Agenda (Day 1):

a) CDP Overview (25 minutes)
b) CDW Overview and Benefits (15 minutes)
c) Hands-on (step-by-step below) (105 minutes[1 hour and 45 minutes] plus 5-10 minute break)
    i) Part 1 - Data Catalog (20 minutes)
    ii) Part 2 - Create a Virtual Warehouse and Run Queries (45 minutes)
    iii) Part 3 - Data Visualization (25 minutes)
    iv) Part 4 - Import a File into a Table (15 minutes)
d) Q&A/Wrap-up (10-15 minutes)

Step-by-step instructions:

Part 1 - Data Catalog [20 minutes]

Overview: What is Cloudera Data Catalog?

Data Catalog is a service that enables you to understand, manage, secure, and govern data assets across the enterprise. Data Catalog helps you understand data across multiple clusters and across multiple CDP environments. You can search to locate relevant data of interest based on various parameters. Using Data Catalog, you can understand how data is interpreted for use, how it is created and modified, and how data access is secured and protected.

Purpose: Search for a dataset (table) in Data Catalog, called “flights”.

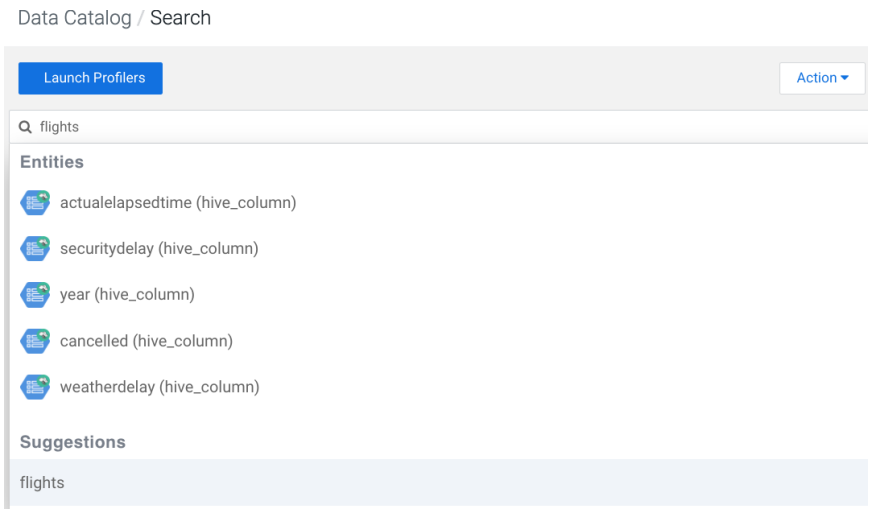
- Find what database(s) the table “flights” is located.
- Find out at least one year that the “flights” table was generated from.
- Find out how many columns the table “flights” contains.

1) Open CDP, using the “admin” user within the Test Drive link.

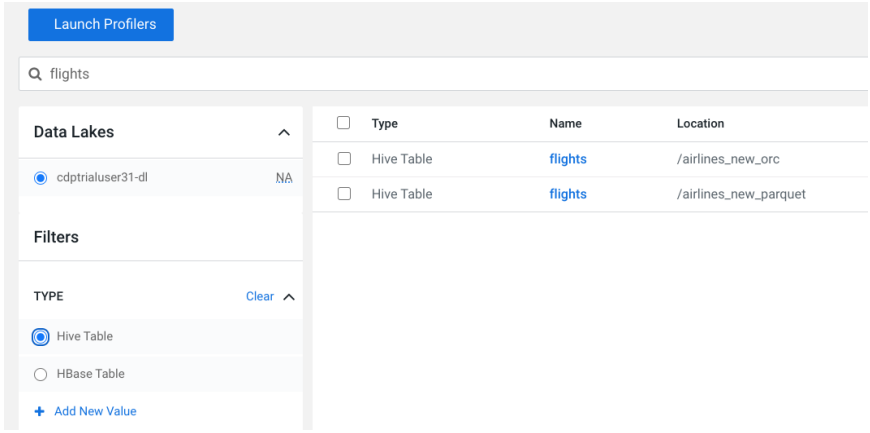
Your link should look something like (remember click the link in your email not the link below)
http://login.trycdp.com/auth/realms/trycdp-trialxx/protocol/saml/clients/samlclient?tn=trialxx_admin@trycdp.com&p=X
*xx represents the trial user #
*X represents the password

2) Click the “Data Catalog” within the CDP Home Screen

3) Type “flights” in the search box and click “flights” under suggestions

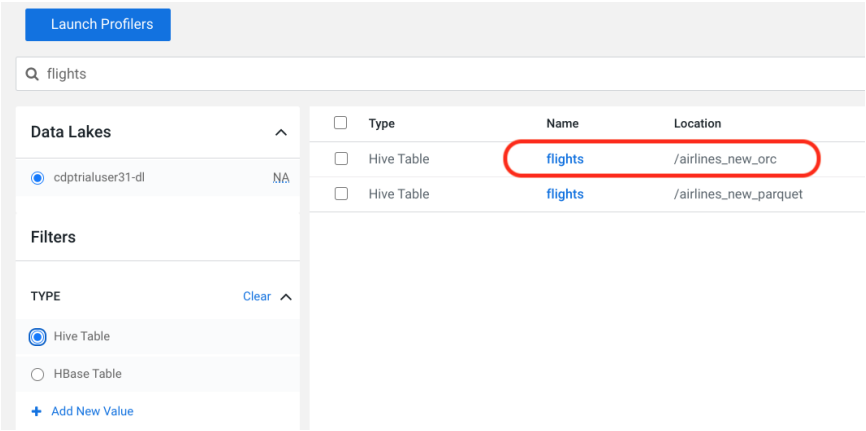


4) Click “Hive Table” under Filters on the left

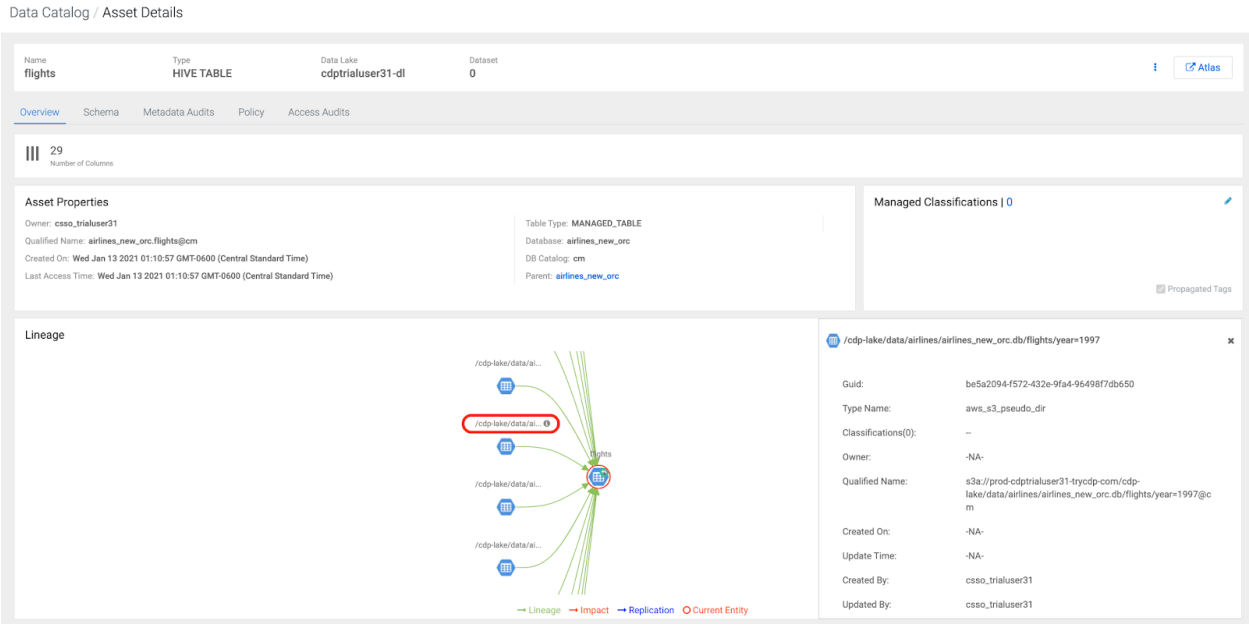


*Find what database(s) the table “flights” is located.

5) Click “flights” where the Location = /airlines_new_orc



6) Zoom into the Lineage and scroll over one of the /cdp-lake/data, clicking the “i” for more information



*Find out at least one year that the “flights” table was generated from.
*Find out how many columns the table “flights” contains.

Part 2 - Create a Virtual Warehouse and Run Queries [45 minutes]

Overview: What is Cloudera Data Warehouse?

We will explore features of Cloudera Data Warehouse (CDW) by performing some data exploration and create dashboards to share our results to a wider audience
We will be taking a look at a generated data set from a mock airline company containing flights information from its fleet of aircraft.

A virtual warehouse represents virtual compute resources to access data that is stored in a database catalog. This lets you create or destroy compute resources, auto-scale, or separate resources across different workloads, all running on the same underlying data.

CDW let's you choose from a set of default resources based on your predicted workload as well as give you fine grained control over autoscaling and timeout features so you can fine tune your system to be most cost effective.

Purpose: Create a virtual warehouse and run queries, answering the questions below:

- What are the top 5 visited destinations by year from (1995-2008)?
- What are the top 10 routes (origin and dest) that have seen maximum diversions?
- Which three months have seen the most number of cancellation due to bad weather?

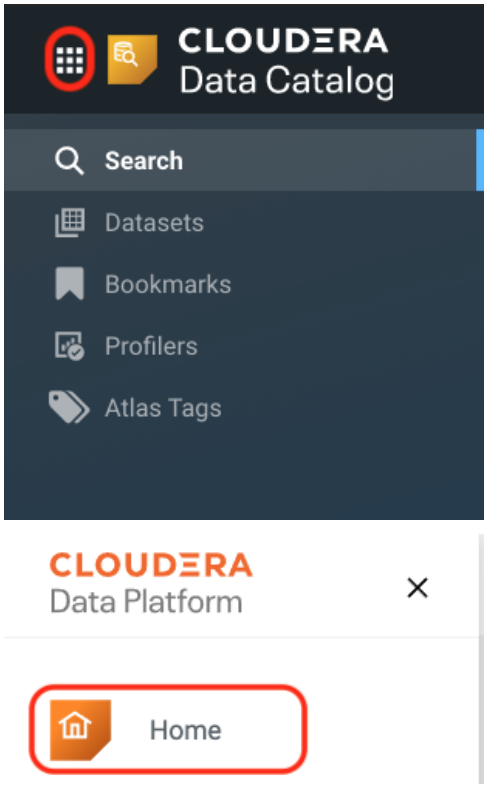
1) Open CDP, using the “admin” user within the Test Drive link.

Your link should look something like (remember click the link in your email not the link below)
http://login.trycdp.com/auth/realms/trycdp-trialxx/protocol/saml/clients/samlclient?tn=trialxx_admin@trycdp.com&p=X
*xx represents the trial user #
*X represents the password

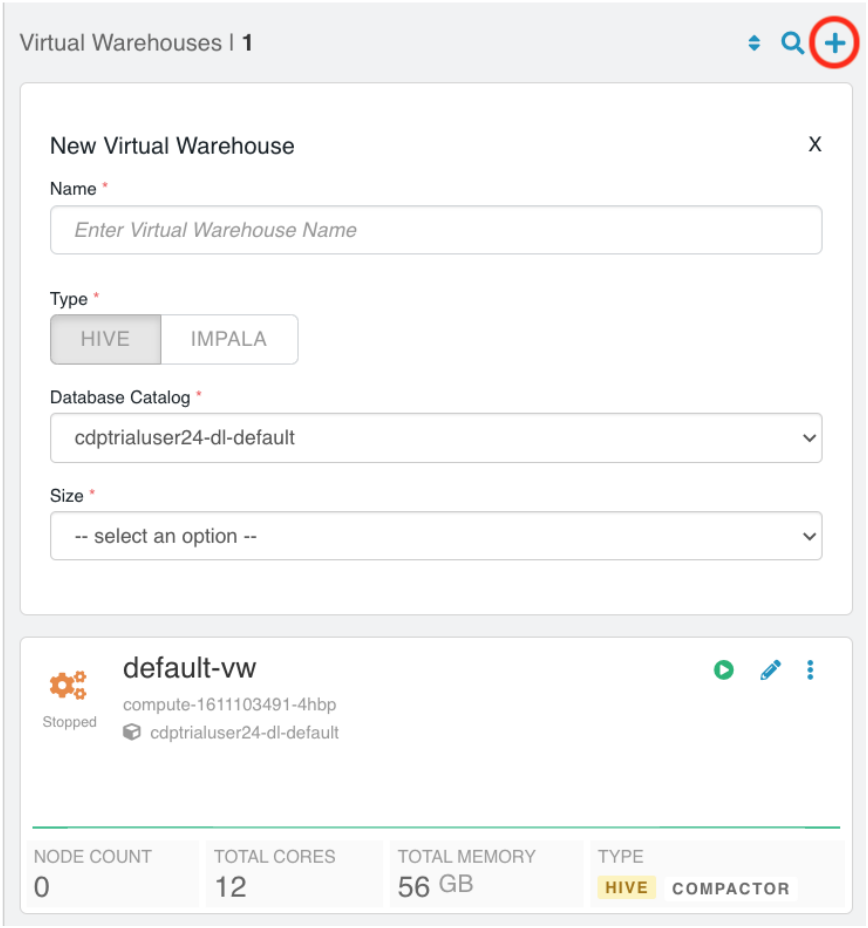
2) Click the “Data Warehouse” within the CDP Home Screen

How do you get to the CDP Home Screen?

