

5 Signs You've Outgrown DynamoDB

Companies that leverage a transactional database do so with core business and technical objectives in mind. Oftentimes they select a database that seems to be the best choice at first glance, as well as the path of least resistance, then are subsequently surprised by cost overruns and technology limitations that quickly hinder productivity and put the business at risk.

This seems to be the case with many enterprises that have chosen Amazon Web Service's (AWS) DynamoDB. DynamoDB is a solid product that appears to be a sound choice for companies that already leverage the AWS platform. However, it's not a one-size-fits-all-for-all-uses product, and there are areas of concern that could indicate you've outgrown this technology. Unfortunately, you can't change your business requirements to fit the limitations of the technology, and the technology is unlikely to change to meet your expanding needs.

So, what are the signs that you've outgrown DynamoDB?

Sign 1	Your business is growing but on-demand pricing is now pricing you out
Sign 2	You can no longer tolerate variable performance and latency
Sign 3	Your business requires a duality of cloud and non-cloud platforms
Sign 4	You are paying more and more for DevOps and testing
Sign 5	You are stuck with one vendor and have no room to maneuver

Sign 1: Your business is growing but on-demand pricing is now pricing you out

While the question of CapEx versus OpEx is at the beginning of any cloud computing discussion, many enterprises find that on-demand pricing is not advantageous down the road. There are 3 areas where the on-demand pricing effect will be felt:

Cost of Strategic Provisioning: Migrating data from another data source into DynamoDB

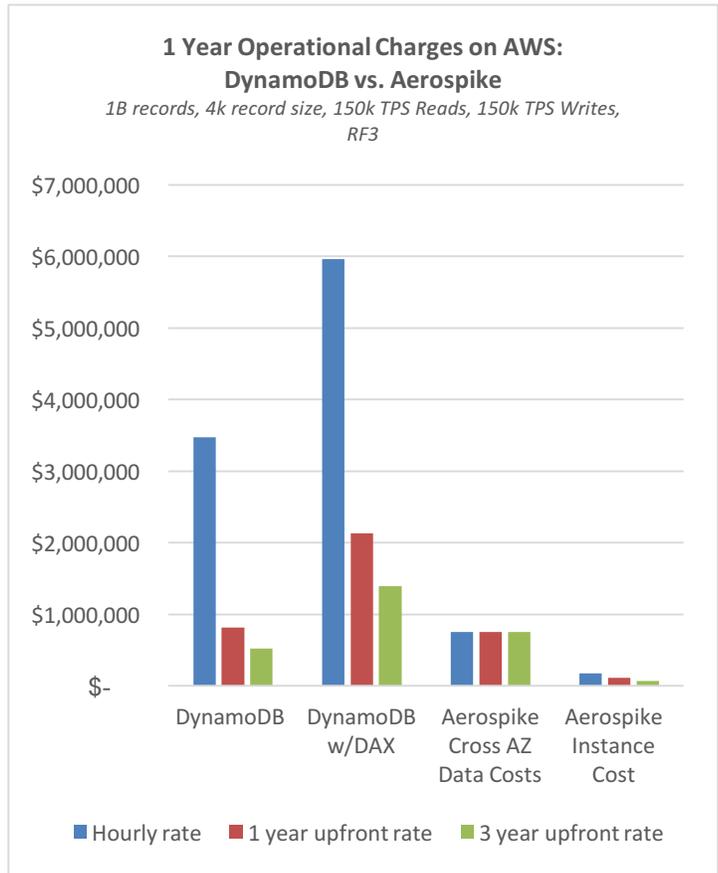
- Increasing partitions for speedier migration of data cannot be undone
- Customers pay for this excess capacity they don't use, forever (3-5X beyond expectations)

Cost of Capacity: High Performance costs a lot more

- To meet Aerospike performance, DynamoDB requires a 90% cache hit ration with DAX
- DynamoDB with DAX costs 2x-9x higher than Aerospike (depending on hourly 1 year, or 3 year upfront pricing)

Cost of Consistency: If you don't like stale data, pay up

- Strongly consistent reads costs more, twice as much as eventually consistent reads
- Basically, DynamoDB uses twice the Read Capacity Units for their Strong Consistency.



