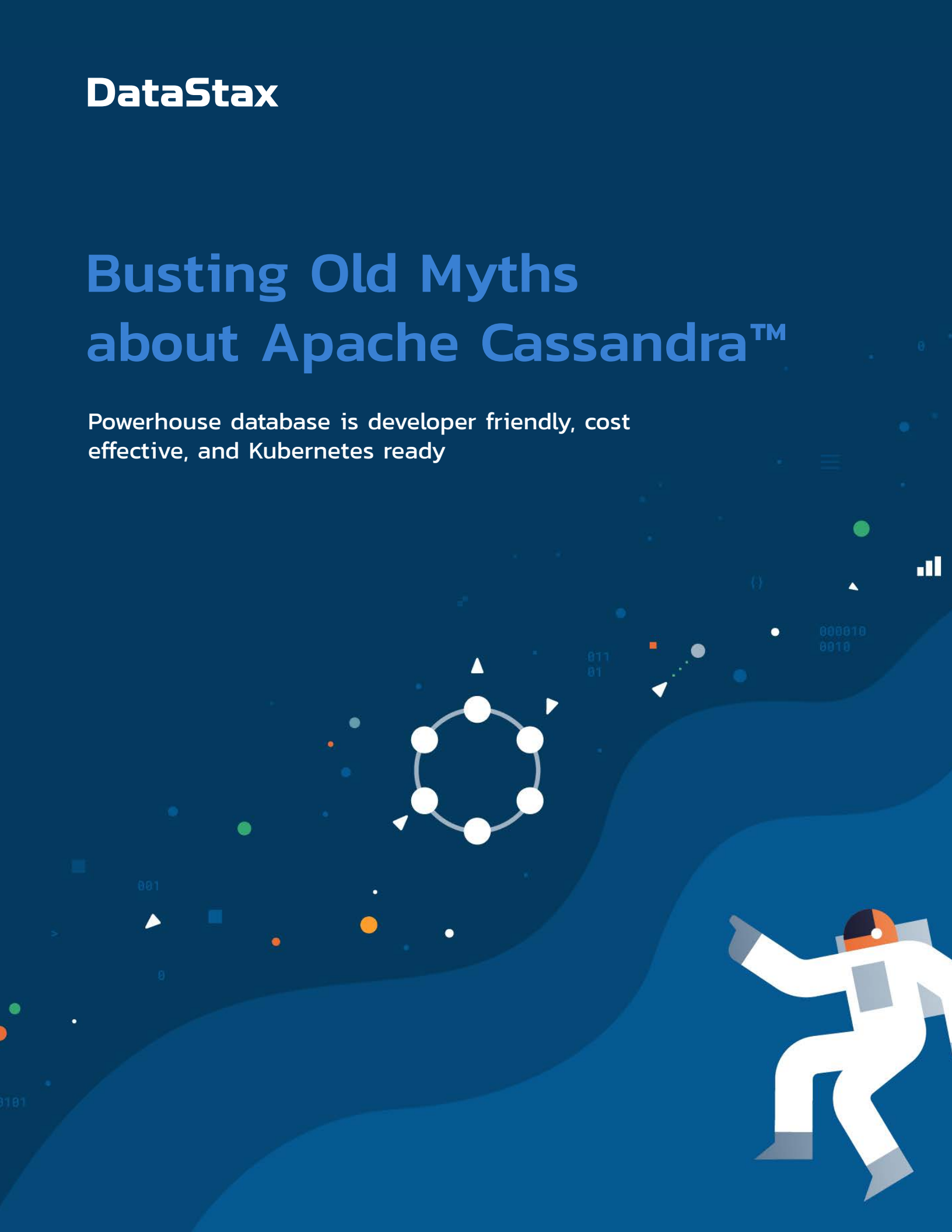


DataStax

Busting Old Myths about Apache Cassandra™

Powerhouse database is developer friendly, cost effective, and Kubernetes ready



Apache Cassandra has a well-earned reputation as a powerhouse database system: it is always available, 100% reliable, and infinitely scalable.

But it's also got a reputation as a tool that is complex to work with — and one that might not fit every company's cloud-native strategy.

