

# Connecting Your BI Tools to Cube



# Community Code of Conduct

- We want to foster an open and welcoming environment where everyone feels they belong in the Cube.js community.
- The full text of our Code of Conduct is available at [https://github.com/cube-js/cube.js/blob/master/CODE\\_OF\\_CONDUCT.md](https://github.com/cube-js/cube.js/blob/master/CODE_OF_CONDUCT.md)
- Any instances of inappropriate/unacceptable behavior can be reported to [conduct@cube.dev](mailto:conduct@cube.dev).

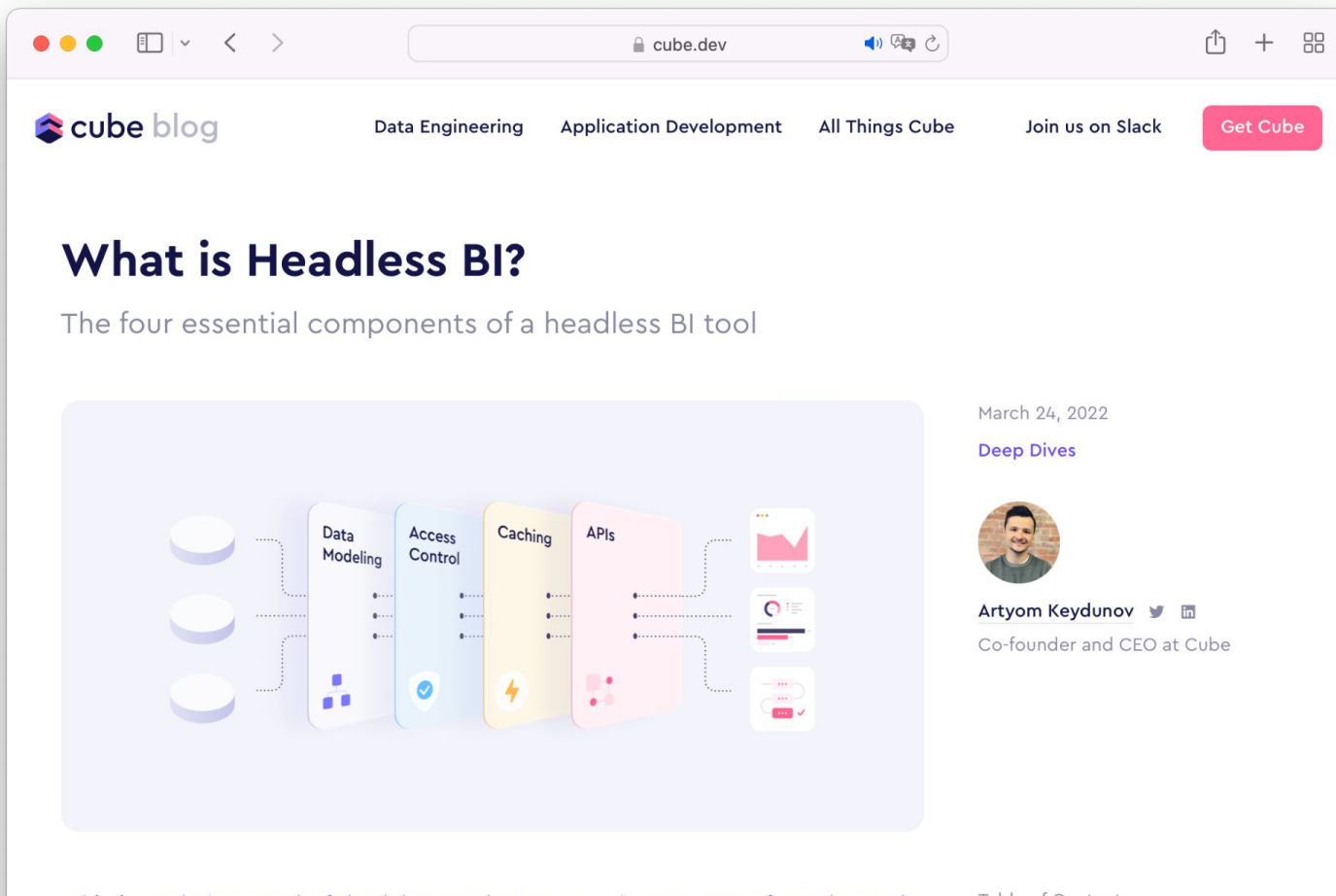
# Some quick notes

- If you have any questions during the workshop, please feel free to type them in the “Q&A” (on Zoom & YouTube).
- We will be using [Cube Cloud](#) for “hands-on” demos.
  - See the [workshop preparation guide](#).
- Recording of the workshop will be posted on the Cube’s [YouTube channel](#).
- All attendees will receive a post-event survey and we’d appreciate your feedback to help us with future events.
  - You will have a chance to select a charity that Cube will make a donation to:
    - [Girls who code](#), [oSTEM](#), or [The Last Mile](#)
- The next workshop 😊
  - Topic: Introduction to Cube Cloud
  - Date: August 31

# What we will discuss today

- Recap of the recent updates to the product (headless BI, SQL API)
- Recap of the [previous workshop](#) (SQL API and ext. support for BI tools)
- **Connecting and using SQL API with BI tools + Q & A session**
- **Multitenancy with SQL API**
- **Extended Q & A session**

# Headless BI



# Headless Business Intelligence

- Universal connectivity to [data sources](#)
  - Even multiple data sources at once
- **Data modeling layer** provides consistent metrics definitions
- **Access control layer** provides consistent security policy
- **Caching layer** provides consistent freshness and fast access to data
- **API layer** provides universal connectivity to [data consumers](#)
  - REST and GraphQL APIs — mostly for programmatic access
  - SQL API — mostly for BI tools and data notebooks



