with Amazon DynamoDB
FTEs	95	122	27 (28% higher productivity)

n = 8; Source: IDC Business Value In-Depth Interviews, January 2024

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About the IDC Analysts



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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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Matthew is responsible for carrying out custom business value research engagements and consulting projects for clients in a number of technology areas with a focus on determining the return on investment of their use of enterprise technologies. Matthew's research often analyzes how organizations are leveraging investment in digital technology solutions and initiatives to create value through efficiencies and business enablement.

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