The truth is, Cassandra today is far more accessible, cost and effort wise; and is far better suited for powering *fast data apps*¹ than many enterprise IT leaders realize. Here we bust the three myths of running a Cassandra database and explain why working with Cassandra today is easier, more intuitive, and more capable of creating value for your business than ever before.



¹ We define fast data apps as transactional systems that power the mission critical functions of the Enterprise, with the ability to inject intelligence as needed. What differentiate fast data apps with the OLTP of old are the scale, availability, and performance demanded by modern use cases.

MYTH 1

Coding on Cassandra is too complicated, especially for smaller teams.

REALITY

With the addition of Stargate, a cloud-native [Modern Data API](#) layer, development teams can cut the time to prototype and bring apps to production by half, using APIs they are already familiar with: REST, Schemaless JSON, and GraphQL.

Cassandra's resilience and ability to run flawlessly at global scale get rave reviews from platform teams concerned with performance, data integrity, and availability. But many developers may feel intimidated by Cassandra, which lacked native support for their preferred languages and toolsets, and which uses its own query language (CQL) that is similar but different from the older and widely known SQL.

The truth is, Cassandra has evolved into one of the world's most developer-friendly NoSQL database systems. Dev teams are learning that Cassandra actually makes it easy to move fast, stay productive, and get results—working with their preferred tools on their own terms.



The key is Stargate, an open source data API gateway that gives developers API access to Cassandra, using **REST**, **JSON**, and **GraphQL**.

Besides the obvious advantages of eliminating the CQL learning curve and dependence on language drivers, Stargate makes Cassandra more accessible and significantly less complex for developers in three other important ways:

1 Going schemaless

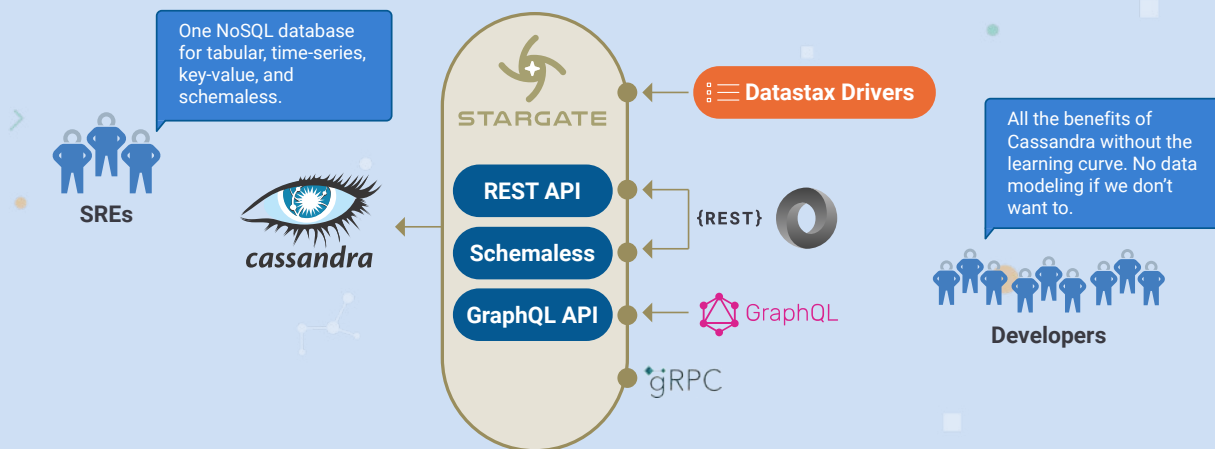
Stargate supports document-based development on Cassandra using Schemaless JSON, giving developers an option to wait until a project matures before investing in the time required to do data modeling or dispense with it entirely.

2 Embracing openness

Modern data APIs are essential, and they evolve quickly: GraphQL usage doubled last year for the fifth year running, and two-thirds of all data APIs today use REST. Stargate keeps Cassandra on the cutting edge with support for modern data APIs, and it puts developers in the driver's seat by letting them choose the tools they prefer to use based on what best addresses their application requirements.

3 Abstracting complexity

Stargate helps to abstract away backends entirely, allowing developers to work without being concerned about specific database implementations or access methods. In an ideal world, SQL should be extinct. Also, since Stargate is implemented using Kubernetes, making it ideal for developers who are building modern, microservices-based applications.



