# DataStax

Creating Applications on DataStax Astra DB: A Primer for Application Development Managers

The number-one goal for most app development managers is to bring scalable, enterprise-grade apps or features to market quickly.

But their road isn't always a smooth one. Working with a database capable of supporting these applications can be complex, and there are a number of internal and external factors that make the process more complicated than it needs to be.

Building apps using the Apache Cassandra® open source database is a scalable, high-availability solution to many of the challenges development teams face. Before we talk about the benefits of using Cassandra, however, let's review the top three challenges you face when trying to bring your in-house apps to market quickly.
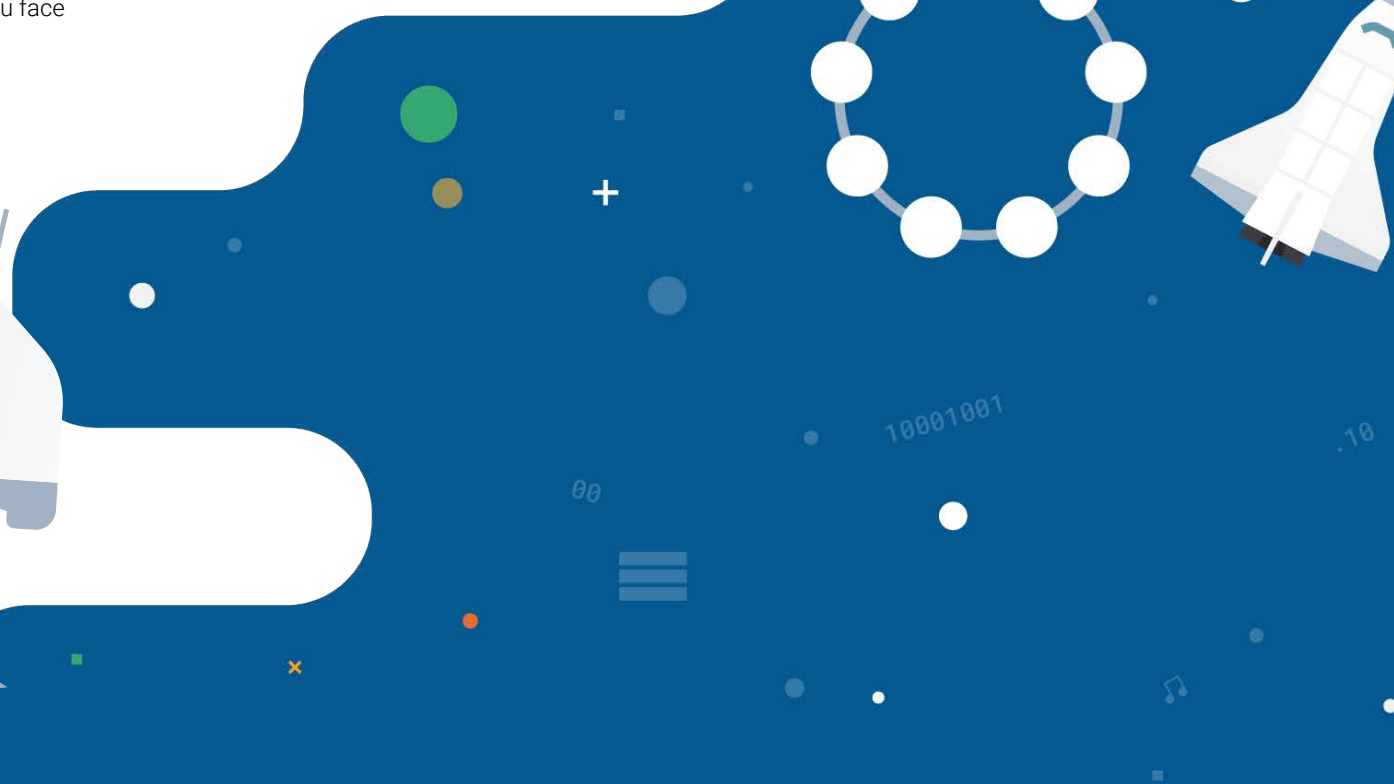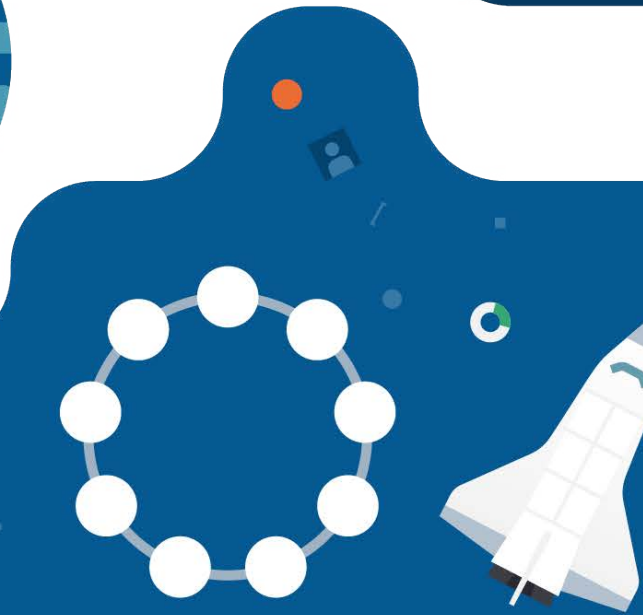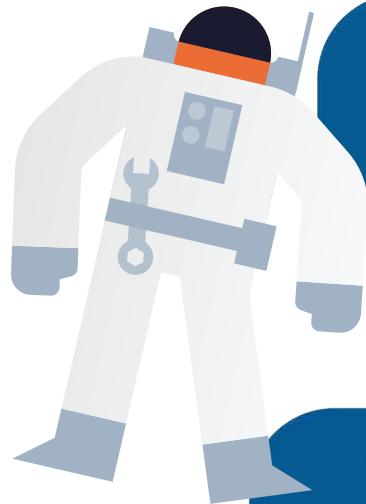
Key challenges

