STARGATE

DataStax

Building Modern Data Apps with a Gateway for Multi-Models Data APIs

Api Days Helsinki, 15th March

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About me

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CÉDRICK LUNVEN

Director Of Developer Advocacy At Datastax

- Training
- Teaching
- Reference Applications
- Support
- Public Speaking

cassandra

FF4J

- Creator of ff4j (ff4j.org)
- Maintainer for 7 years+

KubeCon | CloudNativeCon

Building Modern Data Apps with a Gateway for Multi-Models Data APIs

1. Stargate Overview
2. Ex1: Using Cassandra
3. Ex2: Using Rest and Document API
4. Ex3: Using the GraphQL API
5. What's NEXT

DataStax Developers

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DataStax Developers

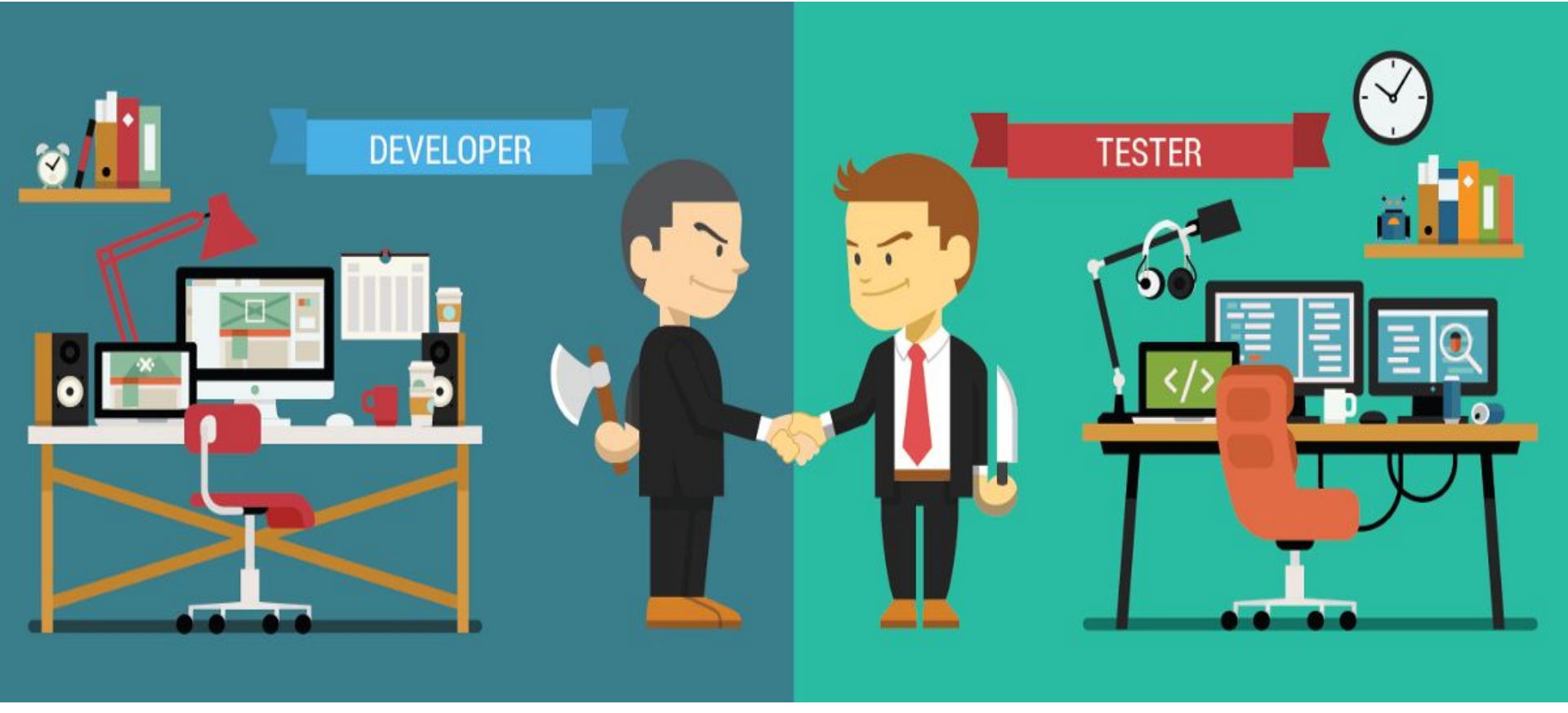
Start with Why – *Simon Sinek*

- **Developers**
  - Do you like learning query languages (CQL, N1QL, GQL, cypher, gremlin….)
    - **No**. Save my JSON, give it to me back when I need it
    - ORM / Spring Data are so popular nowadays
  - Do you care about how your data is stored ?
    - Physical data model part of the interface…yikes
    - Create structures based on queries
  - Do you like installing and running Databases locally
    - especially distributed databases
    - especially with datasets and integration tests

Start with Why – *Simon Sinek*

- **Operators and Databases Administrators**…
  - Do you allow developers to execute direct queries against your DB ?
  - Do you like opening port ranges like 0-65536 to allow communications with applications, especially in the cloud.
  - Do you like creating dedicated projects and hiring people just to create APIs to expose an existing treatment (digital transformation FTW)

