



# Join us to learn more about:

- Building data access layers in Python
- Building applications on NoSQL databases
- Exposing Python methods with RESTful APIs





HANDS-ON WORKSHOP

# › Get Started on Python and NoSQL with Apache Cassandra

FEBRUARY 8, WEDNESDAY

8 AM PT | 11 AM EST | 5 PM CET | 9.30 PM IST



Sarma Pydipally



Aaron Ploetz

DATASTAX

DEVELOPERS

## Hands-on Workshops

# Get Started with Python and NoSQL with Apache Cassandra



python<sup>TM</sup>



cassandra

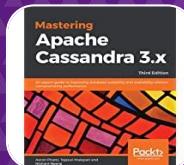
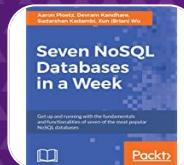
# DATASTAX



## Aaron Ploetz Developer Advocate



- 3x Cassandra MVP
- Former SWE/DevOps/DBA Lead @ **GRAINGER** & **TARGET**®
- Host - Apache Cassandra Corner podcast
- Worked as an author on:  
Mastering Apache Cassandra 3.x  
Seven NoSQL Databases in a Week





# Sarma Pydipally

## Special Guest



@sarma-pydipall  
y-0115a064



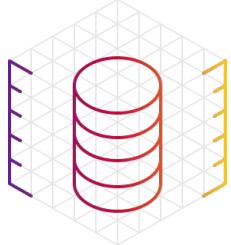
@sarma1807



- DB YouTuber w/ 5k subscribers
- Udemy Instructor
- Open Source Dev
  - Prometheus-Grafana-Cassandra
  - Python Sales App
  - Private\_Email\_Server



@OracleByExample



# › DataStax Developers - Crew



Cedrick  
Lunven



David  
Dieruf



Rags  
Srinivas



Artem  
Chebotko



Aleksandr  
Volochnev



Aaron  
Ploetz



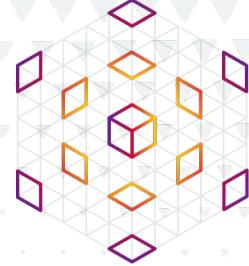
Kirsten  
Hunter



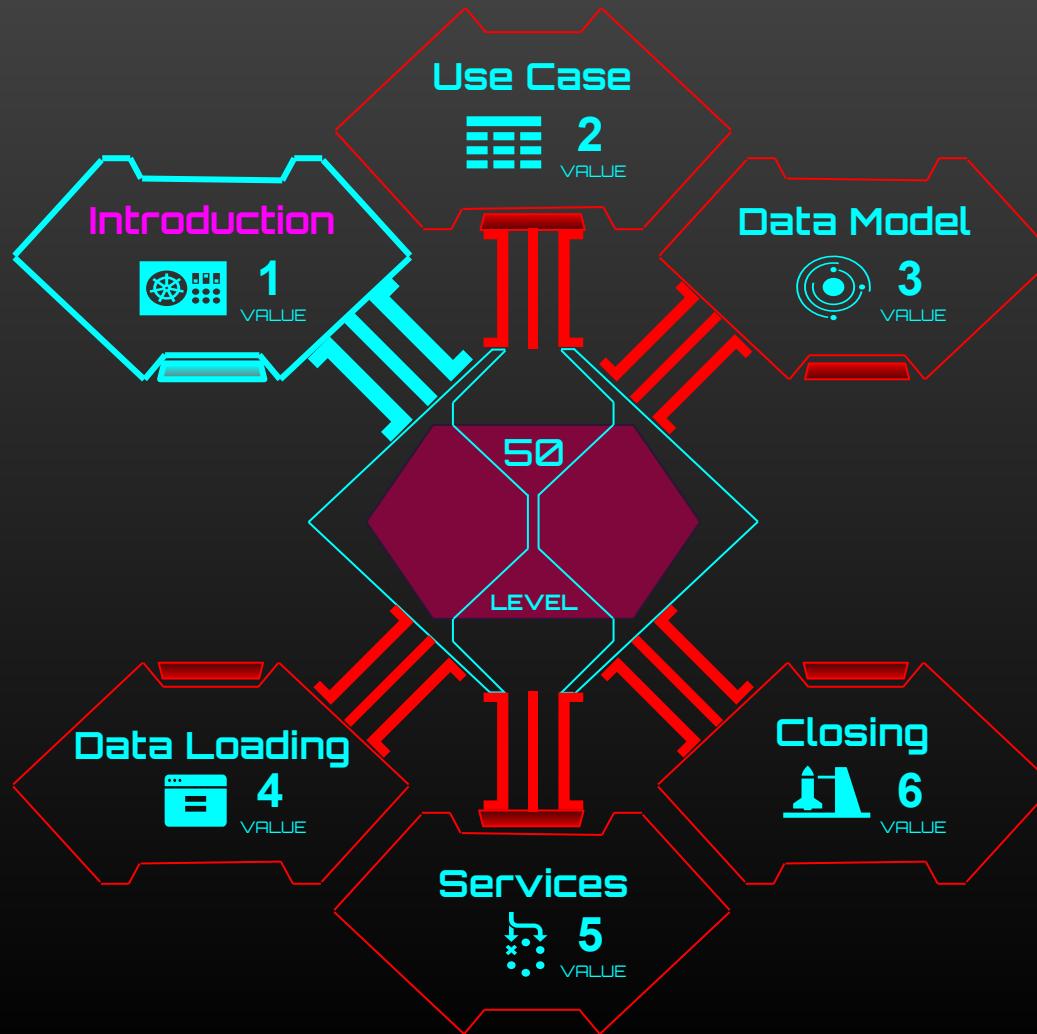
Mary  
Grygleski



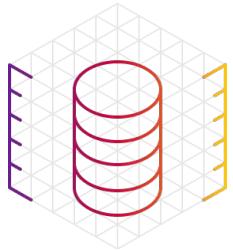
Stefano  
Lottini



# Agenda



# » Live & Interactive



[youtube.com/DataStaxDevs](https://youtube.com/DataStaxDevs)

Live!

Agenda

<b>01</b> PetClinic Architecture & Use Case	<b>02</b> DataStax Astra Cassandra Database The Art of Data Modeling	<b>03</b> Reactive Drivers Reactive vs Async
<b>04</b> Spring Reactive Boot and WebFlux	<b>05</b> User Interface Angular	<b>06</b> Game & Resources

DataStax Developers

!menti

### How much experience do you have with the Spring Framework ?

Quiz! DataStax

Experience Level	Percentage
Never heard about it	41%
I use it regularly	24%
I have already used it	29%
I know the concepts	10%



!discord

Help!

