

# CEMF Migration Tracker Deployment Guide

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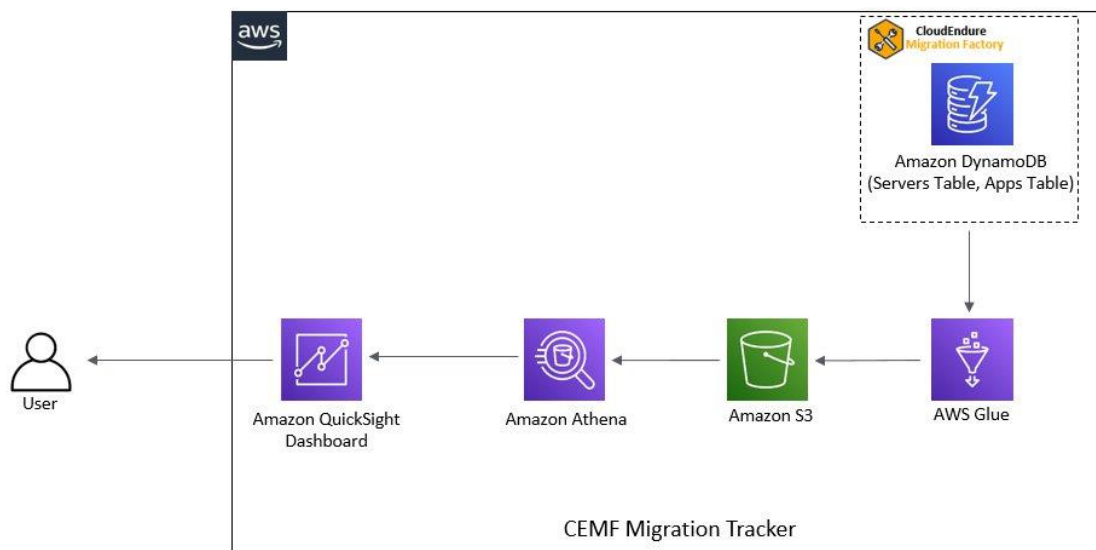
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## Introduction

This document describes how to deploy CEMF Migration Tracker. This would enable the customers to visualize the migration status of the workloads being migrated using a QuickSight Dashboard.

## Architecture Diagram



## Prerequisites

CloudEndure Migration Factory Solution (CEMF) must be deployed before deploying the migration tracker

<https://aws.amazon.com/solutions/implementations/aws-cloudendure-migration-factory-solution/>

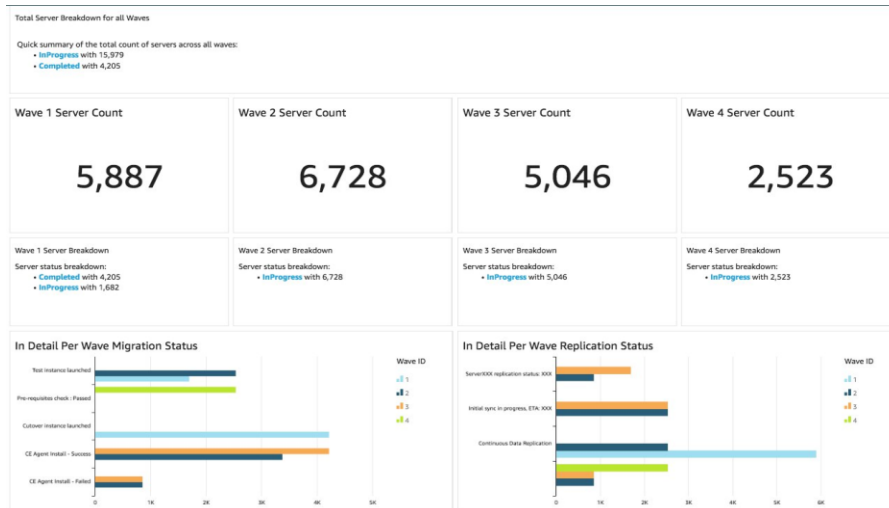
## Deployment Steps

1. Download CloudFormation template from <https://awsmigrationfactory.s3.amazonaws.com/template/CEMF-MigrationTracker.yaml> and deploy the stack
2. Please provide the Stack Name , Application & environment as parameters for the CloudFormation. Keep environment and Application parameters same as provided during CEMF deployment. DO NOT change the Code bucket name.

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- Once the template has run successfully, please wait for 15 minutes. There are two Glue Jobs that run as part of the template. It takes about 10-15 mins for the jobs to finish after the template has been deployed.
- After the glue job successfully executes, you will have the consolidated data available on Athena, which can be integrated with QuickSight for visualization

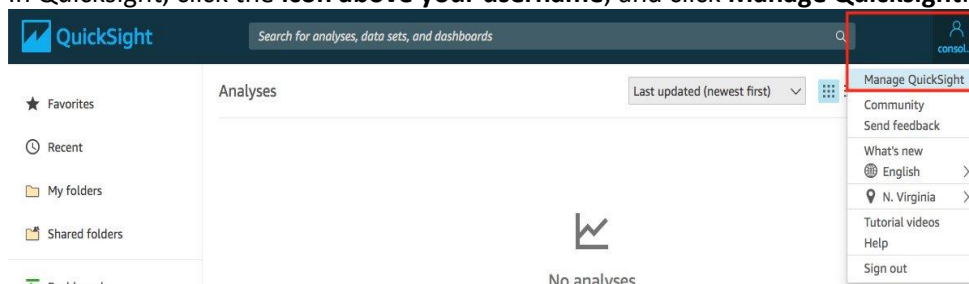
You should have all the data present on QuickSight ready to create custom visuals and reporting dashboards. Please follow the steps to create a quick sight dashboard like the one blow.



## Build QuickSight Dashboard

For first time users, [click this link](#) for a guide on how to register for a new QuickSight account. Please take note that this solution was designed to be deployed with an Enterprise License. However if you don't want the email reporting and the hourly data refresh, you can opt for a Standard License and it will not cause any issues with Migration Tracker.

- In Quicksight, click the **icon above your username**, and click **Manage Quicksight**.



- Click **Security & permissions**, then under **QuickSight access to AWS Services**, click **Add or remove**.

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Account name: mf-mt-integration-test  
Edition: Enterprise

Manage users  
Your subscriptions  
SPIRE capacity  
Account settings  
**Security & permissions**  
Manage VPC connections  
Mobile settings  
Domains and Embedding  
Account customization

### Security & permissions

QuickSight can control access to AWS resources for the entire account in addition to individual users and groups

#### QuickSight access to AWS services

Amazon Redshift Amazon RDS IAM Amazon S3 Amazon Athena  
Amazon S3 Storage Analytics

By configuring access to AWS services, QuickSight can access the data in those services. Access by users and groups can be controlled through the options below.

**Add or remove**

#### Default resource access

Users and groups have access to all connected resources.

