

Why Multi-Cloud is Imperative to Any Modern Data Strategy

Today, organizations are increasingly seeking technologies that simplify the deployment of their application workloads in a multi-cloud design to get lower TCO, build best-of-breed solutions, and avoid vendor lock-in.

Whether to optimize the costs of running and managing private cloud or to enable developer velocity to efficiently build the modern, intelligent applications of tomorrow, the benefits of multi-cloud offerings are an attractive proposition for enterprises.

According to analyst firm [International Data Corp.'s latest report](#), global spending on public cloud infrastructure and services will almost double from \$229 billion in 2019 to around \$500 billion by 2023. While early cloud adoption was largely about building new applications on a single cloud provider, enterprises today are increasingly embracing a model which supports multiple clouds.

“Home Depot manages its own private cloud and data center and uses both Google Cloud Platform and Microsoft Azure. Siddiqui said: Think of us as a hybrid cloud, we actually have our private cloud in our data centers. We also have both Google Cloud, which was our first vendor for the cloud and Azure as well. Being able to really deploy into multiple clouds and have the resilience and competition is good. There's a bunch of stuff that we've done in our data centers, which it is absolutely the right place for it to be. It's the best cost profile for us. It's the best in class operations organization with our data centers and we continue to leverage that.”

A global survey conducted by Forrester on 727 cloud technology decision-makers at businesses with more than 1,000 employees found that 86% of enterprises have adopted a multi-cloud strategy due to shifting business priorities.

What's more, [TechRepublic](#) conducted a survey on multi-cloud adoption which revealed that more than two-thirds of respondents currently use or plan to use services from multiple cloud providers. Of the available public cloud platforms, Microsoft Azure and Amazon Web Services (AWS) were the most popular, at 78% and 77% respectively. Further, 43% of survey respondents use Google Cloud Platform and 23% use Oracle Cloud.

Avoiding vendor lock-in led the list of multi-cloud benefits for 73% of survey respondents, with competitive pricing coming in at second place for 65% of them. Resistance to outages, ease of scaling workloads, and regulatory compliance rounded out the list of multi-cloud benefits.

Here are the top four reasons to consider a multi-cloud strategy and deployment:

- ➔ **Freedom of choice** - Multi-cloud provides organizations flexibility and freedom of choice to host their applications and data anywhere, on any device and on any cloud at global scale. Multiple-cloud-based tools and providers allow enterprises to utilize the best-of-breed capabilities of each cloud provider. With freedom of choice, a variety of partners can help meet unique requirements of each enterprise and scale with businesses as they grow on multi-cloud architectures.
- ➔ **No single cloud provider lock-in** - If a business opts to use a single cloud provider, then it runs the peril of becoming locked into continuing to do business with that provider. It can be very arduous for organizations to switch to another cloud provider; any such migration becomes time-consuming, technically difficult, and extremely expensive.

At the [Gartner IT Infrastructure, Operations Management & Cloud Strategy Conference](#), Gartner VP Analyst Michael Warrilow said, “Most organizations adopt a multi cloud strategy out of a desire to avoid vendor lock-in or to take advantage of best-of-breed solutions. We expect that most large organizations will continue to willfully pursue this approach. One of the reasons attributed to it is the dominance of mega vendors in the market.”

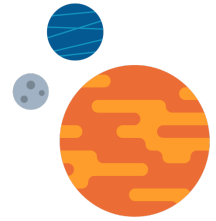
- ➔ **Higher return on investment (ROI)** - While avoiding vendor lock-in is the potential benefit of taking a multi-cloud approach, competitive pricing is an equally compelling reason to make a strategic shift to multi-cloud. With a multi-cloud approach, rather than pushing business processes to align to a single cloud provider, a business now has multiple options. This enables them to find the provider with the right fit for a business function without having to compromise its choices, with an equally compelling cost margin. Hosting applications on multiple clouds provides agility, flexibility, and better total cost of ownership (TCO)—resulting in higher ROI.
- ➔ **Reduced downtime** - Taking a multi-cloud approach and using different providers' cloud services eliminates a single point of failure in applications and business systems. Even though public cloud providers typically offer availability SLA of up to three 9s, it is critical that businesses distribute core workloads across multi-cloud infrastructure to reduce the possibility of downtime.