And when those 2 meet each other



Stargate Overview

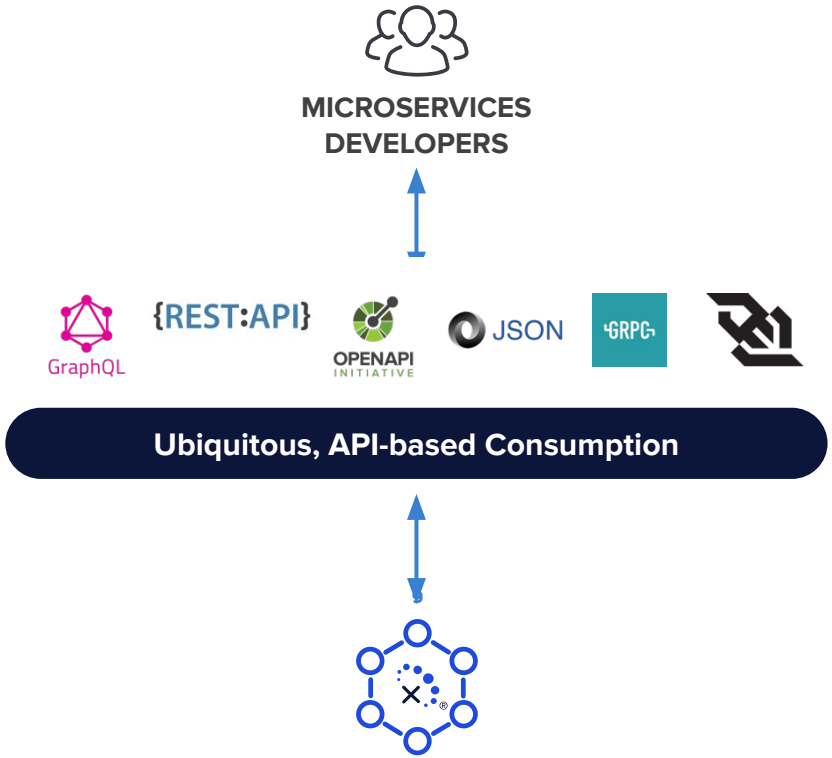
An open source API framework for data

Stargate makes it easy to use a database for any application workload by adding plugin support for new APIs, data types, and access methods

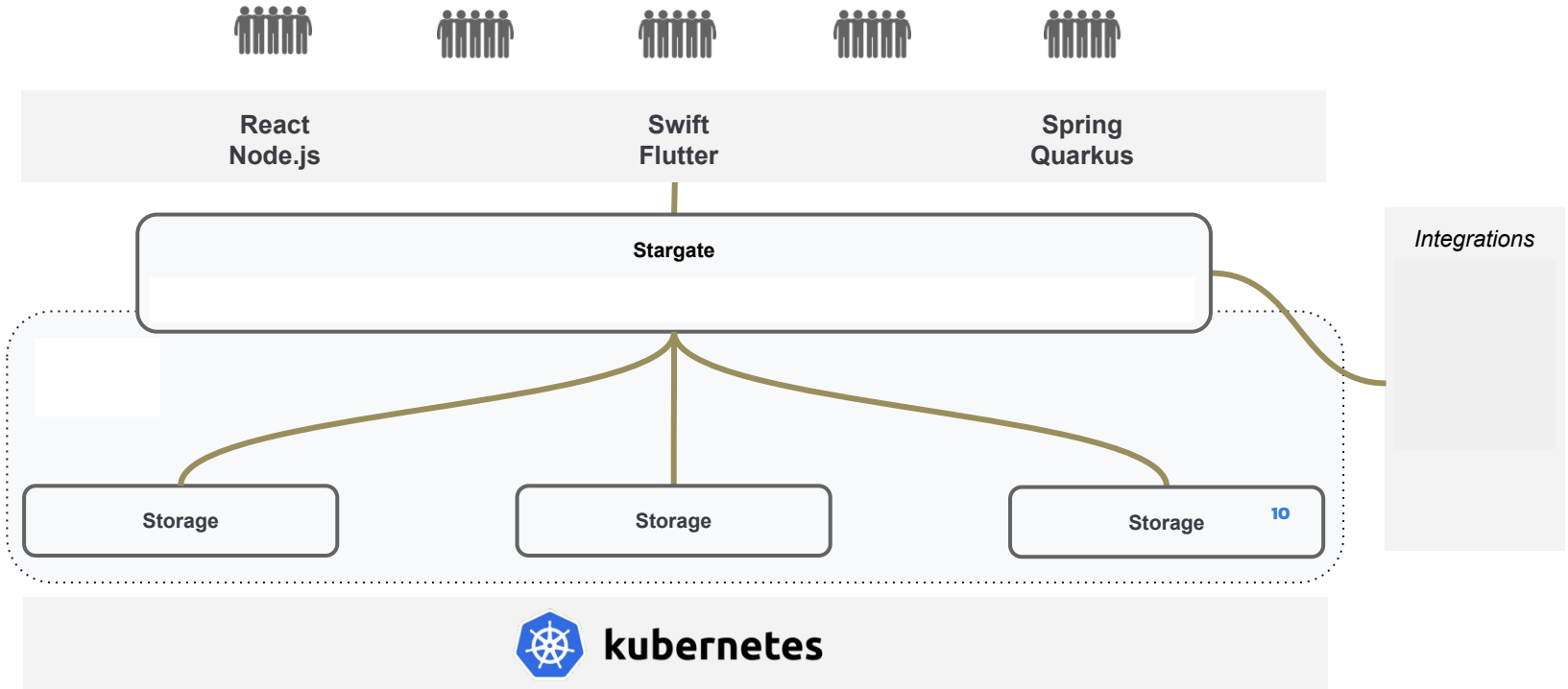
Data Gateway Rational

> Developers want the option to use modern APIs and development gateways.