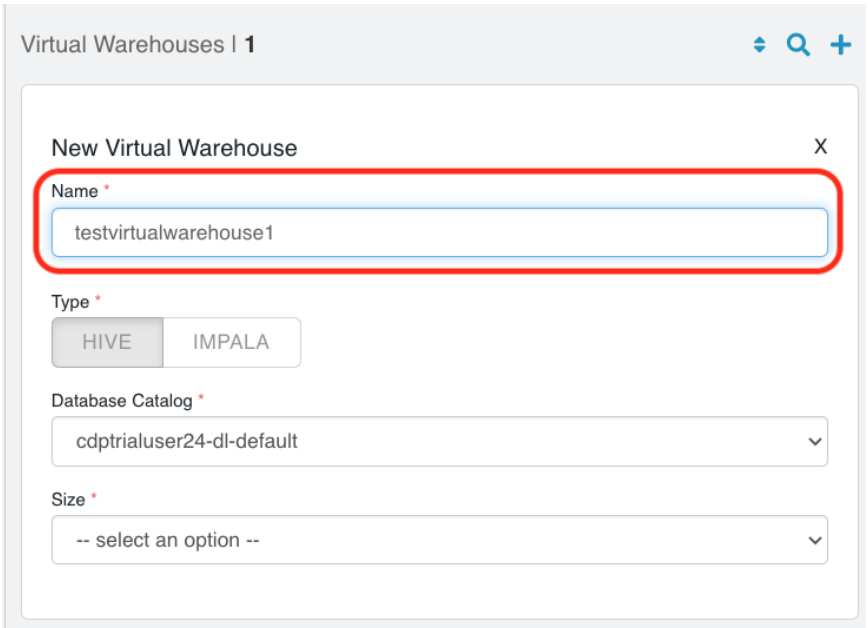
- From any experience such as “Data Catalog”, click the 9 square at the top left and then click “Home”



3) Click the “+” at the top right next to “Virtual Warehouses”

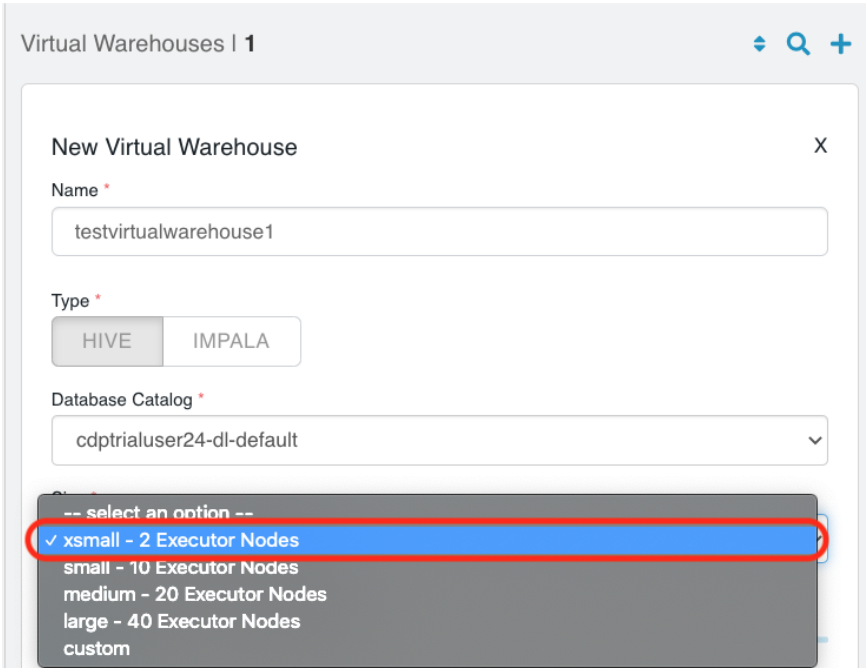


4) Enter a name for your New Virtual Warehouse



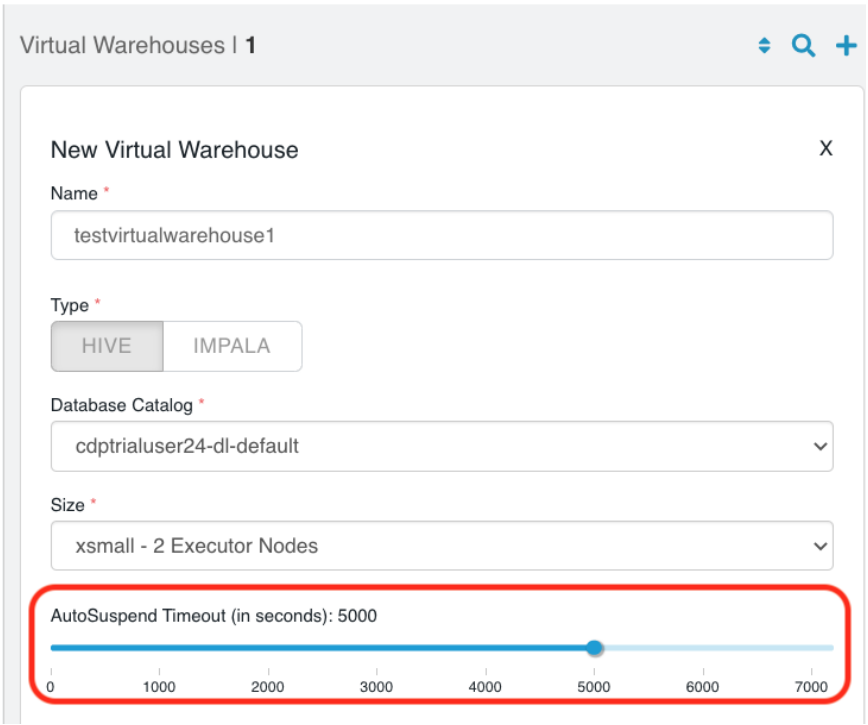
5) Select the Size of “xsmall - 2 Executor Nodes”

*How do I choose a size? Initial concurrent users



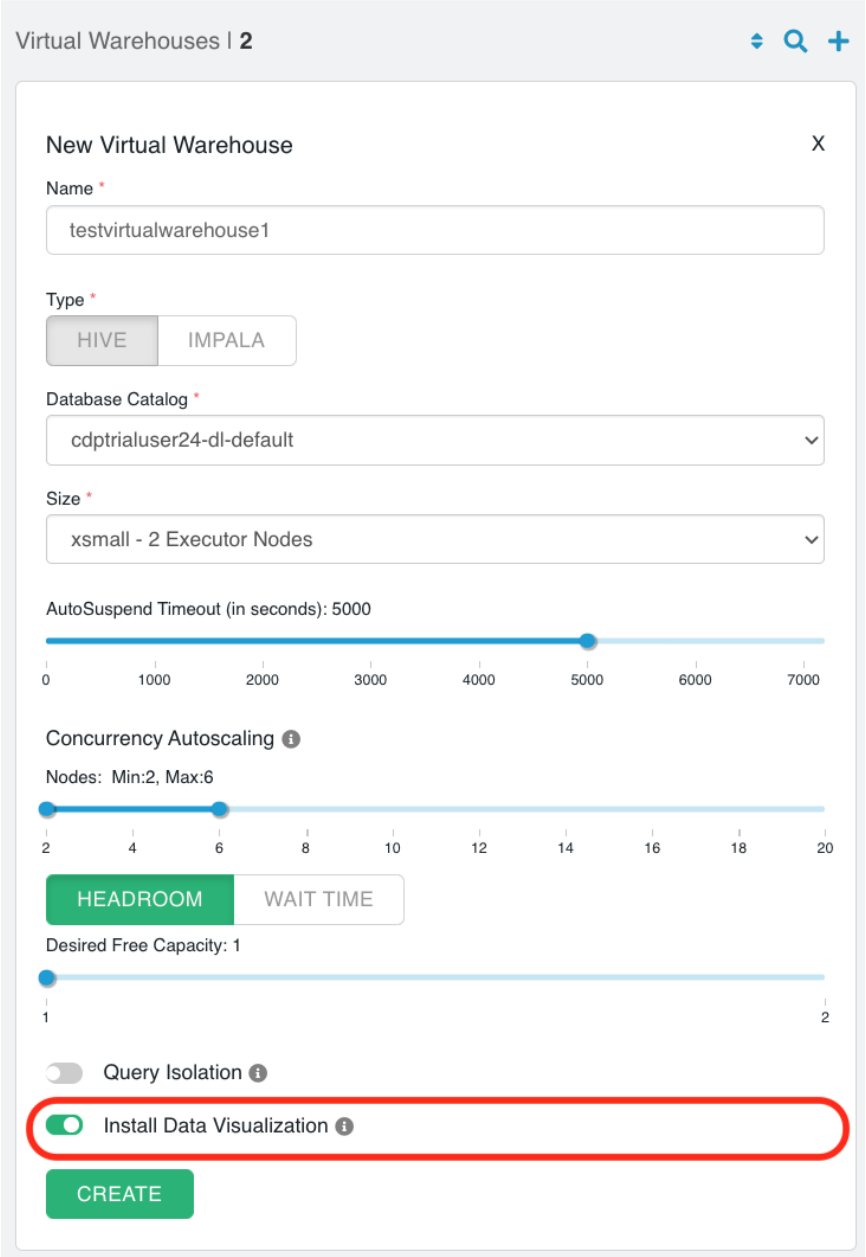
6) Set the AutoSuspend Timeout (in seconds) between 4500 and 5500:

*What is AutoSuspend Timeout? Automatically spin-down unused resources after timeout occurs.



7) Choose “Install Data Visualization” to be on

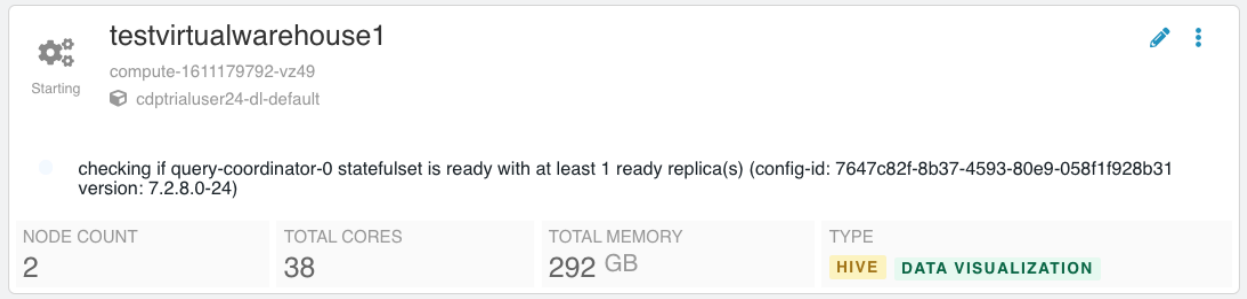
*Allowing for Data Visualizations in Part 3

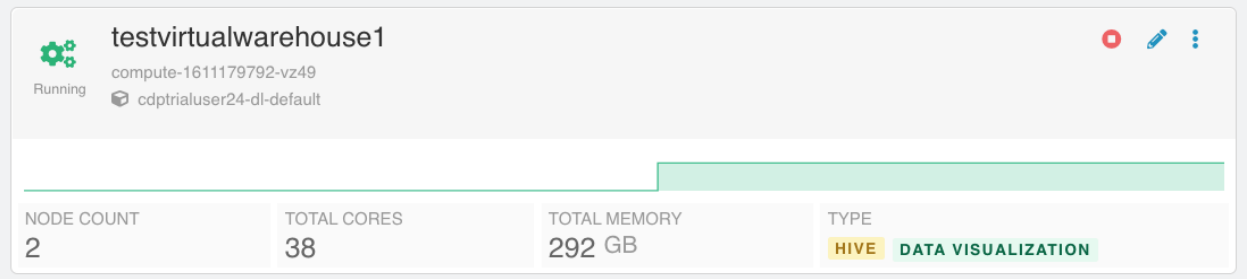


8) Click “Create” to create your Virtual Warehouse

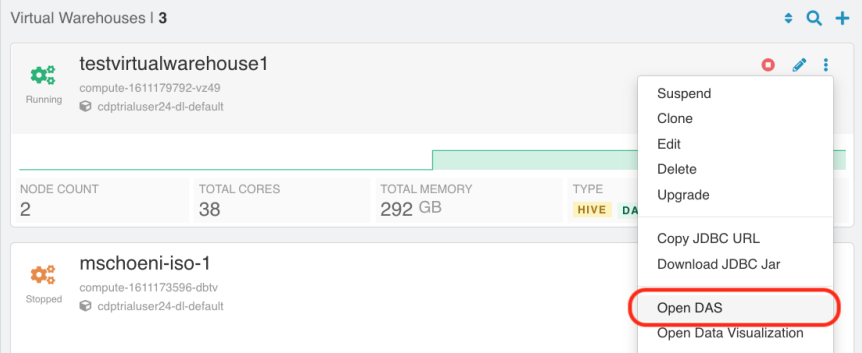
*Allow for approximately 5 minutes for your Virtual Warehouse to become available for use

When available for use, “Starting” will change to “Running” as shown below

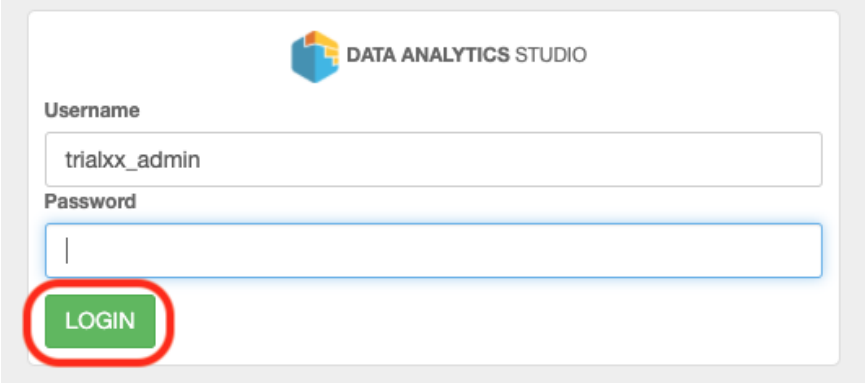




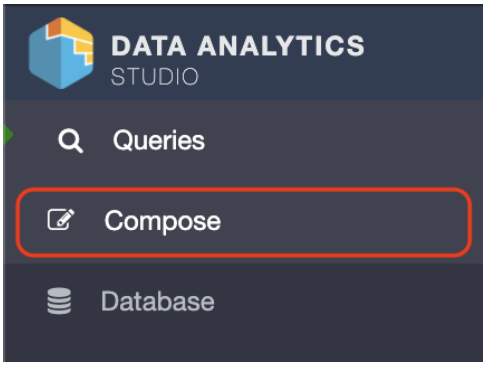
9) Once your Virtual Warehouse is “Running”, click the line in the top right and then click “Open DAS”



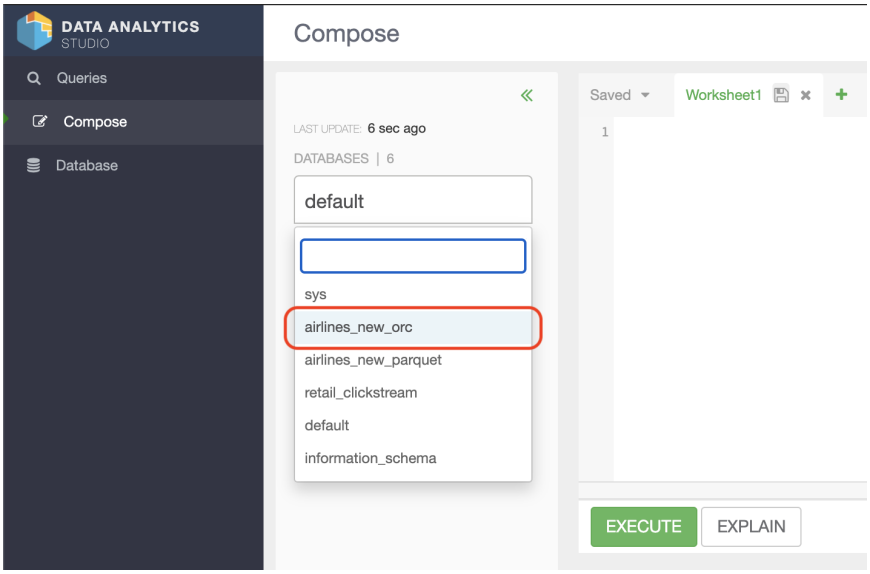
10) Enter the login information from step #1 above using the user, then click “LOGIN”
*Changing “trialxx_admin” to the trail user you’re using and password defined by “X” in #1 above



11) Click on “Compose”, to write the queries below to answer questions on the table “flights”

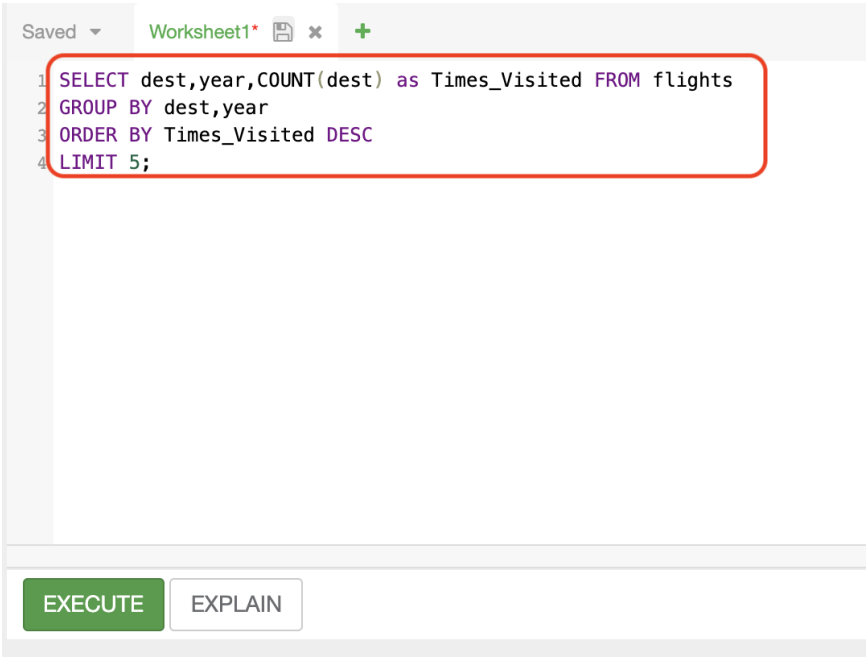


12) Choose the database “airlines_new_orc” that we found in Part 1 “Data Catalog”