Multi-cloud solutions offer clear advantages when it comes to TCO, scalability, and reliability. However, despite the many potential benefits of multi-cloud, there are several challenges of managing multiple cloud providers. From the same TechRepublic survey referenced above, a resounding 72% of respondents cited complexity as their biggest challenge, while both migrating applications and security was a challenge for 48% of respondents. In addition, 43% of respondents indicated that managing costs was a challenge, too.

The continuing investments from Amazon Web Services, Microsoft Azure, Google Cloud Platform, IBM Cloud, VMware, and others have delivered compelling infrastructure offerings, each with their own unique and differentiated application and service benefits. Looking ahead, these cloud providers will continue to build application services over the next decade to further help enterprises innovate and build cloud-native applications at scale, making multi-cloud adoption easier and simpler.



Making Multi-Cloud Real



It is clear that the future is multi-cloud, and that multi-cloud is here to stay for as long as enterprises continue to look for simpler, flexible, scalable, and best-of-breed tools and application services to build their application and infrastructure.

Moving forward, more enterprises will actively think about how to establish multi-cloud strategies and the supporting solutions that they can adopt to ensure more enterprises and developers can build with multi-cloud in mind.

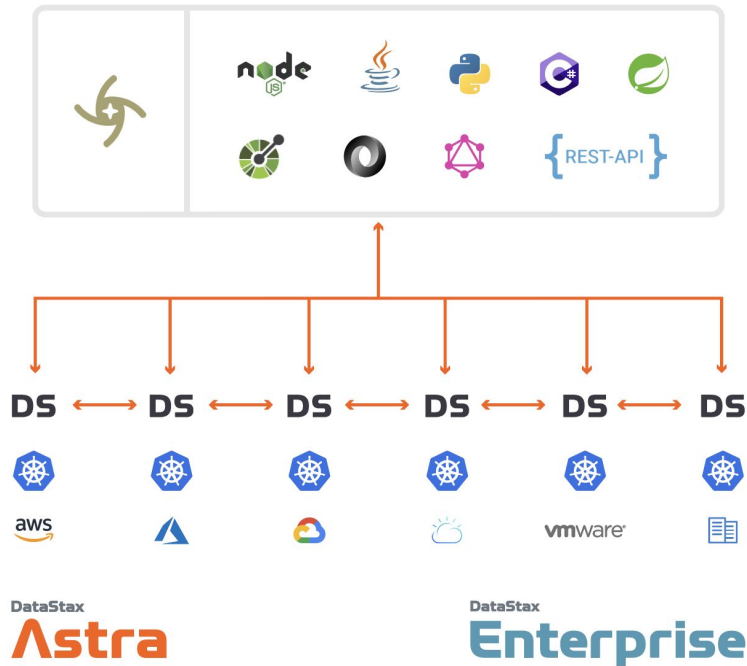
Now that we know the benefits of a multi-cloud strategy, how do we make multi-cloud real and easy to adopt?

The three things we are doing at DataStax to make adoption of Cassandra and multi-cloud real are as follows:

Driving Cloud-Native Transformations

We give users and enterprises a platform to build truly hybrid, multi-cloud, multi-region applications with zero lock-in and NoOps at global scale. Additionally, users and enterprises can choose data-rich APIs, clients, or frameworks that best suit their needs across multiple-cloud when building cloud-native applications. To achieve simplified cloud-native transformations, users and enterprises need a robust platform to build cloud-native application architecture, and we enable that for all modern applications through:

- **Containerization via Kubernetes** - Each part (e.g., applications, processes, etc) is packaged in its own container. This facilitates reproducibility, transparency, and resource isolation.
- **Dynamic orchestration and automation** - Containers are actively scheduled and managed to optimize resource utilization. A great example of this is recently launched [K8ssandra](#)
- **Microservices-oriented architecture support** - Applications are segmented into microservices. This significantly increases the overall agility and maintainability of applications.