QuickSight can allow or deny access to all users and groups by default, when an individual access control is not in effect for a particular user or group

**Change**

### 3. Click **Amazon S3**

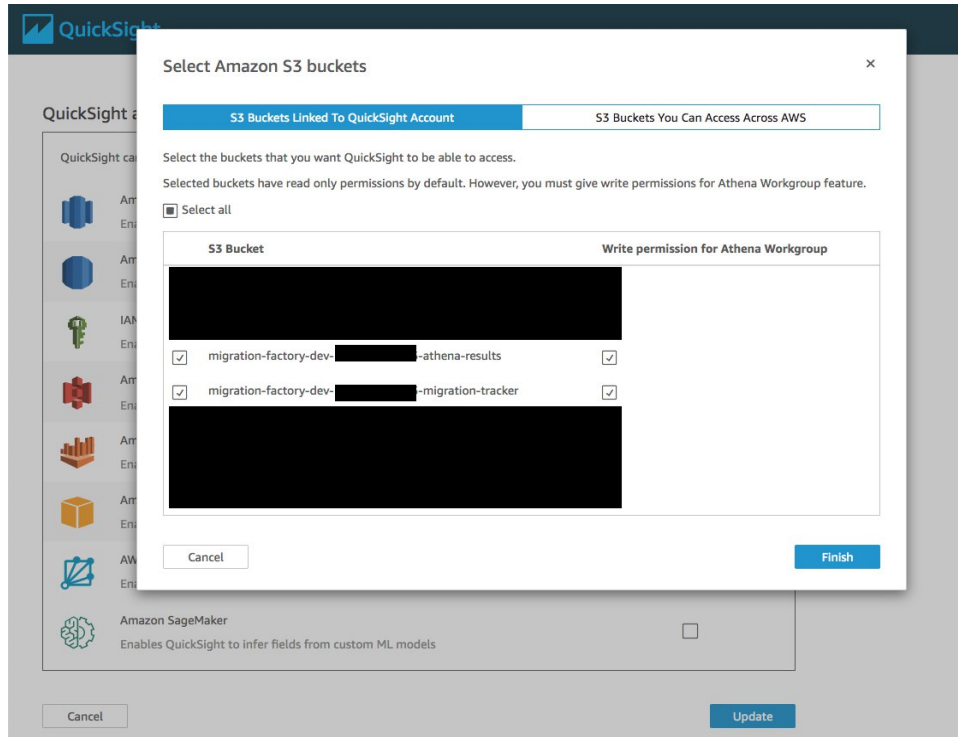
### QuickSight access to AWS services

QuickSight can connect to the selected AWS products & services below for all users & groups:

	Amazon Redshift Enables QuickSight to auto-discover clusters	<input type="checkbox"/>
	Amazon RDS Enables QuickSight to auto-discover instances	<input type="checkbox"/>
	IAM Enables you to invite IAM users from this AWS Account to access QuickSight	<input type="checkbox"/>
	Amazon S3 Enables QuickSight to auto-discover your Amazon S3 buckets <a href="#">Details</a>	<input type="checkbox"/>
	Amazon Athena Enables QuickSight access to Amazon Athena databases	<input type="checkbox"/>
	Amazon S3 Storage Analytics Enables QuickSight to visualize your S3 Storage Analytics data	<input type="checkbox"/>
	AWS IoT Analytics Enables QuickSight to visualize your IoT Analytics data	<input type="checkbox"/>
	Amazon SageMaker Enables QuickSight to infer fields from custom ML models	<input type="checkbox"/>

**Cancel** **Update**

- Grant access to the **athena-results** and **migration-tracker** buckets as shown in the boxes below. Make sure to check the boxes on the right and the left of the buckets selected. Click **Finish** once done.



- After granting access to the S3 buckets, add permissions for Athena. Check the Athena box then click **Next** when asked about the bucket selection and make sure that the same buckets have the same permissions there. Then click **Finish**.

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### Amazon Athena

To connect to Amazon Athena, QuickSight needs to access the Amazon S3 buckets that Amazon Athena is using. The next step lets you choose the correct S3 buckets.

Cancel Skip S3 bucket selection Next

### Select Amazon S3 buckets

**S3 Buckets Linked To QuickSight Account** **S3 Buckets You Can Access Across AWS**

Select the buckets that you want QuickSight to be able to access.


Selected buckets have read only permissions by default. However, you must give write permissions for Athena Workgroup feature.

☒ Select all

S3 Bucket	Write permission for Athena Workgroup
[REDACTED]	<input type="checkbox"/>
<input checked="" type="checkbox"/> migration-factory-[REDACTED]-athena-results	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> migration-factory-[REDACTED]-migration-tracker	<input checked="" type="checkbox"/>
[REDACTED]	<input type="checkbox"/>
[REDACTED]	<input type="checkbox"/>
[REDACTED]	<input type="checkbox"/>









Cancel Finish

6. After the selections are confirmed, click **Update**.

 **QuickSight**

### QuickSight access to AWS services

QuickSight can connect to the selected AWS products & services below for all users & groups:

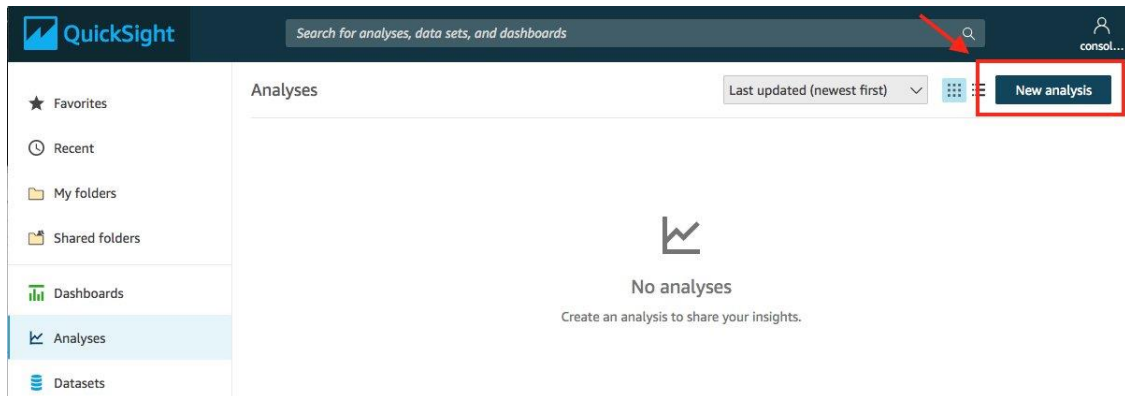
	Amazon Redshift Enables QuickSight to auto-discover clusters	<input type="checkbox"/>
	Amazon RDS Enables QuickSight to auto-discover instances	<input type="checkbox"/>
	IAM Enables you to invite IAM users from this AWS Account to access QuickSight	<input type="checkbox"/>
	Amazon S3 Enables QuickSight to auto-discover your Amazon S3 buckets <a href="#">Details</a>	<input checked="" type="checkbox"/>
	Amazon Athena Enables QuickSight access to Amazon Athena databases	<input checked="" type="checkbox"/>
	Amazon S3 Storage Analytics Enables QuickSight to visualize your S3 Storage Analytics data	<input type="checkbox"/>
	AWS IoT Analytics Enables QuickSight to visualize your IoT Analytics data	<input type="checkbox"/>
	Amazon SageMaker Enables QuickSight to infer fields from custom ML models	<input type="checkbox"/>