## Headless BI

### Data Sources

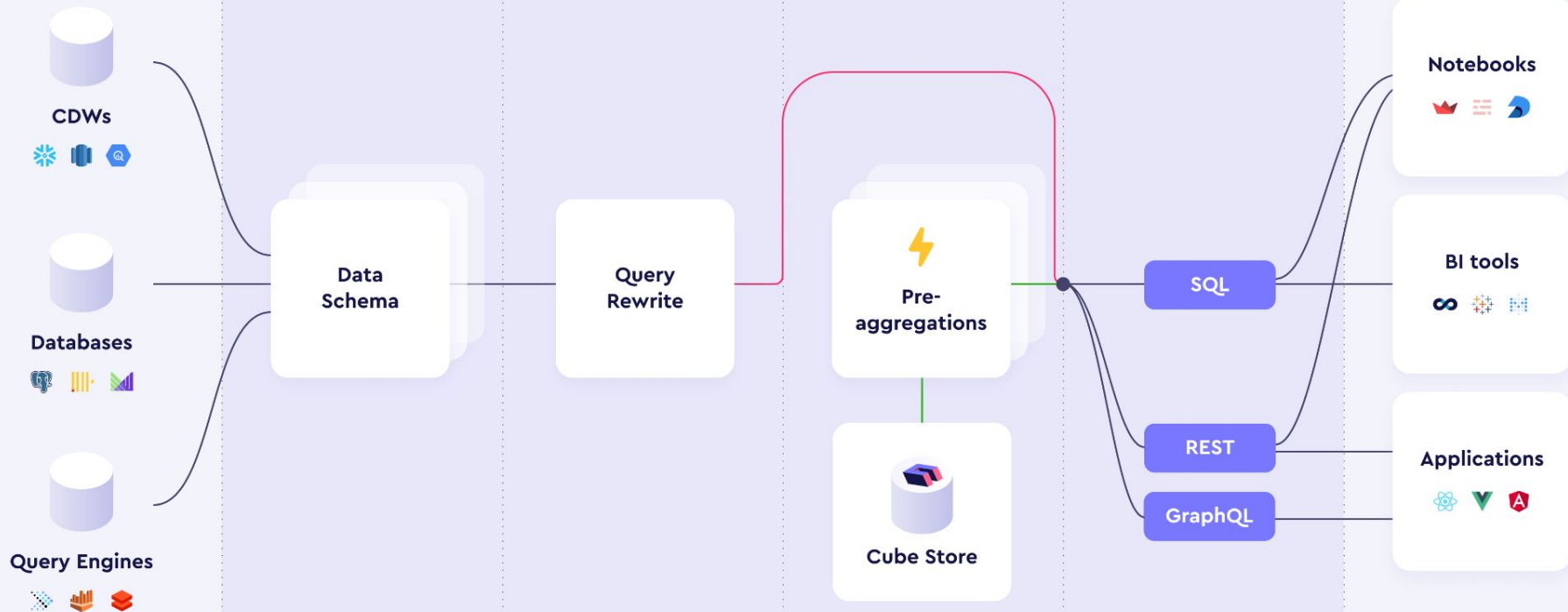
### Data Modeling

### Access Control

### Caching

### APIs

### Data Consumers



### Multitenancy

# Update to SQL API

cube.dev

cube blog

Data Engineering

Application Development

All Things Cube

Join us on Slack

Get Cube

# Announcing expanded BI support with our SQL API

Connect your favorite visualization tools to Cube.

cube

Data Modeling

Access Control

Caching

APIs

Headless BI

BI tools

Data apps & notebooks

May 24, 2022

News & Product Updates

Artyom Keydunov

Co-founder and CEO at Cube

cube.dev

# Expanded BI support with the SQL API

- [Preview of the SQL API](#) announced in November 2021
- Initial support for data notebooks and BI tools, e.g., [Apache Superset](#)
- A lot of thoughtful and positive feedback from Cube's users
- A lot of engineering and product work
  - [PostgreSQL dialect](#) as the SQL dialect
  - [Apache Arrow Datafusion](#) as the SQL execution engine
- [Update to the SQL API](#) announced in May 2022
- Support for many BI tools and data notebooks—and counting

# Epic: Connectors for additional BI tools #3906

Edit

New issue

Open

2 of 7 tasks

rpaik opened this issue on 10 Jan · 8



cube.dev



## Data Engineering

Data pipelines, data modeling, and BI tools to collect, store, and analyze data

### BI & Data Exploration

Platforms and tools for business intelligence bringing data insight to internal users.