Development leaders are tasked with getting transformative applications out the door and into customers' hands as quickly as possible. But they often encounter complications that slow things down or even prevent them from doing so:

1 **Developers frequently have to depend on resources beyond their control.**

Development leaders are likely all too familiar with this scenario: Their team is ready to get to work, but they have to wait for operations to provision the necessary backend equipment before they can start. At the same time, the cost of database misconfiguration is high. If the database isn't set up correctly, users could experience unacceptable latency levels, or, worse yet, the database might not work at all.

2 **Trained developers and other resources are scarce and expensive.**

When it comes to finding developers experienced in working with backend technologies such as databases, it's a seller's market. In other words, skilled developers are not only expensive, but they might also be difficult to find in the first place-- especially if your organization is outside the tech sector or located far from the metropolitan centers where tech talent congregates. What's more, many backend technologies have a steep data-modeling and development learning curve, meaning that developers either specialize in just one or focus on learning the intricacies of the database itself rather than creating the software that accesses it.

3 **Speed often comes at the expense of increased technical debt.**

The expression "Fast, good, or cheap – pick two" represents software development's "iron triangle." There's a big-stakes race when it comes to shipping the latest and greatest applications, so speed to market generally takes precedence over all other priorities. A development team can roll out applications and features within days, but in doing so, they may limit the application's ability to scale or expand beyond the existing use case in the future.

The benefits of Apache Cassandra

Application development managers who are building modern data apps have found that an open data stack is often the best solution because it resolves all the primary challenges. Such a stack is built on open source and is capable of running in a hybrid and/or multi-cloud infrastructure. In a best-case scenario, this stack uses plain-vanilla object storage, such as Amazon Web Service's S3 buckets, a common operational platform like Kubernetes, and an open source database such as Apache Cassandra for its backend. It should also be front-ended with easy-to-use APIs that abstract away much of the database idiosyncrasies from developers so they can spend their time exploring creative ways to solve problems rather than learning a new database.