Operating Cassandra-as-a-service helps drive operational efficiency by enabling the Operators to manage a larger landscape with efficiency. At one end of the spectrum, Astra provides a NoOps experience, with self-provisioning of the infrastructure and data platform, and day-to-day maintenance taken care of by DataStax.

If you choose to self-manage, you have a variety of options with DataStax, either using OSS or DataStax Enterprise (DSE) with on-premises or cloud vendor infrastructure. Your operational team will improve their efficiency with our Kubernetes Operators and AIOps with our Vector product.

Building Data Platform to Operate at Scale, Anywhere, and on Any Cloud

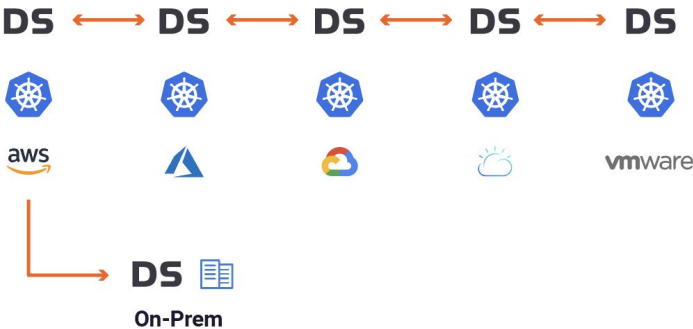
It is critical to ensure that users and enterprises have the ability to run their data services at scale, with no downtime on the most appropriate platform. This could be on-premises because of regulatory or compliance reasons or to utilize existing infrastructure assets.

At times, there may be a need to run in the cloud but reserve the right to switch cloud vendors for business, technical, or other motivations. There may also be use cases where enterprises need to have coherent and consistent data that spans on-prem and cloud environments with the ability to read and write in any location.

Cassandra provides this true hybrid, multi-cloud deployment.

Finally, you need to drive a best-in-class TCO. Cassandra can be deployed across your existing infrastructure and across multiple cloud vendors, with no cloud vendor lock-in. Cassandra can scale as the demand peaks and troughs, which means you get the advantages of consumption-based economics.

Operate at Scale, Anywhere



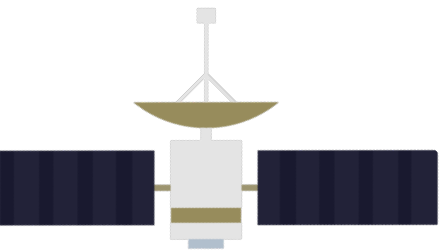
Creating Mechanisms to Seamlessly Deliver at the Speed of Imagination

Cassandra provides the ability for developers to access modern, relevant APIs, and frameworks. This is achieved through Stargate, an open source component developed by DataStax. It acts as a Database Proxy, that enables multiple APIs to interact with the Cassandra cluster. New APIs have been made available independently of Cassandra releases.

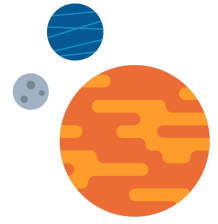
Allowing the developer to use the appropriate API is just part of the problem. Cassandra continues to support the column-family model for structured data. This becomes extremely important as you think about AI and ML processing. Cassandra also supports graph data types when you need to understand relationships between data. This is ideally suited to risk analysis, permission schemes, and other complex relationships. JSON documents can also be stored, manipulated, and retrieved natively and schemaless, which is very suitable for semi-structured data. It makes a great data model for Customer 360s when you need to integrate multiple sources of data and the schema of the data varies. Built-in is full text search capabilities with SOLR, only with integration with Spark and Kafka.

Finally, a serverless architecture allows the Cassandra cluster to scale dynamically—out and in as well as up and down. This moves towards a consumption-based model, where compute resources are only used when needed, thereby avoiding over-provisioning of the infrastructure for peak workloads.