Stargate is a modern API layer that enables developers to appreciate the benefits of performance, scalability, and availability of Cassandra without having to suffer the learning curve, and get productive immediately. At the same time, it allows SREs to consolidate different NoSQL workloads – like document and key-value – on Cassandra.

Stargate also supports another valuable outcome:

It puts ops and dev teams back on the same page when making platform choices. Ops teams will like Cassandra as the versatile database that can back not only the bread-and-butter scale-out and fault-tolerant use cases, but also the fast-to-market schemaless applications. They can use Cassandra as a platform to consolidate database sprawl.

Dev teams can support that decision because the new freedom of choice allows them to focus on what they do best – create innovative applications without spending time learning about the ins and outs of NoSQL before they can be productive with the database.



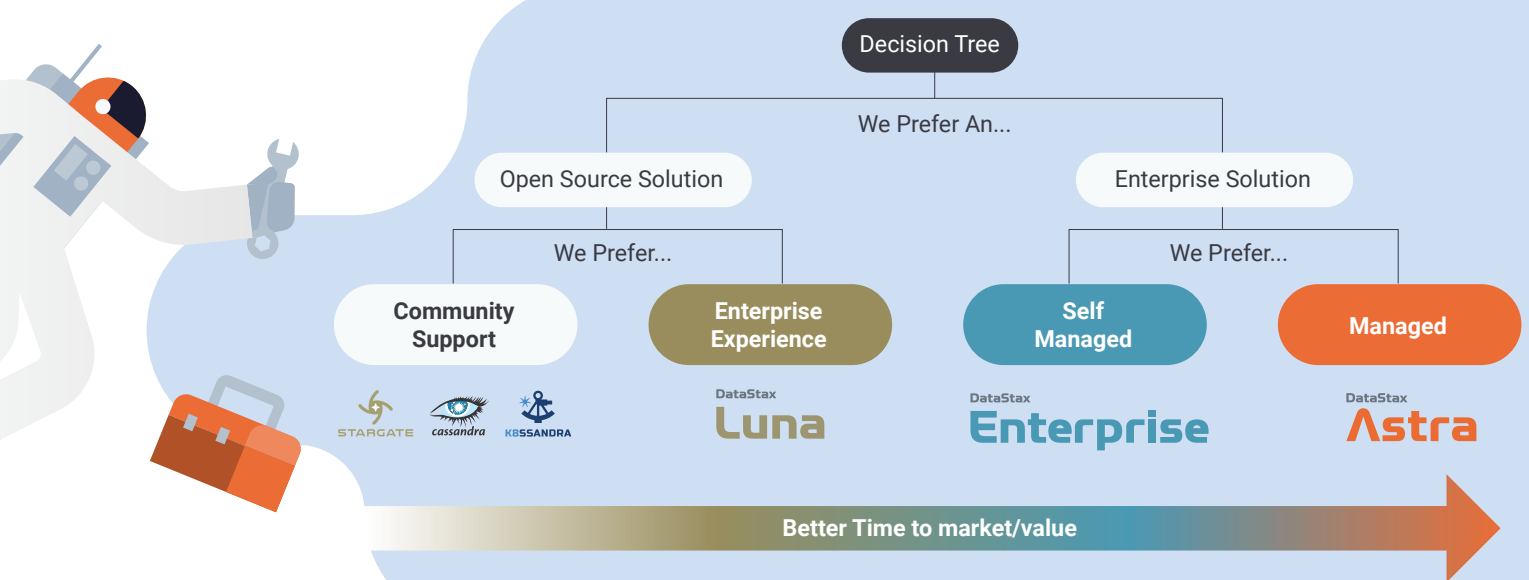
MYTH 2

Cassandra is a heavy lift to adopt and implement, and expensive to run.

REALITY

With DataStax, enterprises now have choices in the way they install, operate, and maintain a Cassandra database that reduce their operational burden and TCO.

They can continue to operate the **Cassandra OSS** themselves, while benefiting from the support of **DataStax Luna**. They can choose to self-manage it themselves while taking advantage of the enterprise features of **DataStax Enterprise**. Or, they can completely take away the hassles of database and infrastructure administration away by choosing **DataStax Astra DB**, a **pay-as-you-go** Database-as-a-Service built by DataStax on Cassandra.