### Data Notebooks

Interactive and collaborative platforms for data analytics.



### Cloud Data Warehouses (CDW)

Popular cloud-based scalable data stores optimized for BI and analytics.



### Query Engines

Tools for querying data from a variety of data sources within a single query.



### BI & data exploration tools



Superset / Preset



Tableau

You can learn more about SQL API on the [reference page](#), other BIs or visualization tools not listed here.

### Notebooks



Hex



Jupyter

### Low-code tools & internal tool builders

# Supported BI tools & data notebooks tools

See the list of [supported tools](#) in the docs.

- BI tools: [Apache Superset](#), [Tableau](#), [MS Power BI](#), [Metabase](#), [Sigma](#)
- Notebooks: [Deepnote](#), [Hex](#), [Jupyter](#), [Observable](#), [Streamlit](#)
- Coming soon/planned: [Google Data Studio](#), Google Sheets, MS Excel
- Also supported: low-code internal tool builders, front-end frameworks

Track progress and feel free to suggest [more tools](#) on GitHub.

# Connecting to SQL API

# Connecting and using SQL API (self-hosted)

See the [docs](#).

- Set `CUBEJS_PG_SQL_PORT` to enable the SQL API
- Provide `CUBEJS_SQL_USER` to set the user name
- Provide `CUBEJS_SQL_PASSWORD` to set the password
- Test with `psql -h 127.0.0.1 --port 5432 -U user --password`

If you're running Cube in Docker, don't forget to expose (map) the port.