Discord Developers

#workshop-chat

lost4000: I'm new to DataStax help With the workshop bootstrap. It's fine ok for me to have a background too

Eric.McNamee: With the workshop bootstrap, is it ok to have a background too

lost4000: I have some programming background so helping is going to help a lot otherwise, it will be very difficult for you to understand the concepts

lost4000: I am planning to transition as machine learning but I don't know if I should enrol in a university But now, we can just build app with no code.

What makes it different?

they're not "seen how to program"

lost4000: they're not "seen how to program"

lost4000: the requirement is the same though

I mean faster

fast and functional is way better

Like in business and hobby

I don't know anyone what I am doing. Just really want to get out from poverty

horse20: @Cedrick.Lunzen @David.Jones-Gland I believe the issue is with the volume result. I commented that file but was able to start with containers.

horse20: @Cedrick.Lunzen @David.Jones-Gland I am unable to run the 2 containers and still facing the same issue of futures



YouTube

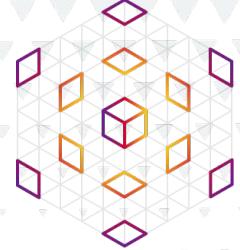
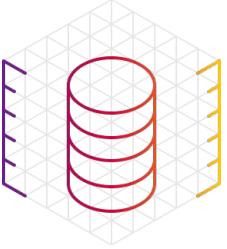


Mentimeter



Discord (#workshop-chat)

# ► Hands-on housekeeping



Source code + exercises + slides

A screenshot of a GitHub repository page for 'DataStax-Examples/todo-astra-jemstack-netty'. It shows a file tree with 'github-workflows', 'branches', 'issues', 'pulls', 'tags', 'releases', and 'env-template'. A 'README.md' file is also visible. The repository has 230 contributors.

IDE

A screenshot of an IDE showing the code for 'StargateDemoApplication.java'. The code imports org.springframework.boot.SpringApplication and org.springframework.boot.autoconfigure.SpringBootApplication. It defines a public static void main method that calls SpringApplication.run with StargateDemoApplication.class as the argument. The code is annotated with @SpringBootApplication.

```
import org.springframework.boot.SpringApplication;
import org.springframework.boot.autoconfigure.SpringBootApplication;

public class StargateDemoApplication {
    public static void main(String[] args) {
        SpringApplication.run(StargateDemoApplication.class, args);
    }
}
```



GitHub



!github



Gitpod



!gitpod

Database + Api + Streaming

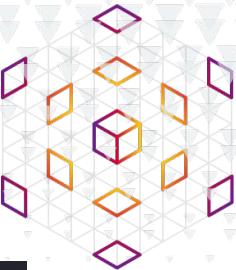
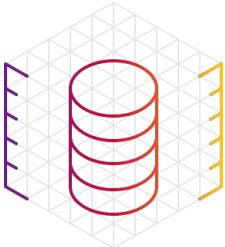


DATASTAX

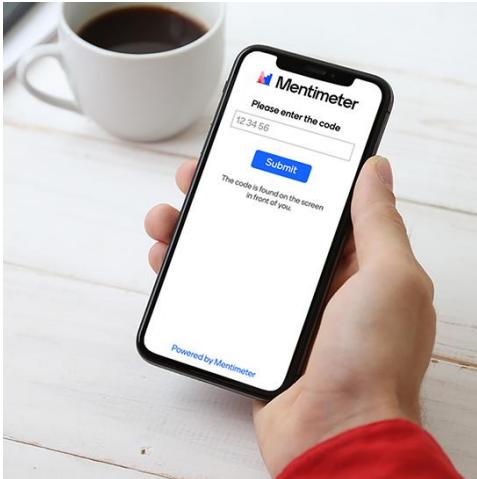
ASTRA DB

!astradb

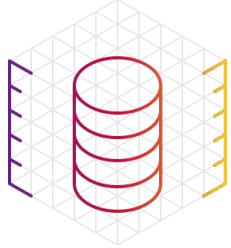
# ➤ "Menti" for survey and quiz



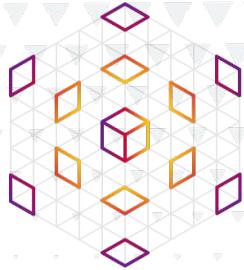
!menti



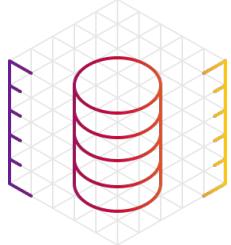
**menti.com** ⇒ enter code  
Don't answer in YT chat  
Look at phone (not at YT)  
Keep it open for later



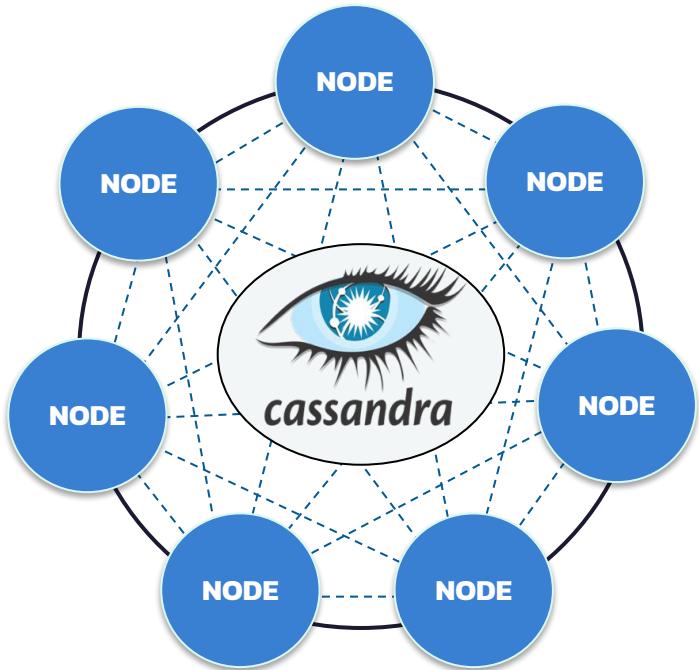
## ➤ Topics for Today



- Intermediate-level Python & Cassandra
- Data Modeling
- Test Data Generation & Loading
- Restful Services



# Apache Cassandra



- **Big Data Ready**
  - **Read / Write Performance**
  - **Linear Scalability**
  - **Highest Availability**
  - **Self-Healing and Automation**
  - **Geographical Distribution**
  - **Platform Agnostic**
  - **Vendor Independent**
- 

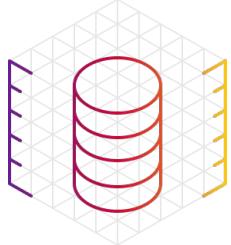
## › What is Astra DB?



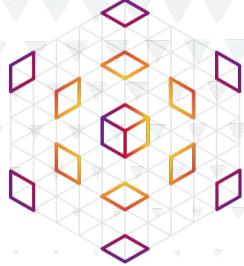
**Astra DB is a DBaaS built on Apache Cassandra**

-Can deploy to all 3 major cloud providers.