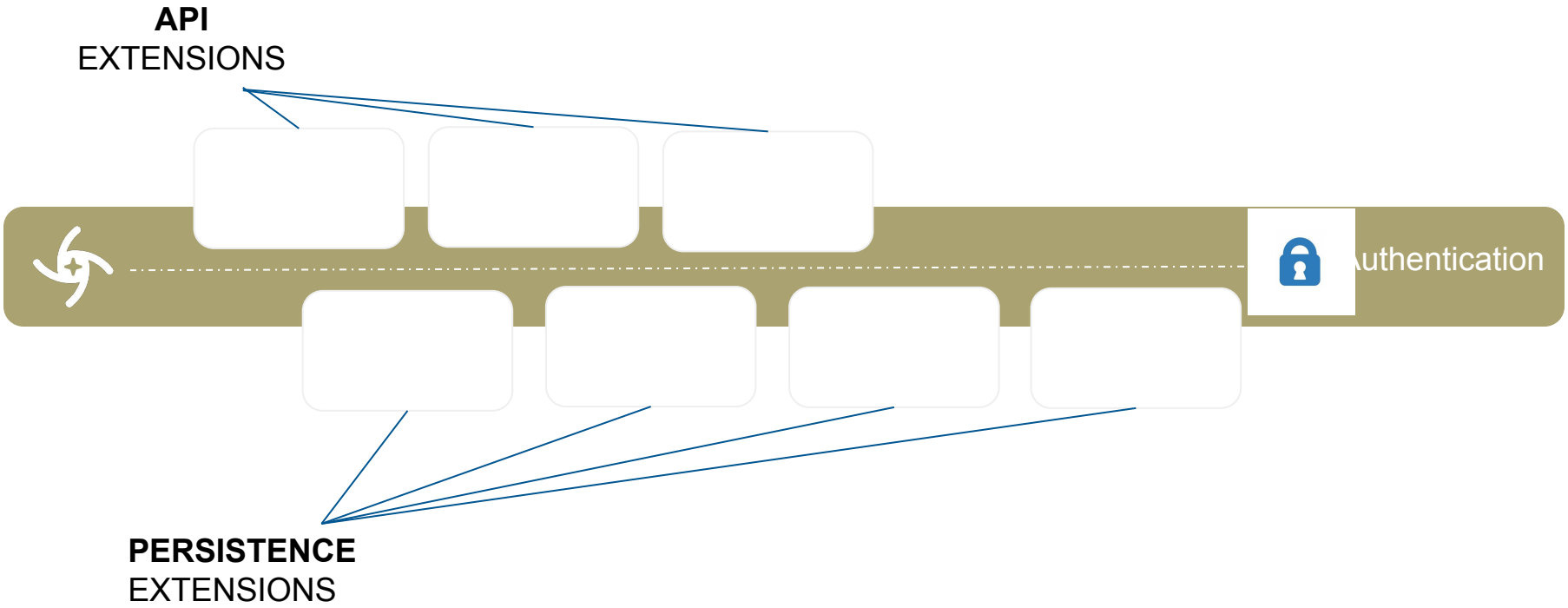
Cassandra is a database designed for the new standard and the associated APIs that facilitate the first choice of developers.