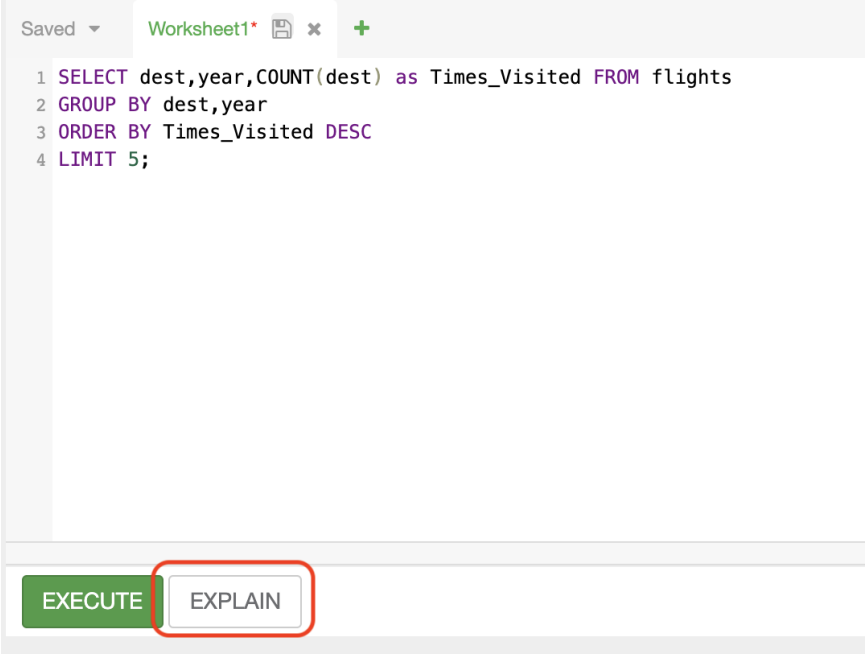
13) Enter the following query in Worksheet1, answering the question “show me the top 5 visited destination by year from (1995-2008)”

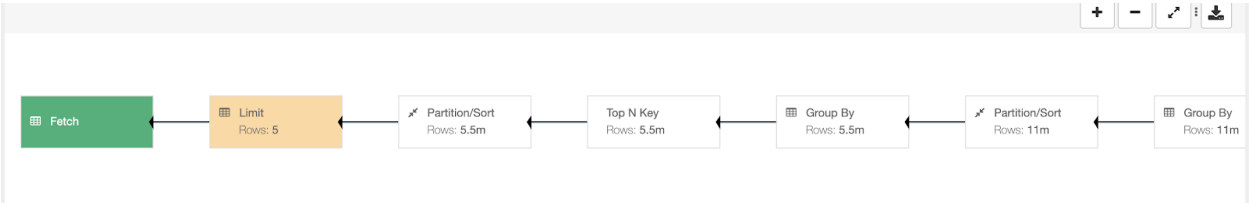
```
SELECT dest,year,COUNT(dest) as Times_Visited FROM flights
GROUP BY dest,year
ORDER BY Times_Visited DESC
LIMIT 5;
```



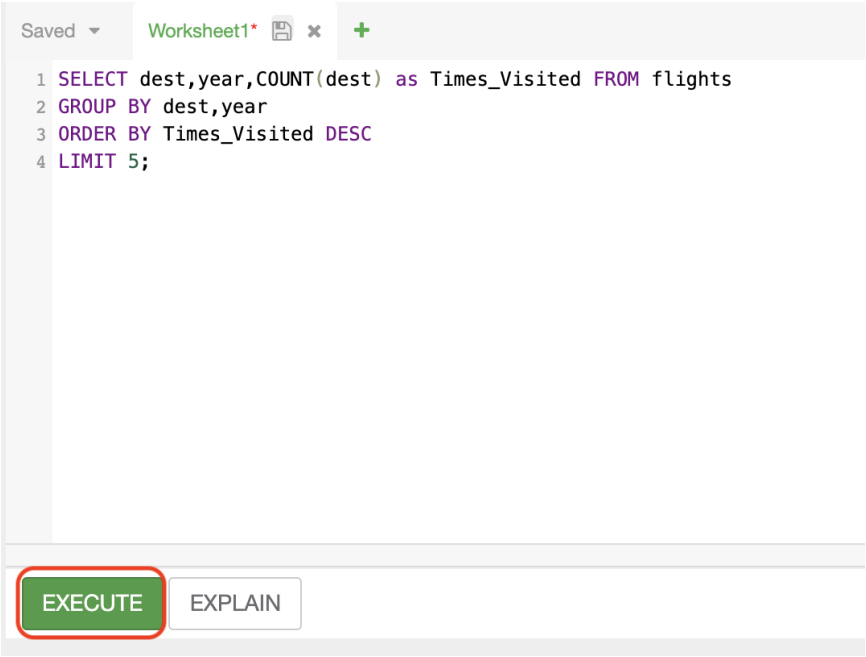
14) Click “EXPLAIN” to see the visual explain plan prior to running the query

*Not required to execute the query - this gives us a plan on exactly what the query is doing

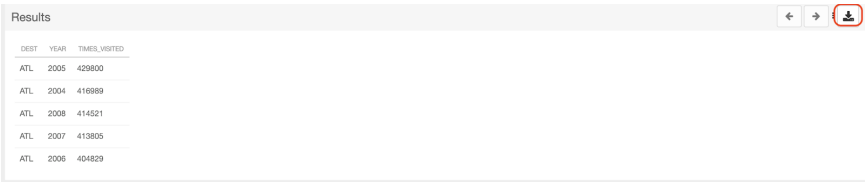




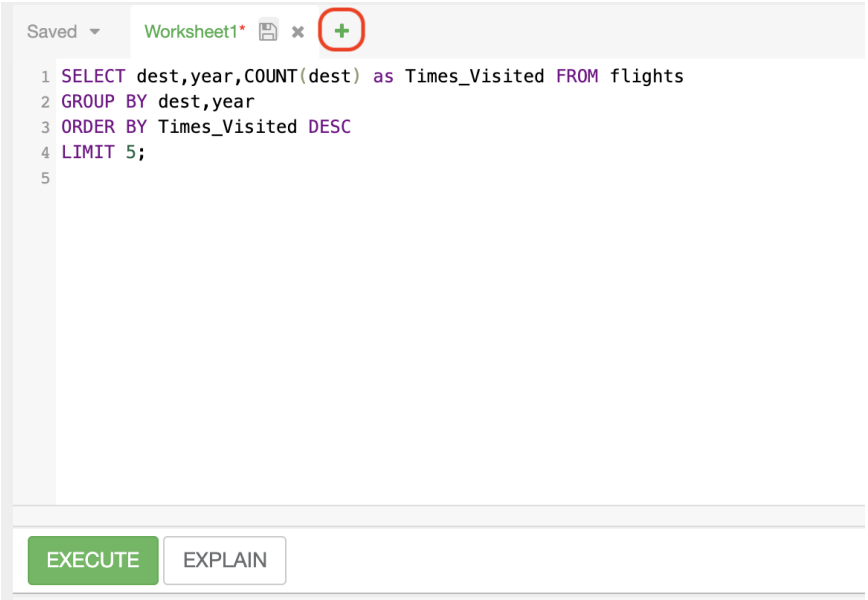
15) Click “EXECUTE” to execute the query, answering the question “show me the top 5 visited destination by year from (1995-2008)”



16) Click the download button on the top right, to download the results as a CSV file

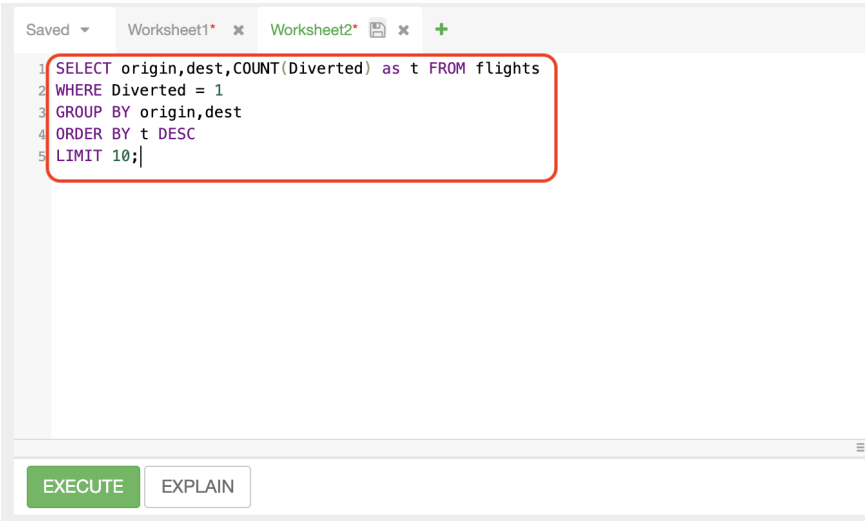


17) Going back to “Worksheet 1”, click the “+” to add another Worksheet for the next query

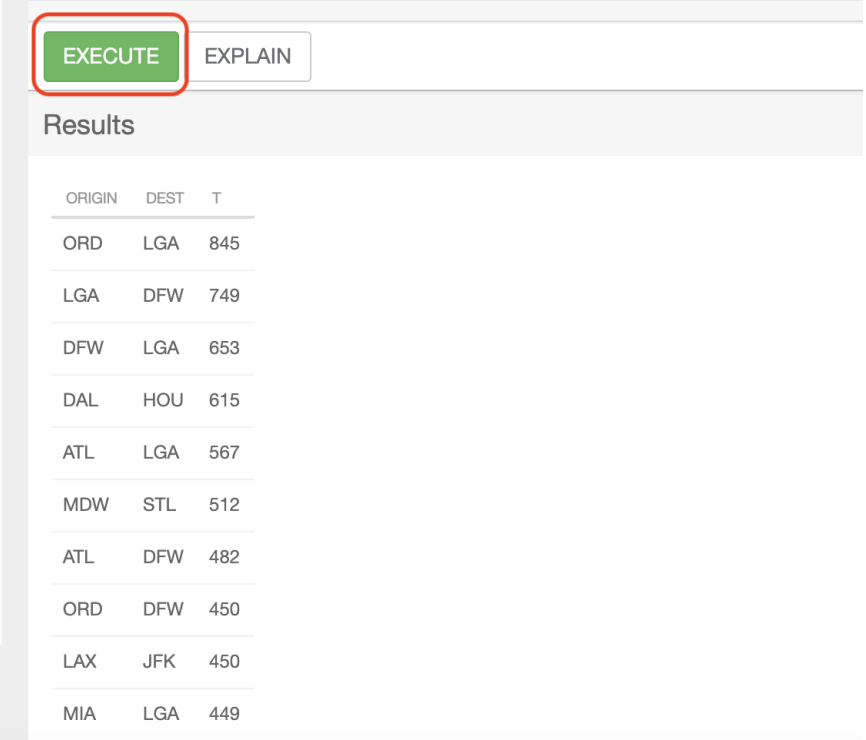


18) In “Worksheet 2”, Choose the database “airlines_new_orc” then copy-and-paste the following query, answering the question “What are the top 10 routes (origin and dest) that have seen maximum diversions?”

```
SELECT origin,dest,COUNT(Diverted) as t FROM flights
WHERE Diverted = 1
GROUP BY origin,dest
ORDER BY t DESC
LIMIT 10;
```

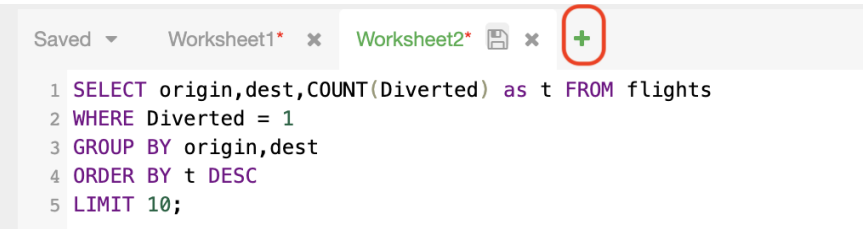


19) Click “EXECUTE” to execute the query, answering the question “What are the top 10 routes (origin and dest) that have seen maximum diversions?”



ORIGIN	DEST	T
ORD	LGA	845
LGA	DFW	749
DFW	LGA	653
DAL	HOU	615
ATL	LGA	567
MDW	STL	512
ATL	DFW	482
ORD	DFW	450
LAX	JFK	450
MIA	LGA	449

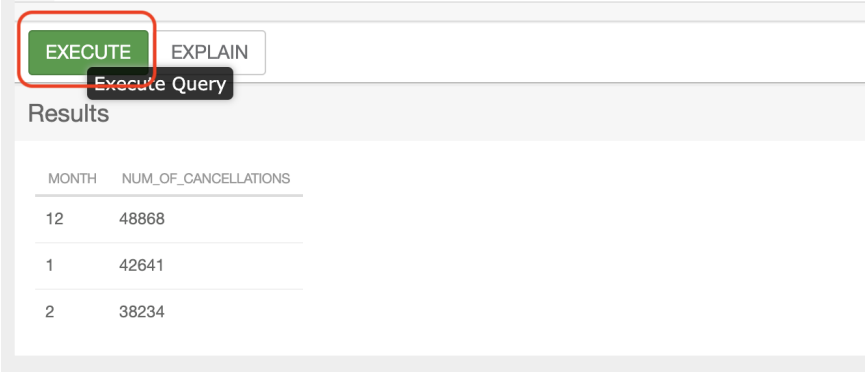
20) Going back to “Worksheet 2”, click the “+” to add another Worksheet for the final query



21) In “Worksheet 3”, Choose the database “airlines_new_orc” then copy-and-paste the following query, answering the question “Which three months have seen the most number of cancellation due to bad weather?”

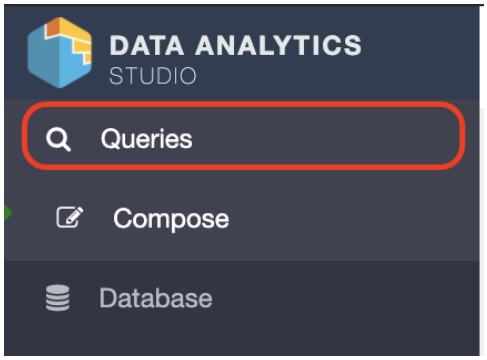
```
SELECT month,COUNT(Cancelled) as num_of_cancellations FROM flights
WHERE Cancelled = 1 AND CancellationCode = 'B'
GROUP BY month
ORDER BY num_of_cancellations DESC
LIMIT 3;
```

22) Click “EXECUTE” to execute the query, answering the question “Which three months have seen the most number of cancellation due to bad weather?”