Feel free check this Docker Compose [example config](#).

```

cube-workshop-sql-api — docker-compose - docker compose up — 188x44
igorlukanin@igorlukanin-laptop cube-workshop-sql-api % docker compose up
[+] Running 2/2
  # Container cube-workshop-sql-api-cube_with_sql_api-1 Created          0.1s
  # Container cube-workshop-sql-api-script-1 Created                    0.1s
Attaching to cube-workshop-sql-api-cube_with_sql_api-1, cube-workshop-sql-api-script-1
cube-workshop-sql-api-cube_with_sql_api-1 | Warning. There is no cube.js file. Continue with environment variables
cube-workshop-sql-api-cube_with_sql_api-1 | 🔥 Cube Store (0.30.26) is assigned to 3030 port.
cube-workshop-sql-api-cube_with_sql_api-1 | 🛡️ Authentication checks are disabled in developer mode. Please use NODE_ENV=production to enable it.
cube-workshop-sql-api-cube_with_sql_api-1 | 🌐 Dev environment available at http://localhost:4000
cube-workshop-sql-api-cube_with_sql_api-1 | 🐉 Cube SQL (pg) is listening on 0.0.0.0:5432
cube-workshop-sql-api-cube_with_sql_api-1 | 🚀 Cube.js server (0.30.26) is listening on 4000
cube-workshop-sql-api-cube_with_sql_api-1 | 2022-06-22 13:46:24,585 INFO [cubestored] <pid:20> Cube Store version 0.30.25
cube-workshop-sql-api-cube_with_sql_api-1 | 2022-06-22 13:46:24,589 INFO [cubestore::http::status] <pid:20> Serving status probes at 0.0.0.0:3031
cube-workshop-sql-api-cube_with_sql_api-1 | 2022-06-22 13:46:24,591 INFO [cubestore::metastore] <pid:20> Using existing metastore in /cube/conf/.cubestore/data/metastore
cube-workshop-sql-api-cube_with_sql_api-1 | 2022-06-22 13:46:24,691 INFO [cubestore::http] <pid:20> Http Server is listening on 0.0.0.0:3030
cube-workshop-sql-api-cube_with_sql_api-1 | 2022-06-22 13:46:24,691 INFO [cubestore::mysql] <pid:20> MySQL port open on 0.0.0.0:13306
cube-workshop-sql-api-script-1 | schemaname | tablename
cube-workshop-sql-api-script-1 | -----+-----
cube-workshop-sql-api-script-1 | public    | Orders
cube-workshop-sql-api-script-1 | (1 row)
cube-workshop-sql-api-script-1 |
cube-workshop-sql-api-script-1 exited with code 0

```

# Connecting and using SQL API (Cube Cloud)

See the [workshop preparation guide](#).

- We need a Cube instance — let's [take one](#) in Cube Cloud
- We can switch our instance to use the latest version of Cube

master

Enter Development Mode

API is ready (Build #25)

Copy API URL

Overview

Playground

Schema

Queries

Pre-Aggregations

Metrics

Settings

## Overview

aws US West (Oregon)

### REST API

[How to connect your application](#)

<https://operational-ashippun.aws-us-west-2.cubecloudapp.dev/cubejs-api/v1>

### SQL API

[How to connect your BI tool](#)

With this new API, Cube can now function as a headless BI layer to provide metrics to any SQL-compatible querying and visualization tool.

### GraphQL API beta

[How to connect your application](#)

<https://operational-ashippun.aws-us-west-2.cubecloudapp.dev/cubejs-api/graphql>

### Resources & Logs

[Manage resources](#)

Single instance

Build #25

✓ Cube API

✓ Cube Store

Single instance deployment is designed for development use cases.

Consider [switching to cluster type](#) for production workload.

### Activity Log

|                            |               |                 |
|----------------------------|---------------|-----------------|
| ✓ Cube Sql API enabled     |               | Jun 20 at 16:38 |
| ✓ Build #25                | igor@cube.dev | Jun 20 at 16:31 |
| 6980f7fb: "Initial commit" |               |                 |
| ✓ Env var update           |               | Jun 20 at 16:31 |
| ✓ Init deployment          |               | Jun 20 at 16:30 |

You can connect your Git repository to Cube Cloud

[Connect to GitHub](#)

# Business Intelligence tools

- On the [previous workshop](#), we tried [Superset](#) and [Tableau](#)
- Today... let's try [Power BI](#) and [Metabase](#)
  - We'll also check dev mode + a bit of data modeling

# Power BI

# Metabase

# Data Notebooks

- On the [previous workshop](#), we tried [Deepnote](#)
- Today... let's try [Observable](#) and [Hex](#)
  - We'll also check multitenancy later