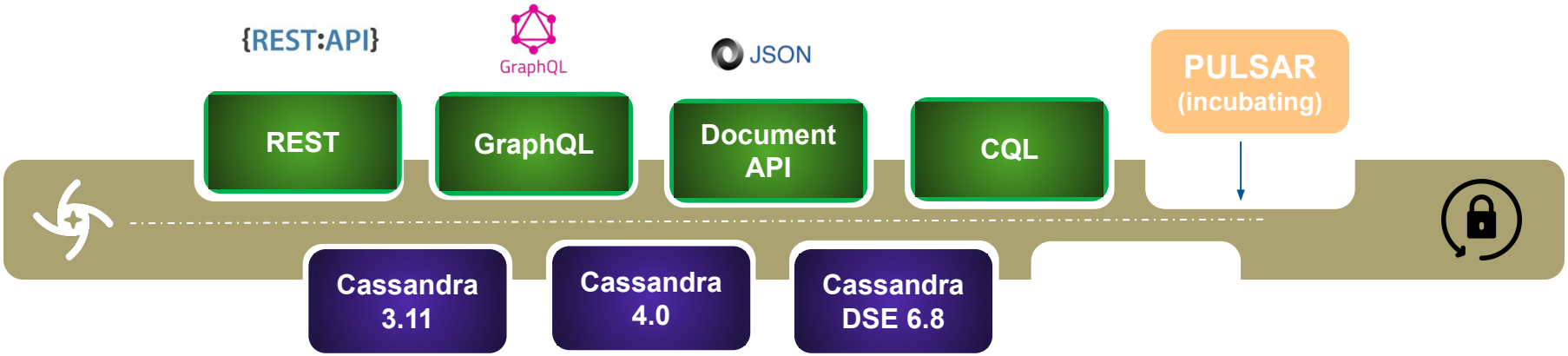
Logical Architecture, Yet another Proxy



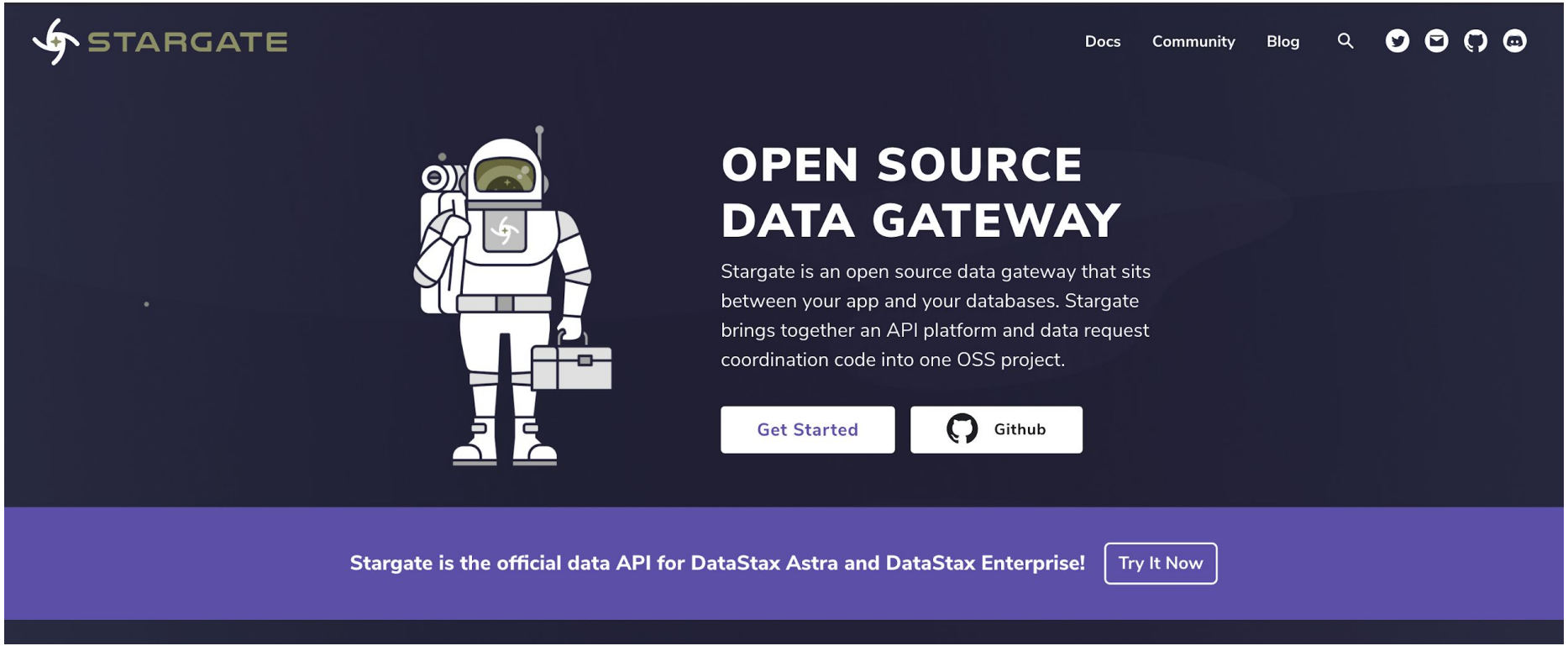
API Extension and Persistence Extensions



Modules


{REST:API}
GraphQL
JSON
REST
GraphQL
Document API
CQL
PULSAR
(incubating)
Cassandra 3.11
Cassandra 4.0
Cassandra DSE 6.8

Stargate.io


STARGATE
Docs
Community
Blog
OPEN SOURCE
DATA GATEWAY
Stargate is an open source data gateway that sits between your app and your databases. Stargate brings together an API platform and data request coordination code into one OSS project.
Get Started
Github
Stargate is the official data API for DataStax Astra and DataStax Enterprise!
Try It Now