Any API, Any Data Model

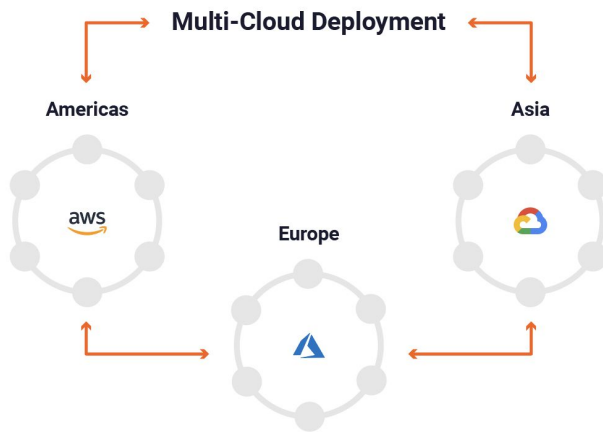


Multi-Cloud Benefits in Practice: DataStax Astra Cassandra-as-a-Service

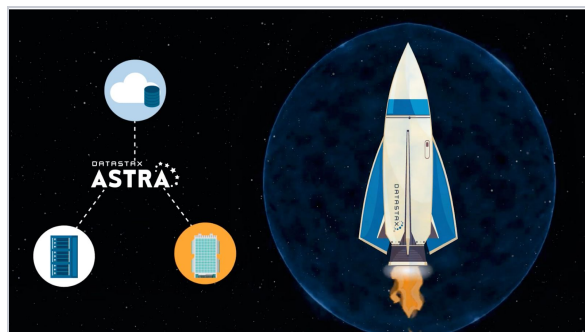


In 2020, DataStax announced *Astra*, a cloud-native Cassandra-as-a-service, that is now available on the three major cloud providers: AWS, GCP, and Azure.

DataStax Astra simplifies cloud-native Cassandra application development. It reduces deployment time from weeks to minutes, removing the biggest obstacle to using Apache Cassandra™, which is behind many of the most popular applications in the world today.



To learn more about DataStax Astra and how it enables you to build multi-cloud applications with ease at global scale, check out this explainer video:



Click above to learn more about DataStax Astra

DataStax Astra gives you the freedom to match compute and database capacity to the usage pattern, which saves money and scales to meet your performance objectives. With DataStax Astra you can create an instance of a database in AWS, or GCP, or Azure in minutes, literally, and the service is ready to accept API requests from applications.

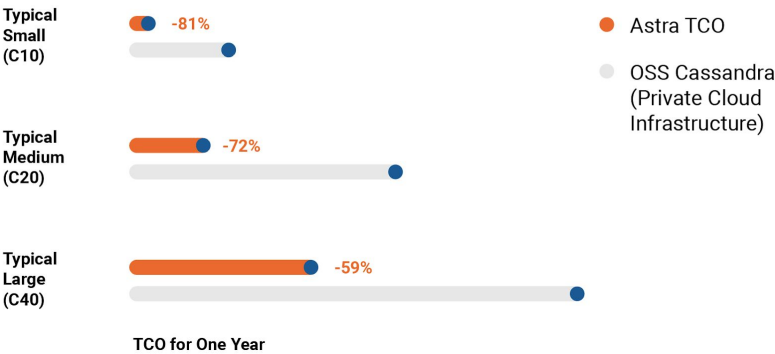
DataStax Astra provides the ability to develop and deploy data-driven applications with a cloud-native service at global scale, without the hassles of database and infrastructure administration.

Our analysis shows that DataStax Astra offers significant cost savings—up to 81% for smaller compute tier, 72% for medium compute tier, and 59% for advanced/large compute tier (on an average 71% cost savings across all tiers) over a period of one year compared to self-managed OSS Cassandra running in private cloud infrastructure.

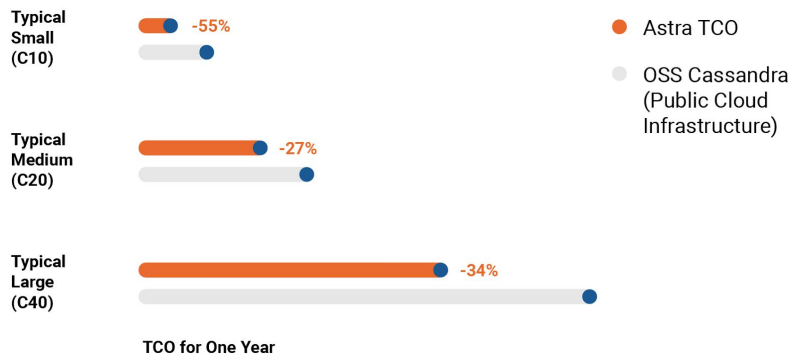
When compared to running OSS Cassandra in a public cloud infrastructure, our analysis shows that DataStax Astra offers cost savings up to 55% for smaller compute tier, 27% for medium compute tier, and 34% for advanced/large compute tier (on an average 39% cost savings across all tiers) over a period of one year.