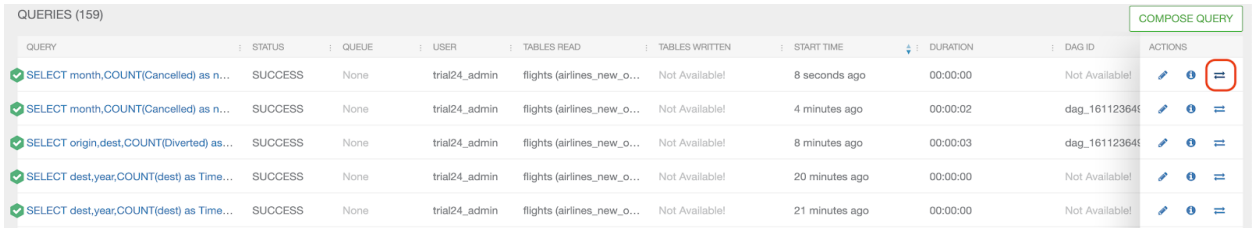


22) Click “EXECUTE” a second time - this will lead us to our last portion of Part 2

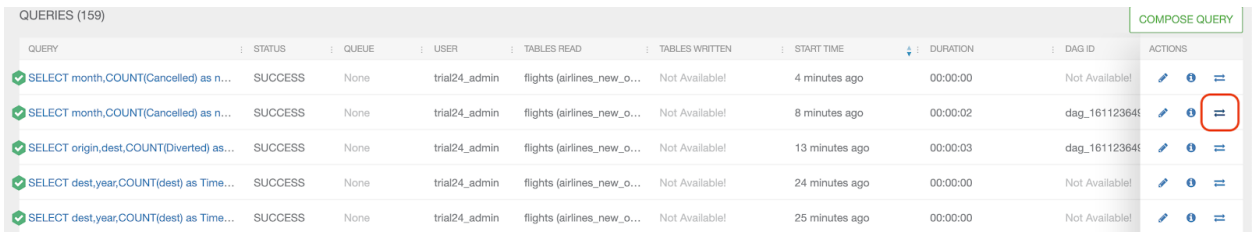
23) Click on “Queries” on the top left navigation bar
*We’ll look at our query history



24) Click the “Compare” on the right of your last query run (query at the top)

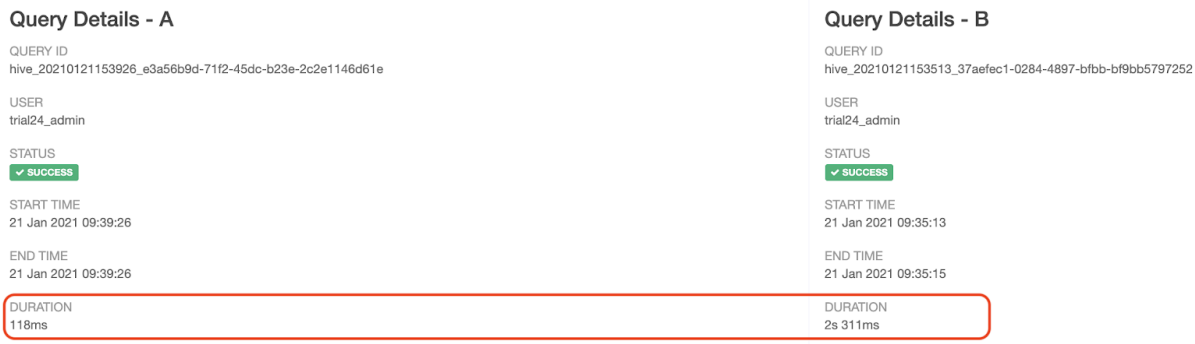


25) Click the “Compare” on the right of the query (second to the top)



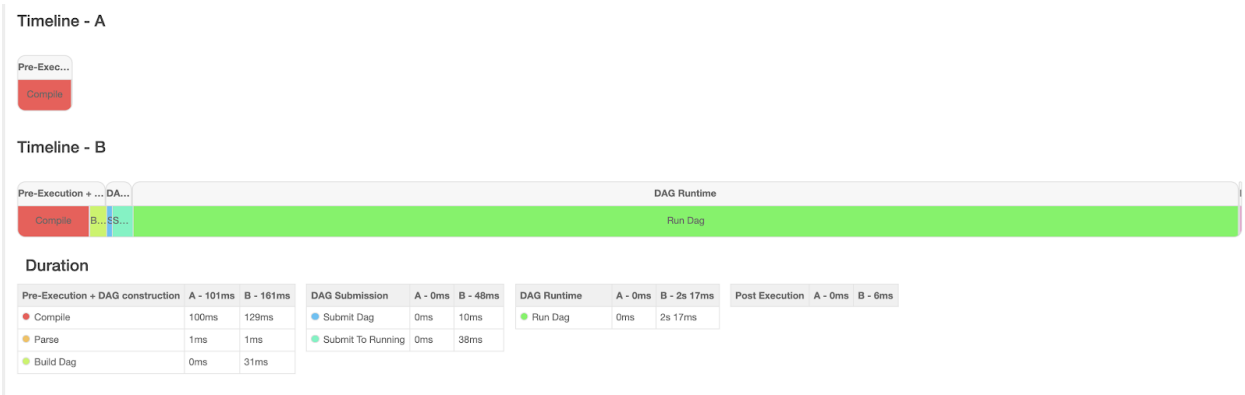
26) Click on the “COMPARE” button to compare the two queries

27) Notice the run duration is different between the two, let’s find out why



28) Click on “timeline” at the top

As shown, the faster query only did “compile and parse”, while the slower query did “compile, parse, build dag, submit dag, submit to running, run dag”. Why? Because if you run the same exact query twice, the results are cached (if the data didn’t change). CDW knows if the data changed.



Part 3 - Data Visualization [25 minutes]

Overview: What is Data Visualization and how do we use it with our data?

Purpose: Create visualization using the flight information answering the question (visually with a density graph):

- What were the most number of flights from destination to origin between (1995-2008) - Route Density

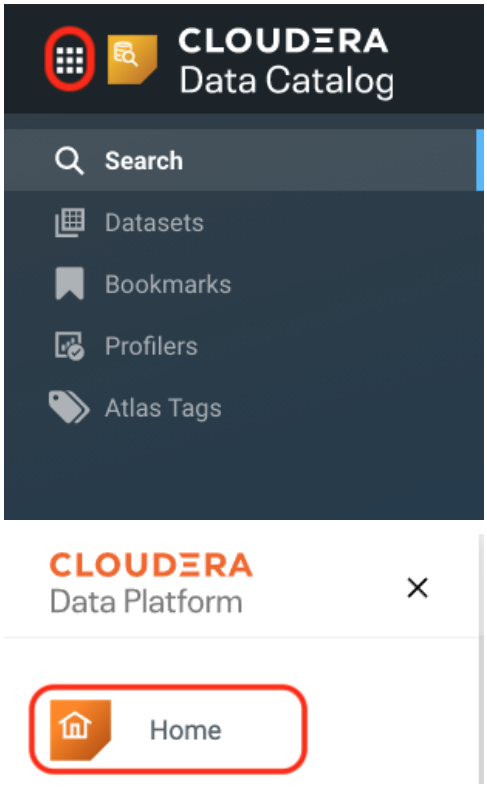
1) Open CDP, using the “admin” user within the Test Drive link.

Your link should look something like (remember click the link in your email not the link below)
http://login.trycdp.com/auth/realms/trycdp-trialxx/protocol/saml/clients/samlclient?tn=trialxx_admin@trycdp.com&p=X
*xx represents the trial user #
*X represents the password

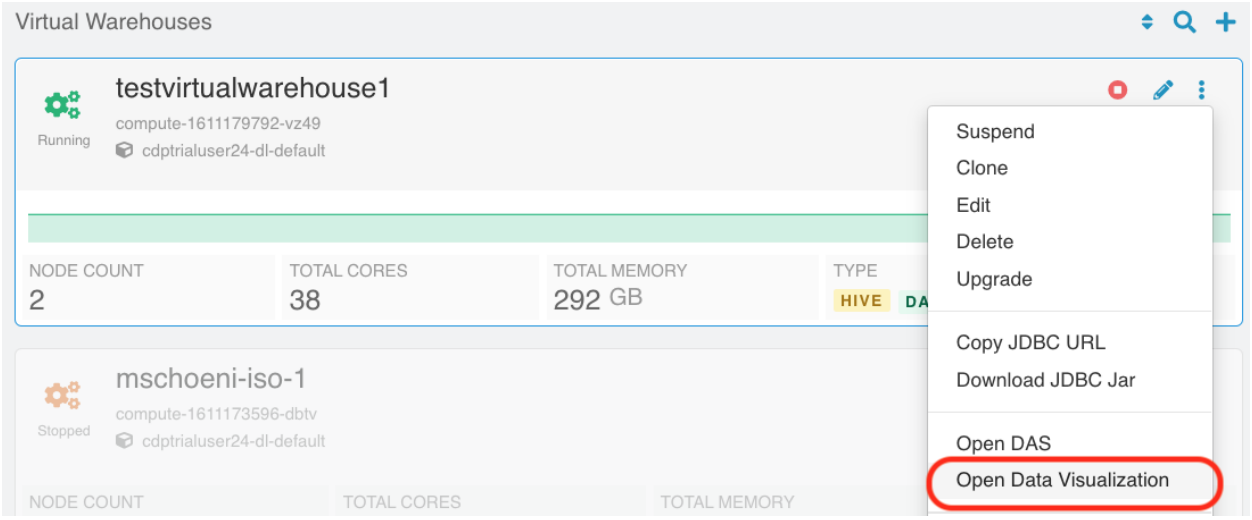
2) Click the “Data Warehouse” within the CDP Home Screen

How do you get to the CDP Home Screen?

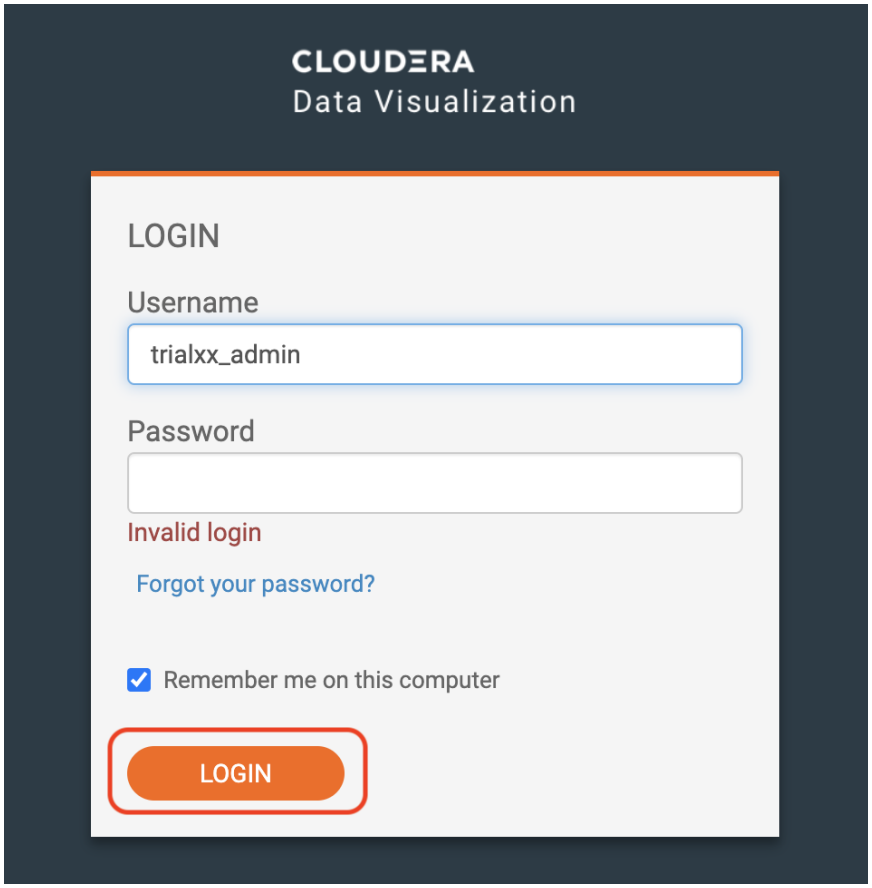
- From any experience such as “Data Catalog”, click the 9 square at the top left and then click “Home”



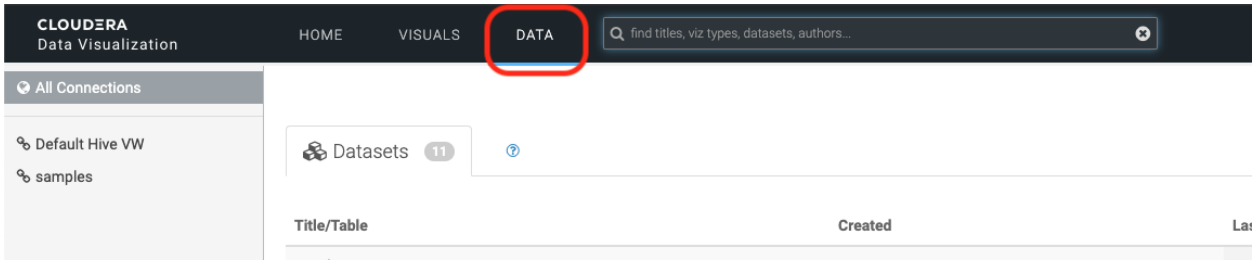
3) Click “Open Data Visualization” on your existing “Running” Virtual Warehouse



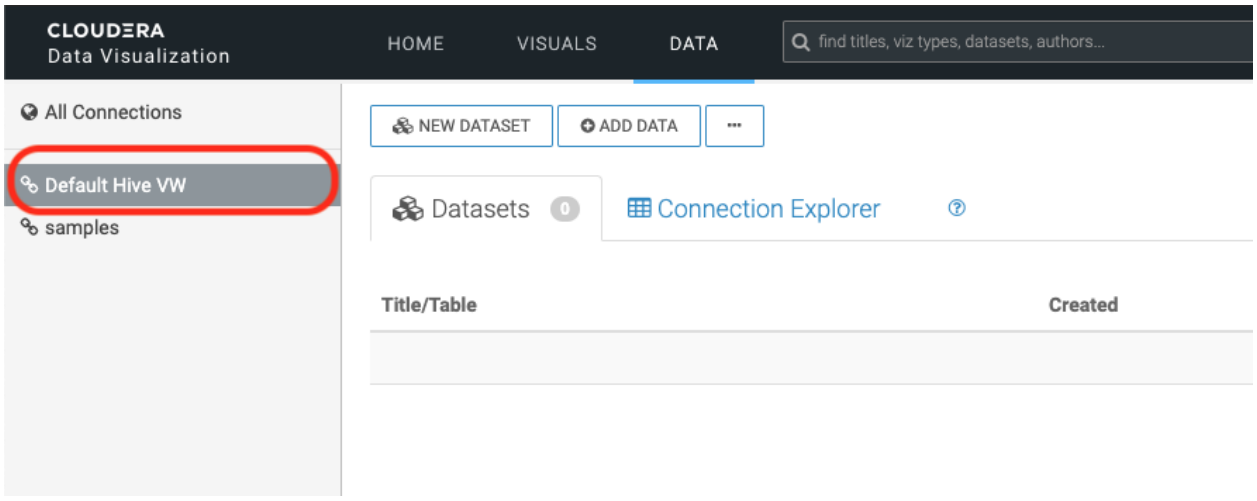
4) Enter the login information from step #1 above using the user, then click “LOGIN”
*Changing “trialxx_admin” to the trail user you’re using and password defined by “X” in #1 above