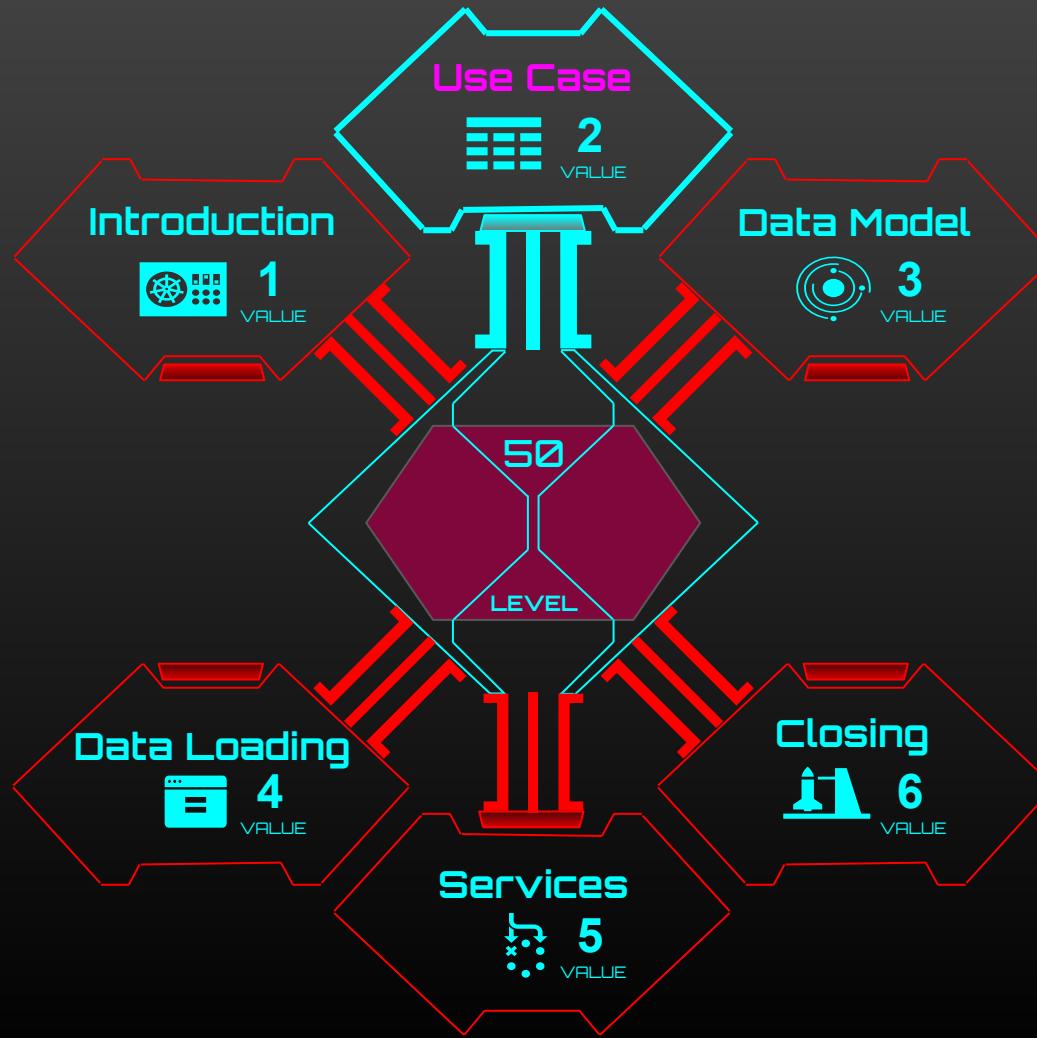
## › Cassandra Python Driver

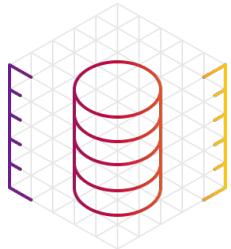


- Automatically installed on your  Gitpod instance.
- **pip install cassandra-driver**
- Download from <https://pypi.org>
- May require additional EPEL packages.



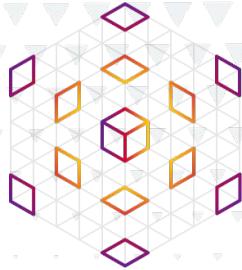
# Agenda

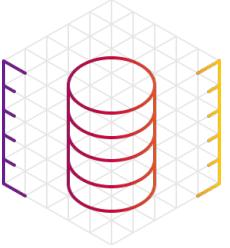


A 3D perspective icon of three red cylinders stacked vertically, representing a database.

## ➤ Use Cases

- Employee database
- Sales application

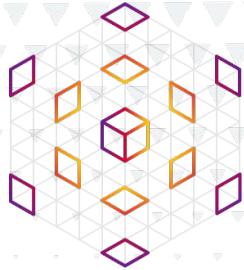


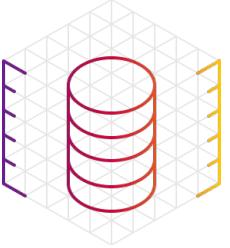


## ➤ Employee table

Keeps track of:

- Employee names
- Employee ID numbers



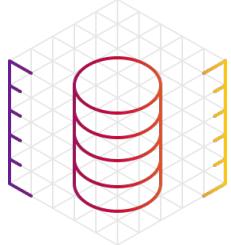
 A 3D perspective icon of a database server, represented by three red cylinders stacked vertically, set against a light gray grid background.

## ➤ Sales application



Keeps track of:

- Users
- Products
- Orders



## › Hands-on #1

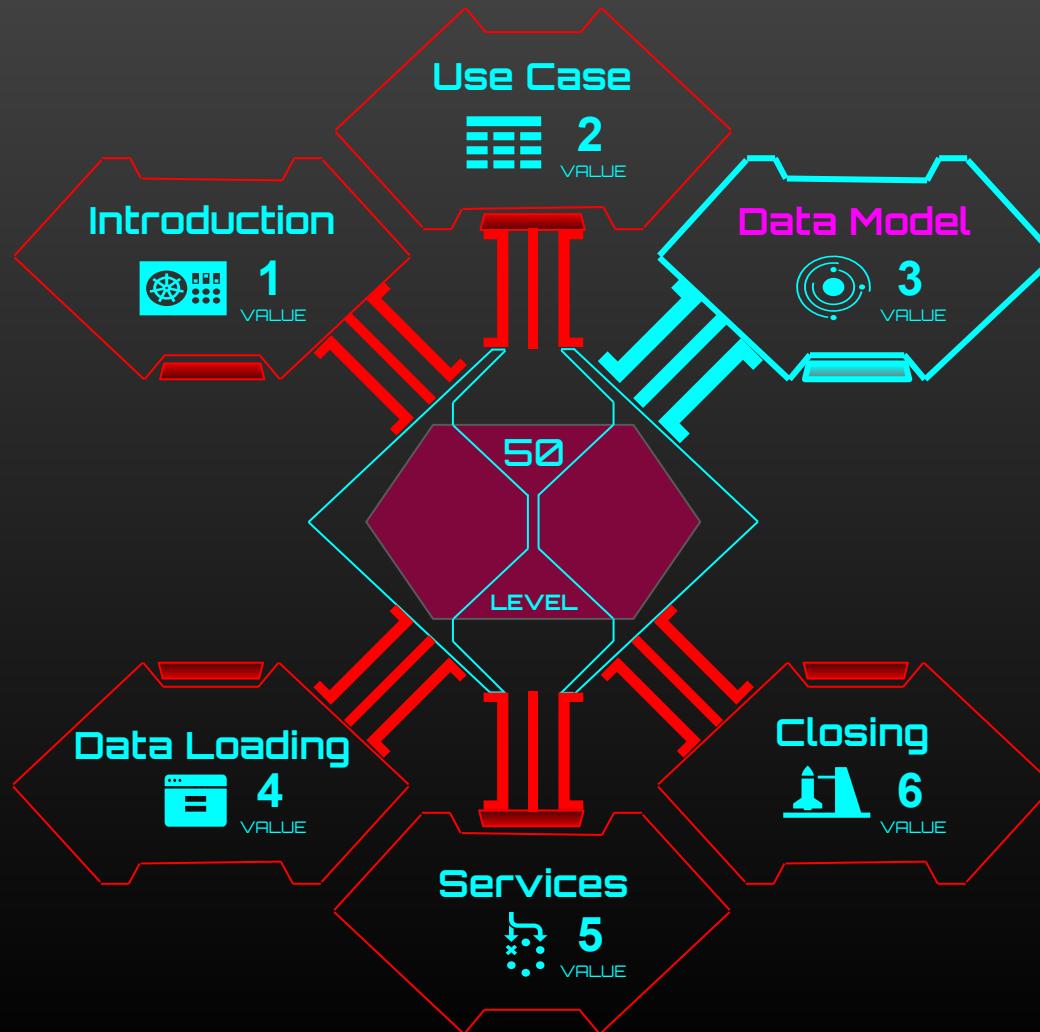
# Database Setup

- README step #2
  - Create **Astra DB** instance
- README step #3 (*stop before step #3a*)
  - Start **Gitpod** instance



[https://github.com/datastaxdevs/  
workshop-python-astra-app](https://github.com/datastaxdevs/workshop-python-astra-app)

# Agenda



# ➤ Distributed Data Modeling

Data modeling for:

- Performance
- Tables built to suit a query

Advantages:

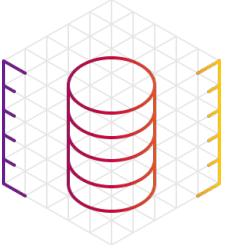
- Fast reads
- Simple query model

Employees			
userId	firstName	lastName	department
1	Edgar	Codd	Engineering
2	Raymond	Boyce	Engineering
3	Sage	Lahja	Math
4	Juniper	Jones	Botany

Astra DB

DATASTAX



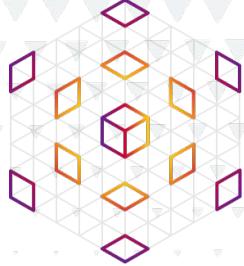


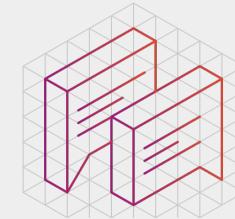
## ➤ Keyspace

Sales keyspace:

- Employee table
- Sales tables

Remember: **Keyspace == logical structure containing tables!**





## › Employee Table

- Supports query by **empid**.

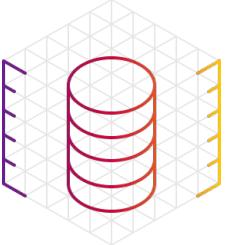
```
CREATE TABLE sales.emp (
    empid int,
    first_name text,
    last_name text,
    PRIMARY KEY (empid)
) ;
```

## › CQL



Have a look at [21\\_SimpleDemos/  
01\\_cassdemo\\_emp\\_cassandraTable.cql](#)

**Astra DB**



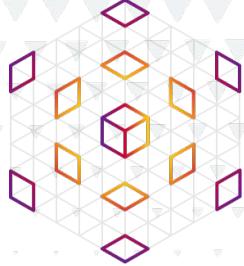
## › Hands-on #2

# Dev Env Setup

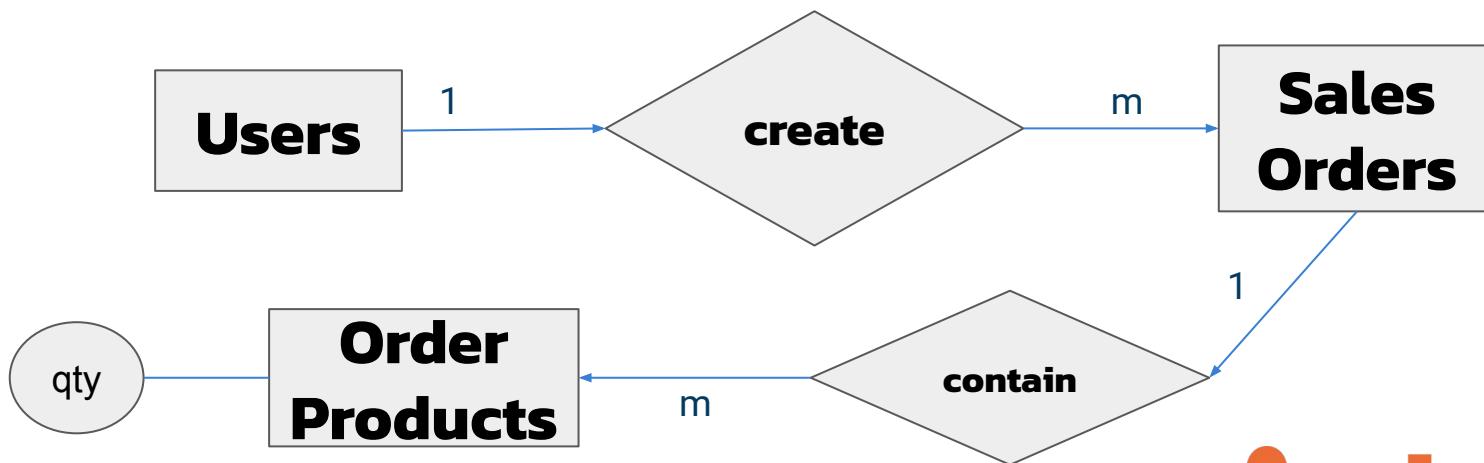
- README step #3a
  - Set Astra env vars
  - Verify Python driver
- README step #4
  - Simple Employee Demo