Cancel **Update**

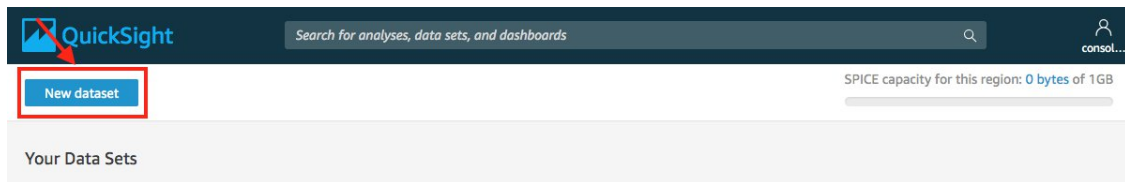


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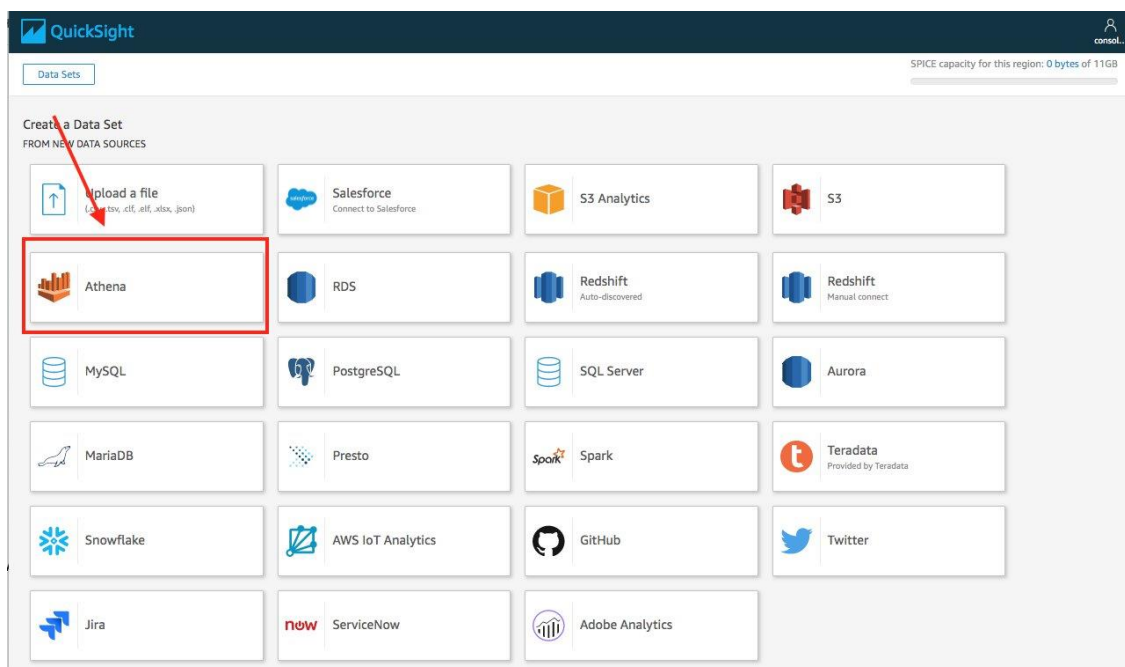
- Once you have the permissions set. Go back to the **homepage** and click **New analysis**.



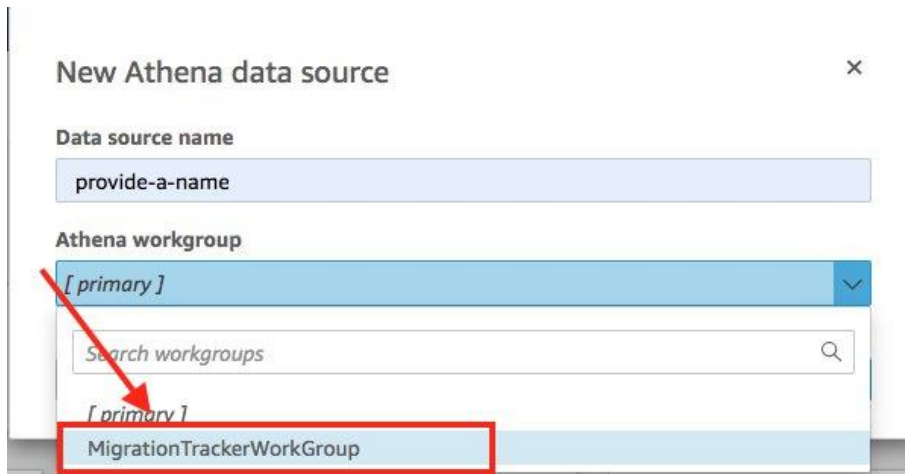
- Then click **New dataset**.



- Select **Athena**



10. Provide **any name for your data source** and select the **Migration Tracker Workgroup**



New Athena data source

Data source name

provide-a-name

Athena workgroup

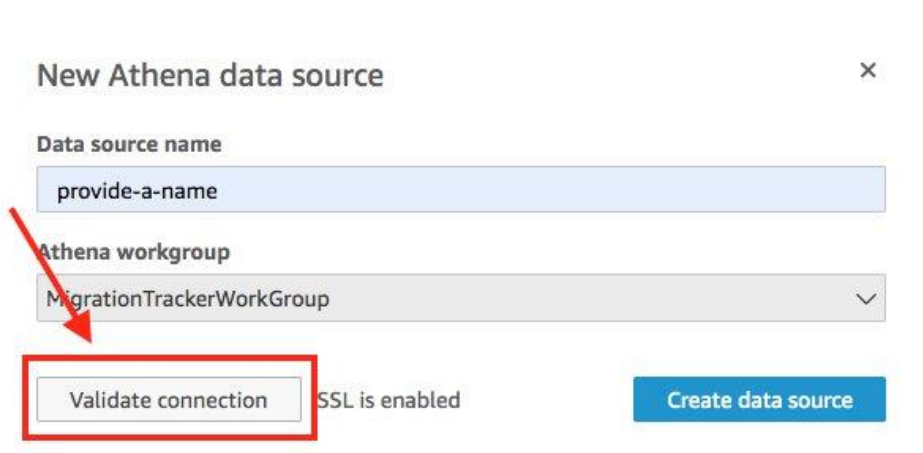
[ primary ]

Search workgroups

[ primary ]

MigrationTrackerWorkGroup

11. **Validate the connection** to make sure QuickSight can communicate with Athena.



New Athena data source

Data source name

provide-a-name

Athena workgroup

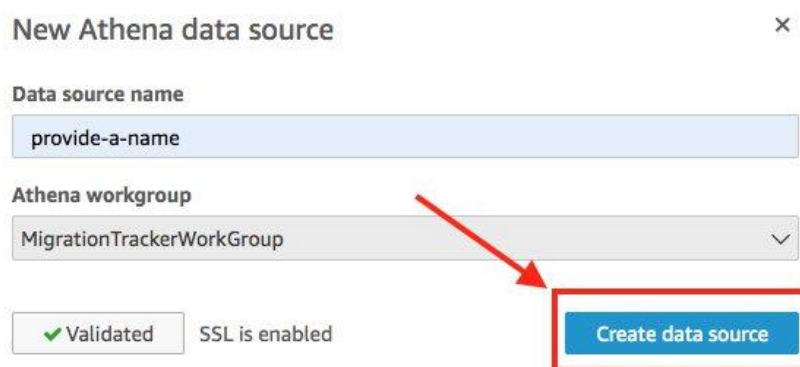
MigrationTrackerWorkGroup

Validate connection

SSL is enabled

Create data source

12. Once the connection has been validated, click **Create data source**.



New Athena data source

Data source name

provide-a-name

Athena workgroup

MigrationTrackerWorkGroup

Validated

SSL is enabled

Create data source

13. Select the **Migration Tracker table** for the Athena table.

Choose your table ×

provide-a-name

Database: contain sets of tables.