Cassandra is the gold standard for today's mission-critical enterprise database. Due to its performance, resilience, and especially scalability, companies like T-Mobile, Netflix, and Uber depend on it to handle some of their most important and most demanding workloads.

Those capabilities used to come at a cost. Cassandra could easily scale out infinitely, but scaling in could be a challenge. Further, regardless of what database they use, companies have been forced to provision compute and storage resources hand in hand, based on peak demand projections—even if those resources might sit unused most of the time. All this added up to create a significant operational burden with unsustainable capital costs. When companies also considered the cost of additional Cassandra instances to support development and testing environments or CI/CD deployment pipelines, along with the productivity impacts due to the steep learning curve, many decided the numbers just didn't make sense.

Today, a series of innovations have entirely transformed how companies think about Cassandra's TCO. We already discussed one big step in this direction: Project Stargate, which gives development teams a high-productivity path to working with Cassandra. Better yet, with DataStax Astra DB, you can now access Cassandra's reliability and performance benefits with drastically reduced cost and complexity. **Separation of compute and storage and other innovations have made the powerhouse database available as a service that is elastic, efficient, and cost-effective at any scale.**

Solutions like DataStax Astra DB illustrate the benefits of running Cassandra in a managed environment—and give companies of all sizes an easy way to put these benefits to work:



On-Demand Elasticity

Teams can scale out **and** scale in compute or storage capacity as needed, independently, based on actual demand, rather than committing to scaling up based on forecasts or guesswork as you would with on-prem legacy databases.



Lower TCO

In a [GigaOm study](#), it is estimated that companies can see a 75% overall savings running DataStax Astra DB as a service, compared to provisioning an on-prem Cassandra environment at peak capacity. At some companies, that translates into millions of dollars freed up to invest in additional headcount or strategic IT programs.



Quick to Market with Innovations

Spinning up additional Cassandra environments to support testing and development or provision a deployment pipeline suddenly becomes an almost trivial task. Not to mention the faster prototyping and development enabled by Stargate, the Modern Data API which is embedded into DataStax Astra DB.



Lower Barrier to Starting up

DataStax Astra DB combines pay-as-you-go pricing with the ability to run data apps that scale out and in, instantly and infinitely, from day one. This makes Cassandra affordable today for startups and smaller firms and gives them a cost structure that ensures it will stay affordable as their business scales.



Your development team can learn more about working with Cassandra as a pay-as-you-go service, by giving DataStax Astra DB a try.