Apache Cassandra is the best NoSQL database for these applications because it offers exceptional benefits, including:

Unprecedented uptime.

Thanks to an active architecture in which nodes can read and write, Apache Cassandra has no single point of failure. There are multiple examples of Cassandra deployments that haven't had a moment of downtime for more than seven years.

Platform agnostic.

Developers can use Cassandra on different platforms, whether they're on the cloud or on-premise, in a containerized environment managed with Kubernetes, as well as cloud-native and microservice architectures.

Global scale.

Cassandra offers linear scalability, so it's able to handle a massive amount of data. Anyone using a website or smartphone today is likely touching Cassandra in the back end somewhere along the line.

Astra DB: Making Cassandra even easier

While Cassandra provides developers with an easy-to-use solution, DataStax Astra DB makes it even faster and simpler to use. Astra DB is a fully managed, multi-cloud, serverless DBaaS that scales up and down dynamically to avoid overprovisioning, thereby reducing the total cost of ownership (TCO). It eliminates the overhead required to install, operate, and scale Cassandra, with no need for updates. Astra's auto-scaling eliminates manual configuration changes and guesswork around database sizing.
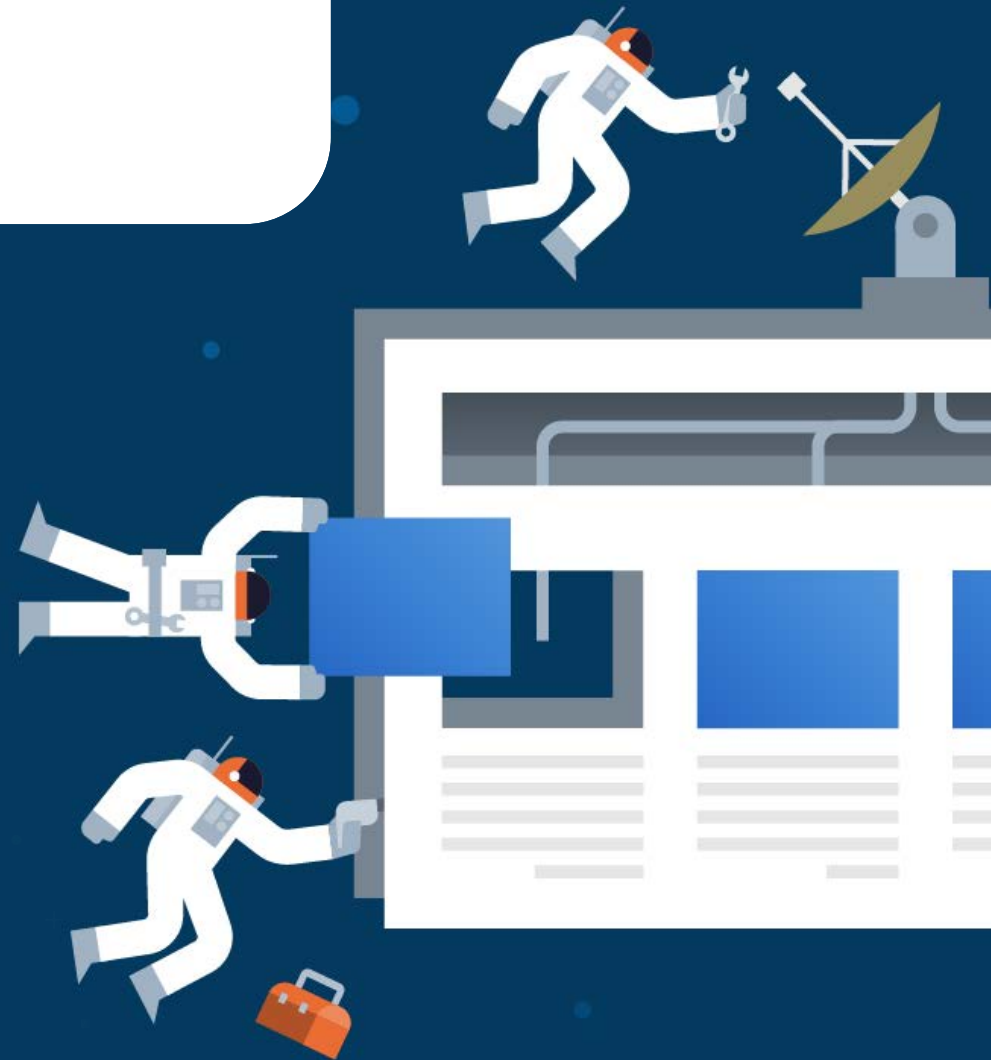
Astra DB offers app dev managers the following advantages:

✅ Scalable and cloud-agnostic.

Astra runs on multiple clouds, including Amazon Web Services, Microsoft Azure, and Google Cloud Platform, using Cassandra Kubernetes as its underlying platform architecture to achieve dynamic elasticity.

✅ Consumption-based pricing.

Idle or abandoned instances are among the most significant contributors to cloud spending waste, with Gartner finding that 80% of companies overspend anywhere from 20% to 50% on cloud infrastructure. Because Astra DB is serverless, it auto-scales on demand.

✅ No operational burden.

Because Astra DB is a managed service, organizations don't need to worry about tuning, backups, Cassandra-specific repairs, compaction, upgrades, or patches. DataStax monitors the health of the nodes and clusters and replaces any damaged nodes without customer intervention.

✅ Easy to use.

Astra DB abstracts Cassandra's idiosyncrasies using data APIs, including REST, GraphQL, CQL, and schemaless Document, so developers can use the frameworks and languages they're already familiar with. This means developers can create applications quickly without accumulating technical debt.

✅ No waiting on operations to set up development or testing environments.

With Astra DB, a generous free-forever tier means that every development team can get their own cluster and set of resources. This makes it easy to utilize production data rather than sample data for development and QA environments.

✅ DevOps API.

Too often, the database is left out of CI/CD because there's no easy way to automate testing. Astra DB includes an API that can be integrated into CI/CD pipelines, allowing organizations to incorporate the database as part of the testing process. The API lets DevOps teams automate such tasks as finding the cluster, creating a cluster load, applying security rules, loading data, running the find, and cleaning up the cluster. As a result, DevOps teams can accelerate software development by including the database as part of the CI/CD process.
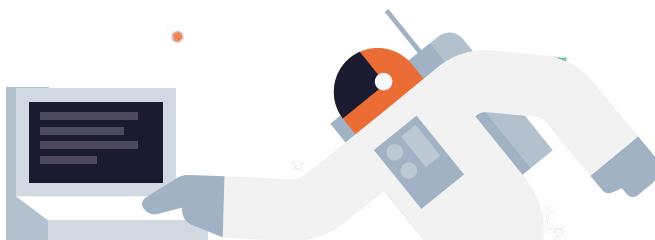
New challenges, fresh solutions

With multiple APIs and the ability to accommodate various data models, Data-Stax Astra DB offers development teams greater agility and time to focus on creating applications. Because Astra DB is serverless, it can scale on demand. It also offers the opportunity to give every development team their own cluster and lets them work with live production data.

Astra's DevOps API can integrate into the CI/CD pipeline to accelerate software development by automating multiple test processes. Creating clusters no longer takes weeks—just minutes. Development teams no longer sit idle waiting for resources or access to a particular environment. And because Astra DB is a managed service, operations teams don't have to worry about installing, tuning, scaling, configuring, or managing databases anymore.

To learn more about how DataStax Astra DB can speed development of Cassandra apps without increasing technical debt, **watch our webinar** or **register now for a free account.**

DataStax