Select...

migration-tracker

Edit/Preview data Use custom SQL Select

14. Choose the **migration\_tracker\_general\_view**. Then click **Select**

Choose your table ×

demo-data-set

Database: contain sets of tables.

migration-tracker

Tables: contain the data you can visualize.

☐ migration-tracker-app-extract-table

☐ migration-tracker-server-extract-table

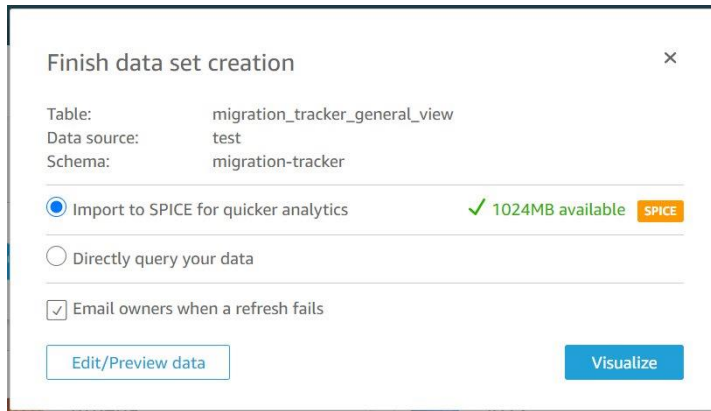
☐ migration\_factory\_test\_apps

☐ migration\_factory\_test\_servers

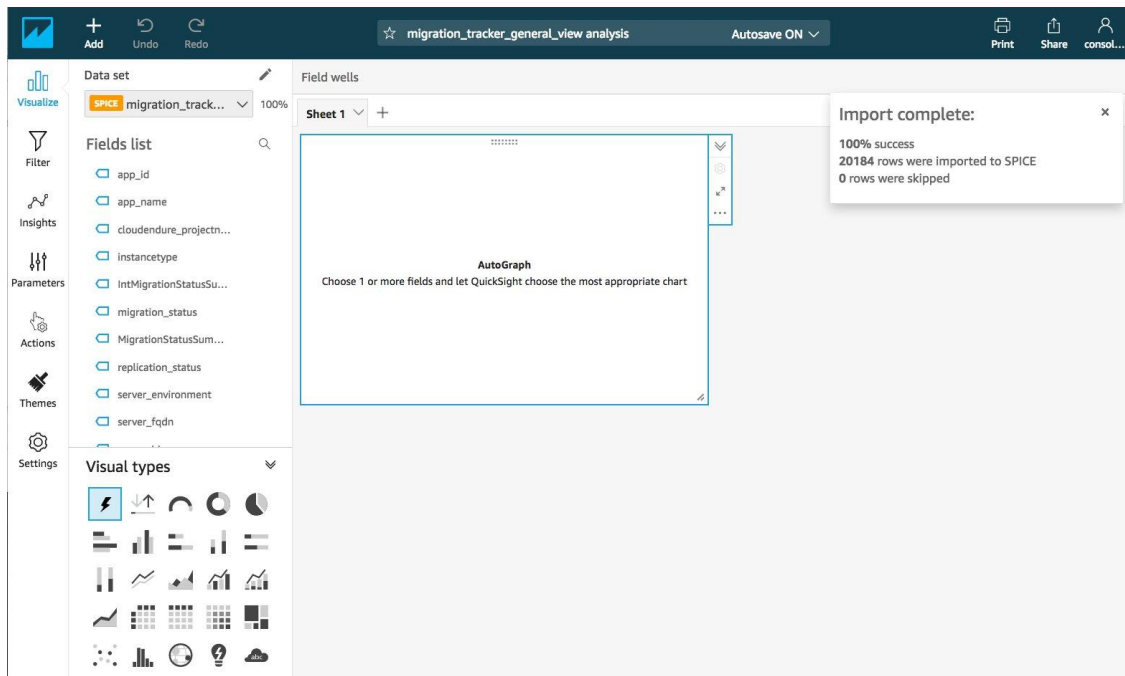
☒ migration\_tracker\_general\_view

Edit/Preview data Use custom SQL Select

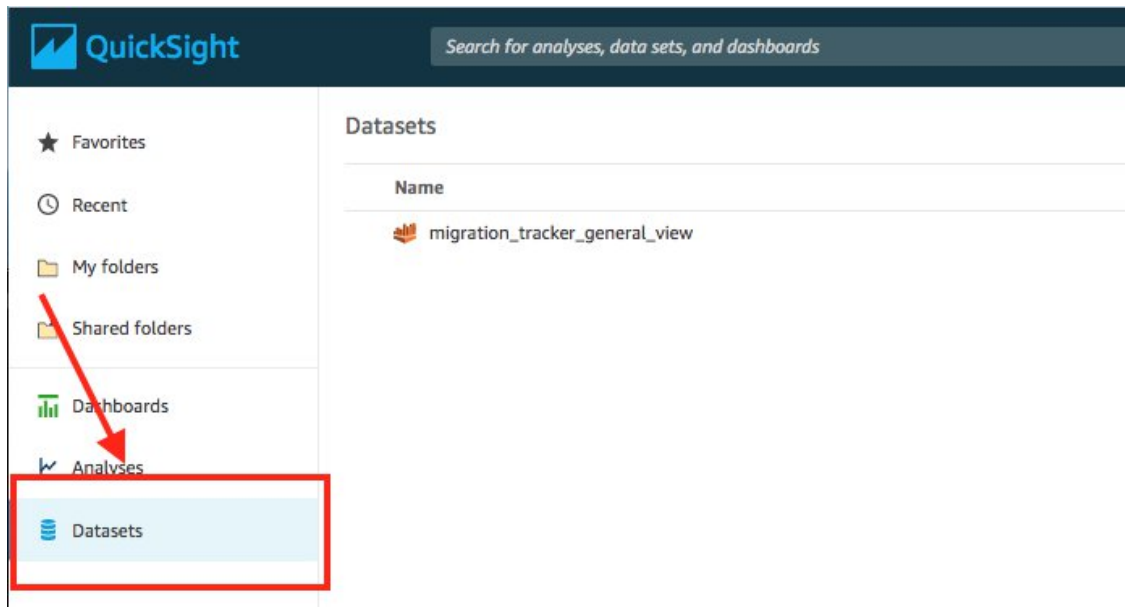
15. Once done, select **Visualize**.



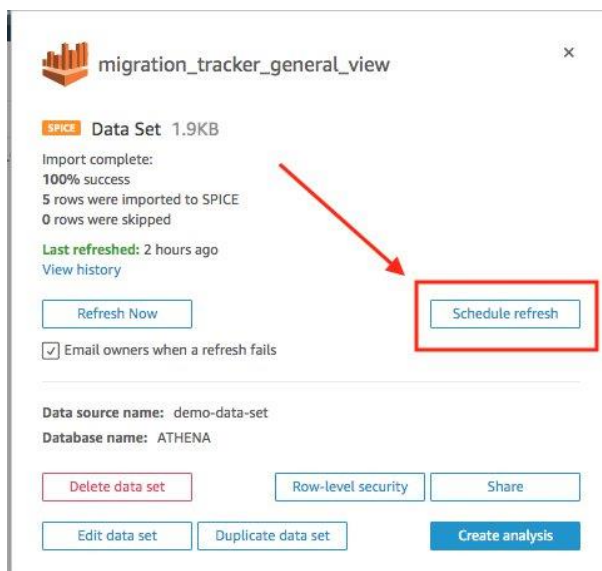
16. Once the data is imported, you will be redirected to the Analysis page to create the visuals.