[https://github.com/datastaxdevs/  
workshop-python-astra-app](https://github.com/datastaxdevs/workshop-python-astra-app)

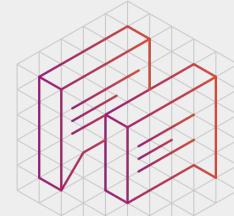


# ➤ Sales app data flow



**Astra DB**

# › Products table

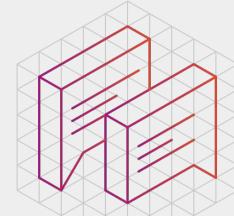


- Supports query by `product_id`.

```
CREATE TABLE sales.products (
    product_id          bigint PRIMARY KEY,
    product_category    text,
    product_code         text,
    product_description text,
    product_name         text,
    product_price        decimal,
    product_qoh          bigint
) ;
```

Astra DB

## ➤ Users table



- Supports query by `user_id`.

```
CREATE TABLE sales.users (
    user_id          bigint PRIMARY KEY,
    user_email_id   text,
    user_name        text,
    user_phone_number text,
    user_platform    text,
    user_state_code  text
) ;
```

# ➤ Orders table

```
PRIMARY KEY ((order_date, order_date_hour),  
order_timestamp, order_code)  
  
) WITH CLUSTERING ORDER BY (order_timestamp  
ASC, order_code ASC);
```



```
CREATE TABLE sales.sales_orders (  
    order_date                date,  
    order_date_hour            int,  
    order_timestamp            timestamp,  
    order_actual_shipping_date timestamp,  
    order_code                 uuid,  
    order_discount_percent     int,  
    order_estimated_shipping_date timestamp,  
    order_grand_total          decimal,  
    order_number_of_products   int,  
    order_total                decimal,  
    user_email_id              text,  
    user_id                    bigint,  
    user_name                  text,  
    user_phone_number          text,  
    user_platform              text,  
    user_state_code            text,
```

# › Order Products table



```
PRIMARY KEY ((order_date, order_code),  
product_id)  
  
) WITH CLUSTERING ORDER BY (product_id ASC);
```

```
CREATE TABLE sales_order_products (  
    order_date          date,  
    order_code          uuid,  
    product_id          bigint,  
    product_category    text,  
    product_code         text,  
    product_description text,  
    product_name        text,  
    product_price_each  decimal,  
    product_price_total decimal,  
    Product_sold_quantity int,
```

# › Primary Keys



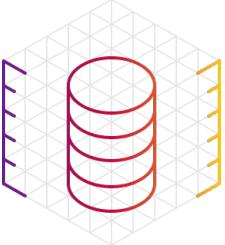
Remember: **Primary Key == how we can query the table!**

## › CQL



Have a look at [\*\*31\\_SalesApp\\_AutoSalesGenerator / 02\\_sales\\_create\\_tables.cql\*\*](#)

**Astra DB**



## › Hands-on #4

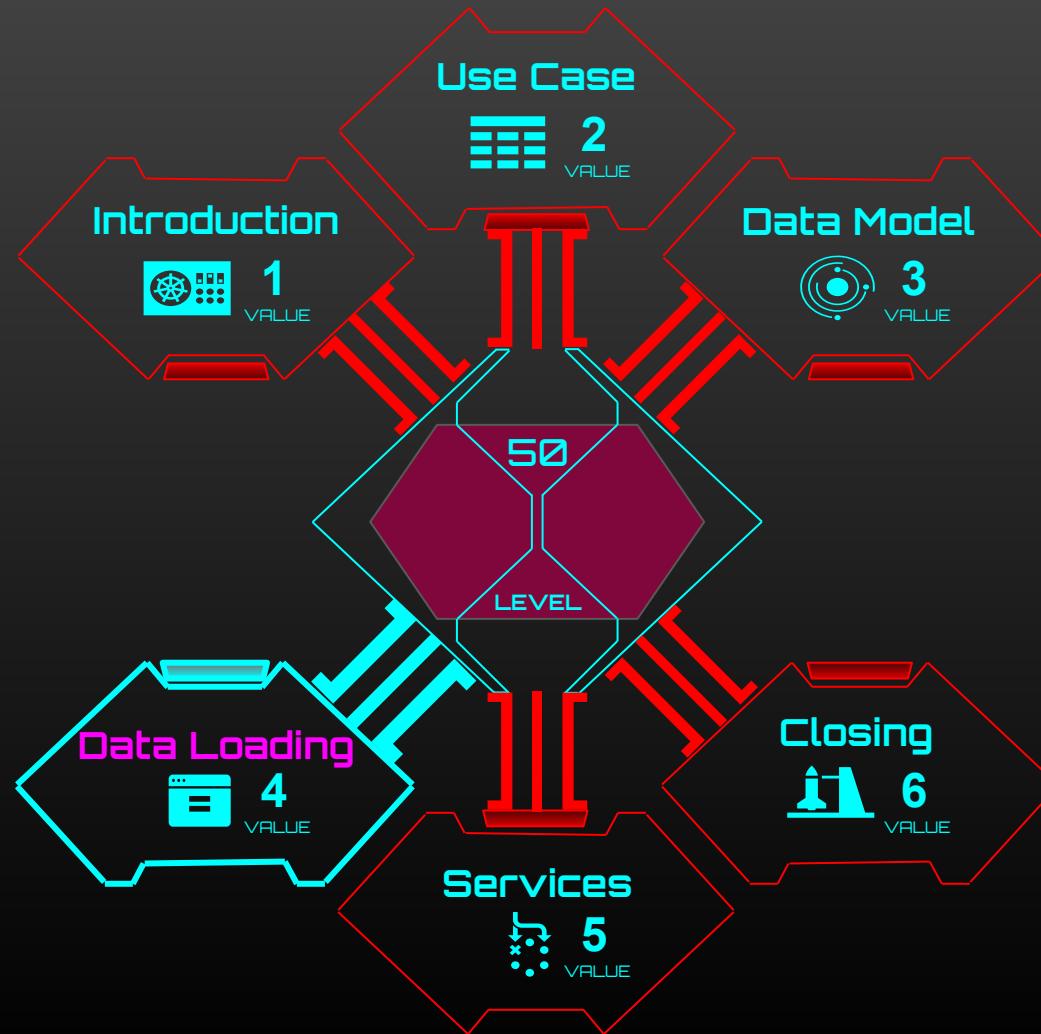
# Sales DB Setup

- README step #5
  - Build schema
- README step #5a
  - Load lookup tables



[https://github.com/datastaxdevs/  
workshop-python-astra-app](https://github.com/datastaxdevs/workshop-python-astra-app)