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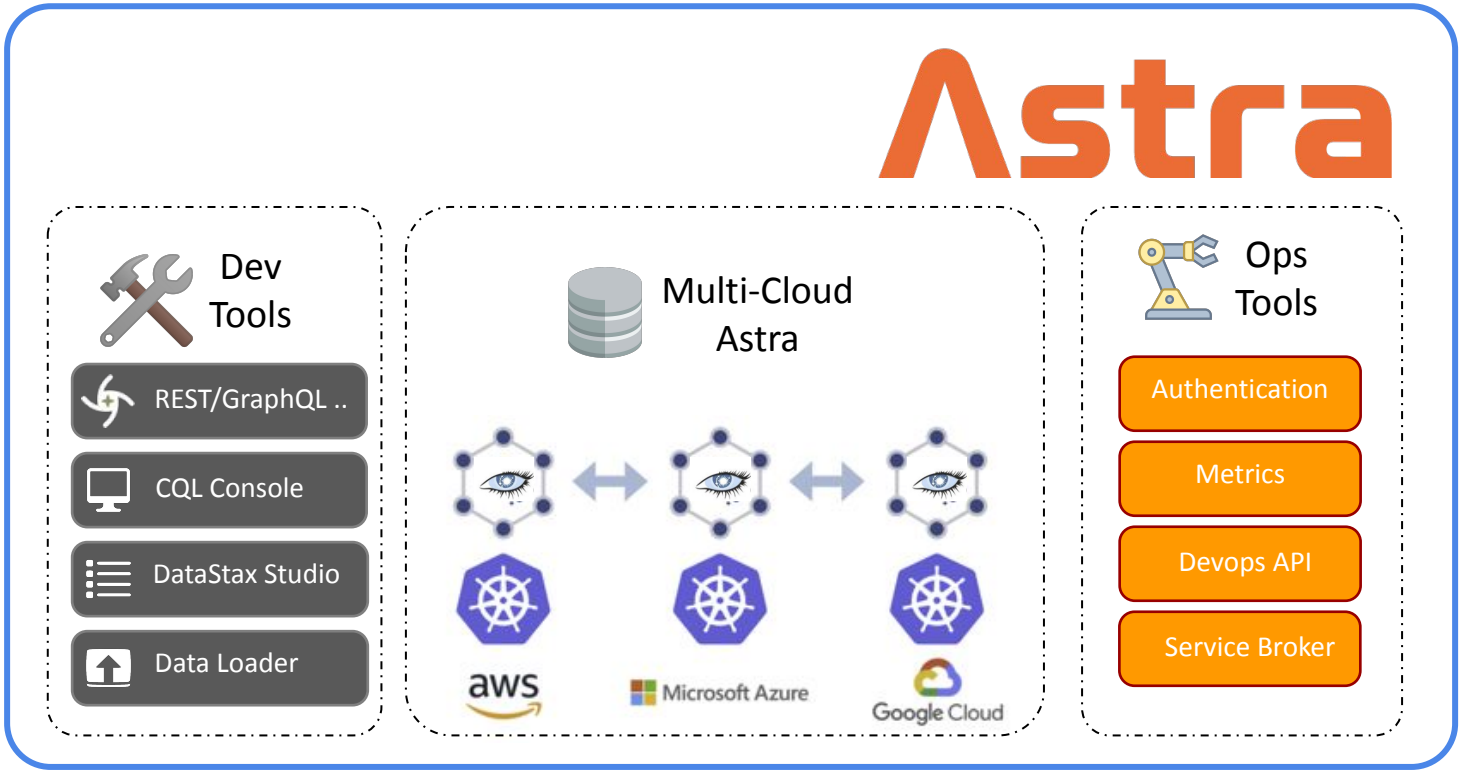
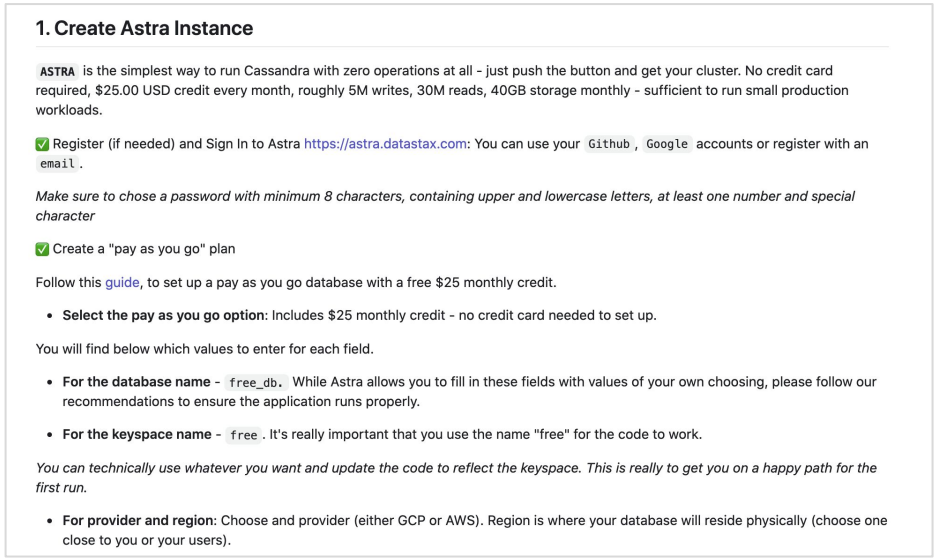
OSS Stargate is Embedded in Astra



HouseKeeping

- Instructions and Slide
  - https://github.com/datastaxdevs/conference-apidays2021-stargate
- Runtime
  - https://astra.datastax.com



1. Create Astra Instance

`ASTRA` is the simplest way to run Cassandra with zero operations at all - just push the button and get your cluster. No credit card required, $25.00 USD credit every month, roughly 5M writes, 30M reads, 40GB storage monthly - sufficient to run small production workloads.

✅ Register (if needed) and Sign In to Astra https://astra.datastax.com: You can use your `Github`, `Google` accounts or register with an `email`.