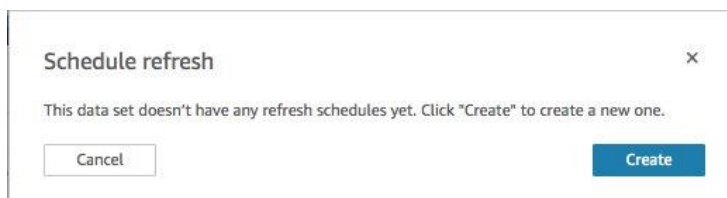
17. To make sure that your data is up to date, you can schedule a refresh of your data set. To do that, go to the **quicksight homepage** → **Datasets**.



18. Then click on the **name of the dataset** you want to configure and click **Schedule refresh**



19. Click **Create** to create a scheduled refresh.



20. **Change it to the timezone** you want and customize your frequency by clicking on **repeats** then change the **starting time** to when you want the refresh to start. Once you have confirmed your options click **Create**.

Create a schedule

After you create an hourly refresh schedule, you can't create any other refresh schedules for this data set.

Time zone: Europe/London

Repeats: Hourly

Starting: 2020-09-24 14:00

Cancel Create

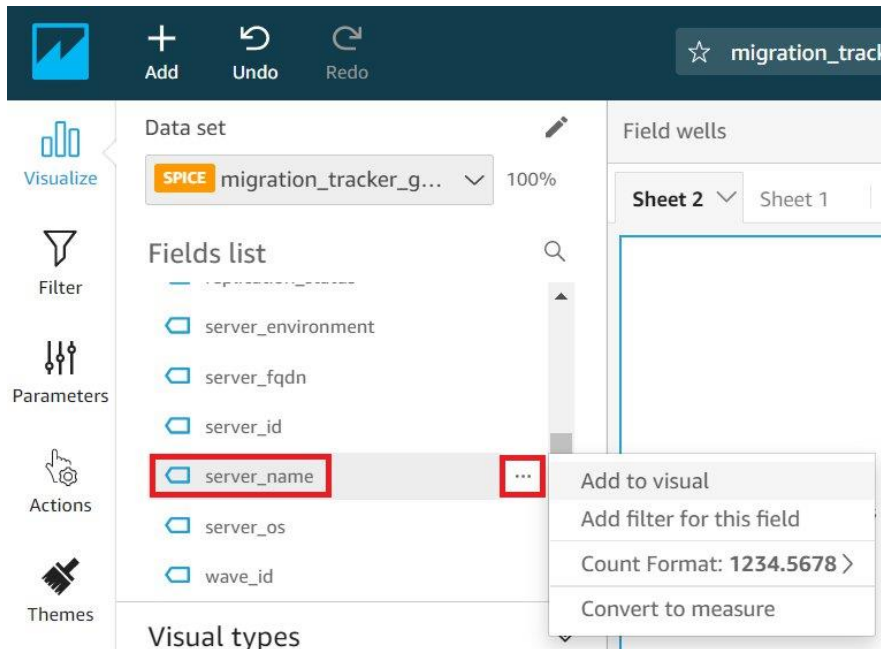
## Visuals

There are multiple ways you can display your data on Quicksight. It can be customized to show views that are necessary to your team. Here are two examples of visuals that we think is necessary for your migration.

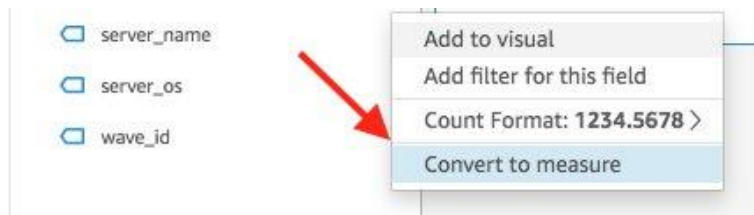
Wave 1 Server Count	Wave 2 Server Count	Wave 3 Server Count	Wave 4 Server Count
5,887	6,728	5,046	2,523

First is the count overview, this view counts all of the servers in the data set then are grouped per wave to give you a more granular view of how many servers there are in total. You can create this view by converting the server\_name into measure, then counting the distinct servers names. Then finally, create a wave by wave filter to make it look like this.

1. To **add** a visual, click the **+** button on the left hand side of the screen and select **Add Visual**.
2. Find a **unique id** on your dataset. For Migration Factory, we will use the server name field to make sure we get the unique entries. **Hover over the unique field** and **click the three dots** on the right of it.



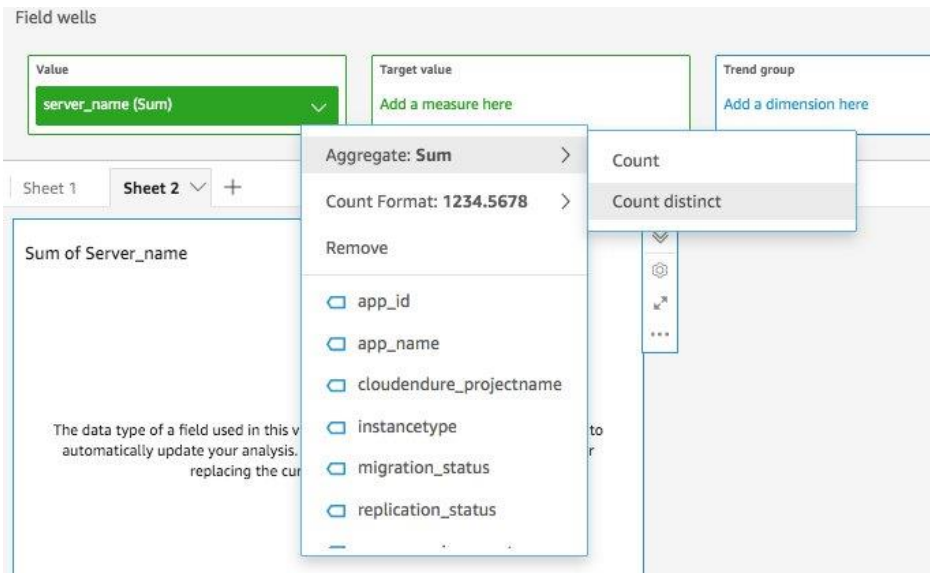
3. In order for us to count each entry, we have to convert the dataset to measure instead of dimension. To do this, click the **Convert to measure**. The tag will the **turn green** to indicate that it is now measure and not a dimension.