# Agenda



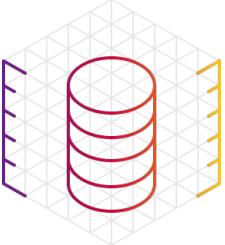
# › Python



Have a look at **31\_SalesApp\_AutoSalesGenerator /  
SalesApp\_GenerateOrders.py**

And  
**globalSettings.py**

**Astra DB**



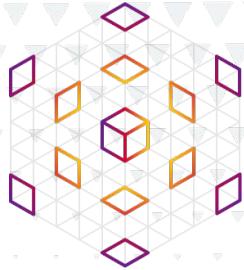
## › Hands-on #5

# Generate Data

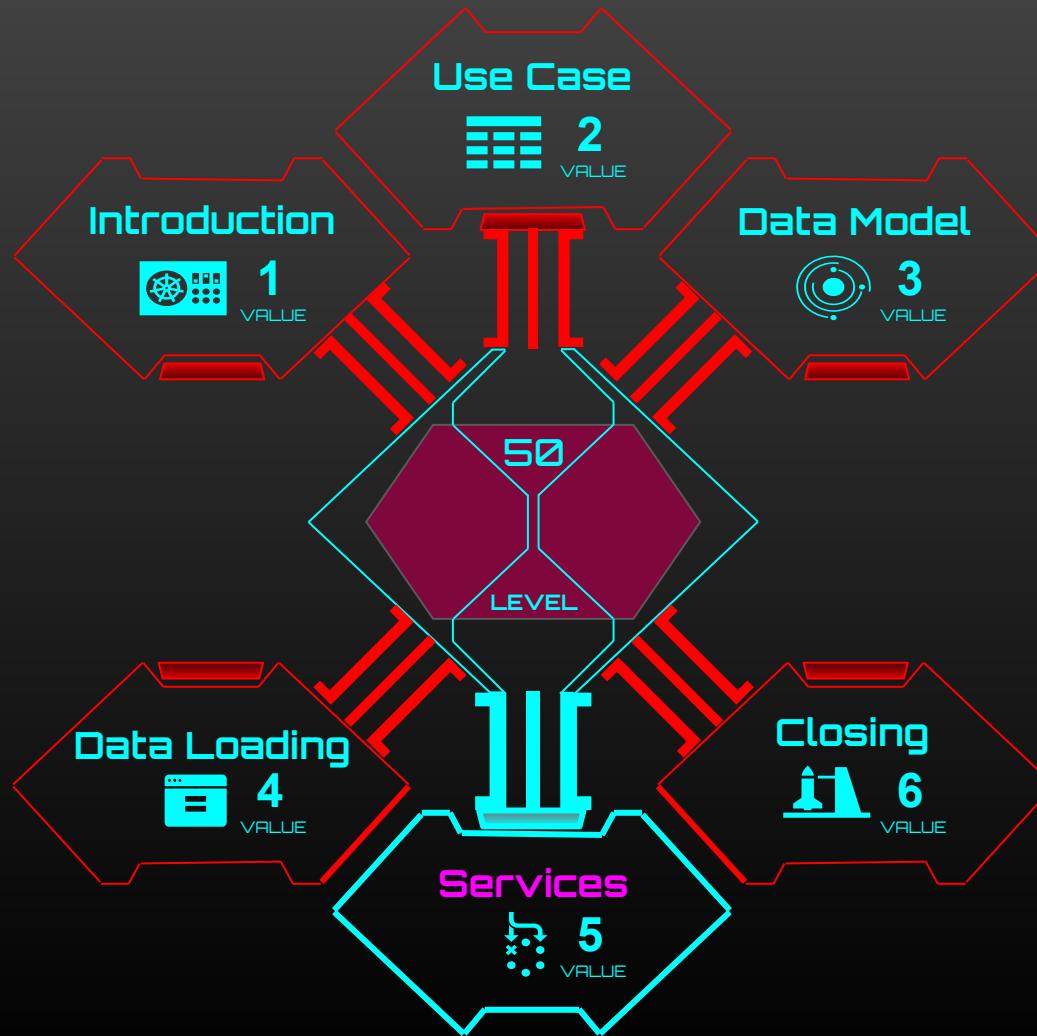
- README step #5b & 5c
  - Gen user, product & order data
- README step #5d
  - Verify data

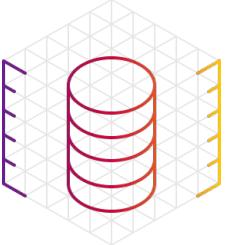


[https://github.com/datastaxdevs/  
workshop-python-astra-app](https://github.com/datastaxdevs/workshop-python-astra-app)



# Agenda





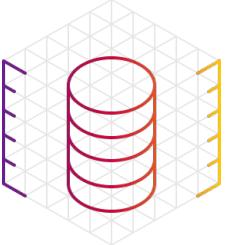
## ➤ Restful Service Layer



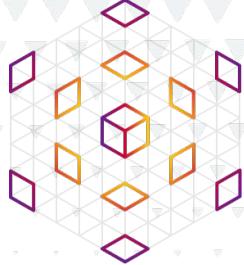
- **GET**
- **POST**
- **PUT**
- **DELETE**



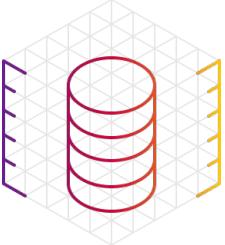
```
$ uvicorn salesAppApi:app
INFO:     Started server process [33283]
INFO:     Waiting for application startup.
INFO:     Application startup complete.
INFO:     Uvicorn running on http://127.0.0.1:8000
(Press CTRL+C to quit)
```



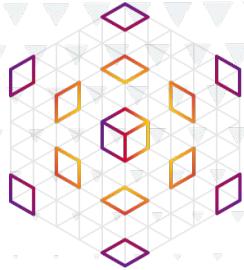
## ➤ Restful Service Layer



- User
  - /user/{id}
  - /users/{limit}
- Product
  - /product/{id}
  - /products/{limit}
- Order
  - /orders/date/{order\_date}/hour/{hour}
  - /orders/{limit}
- Order Products
  - /orderproducts/date/{order\_date}/code/{order\_code}



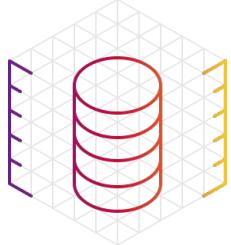
# ➤ Prepared statements



```
prepared_user_select = None

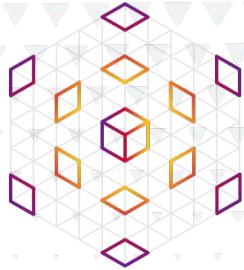
def get_prepared_user_select(session):
    global prepared_user_select
    if prepared_user_select is None:
        prepared_user_select = session.prepare("SELECT user_id, user_email_id,
    user_name, user_phone_number, user_platform, user_state_code FROM users WHERE
    user_id = ?")
    return prepared_user_select
```