Make sure to chose a password with minimum 8 characters, containing upper and lowercase letters, at least one number and special character

✅ Create a "pay as you go" plan

Follow this guide, to set up a pay as you go database with a free $25 monthly credit.

- **Select the pay as you go option**: Includes $25 monthly credit - no credit card needed to set up.

You will find below which values to enter for each field.

- **For the database name** - `free_db`. While Astra allows you to fill in these fields with values of your own choosing, please follow our recommendations to ensure the application runs properly.
- **For the keyspace name** - `free`. It's really important that you use the name "free" for the code to work.

You can technically use whatever you want and update the code to reflect the keyspace. This is really to get you on a happy path for the first run.

- **For provider and region**: Choose and provider (either GCP or AWS). Region is where your database will reside physically (choose one close to you or your users).

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Cassandra as a Multi-Models NoSql Database

Column Oriented

- Cassandra is contains **Tables** with a Partition key
- Defined as Column Oriented (you can add columns)

Key-Value

- This is like KEY and multiple values, fit the key-value pattern

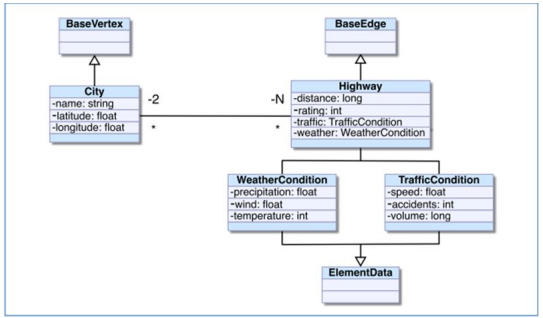
TimeSeries DataBase

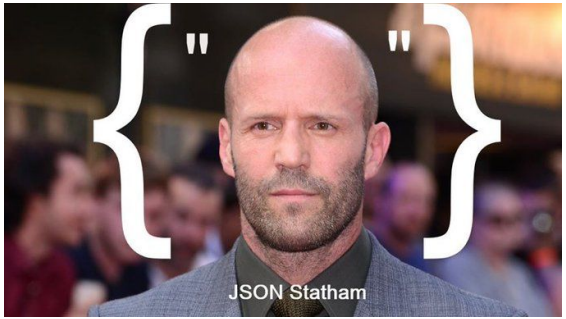
- Cassandra fits time series use cases (high throughput) and data models (CL)
- Provide: TTL, aggregation through **Spark**, split OLTP and OLAP

Graph DataBase

- For 5 years Datastax has been implemented a graph Engine, fork of TitanDB on top of Cassandra storage, querin with **gremlin**.

Cassandra as Document Store, the last frontier





- Cassandra already handles JSON and structures
  - INSERT JSON, SELECT JSON
  - Set<>, List<>,Map<>, and User Defined type (UDT) even nested

Document Shredding

```
create table <name> (
  key text,
  p0 text,
  … p[N] text,
  bool_value boolean,
  txt_value text, d
  bl_value double, leaf text
)
```

Document Shredding

```
{"a": { "b": 1 }, "c": 2}
```

The document would be “shredded” into rows looking like this:

key	p0	p1	dbl_value
x	a	b	1
x	c	null	2

Document Shredding

For data with an array, such as:

```
{"a": { "b": 1 }, "c": [{"d": 2}]}
```

there would be two rows, like so:

key	p0	p1	p2	dbl_value
x	a	b	null	1
x	c	[0]	d	2

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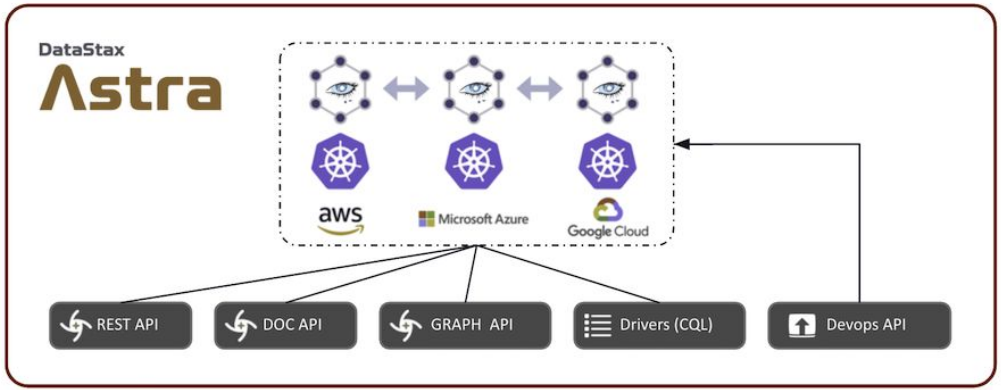
Astra SDKs