DataStax Astra not only helps you lower your costs and maximize your savings but also encourages innovation in enterprises by accelerating time-to-market, innovation, and experimentation. In a multi-cloud setup, the TCO is lower and ROI is even higher with Astra as you use best-of-breed solutions and services to build multi-cloud applications with ease at scale.

TCO Analysis - Astra vs. OSS Cassandra (Private Cloud Infrastructure)



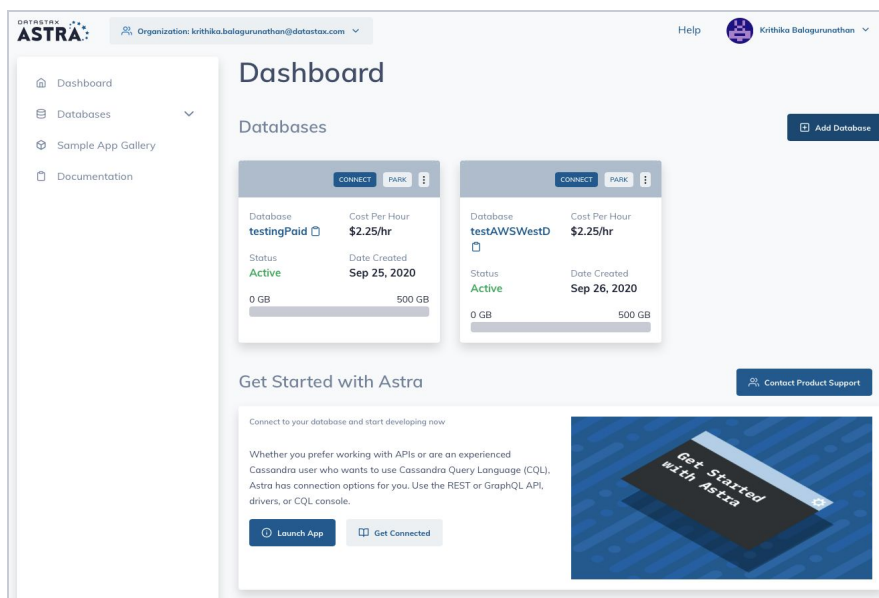
TCO Analysis - Astra vs. OSS Cassandra (Public Cloud Infrastructure)