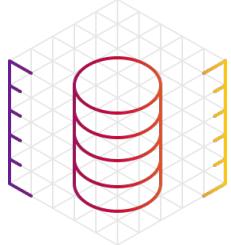
Remember: **Prepared statements == faster queries!**



# >User class

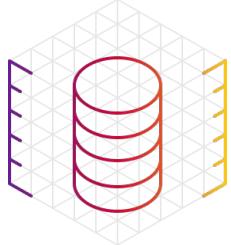
```
class User(BaseModel):  
    user_id: int  
    user_email_id: str  
    user_name: str  
    user_phone_number: str  
    user_platform: str  
    user_state_code: str
```





# ➤ Service code

```
@app.get('/user/{id}')
async def get_user(id: int,
session=Depends(get_db_session)):
    prepared =
        get_prepared_user_select(session)
    return [
        {
            'user_id': user.user_id,
            'user_email_id': user.user_email_id,
            'user_name': user.user_name,
            'user_phone_number': user.user_phone_number,
            'user_platform': user.user_platform,
            'user_state_code': user.user_state_code,
        }
        for user in session.execute(prepared_user_select, (int(id),))]
```



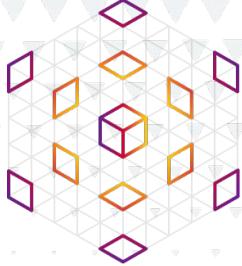
## › Hands-on #6

# Service calls

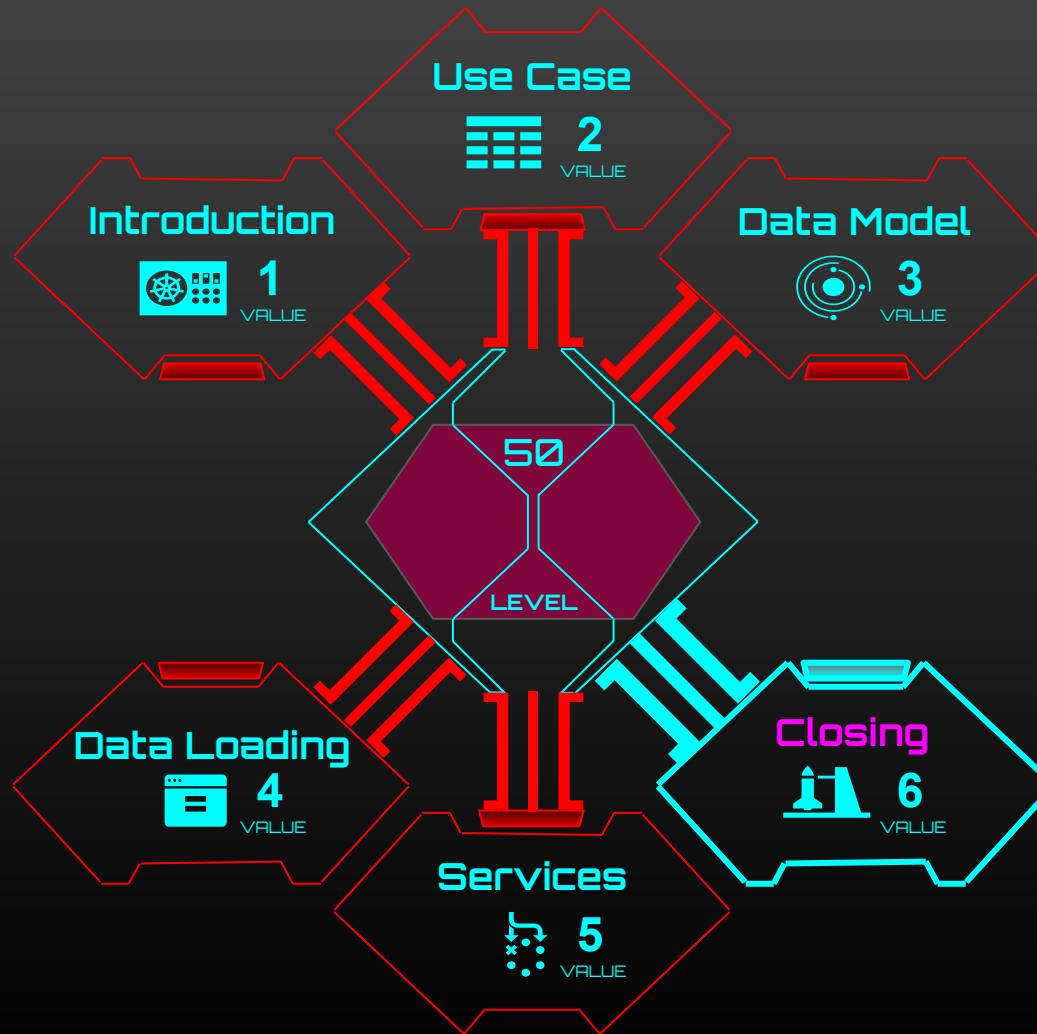
- README step #5e
  - Explore the API



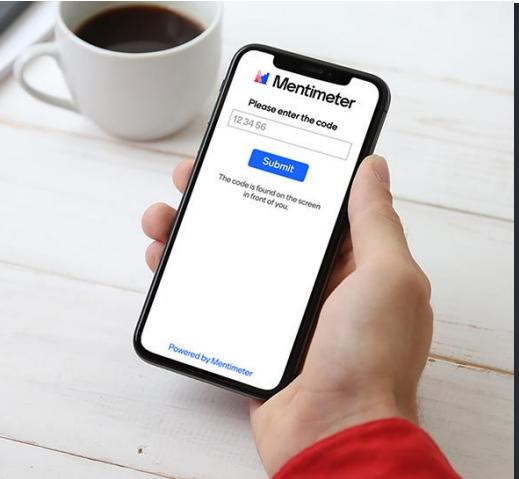
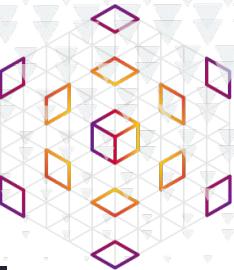
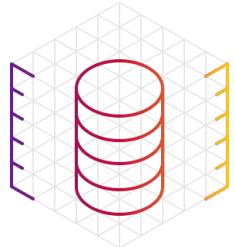
[https://github.com/datastaxdevs/  
workshop-python-astra-app](https://github.com/datastaxdevs/workshop-python-astra-app)