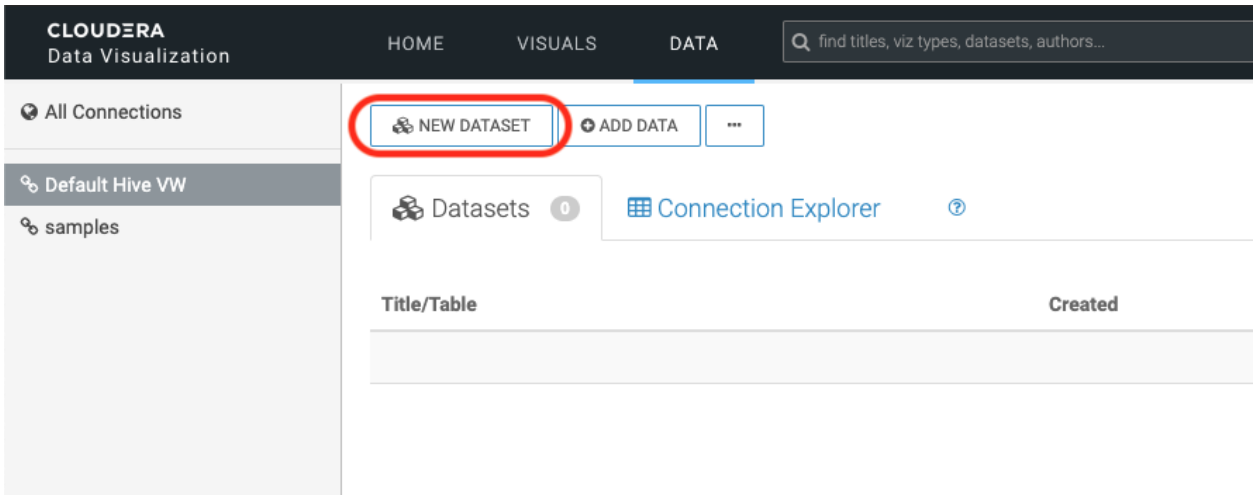
5) Click “DATA” the top navigation bar



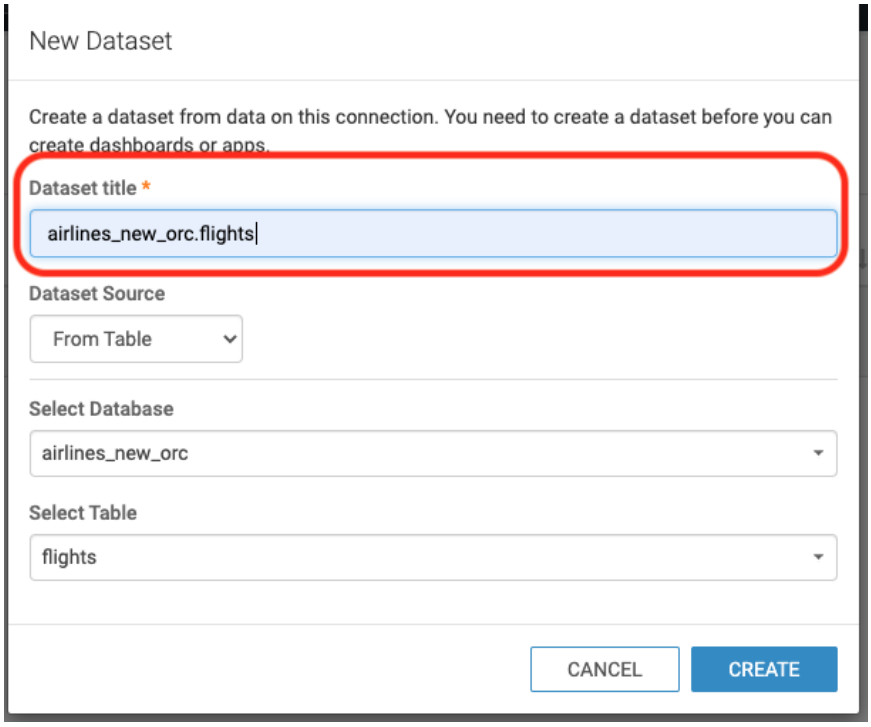
6) Click “Default Hive VW” to add our dataset



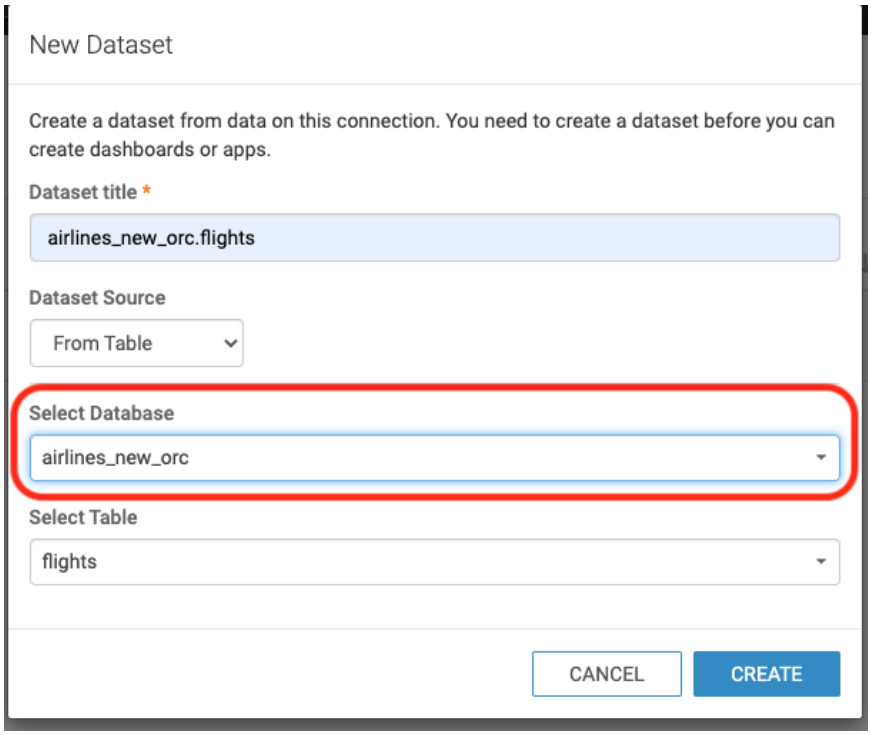
7) Click “NEW DATASET” to add our “flights” data



8) Enter a name for the Dataset title naming “airline_new_orc.flights”
*Can be any name you choose

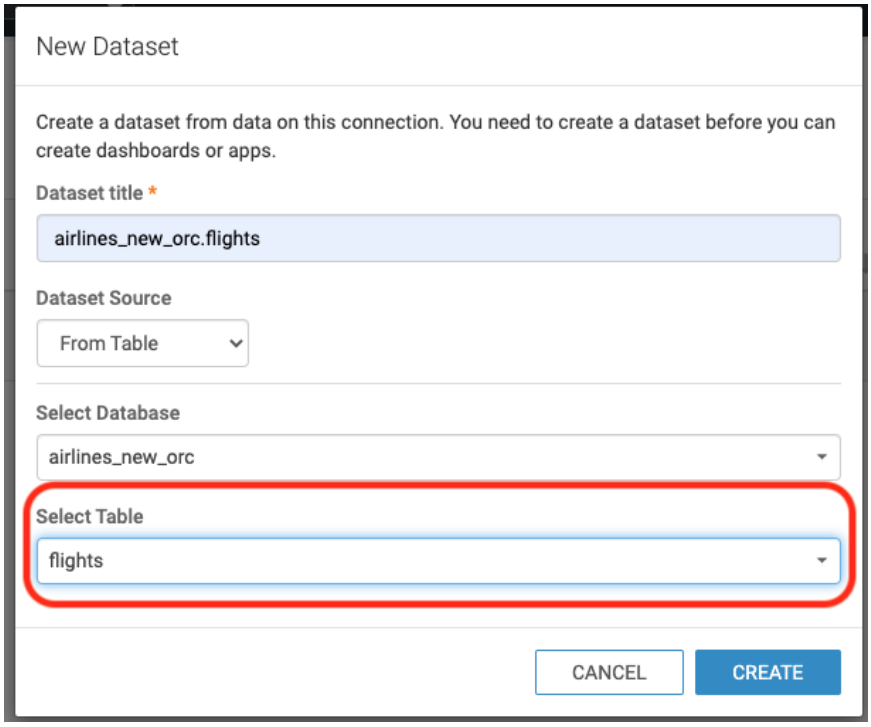


9) Choose the database “airlines_new_orc”

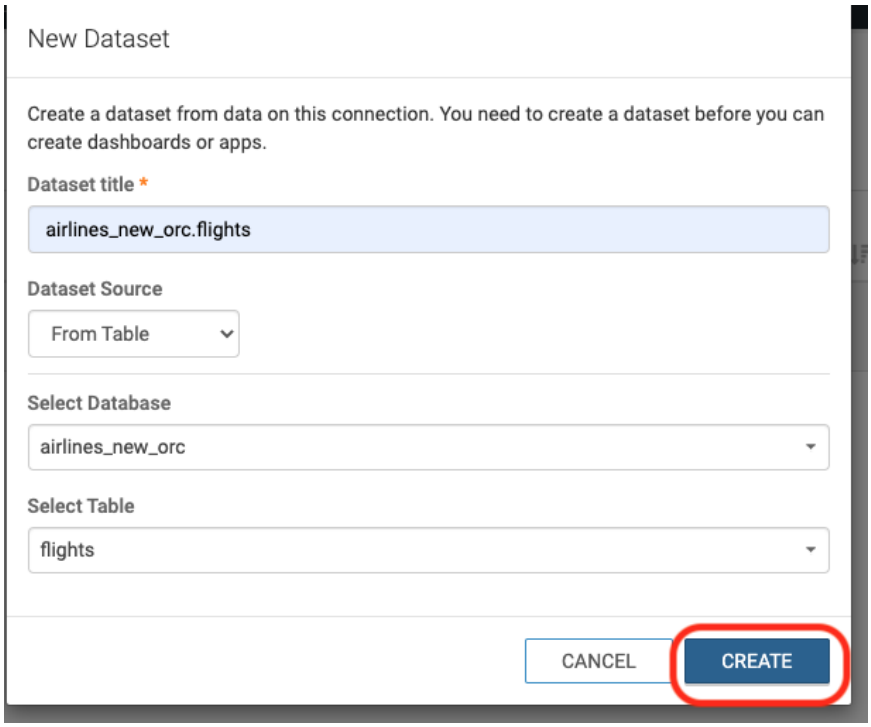


10) Choose the table “flights”

*Need to import multiple databases and tables? You’d use Dataset Source = SQL

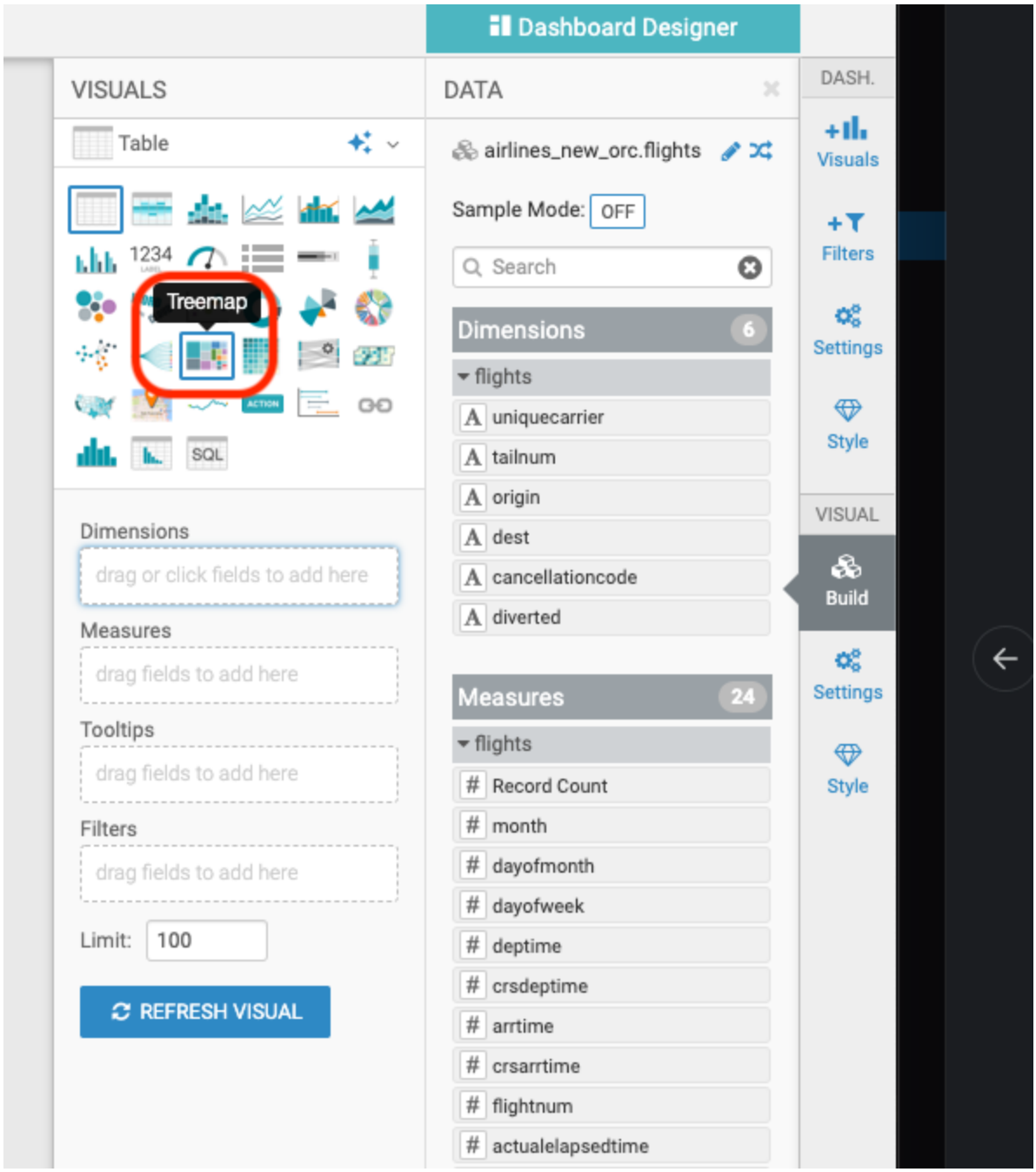


11) Click “CREATE”