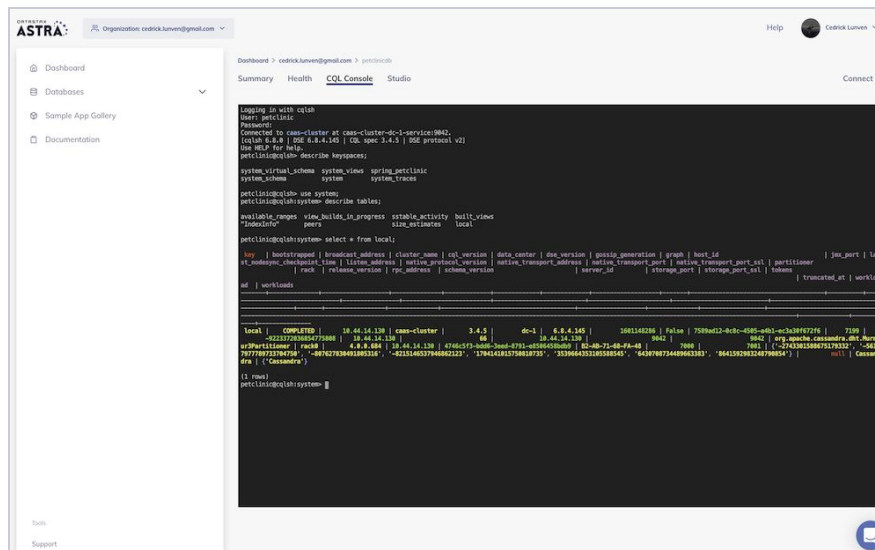
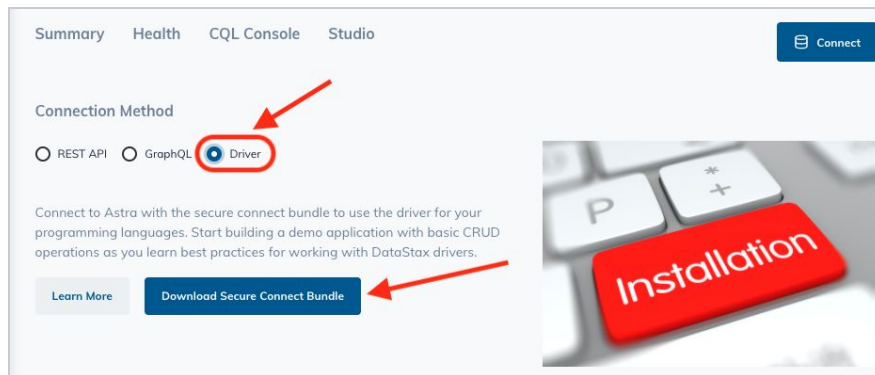
DataStax Astra is built on Kubernetes, Prometheus, and Envoy and participates in the GKE, AKS, and EKS native control and management planes. Enterprises and developers now have the freedom to run any Apache Cassandra workload in any cloud or on any device, at global scale. The NoOps and zero-downtime capabilities of Astra helps developers and enterprises build cloud-native apps quickly on any cloud provider (of their choice) with zero lock-in and the ability to scale-out to the largest workloads.

DataStax Astra also offers tangible business outcomes and differentiated value proposition to enterprises beyond TCO, ROI, freedom of choice, NoOps, zero lock-in. Here are a few important ones to highlight-

- ➔ **Accelerated development** - Today, using Astra, developers can quickly access a cloud-native data platform with all of the power of Cassandra in less than five minutes. This gives developers the ability to quickly start their project and begin delivering results right away.

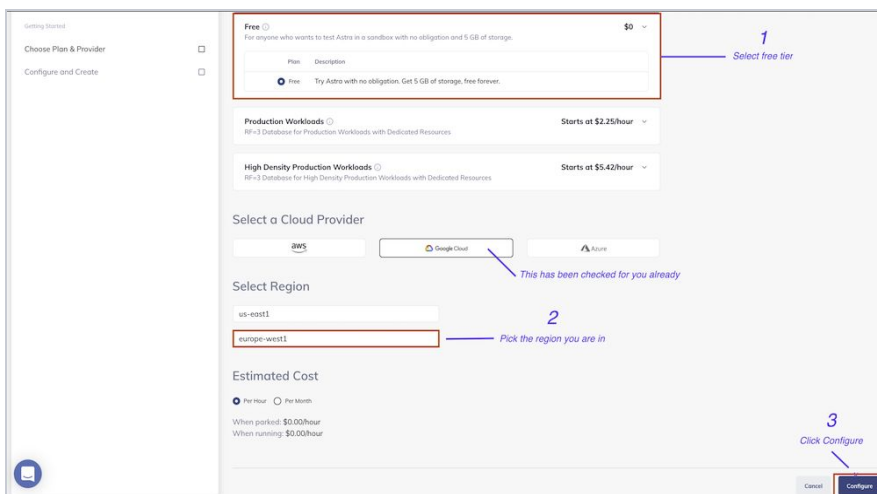


Availability via APIs - When it comes to utilizing the data platform in their apps, developers have many options at their disposal. In many cases, having powerful drivers that handle a lot of database-specific capabilities in a clean and easy way gets them to production quickly. Increasingly, developers prefer to be abstracted away from the particular data technology and utilize standard API approaches such as REST, GraphQL, CQL, and other common API approaches. Astra supports all of these developers where they are so they can use the approach most familiar and helpful for their application.