# Observable

# Q&A

# Multitenancy

# Multitenancy

- [Multitenancy](#) allows to segregate queries from different users
- Multitenancy spans across all Cube's layers



## Headless BI

### Data Sources

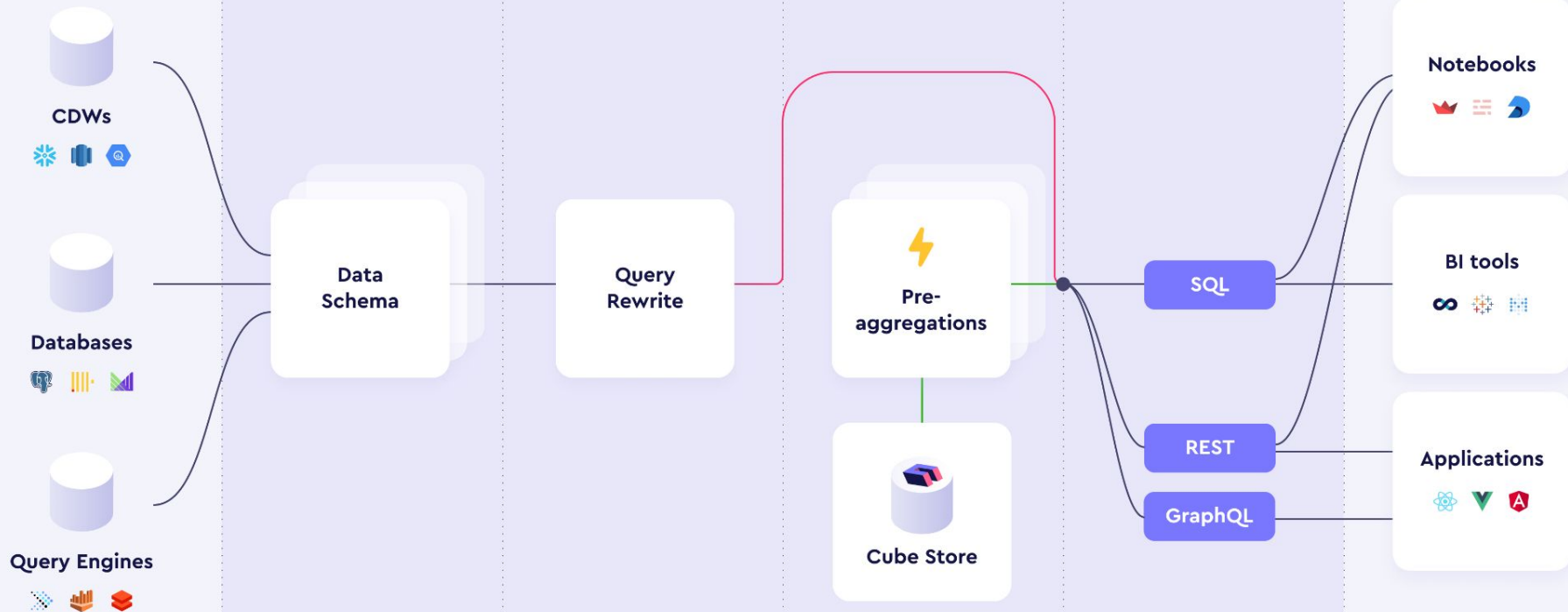
### Data Modeling

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### Multitenancy

# Multitenancy

- [Multitenancy](#) allows to segregate queries from different users
- Multitenancy spans across all Cube's layers
- Often, you will use multitenancy to fine-tune access control to data
- Supported in the REST API and GraphQL API via [JSON Web Tokens](#)
- Supported in the SQL API via the [custom authentication](#)
  - [checkSqlAuth](#) + [queryRewrite](#)
  - In the future: `__user`

# Hex

# Q&A

# To learn more visit...

- Documentation:
  - SQL API: <https://cube.dev/docs/backend/sql>
- Blog:
  - <https://cube.dev/blog/expanded-bi-support>
  - <https://cube.dev/blog/headless-bi>
  - <https://cube.dev/blog/category/data>
- Community support:
  - Slack: <https://slack.cube.dev>