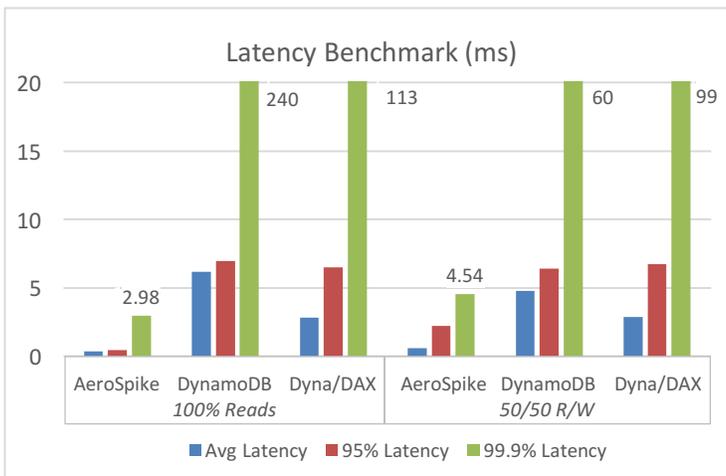
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AEROSPIKE

Sign 2: You can no longer tolerate variable performance and latency

In our benchmark analysis (see chart), we prove that Aerospike performs best with the lowest latency and highest query throughput when compared to DynamoDB under scenarios of very heavy Read workloads and a 50-50 Read/Write workload. Also:

- Aerospike is guaranteed to be under 1ms 99% of time under high TPS
- DAX is just a way for DynamoDB to put cache in the front – and it costs more
- DAX can help in heavy reads but to be on-par with Aerospike performance, a cache hit ratio of 90% is required
- When using DAX, write latency actually increases (a “write-through”, if you will)

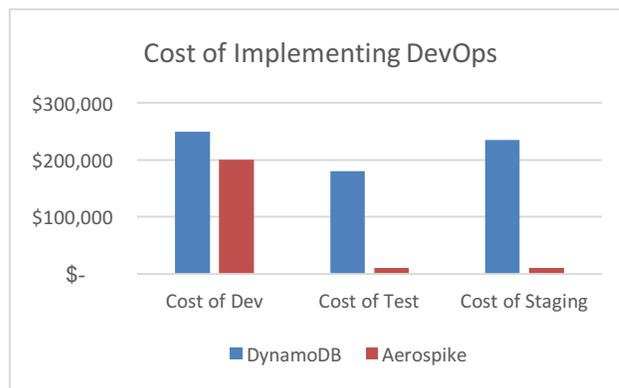


Sign 3: Your Business requires a duality of cloud and non-cloud platforms

Many enterprises looking to build database systems need this kind of operational flexibility to deal with real world business issues. Examples include laws such as GDPR or PSD2 that require specific the data to remain on premises, or latency issues that can only be addressed with the data being co-located with the applications, either cloud or non-cloud.

Sign 4: You are paying more and more for DevOps and testing

While on-demand costs appear to provide better cost metrics for dev and test use of databases, the resources needed when considering dev, test, staging, and deployment are often far greater than those budgeted. If an enterprise's DevOps included a lot of validation with dynamic data sets, the enterprise will pay a premium every time it must test its product/solution. Customers try to mitigate this by reserve instance, or paying upfront for cloud service, or spot instances (“be there at the right time”), but this quickly becomes a manageability issue.



Sign 5: You are stuck with one vendor and have no room to maneuver

The idea that you'll be held hostage by a technology is scary, and it adds costs and risk to your database solutions. While there is rarely a technology that can't be abandoned, the core metric here is the cost of doing so, as well as the risk and disruption to the business. Indeed, AWS and its cloud services, including DynamoDB, are considered “sticky” technology with migration off of that technology at some point in the future often cost prohibitive whether it is between Cloud to Cloud or Cloud to On-Prem.

In this brief paper, we highlighted the issues that exist in the world of AWS DynamoDB. We've looked specifically at what this technology does, and, more importantly, the limitations you should consider to determine if you've outgrown this technology. Or, issues you should consider before you select this technology.

If you're experiencing any of the above 5 Signs and are concerned that you've outgrown DynamoDB, contact Aerospike at info@aerospike.com. Ask for a free one-on-one consultation with our Solution Architect staff to evaluate your specific situation.