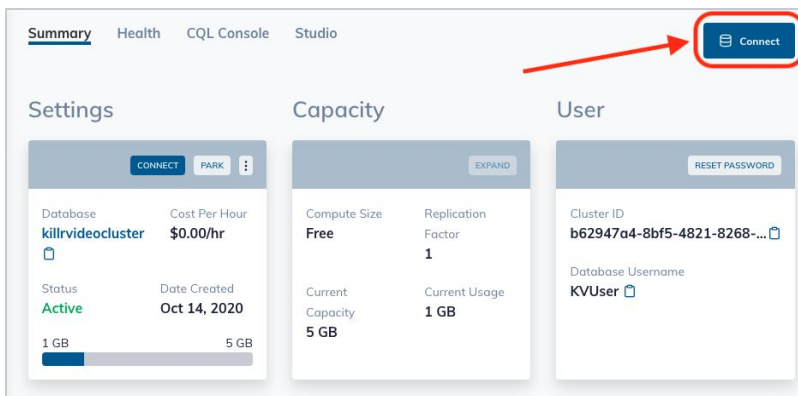


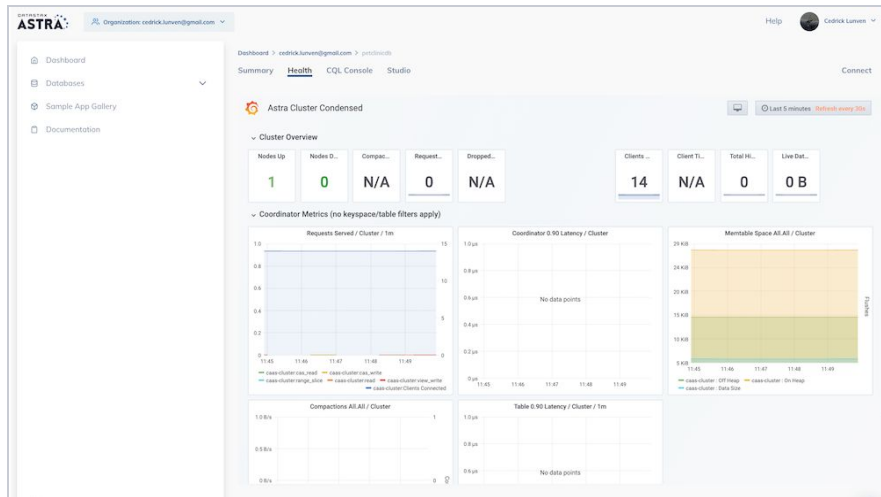
➔ **Flexible platforming** - Let your business needs shape your application deployment profile—and not the other way around. With Astra, you can quickly and easily develop against a cloud-native platform of your choice (e.g., AWS, Azure, or GCP), and later you may choose to take this application to production that may include multiple public or private cloud environments or even on-prem with a hybrid on-prem and cloud deployment leveraging standard Cassandra capabilities.

"DataStax Astra helps accelerate usage of Apache Cassandra," says Ashwin Jaiprakash, Alliance Manager, Government and Public Sector at Deloitte Consulting LLC. "As we continue to grow our Cassandra experience, Astra helps lower the barrier to entry and can allow developers to jump into working with Cassandra to build and deploy applications with ease."



- ➔ **Complete NoOps flexibility** - Astra brings all of this power and does not require any additional effort around provisioning instances, maintaining database software, or managing infrastructure upgrades and maintenance. Developers can focus more intently on innovation while Astra takes care of the operations.





“Our business needs a stable, cloud-native database that scales to our members’ needs,” says Sam Sgro, Chief Architect at Lending Club. “We leverage Cassandra and AWS to keep millions of data points accurate and available for our decisioning systems. We are very excited about DataStax Astra, delivering a NoOps experience on Cassandra and allowing us to effortlessly react to demand.”

Astra’s availability on all three major cloud providers (i.e., AWS, Azure, GCP) only furthers this momentum to deploy applications in a multi-cloud setup. Go and launch your first database in any cloud of your choice anywhere with **Astra** in less than three minutes, and start building globally distributed and scalable applications right away.

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