Java

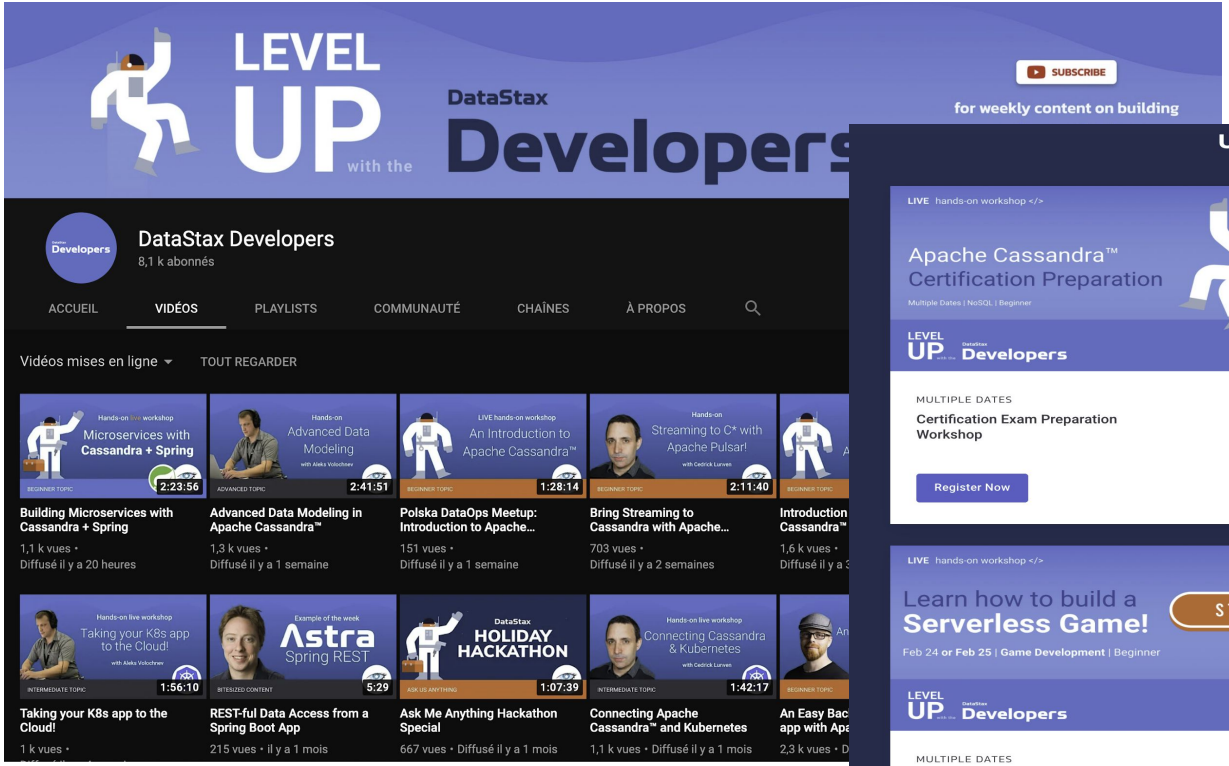
https://github.com/clun/astra-sdk-java

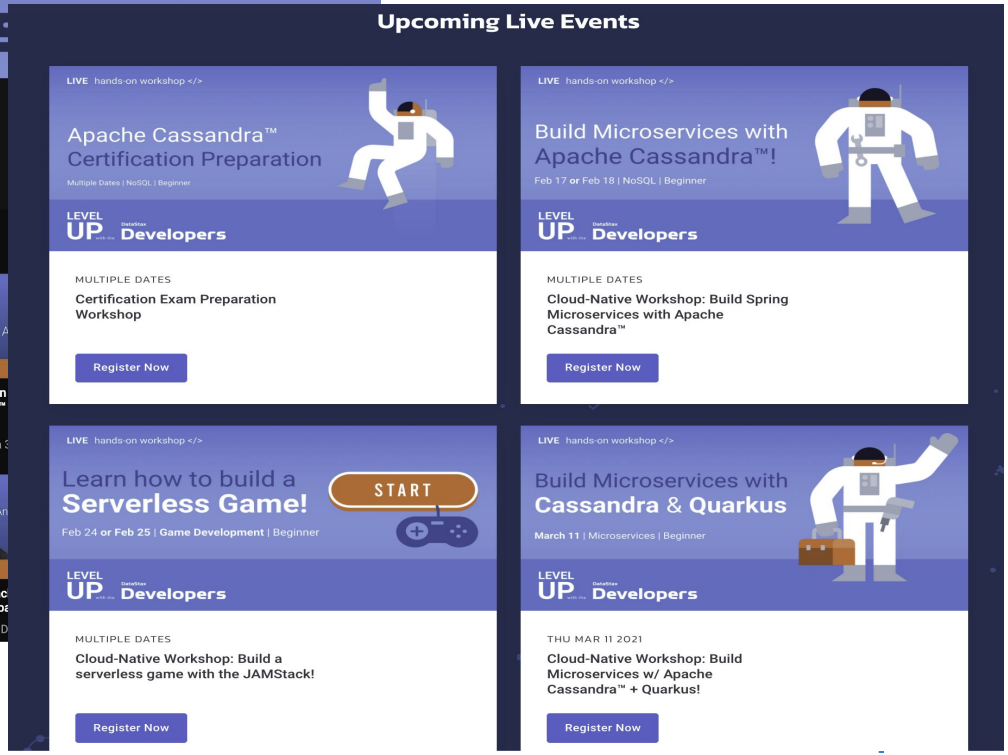
node js

https://github.com/datastax/astrajs

Weekly Workshops

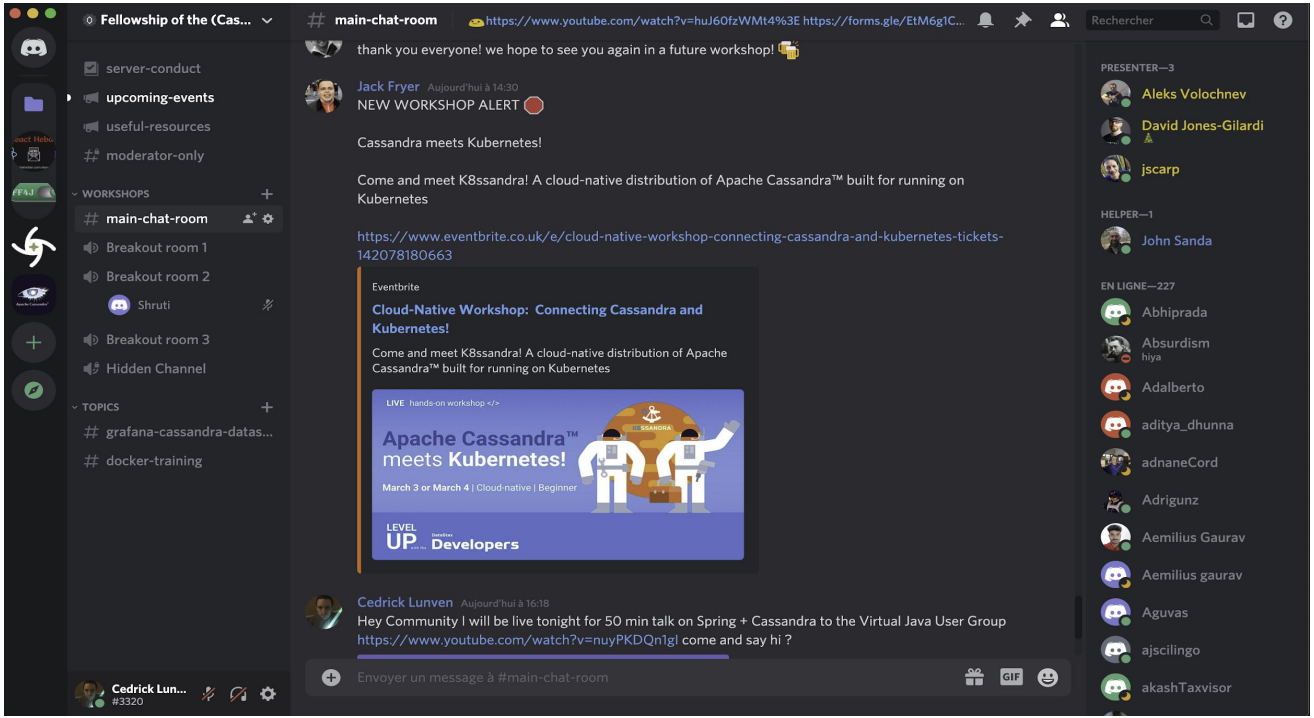