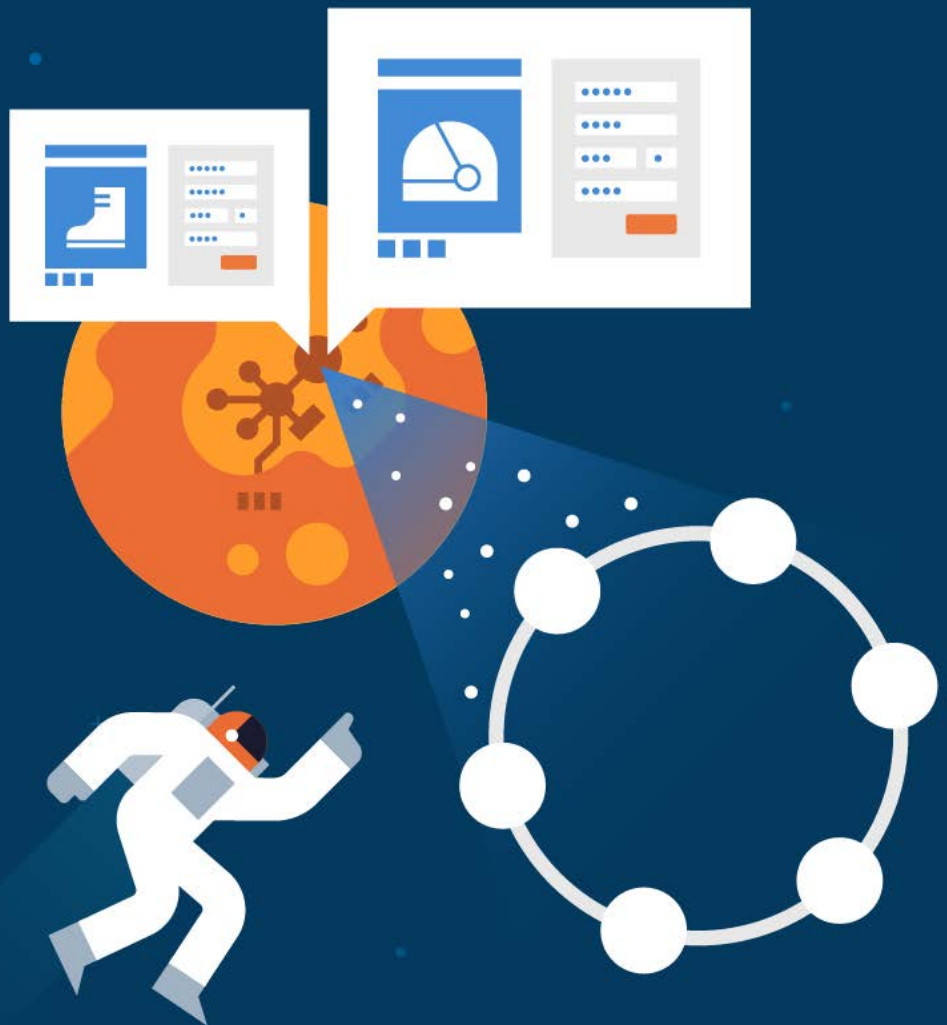
MYTH 3

It is difficult to run stateful workloads like Cassandra on Kubernetes.

REALITY

Kubernetes and Cassandra work hand-in-hand to create an ideal platform for a new generation of modern cloud-native applications.

Kubernetes has played a pivotal role in the emergence of modern, cloud-native microservice-oriented applications. But there's a catch: Kubernetes was an environment built on stateless applications and ephemeral application workloads. And that was an environment where databases simply didn't belong.



Today, it's a different story: Kubernetes is powering a new generation of stateful, data-aware applications with improved scalability, reliability, and ease of management.

This has been the culmination of several important innovations that arrived in concert-like orchestration!

- ✓ **Performance and reliability enhancements to Cassandra** that laid the groundwork for running it in containerized environments.
- ✓ Changes to the Kubernetes ecosystem, such as **StatefulSets**, which started the ball rolling on support for pods with persistent storage. The emergence of the persistent volume API and container storage interface (CSI) also gave Cassandra a starting point for performance and reliability gains.
- ✓ The creation of the **Kubernetes operator for Cassandra** that integrates and standardizes all of the capabilities required to deliver a cohesive Cassandra experience on Kubernetes. Cass-operator enables the automatic translation of Kubernetes commands into Cassandra instructions, and therefore the unified orchestration of application and data pods from Kubernetes.
- ✓ The latest iteration in this process: **K8ssandra**, which delivers a complete data platform built on Kubernetes and Cassandra. K8ssandra elevates and abstracts away its component technologies and integrates essential supporting services such as monitoring, backups, and APIs. It is available as open-source, works with Cassandra OSS and DataStax Enterprise, and is embedded into the DataStax Astra DB offering.



K8ssandra is DataStax-contributed open source project that enables you to run Cassandra on Kubernetes, with invaluable sidecars for repair, backup, and monitoring.

These innovative steps answered some very challenging technology problems, and they are proof of the commitment and talent of the open source contributors (including DataStax engineers) that made them possible. As a result, we can now claim Cassandra as the default data tier for building and running powerful, resilient, truly cloud-native data apps on Kubernetes.



The most important reality of all: innovations have never stopped with Cassandra and it just keeps getting better.

All three paradigm shifts redefine the fundamental realities about working with Cassandra and getting value from it. And all three point to the same overarching trend: if the future for your business runs through the cloud, then Cassandra should be part of your team's technology conversations as you migrate more workloads to the cloud.

NEXT STEPS

- 1 Building a modern app for mobile, IoT, customer-engaged web applications? [Get your hands dirty with Cassandra as a Service and use the data API layer for your projects.](#) \$25 toward your subscription so you can prototype for free.
- 2 Contribute to the [open source data API project](#).
- 3 Running Cassandra on your own and want to run it in the cloud? [Save yourself some grief](#) and use k8ssandra.