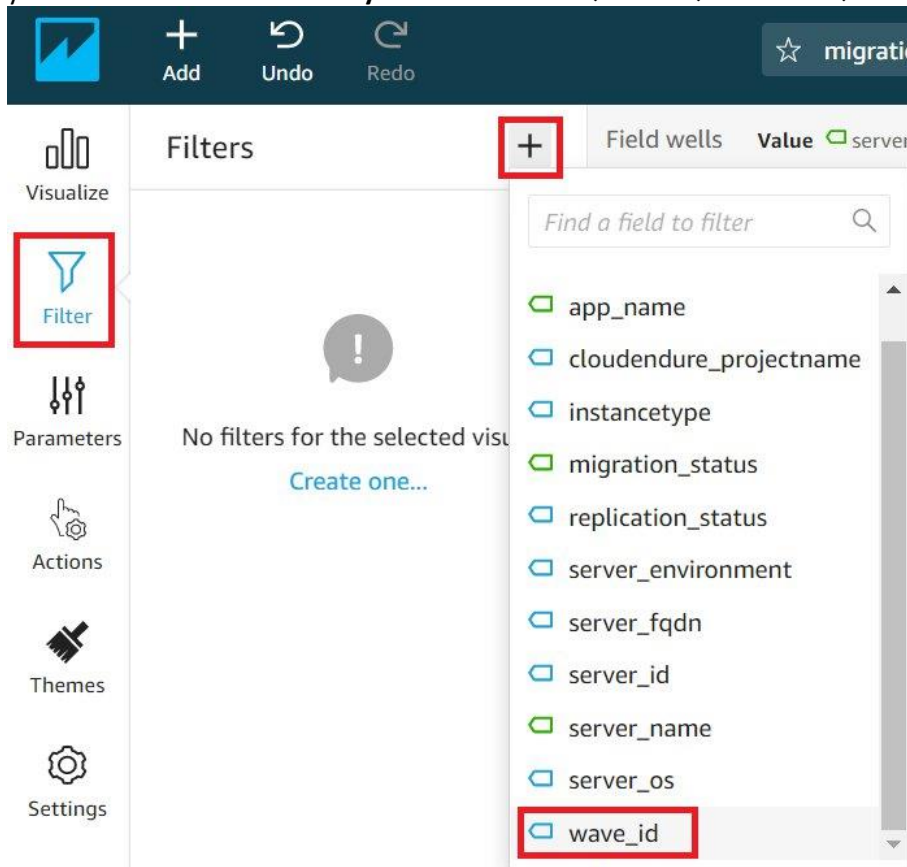
Color will change to green like below:



4. **Click the field we just converted to measure** (ie. server name) to visualize the image. You will then see the visual with an error message saying that we have to update the field data types. Don't worry, we'll fix that on the next step.
5. To fix that error and make sure we get the count. Under field wells, **click the drop down beside server\_name (Sum) → Aggregate: Sum → Count Distinct**.



6. After you do that, it should now show a count of how many unique server names you have in your dataset. Don't forget to convert your dataset back to dimension when you create another visual. Resize the visualization to make it look better. You can now add filters by following the steps above to know the server count for each wave.
7. To get the server count for each wave, you need to apply a wave\_id filter. To **create filters** for your data set: **click the visual you want to filter** → **Filter** → **+ Button** → **Choose Wave\_id**.

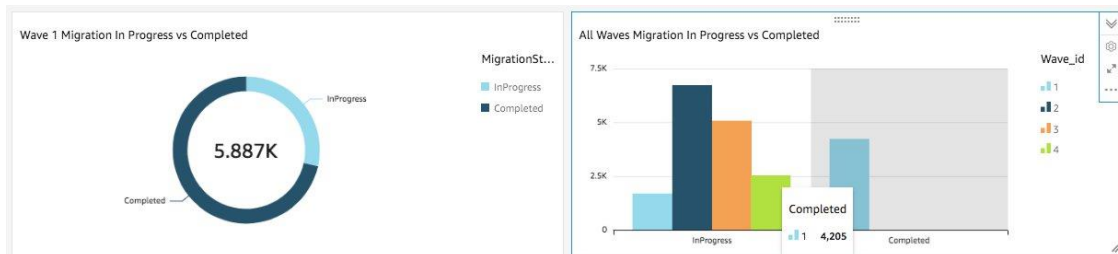




8. Select Wave\_id Filter, and select the correct Wave\_id, in this example, we will select wave id 1. Change the visual name to Wave 1 Server Count. You can repeat this step as needed for other waves

app_name	server_name	migration_status
app 123	Server1	
app 123	Server2	
Application 01	Server1	CE Agent Install - Success
Application 01	Server2	CE Agent Install - Success

Next view is the in Progress vs Completed view:



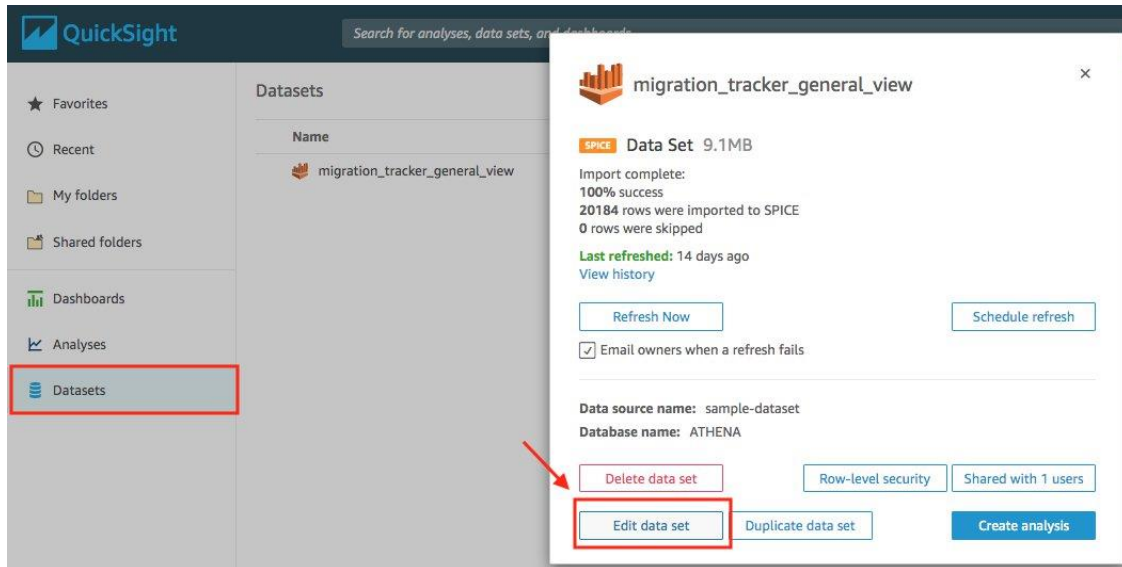
In this view, we made use of SPICE Queries by creating a new column on the data set that tells us that if the status is not Completed, then it must be In Progress. This combines all of the values that doesn't say Completed in the dataset and turns it into In Progress. In general, this would show you up to 5 migration/replication status but since we created a new column called MigrationStatusSummary with this query:

```
ifelse(migration_status = 'Cutover instance launched', 'Completed', 'InProgress')
```

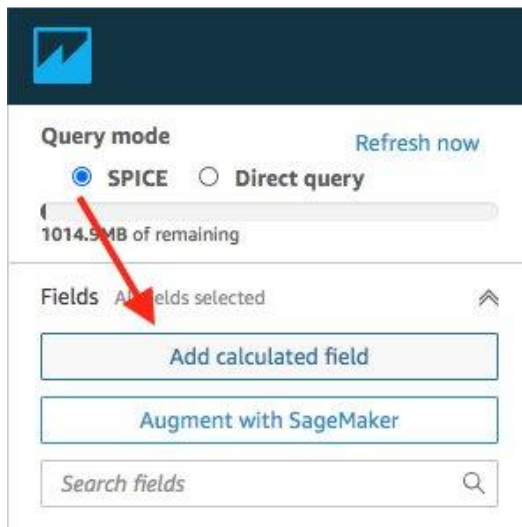
It helped us combine the values of the other statuses together to make one column that we can use for visualization. Here is a reference page for how to [add a SQL Query](#)