https://www.datastax.com/workshops





https://bit.ly/cassandra-workshop

Join our 9k Discord Community
The Fellowship of the RINGS



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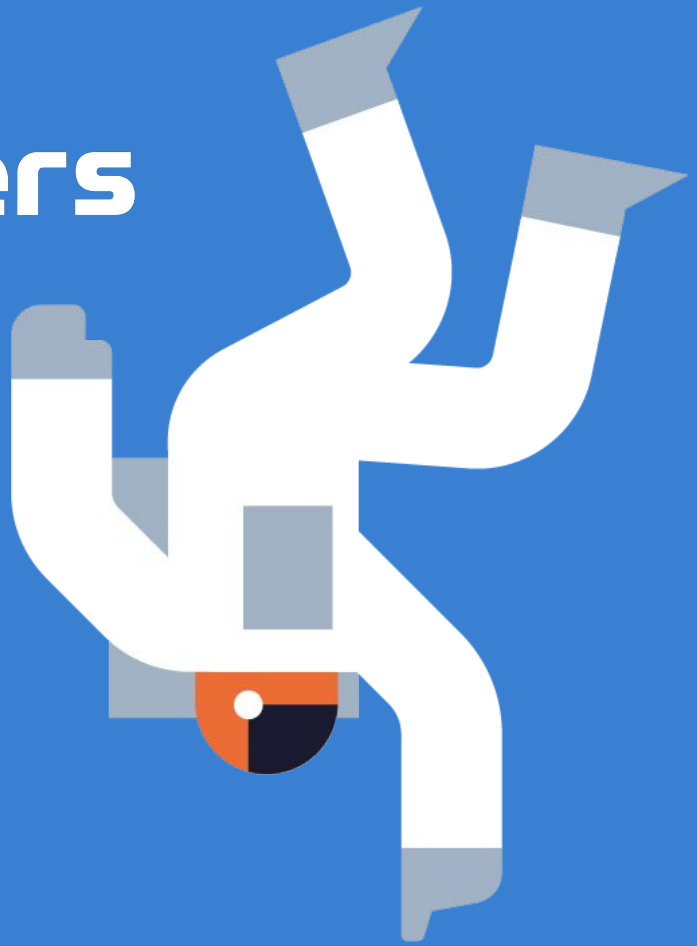
Thank you!



GitHub @clun

@clunven