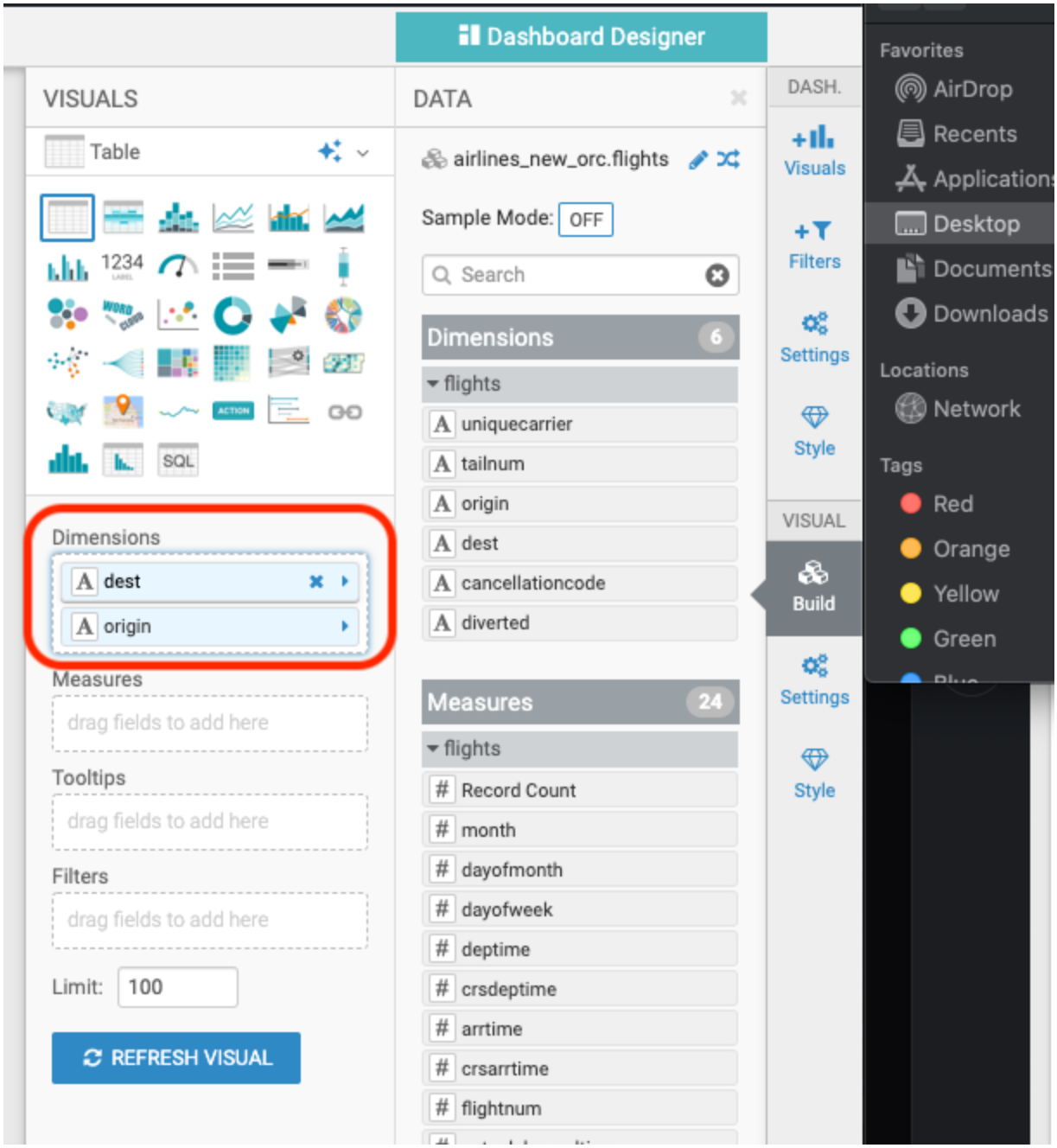


12) Click “+” to create a New Dashboard

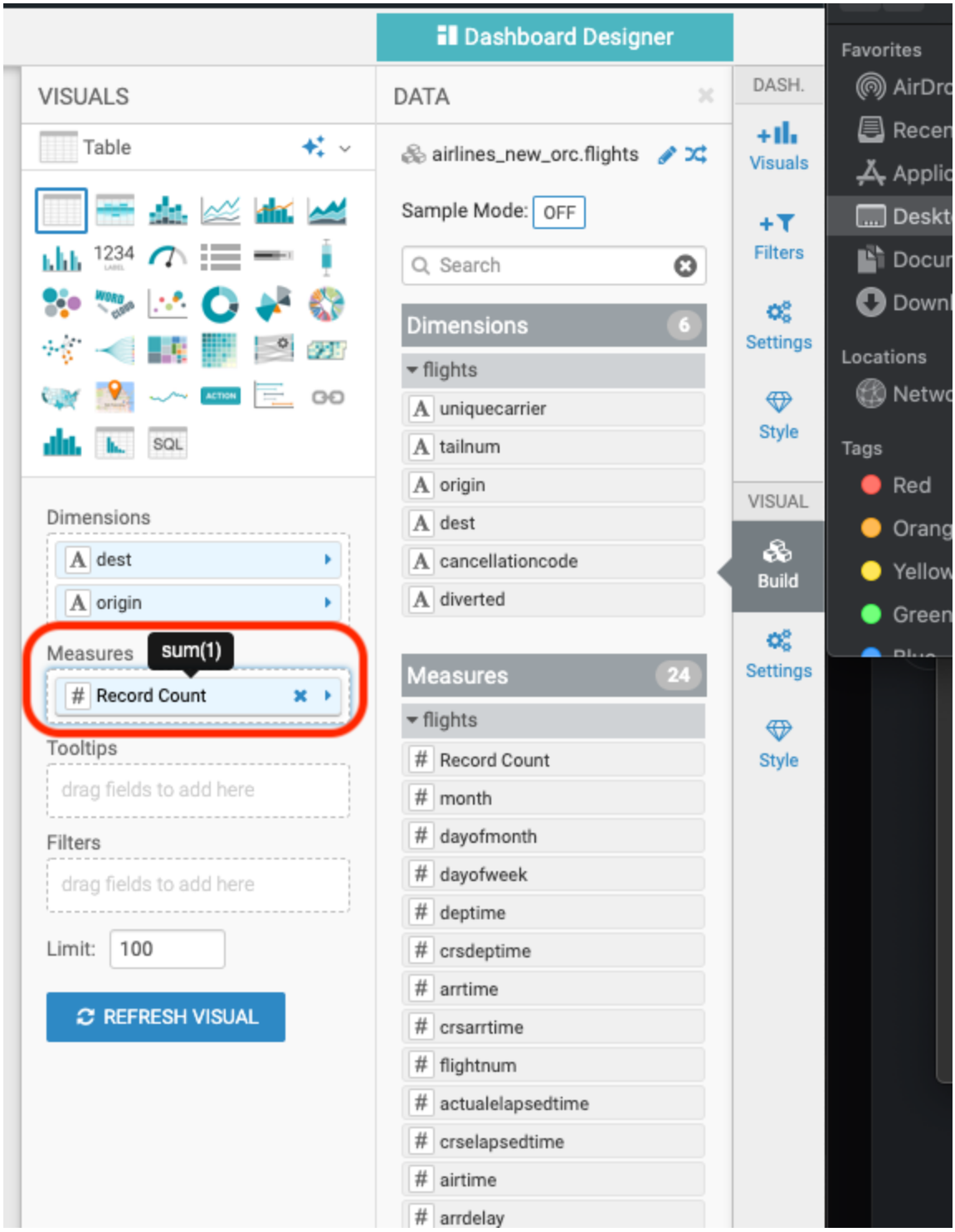
13) Choose “TreeMap” under “VISUALS”



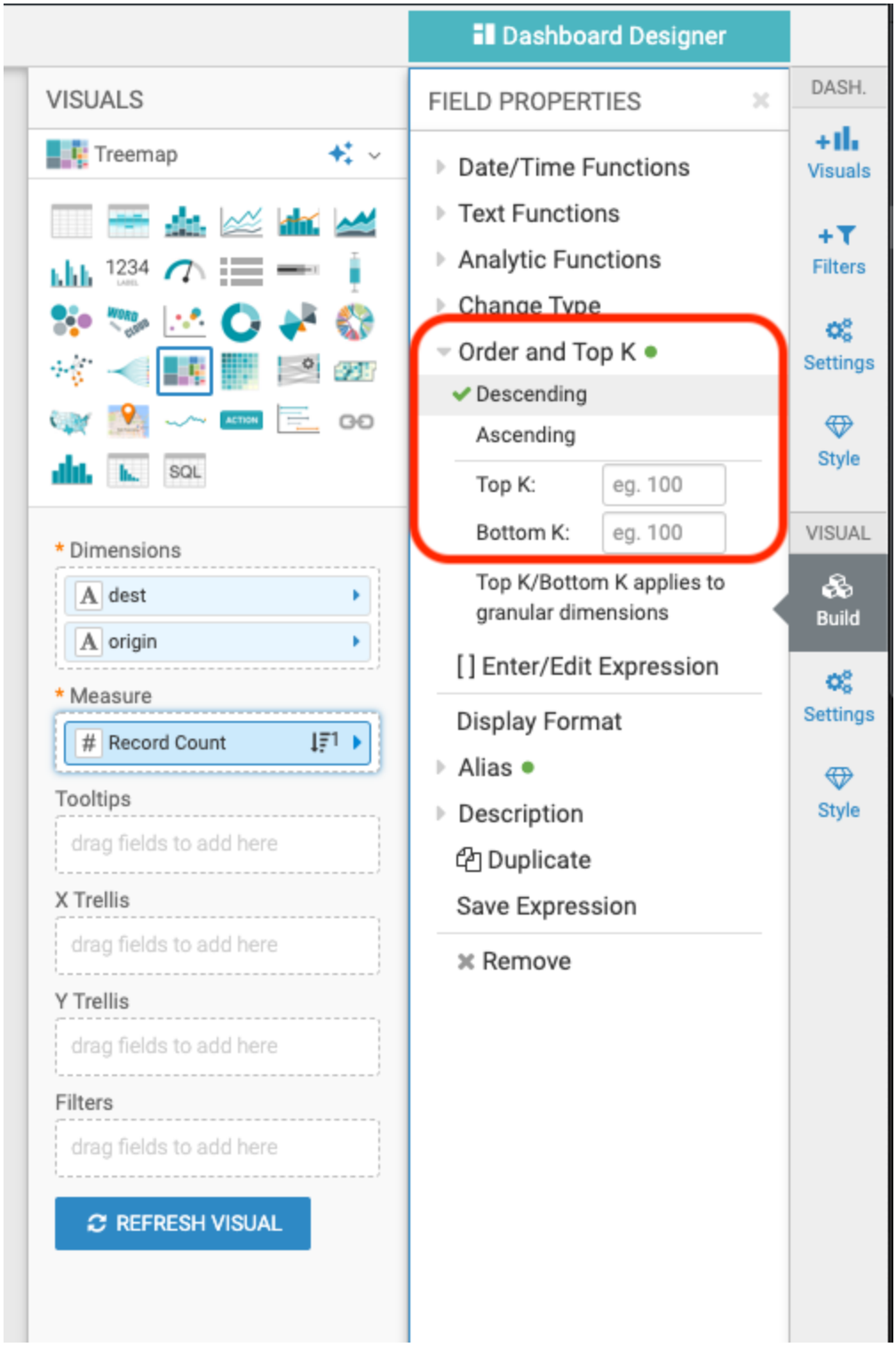
14) Drag-and-drop both “dest” and origin” from Dimensions->Flights into Dimensions under Visuals



15) Drag-and-drop “Record Count” from Measures->Flights into Measures under Visuals

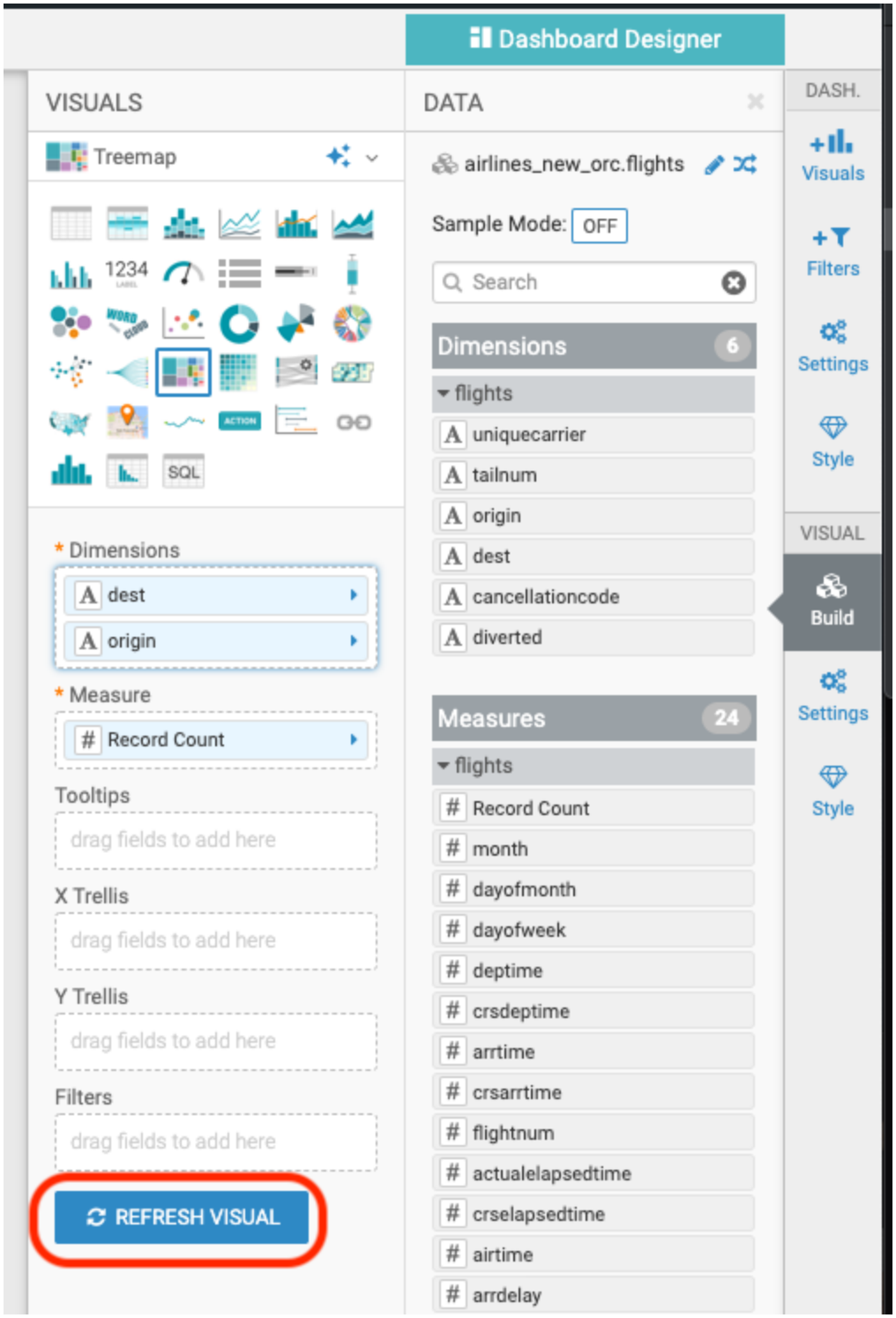


16) Click the right arrow next to Record Count and select “Descending” under Order and Top K

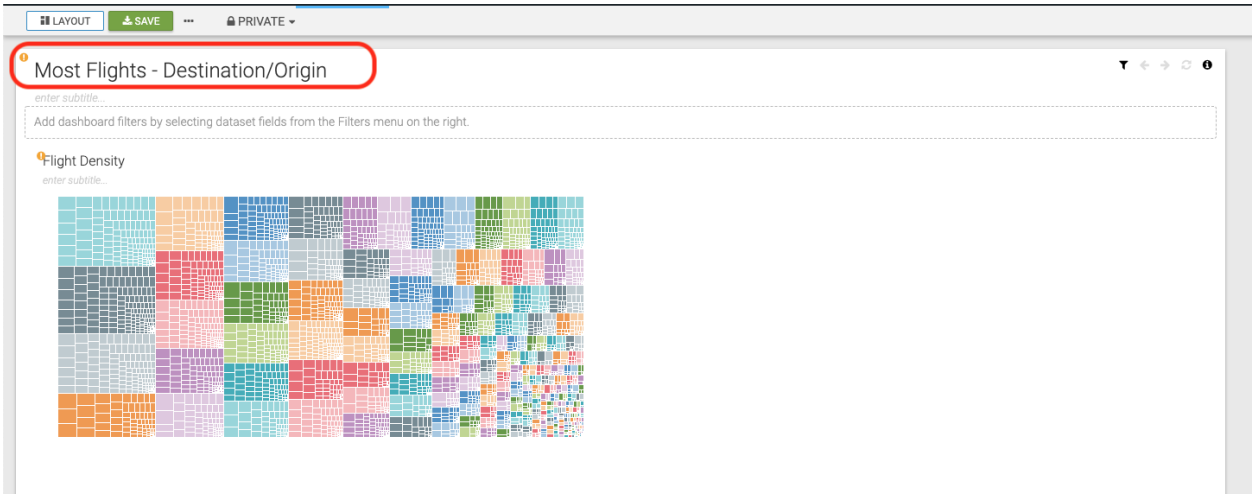


17) Click “REFRESH VISUAL”

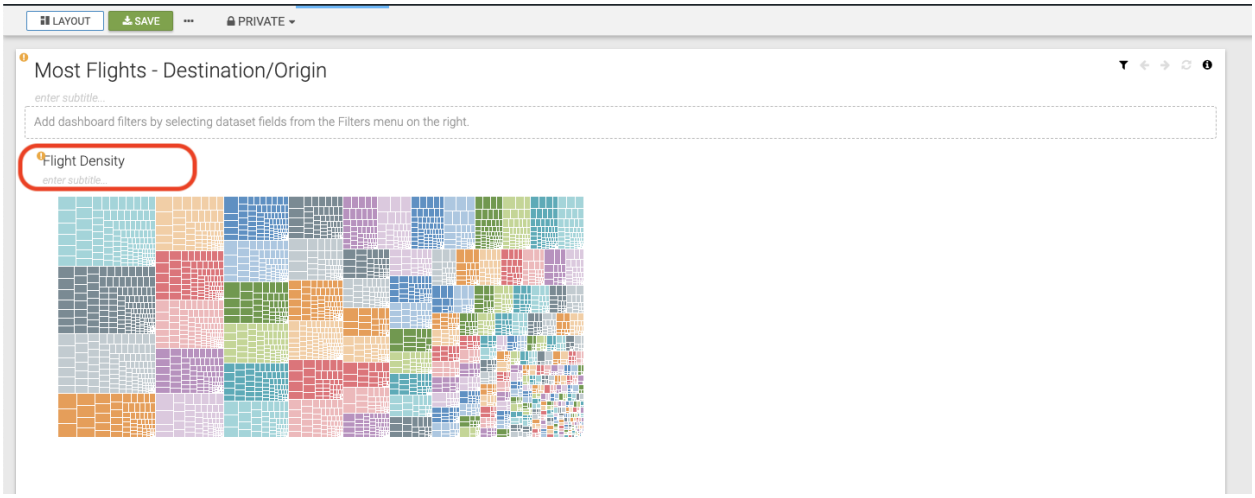
*Notice - you can have other Visuals chosen to be displayed with the Dimensions and Measure(s), then click REFRESH VISUALS



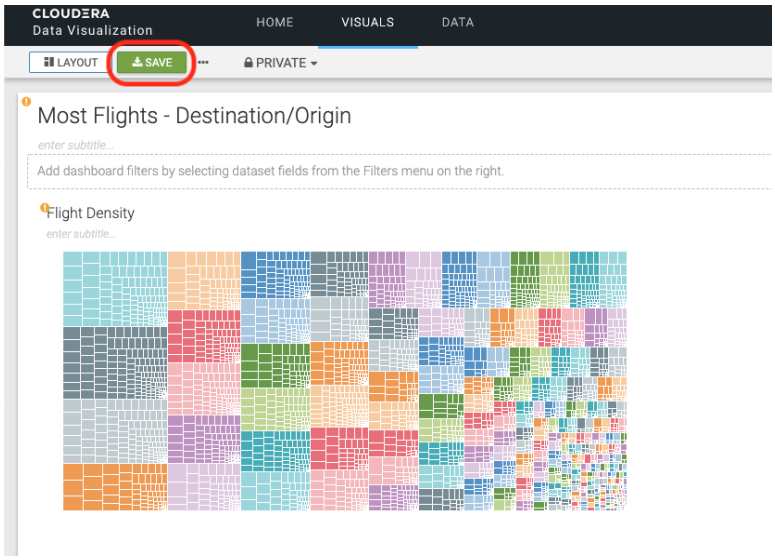
18) Enter a title “Most Flights - Destination/Origin”



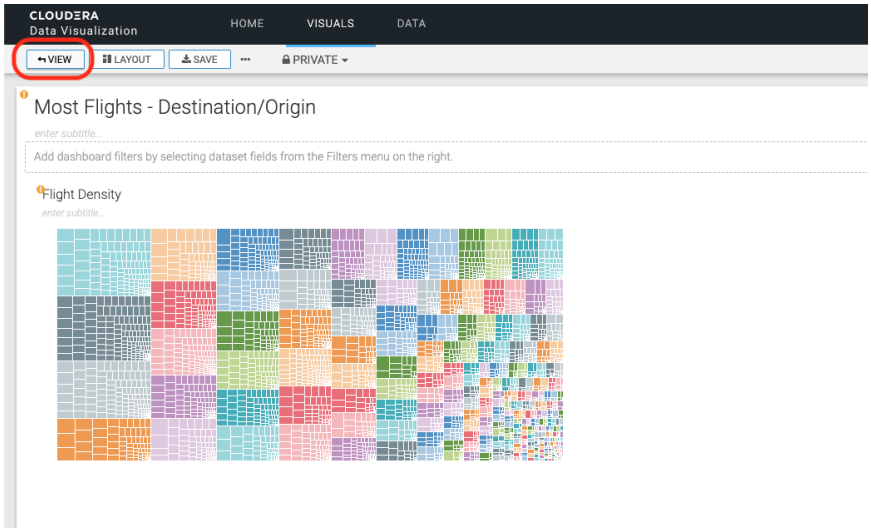
19) Enter “Flight Density” under the graph’s title



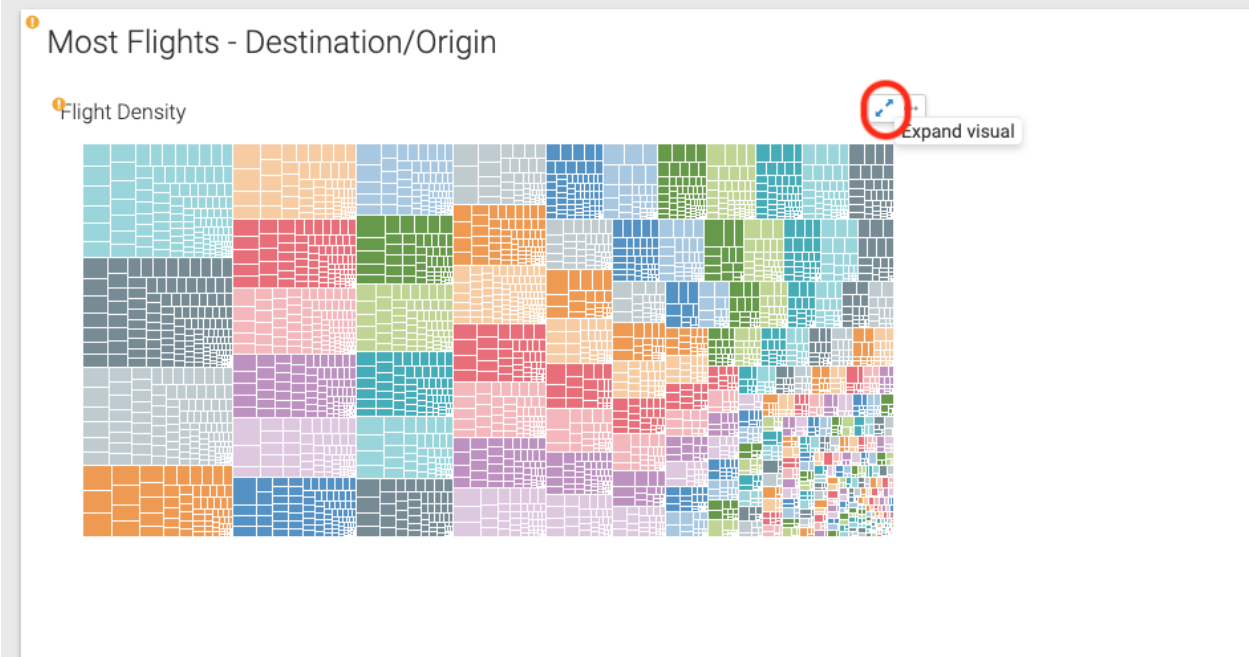
20) Click “SAVE”



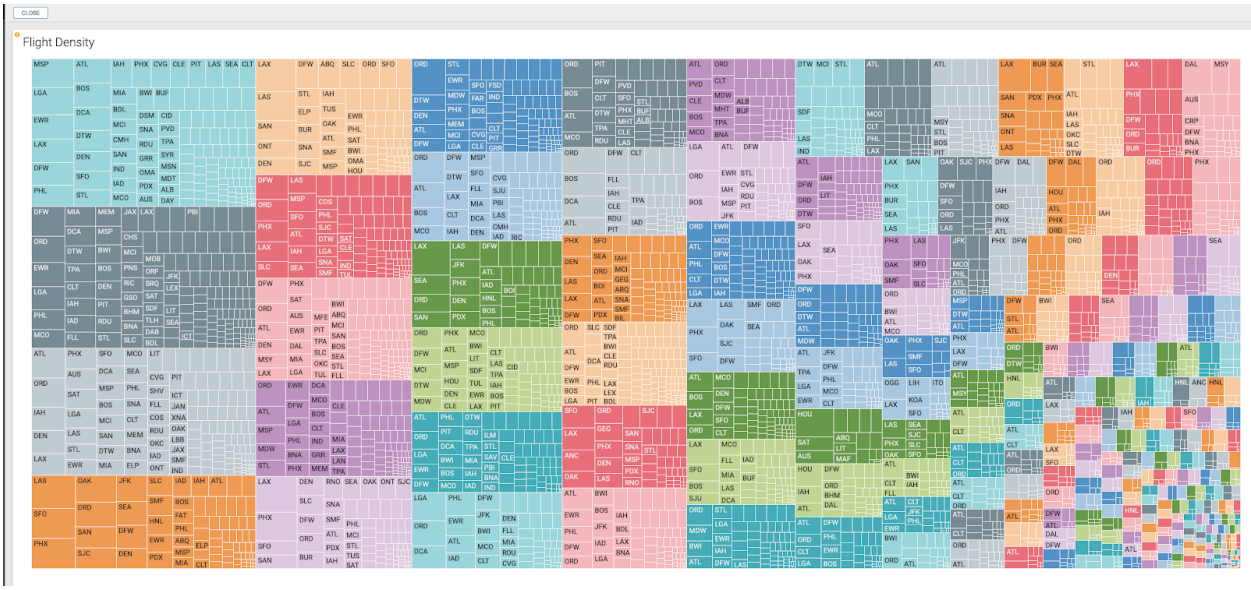
21) Click “VIEW”



22) Scroll over the graph and click “Expand Visual”



Destinations are displayed



Part 4 - Import a File into a Table [15 minutes]

Overview: How do we import data (csv file), creating a table?

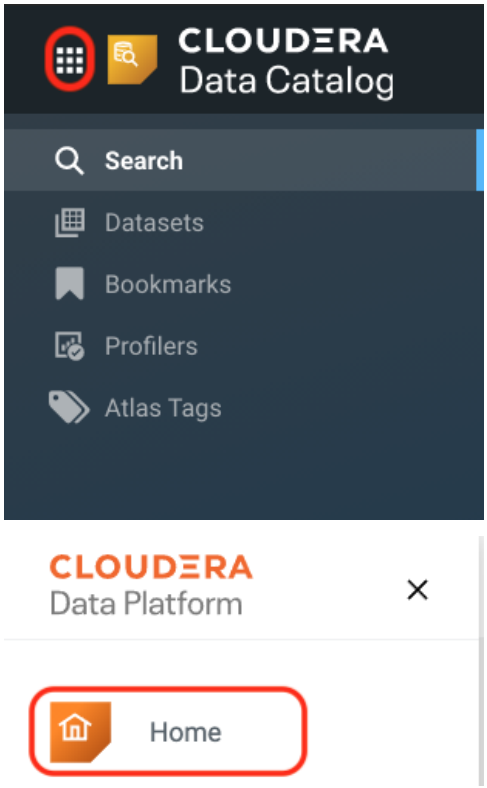
1) Open CDP, using the “admin” user within the Test Drive link.

Your link should look something like (remember click the link in your email not the link below)
http://login.trycdp.com/auth/realms/trycdp-trialxx/protocol/saml/clients/samlclient?tn=trialxx_admin@trycdp.com&p=X
*xx represents the trial user #
*X represents the password

2) Click the “Data Warehouse” within the CDP Home Screen

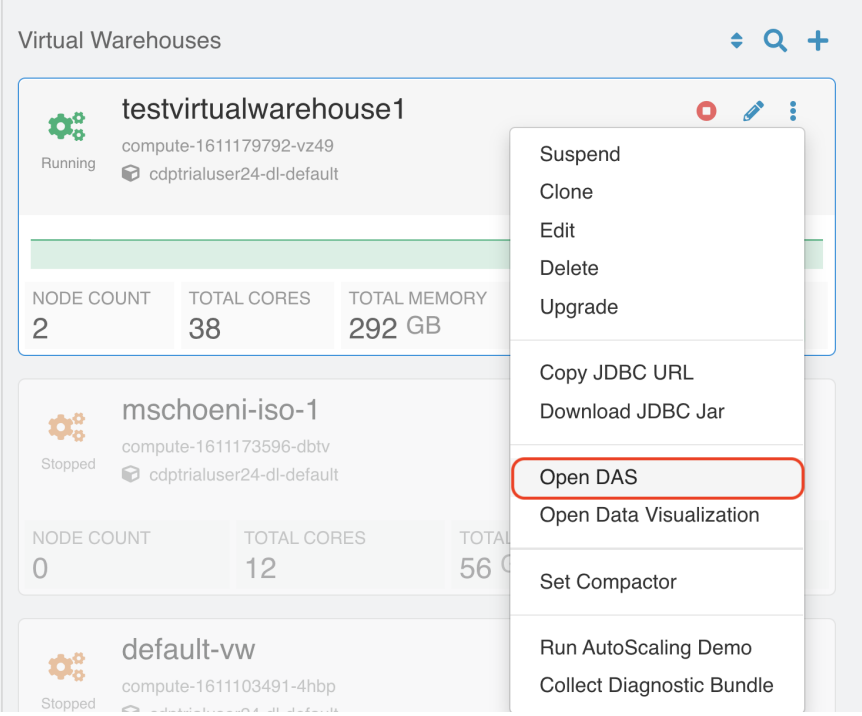
How do you get to the CDP Home Screen?

- From any experience such as “Data Catalog”, click the 9 square at the top left and then click “Home”



3) Click “Open DAS” on your existing “Running” Virtual Warehouse

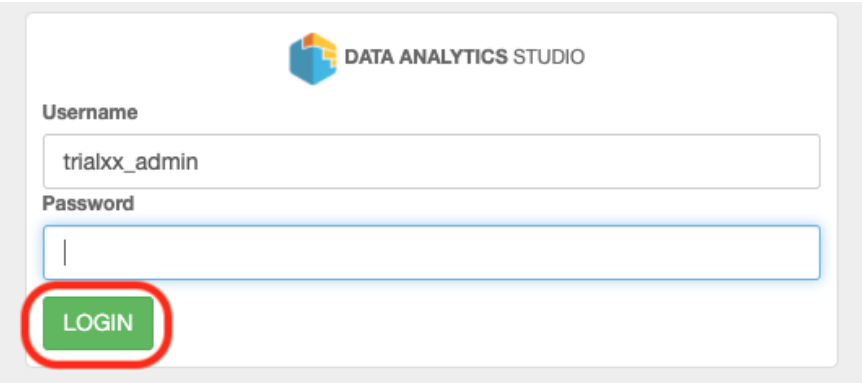
*The same steps you did in Part 2 to Open DAS



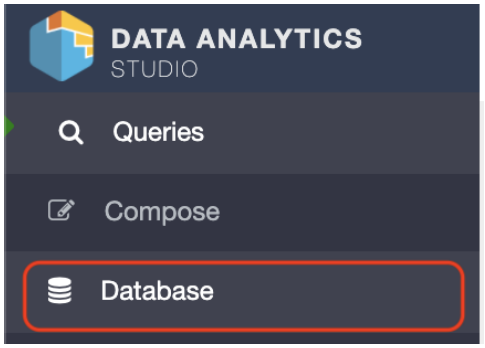
4) Enter the login information from step #1 above using the user, then click “LOGIN”

*You’ll likely already be authenticated from Part 2, you may not need to enter credentials

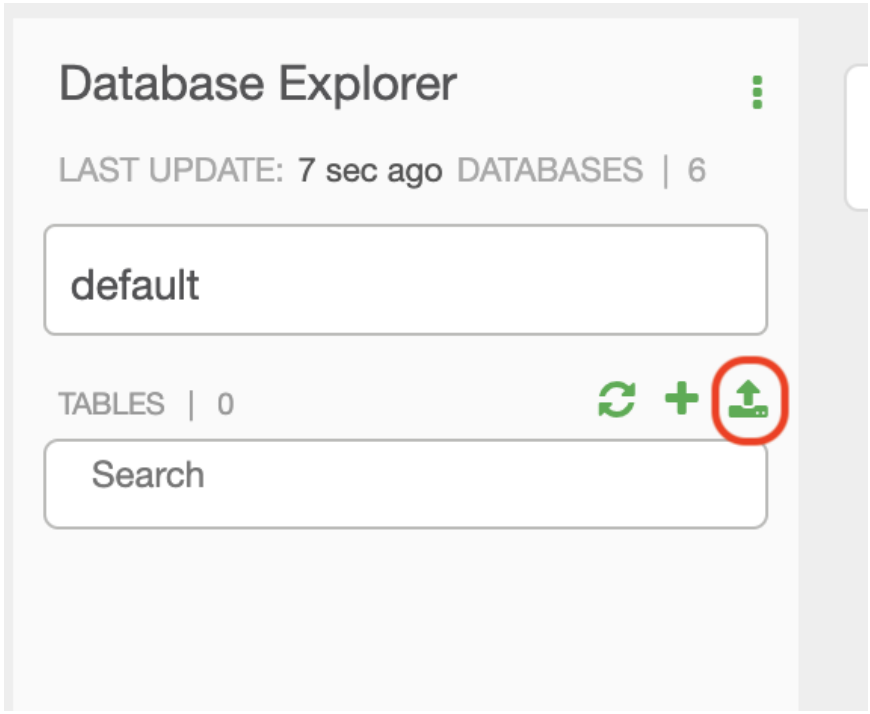
*Changing “trialxx_admin” to the trail user you’re using and password defined by “X” in #1 above



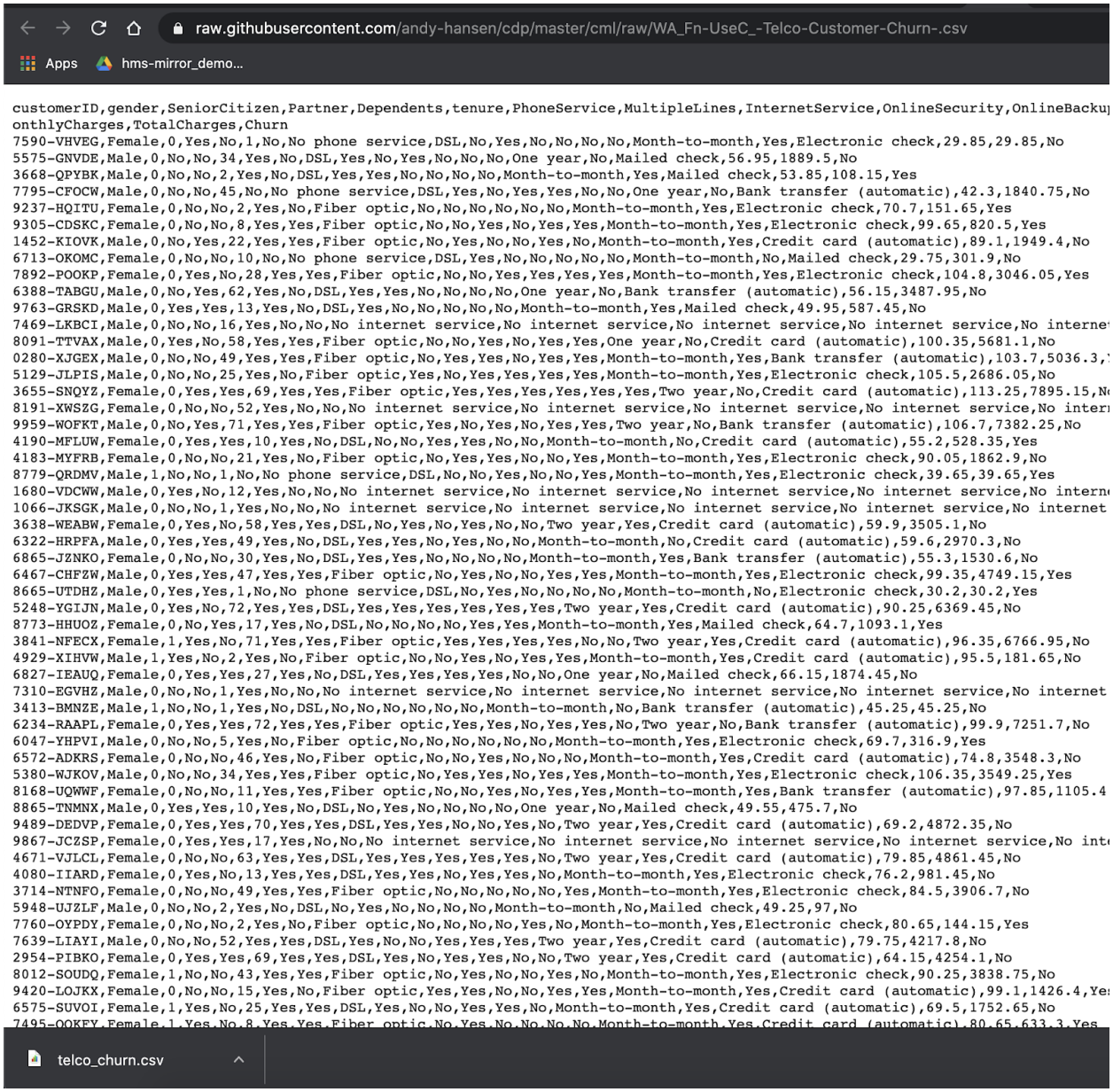
5) Click on Database on the left navigation bar



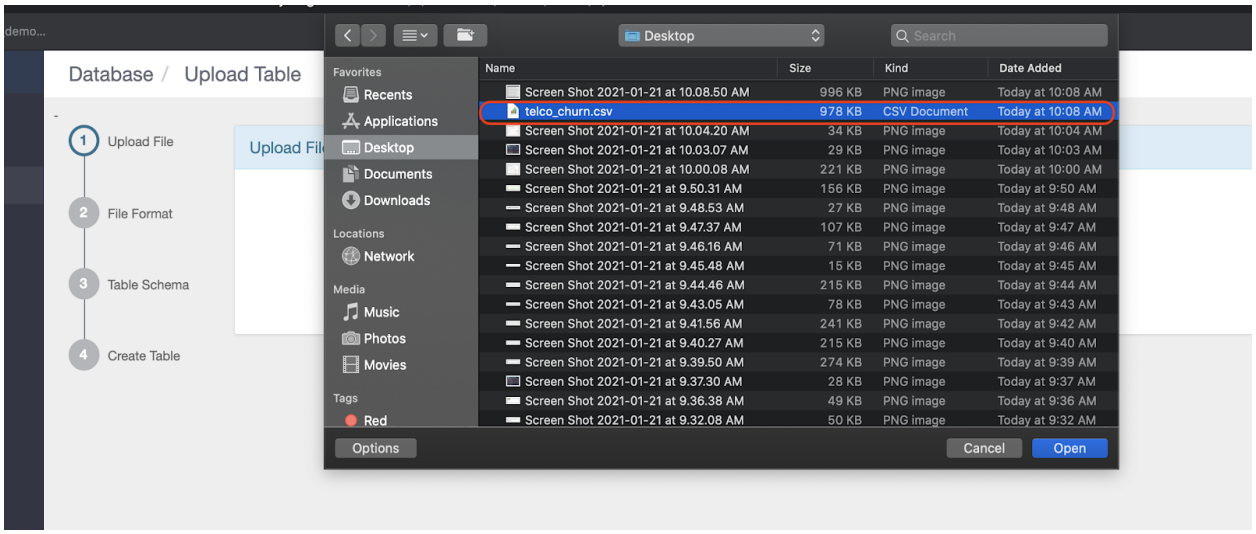
6) Click on “Upload Table”, using the “default” database



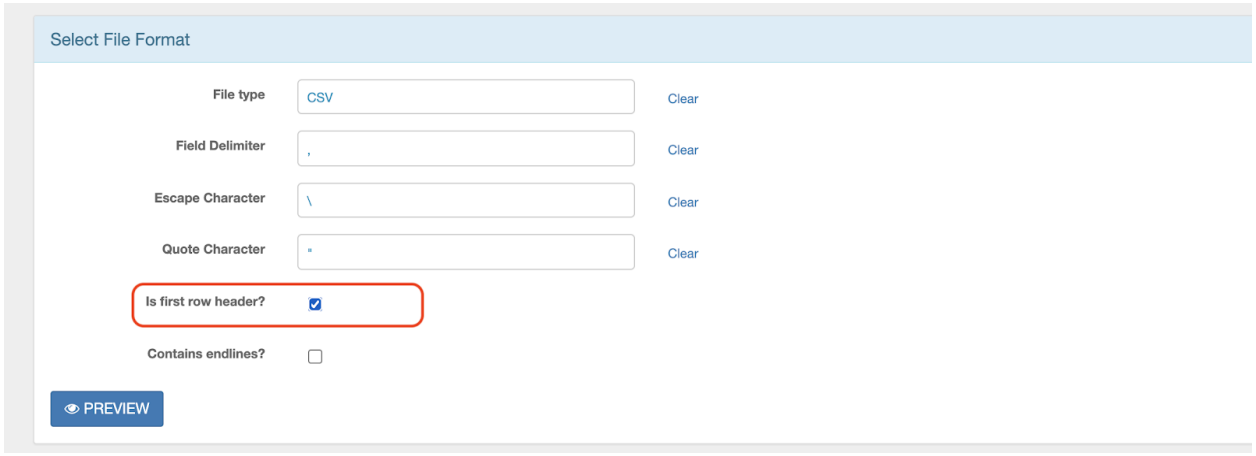
7) In a new browser window or tab, download the CSV file, saving to your desktop as “telco_churn.csv”
https://raw.githubusercontent.com/andy-hansen/cdp/master/cml/raw/WA_Fn-UseC_-Telco-Customer-Churn-.csv



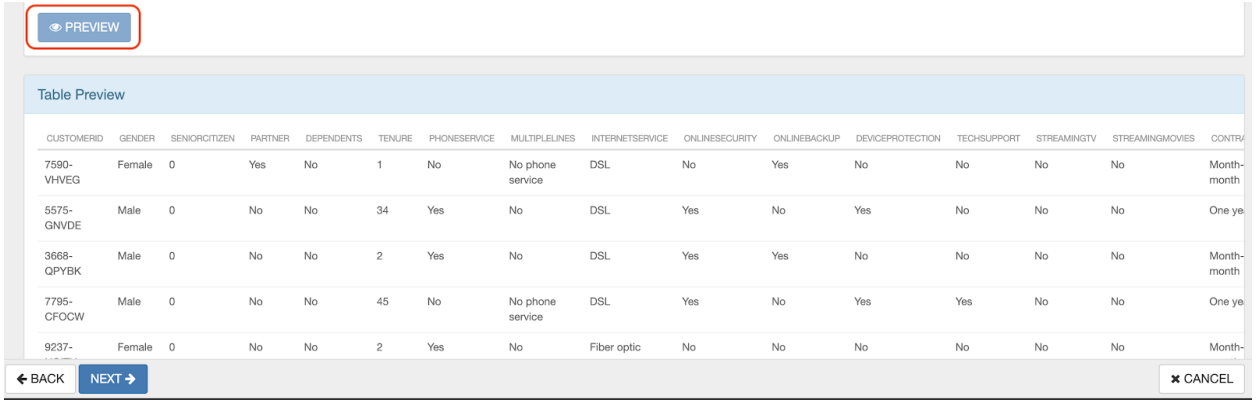
8) Going back to the window from step 6 above, upload the file “telco_churn.csv”



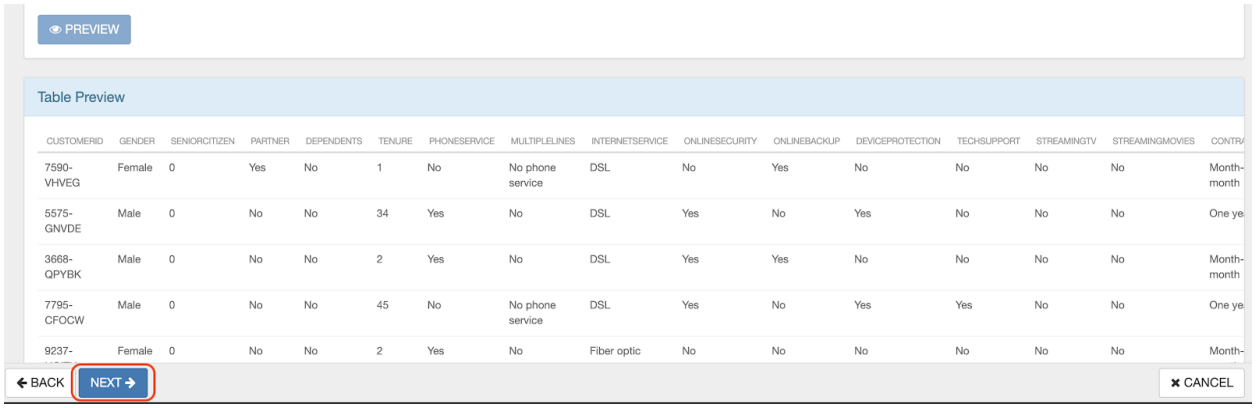
9) Click the “Is first row header?”, since the first row is a header



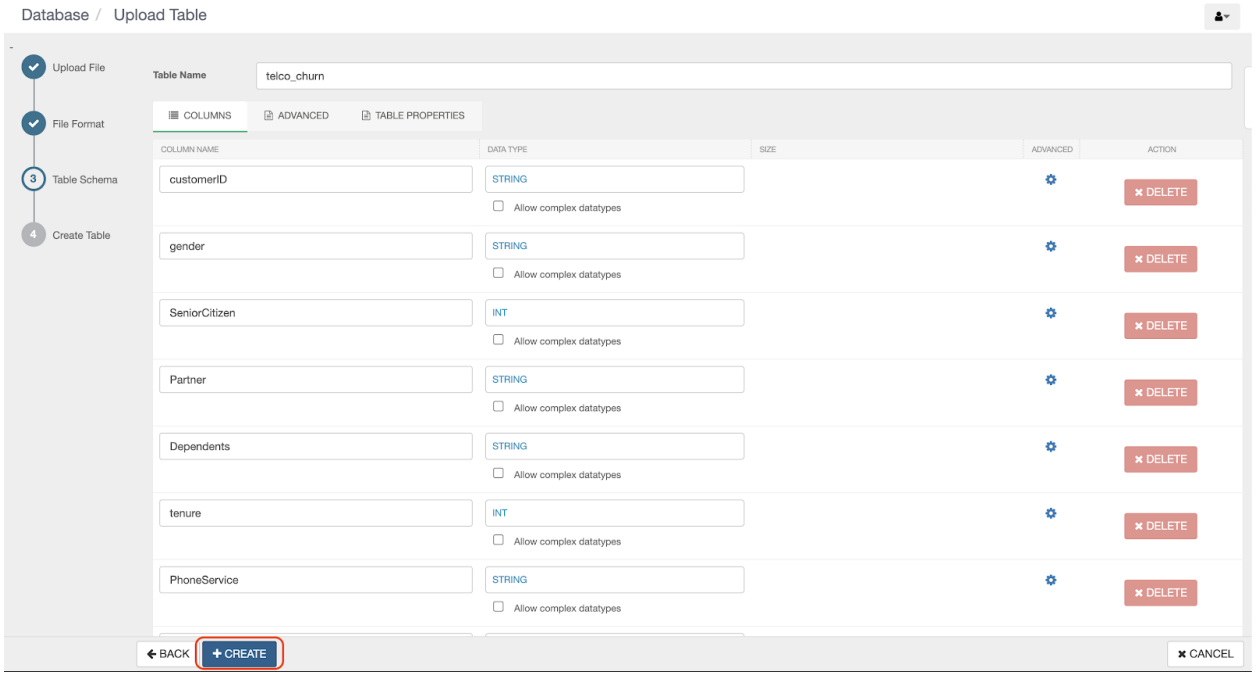
10) Click “PREVIEW” prior to creating the table



11) Click “NEXT”



12) Enter ‘telco_churn’ as the Table Name. Click “CREATE”



13) Go-to “Compose” and within “Worksheet 1” run the following query on the new table

```
select * from telco_churn limit 10;
```