1. To create the MigrationStatusSummary column, go to **Datasets** → **click on the Migration Tracker Dataset** → **Edit Data Set**

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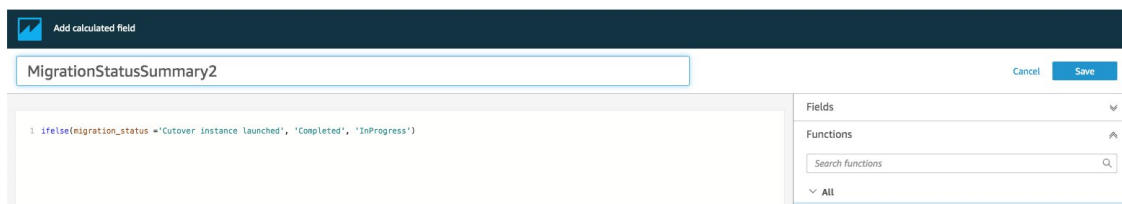


2. Click on the **Add Calculated Field**

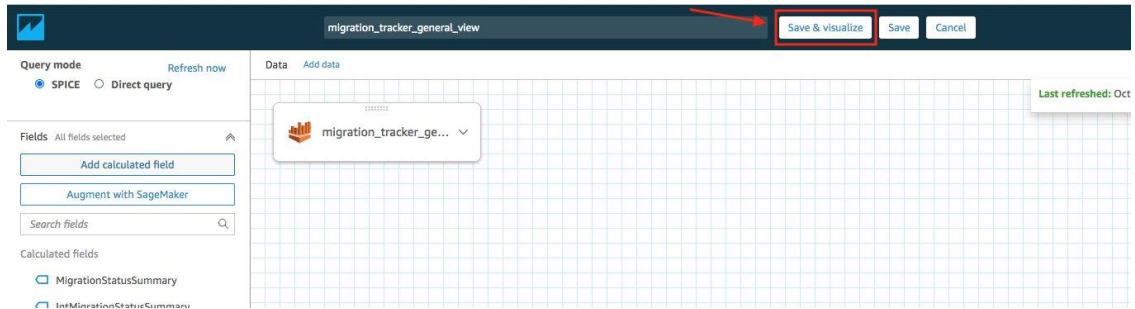


3. **Add a name** to your new SQL query (this will serve as the column name as well), then **write the query on the text field below** and click **Save**. Use the query below:

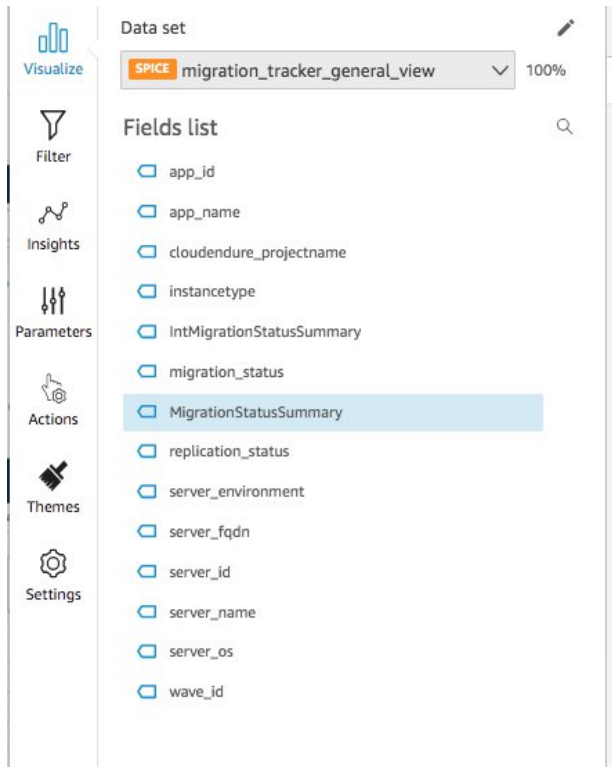
*ifelse(migration\_status = 'Cutover instance launched', 'Completed', 'InProgress')*



- Click **Save & Visualize** before leaving the page to save your changes.



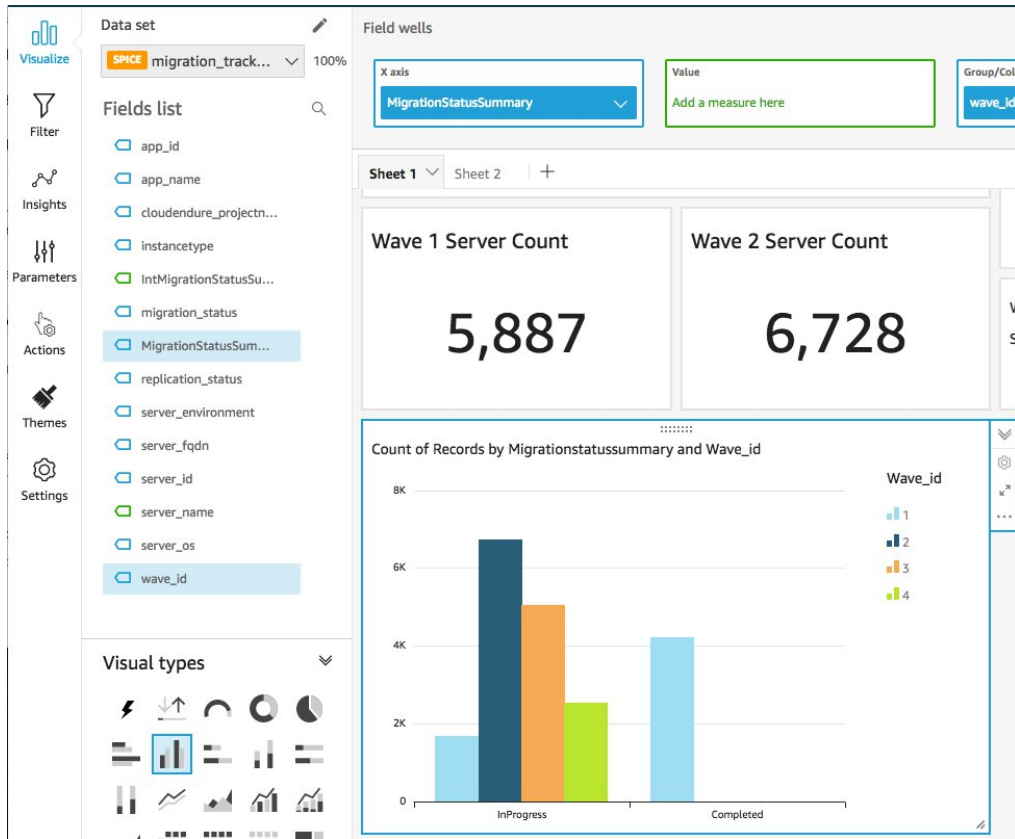
- You should now be able to see that field on your Data Set Fields list once you visualize your data.



### To Build the Dashboard:

- To build the dashboards above, **add a visual** by clicking the + button
- Click on the new column you built, in this case: **MigrationStatusSummary** as the main value, then select **Wave** to break it down by wave.