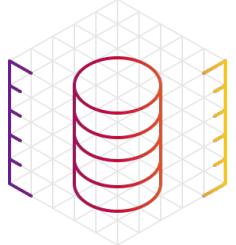
# Agenda



# › Quiz time on "Menti"!



**menti.com** ⇒ enter code  
Don't answer in YT chat  
Look at phone (not at YT)  
Answer fast to win!



# › Quiz Winners

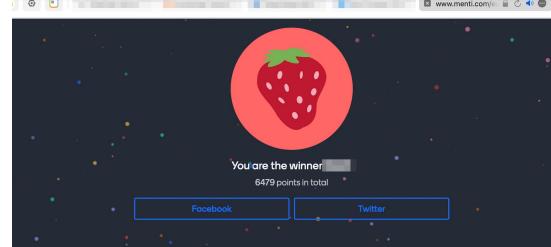
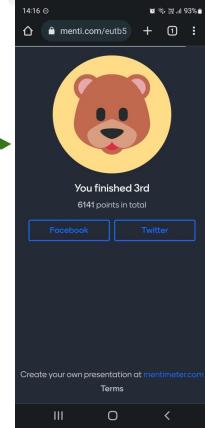
Congratulations to 1st, 2nd and 3rd place  
on the Menti quiz!

To claim your prize:

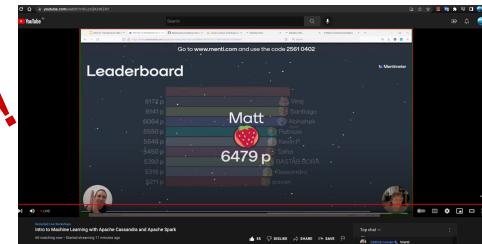
Take a screenshot of your Menti screen

Email it to **aaron.ploetz@datastax.com**

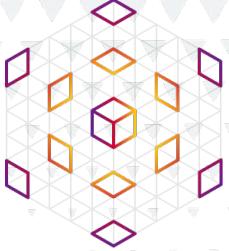
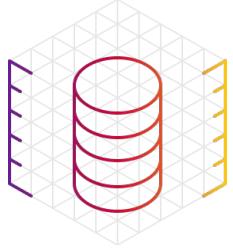
OK



NO!



# Our Discord community (18k+)



!discord

**PRESENTER — 1**

- David Jones-Gillard

**HELPER — 7**

- 012345
- AaronP
- BInary
- Chelsea Navo
- Jeremy Hanna
- John Sanda
- Patrick\_McFadin

**EN LIGNE — 560**

- samu-
- 6304-42J8
- Aahlya
- Abdurahim
- abhi3pathi
- Abhiis.s
- Abhineet
- Abirsh

19 novembre 2021

**RIGGITYREKT** Hier à 21:14  
I have a 5 node datacenter, 4 nodes are on dse version 5.1.20, one is on dse5.0.15. I am doing some mixed version testing for a class and the one node that is 5.0.15 is coming up as an analytics workload. I dont have /etc/default/dse, instead I am using /etc/init.d/dse-cassandra  
how do i make that node start in cassandra workload, not in analytics?

**RIGGITYREKT** Hier à 23:39  
Okay I found out my issue, when i started DSE 5.0.15 it had endpointsnitch set to DseSimpleSnitch, the rest of my cluster is using PropertyFileSnitch, when i change it to PropertyFileSnitch, it still uses the simple snitch config. looking at the docs i see there is a way to go to GossipingPropertyfileSnitch, but i need the property file one. I can wipe this dbs, do anything with this node to get this done. how do i fix this?  
@here

**Erick Ramirez** Aujourd'hui à 02:19  
mixed versions isn't supported and you're guaranteed to run into weird issues that will cause further problems down the track

**RIGGITYREKT** I have a 5 node datacenter, 4 nodes are on dse version 5.1.20, one is on dse5.0.15. I am doing some mixed v...  
**Cedrick Lunven** Aujourd'hui à 09:01  
When you start a node you have parameters -k for analytics, -g for graph and -s for search. To remove analytics check and remove -k

Envoyer un message dans #workshop-chat

[dtsx.io/discord](https://dtsx.io/discord)

DataStax Developers

@DataStaxDevs  
29.9K subscribers

HOME VIDEOS SHORTS LIVE PLAYLISTS COMMUNITY CHANNELS ABOUT

Recently uploaded Popular

San Jose ↓

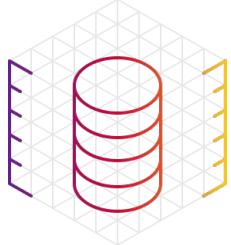
The Legend of DataStax - Cassandra Summit Training Day!

Cassandra Summit Training Day - Sunday March 12th

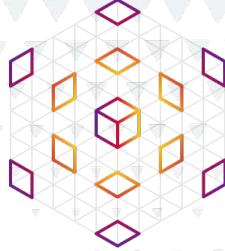
CDC for Astra DB Demo: Sink to Astra DB

92 views • 2 weeks ago

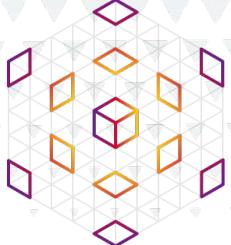
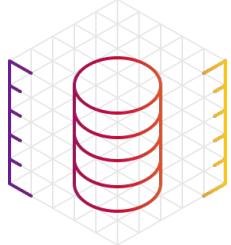
CDC for Astra DB Demo: ElasticSearch



Stay in touch!



- |                   |   |
|-------------------|---|
| <b>Discord:</b>   | <a href="https://dtsx.io/discord">dtsx.io/discord</a>               |
| <b>Academy:</b>   | <a href="https://academy.datastax.com">academy.datastax.com</a>     |
| <b>Workshops:</b> | <a href="https://datastax.com/workshops">datastax.com/workshops</a> |
| <b>YouTube:</b>   | <a href="#">@DataStax Developers</a>                                |



› You are not alone in your journey

Discord



[dtsx.io/discord](https://dtsx.io/discord)

StackOverflow<sup>(\*)</sup>



[stackoverflow.com/questions/tagged/cassandra](https://stackoverflow.com/questions/tagged/cassandra)

DBA Stack Exchange<sup>(\*)</sup>



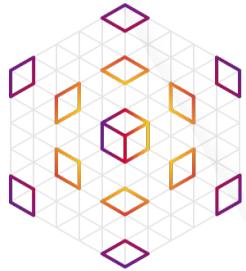
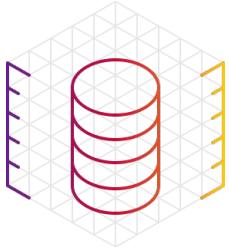
[dba.stackexchange.com/questions/tagged/cassandra](https://dba.stackexchange.com/questions/tagged/cassandra)

Sarma's courses



[udemy.com/user/oramad/](https://udemy.com/user/oramad/)

*(\*) For best results, follow the cassandra tag*



# Thank You