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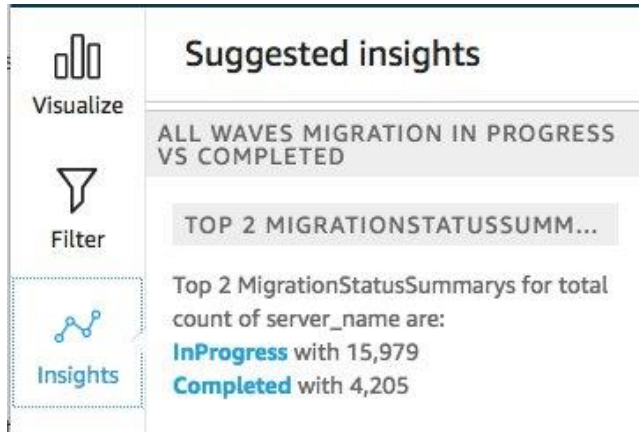
3. As a bonus, after you create the custom columns, insights will be generated and you can customize your narratives per insight. For example:



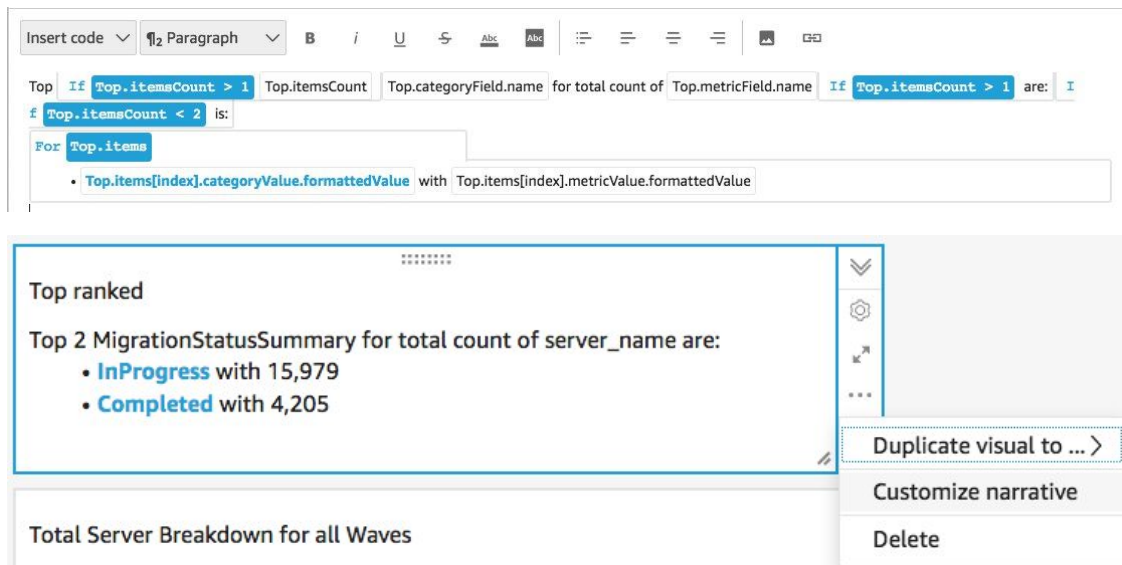
4. You can break this down by waves to give you this kind of insight:



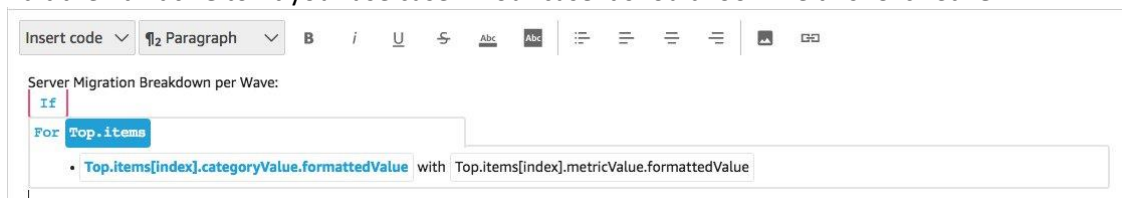
- Click on **Insights** (Note: This option is only available if you use Enterprise license), and find the insight that shows the breakdown of Completed and In Progress



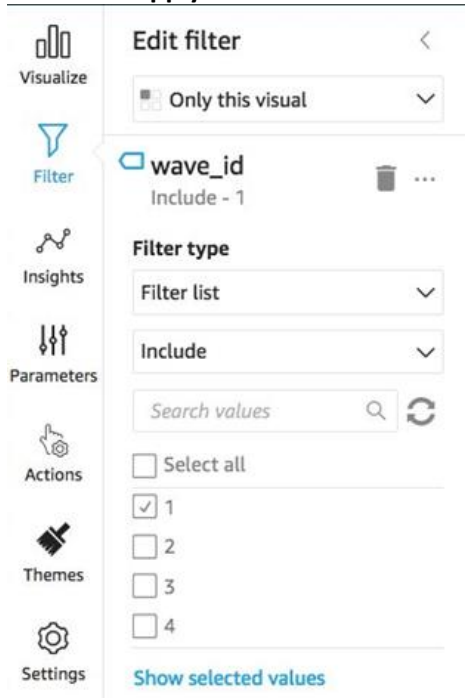
- Click on that insight and add it to your analysis, then click **Customize Narrative**.



- Edit the **narrative** to fit your use case. In our case it should look like this. Click **Save**:



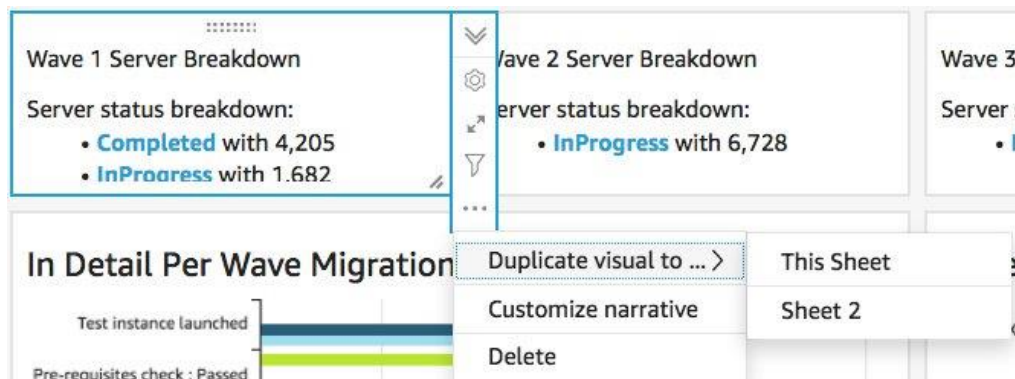
8. After you hit save, go back to the dashboard and then filter it to show it per wave. To do this, **click Filter** → **Plus +** button and **select wave\_id**. Then choose the wave you need for the visual. Then click **Apply**



9. You should now be able to see this:



10. To create visual for all waves, duplicate the visuals to the same sheet by clicking the **3 dots** on the left hand side of the visual then **Duplicate visual to.. >**



11. Modify your filters per visual and it should show you a breakdown for all your waves per filter. This insight was customized to tell you a quick summary of the total count of servers across all waves. For more information and guide on how to customize insights click this link: <https://docs.aws.amazon.com/quicksight/latest/user/computational-insights.html>

Overall, an example dashboard can look like this but can also be customizable depending on how you want your data visualized:

