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### About the Tutorial

AWS Quicksight is an AWS based Business Intelligence and visualization tool that is used to visualize data and create stories to provide graphical details of the data. Data is entered as dataset and you can apply filters, hierarchies, and columns to prepare documents. You can choose various charts like Bar charts, Pie charts, etc. to visualize the data effectively. This basic tutorial will help you to understand and learn AWS Quicksight tool.

### Audience

AWS Quicksight is meant for BI developers and business users who can alter data structures and correlations in whatever way they want. They can create data visualizations and stories from multiple data sources. It helps to adapt data to organizational needs to create stories with visualizations.

### **Prerequisites**

Before you start proceeding with this tutorial, we are assuming that you are already aware of the basics of Business Intelligence and SQL. If you are not exposed to BI concepts, then we will suggest you first to go through our short tutorial on same topics.

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AWS Quicksight is one of the most powerful Business Intelligence tools which allows you to create interactive dashboards within minutes to provide business insights into the organizations. There are number of visualizations or graphical formats available in which the dashboards can be created. The dashboards get automatically updated as the data is updated or scheduled. You can also embed the dashboard created in Quicksight to your web application.

With the latest ML insights, also known as Machine Learning insights, Quicksight uses its inbuilt algorithms to find any kind of anomalies or peaks in the historical data. This helps to get prepared with the business requirements ahead of time based on these insights. Here is quick guide to get started with Quicksight.

Below is official product description page from AWS:

#### https://aws.amazon.com/quicksight/

You can also subscribe for an AWS trial account by filling the below mentioned information and click on Continue button.

aws	
	Create an AWS account
AWS Accounts Include 12 Months of Free Tier Access Including use of Amazon EC2, Amazon S3, and Amazon DynamoDB Visit aws.amazon.com/free for full offer terms	Email address Password Confirm password AWS account name  Continue Sign in to an existing AWS account



# 2. AWS Quicksight — Landing Page

To access AWS Quicksight tool, you can open it directly by passing this URL in web browser or navigating to **AWS Console -> Services**.

#### https://aws.amazon.com/quicksight/

Once you open this URL, on top right corner click on "Sign in to the Console".



You need to provide the below details to login to Quicksight tool:

- Account ID or alias
- IAM User name
- Password

aws	
Account ID or alias	
IAM user name	Amazon RDS
Password	Optimized, fully managed relational cloud databases.
Sign In	Learn more »
Sign-in using root account credentials	



W QuickSight	Search for analyses, data sets and dashboards	Q	N. Virginia
New analysis 📥 A		B 🖙	Manage data
	Connect to your data on AWS to start creating an analysis RDS Instances oxygenauroramysql2017 sumithapauroramysql20	<b>с</b>	×
	Connect to another data source or upload a file		
	All analyses All dashboards Tutorial videos	<b>)</b>	

Once you login into Quicksight, you will see the below screen:

As marked in the above image,

**Section A:** "New Analysis" icon is used to create a new analysis. When you click on this, it will ask you to select any data set. You can also create a new data set as shown below:

QuickSight	Search for analyses, data sets and dashboards	
New data set		
Your Data Sets		
accaccounts SPICE	History1 SPICE	
accaccounts	accaccounts SPICE	

**Section B:** The "Manage data" icon will show all the data sets that have already been input to Quicksight. This option can be used to manage the dataset without creating any analysis.

**Section C:** It shows various data sources you have already connected to. You can also connect to a new data source or upload a file.



QuickSight		
Data Sets		
Create a Data Set FROM NEW DATA SOURCES		
Upload a file (.csv, .tsv, .clf, .elf, .xlsx, .json)	Salesforce Connect to Salesforce	S3 Analytics
<b>S</b> 3	Athena	RDS

**Section D:** This section contains icon for already created analysis, published dashboards and tutorial videos explaining about Quicksight in detail.

You can click on each tab to view them as below:

# All analysis

Here, you can see all the existing analysis in AWS Quicksight account including report and dashboards.



# All dashboards

This option shows only existing dashboards in AWS Quicksight account.





# **Tutorial videos**



Other option to open Quicksight console is by navigating to AWS console using below URL:

#### https://aws.amazon.com/console/

Once you login, you need to navigate to Services tab and search for Quicksight in search bar. If you have recently used Quicksight services in AWS account, it will be seen under History tab.



### AWS Quicksight

aws Services	🔨 Resource Groups 👻 🛠	🗘 NehaGup
History Console Home	Quick	
CloudFormation Pinpoint S3 Data Pipeline Cognito	Compute       Robotics         EC2       AWS RoboMaker         Lightsail C*       BOOKChain         ECR       BOOKChain         ECS       BOOKChain         Lambda       Amazon Managed Blockchain         Batch       Satellite         Elastic Beanstalk       Soverless Application Repository	Analytics Athena EMR CloudSearch Elasticsearch Service Kinesis QuickSight C Data Pipeline AWS Glue MSK



# 3. AWS Quicksight — Using Data Sources

AWS Quicksight accepts data from various sources. Once you click on "New Dataset" on the home page, it gives you options of all the data sources that can be used.

Below are the sources containing the list of all internal and external sources:

Data Sets		SPICE C
Upload a file (,csv, .tsv, .clf, .elf, .xlsx, .json)	Salesforce Connect to Salesforce	S3 Analytics
<b>S3</b>	Athena	RDS
Redshift Auto-discovered	Redshift Manual connect	MySQL
PostgreSQL	SQL Server	Aurora
A MariaDB	Presto	spark Spark
TERADATA Teradata Provided by Teradata	Snowflake	AWS IoT Analytics
GitHub	Twitter	Jira
<b>ทษพ</b> ServiceNow	Adobe Analytics	

Let us go through connecting Quicksight with some of the most commonly used data sources:



### Uploading a file from system

It allows you to input .csv, .tsv, .clf,.elf.xlsx and Json format files only. Once you select the file, Quicksight automatically recognizes the file and displays the data. When you click on **Upload a File** button, you need to provide the location of file which you want to use to create dataset.

### Using a file from S3 format

The screen will appear as below. Under Data source name, you can enter the name to be displayed for the data set that would be created. Also you would require either uploading a manifest file from your local system or providing the S3 location of the manifest file.

VuickSight			<b>♀</b> N. Virgir
Data Sets	New S3 data source	×	SPICE capacity for this region: 3.1GB
	Data source name		
Create a Data Set	Enter a name for the data source		
FROM NEW DATA SOURCES	Upload a manifest file	💽 URL 🔘 Upload	
	Enter URL of your JSON manifest file		
Upload a file (.csv, .tsv, .clf, .elf, .dsx, .json)		Connect	
<b>\$</b> 3	Athena	RDS	
Redshift Auto-discovered	Redshift Manual connect	MySQL	

Manifest file is a json format file, which specifies the url/location of input files and their format. You can enter more than one input files, provided the format is same. Here is an example of a manifest file. The "URI" parameter used to pass the location of input file is S3.

```
{
    "fileLocations": [
        {
           "URIs": [
           "url of first file",
           "url of second file",
           "url of 3<sup>rd</sup> file and so on"
        ]
     },
```



```
}
],
"globalUploadSettings": {
    "format": "CSV",
    "delimiter": ",",
    "textqualifier": "'",
    "containsHeader": "true"
}
```

The parameters passed in **globalUploadSettings** are the default ones. You can change these parameters as per your requirements.

### **MySQL**

You need to enter the database information in the fields to connect to your database. Once it is connected to your database, you can import the data from it.

QuickSight	New MySQL data source	×	<b>Q</b> N. Virginia N
Data Sets S3	Data source name Enter a name for the data source Connection type Public network	~	SPICE capacity for this region: 3.1GB of :
Redshift Auto-discovered	Database server Enter hostname or IP address Port Port		
PostgreSQL	Database name Enter a database name Username		
MariaDB	Username Password Password Validate connection	data source	

Following information is required when you connect to any RDBMS database:

- DSN name
- Type of connection
- Database server name
- Port
- Database name
- User name
- Password

Following RDBMS based data sources are supported in Quicksight:



- Amazon Athena
- Amazon Aurora
- Amazon Redshift
- Amazon Redshift Spectrum
- Amazon S3
- Amazon S3 Analytics
- Apache Spark 2.0 or later
- MariaDB 10.0 or later
- Microsoft SQL Server 2012 or later
- MySQL 5.1 or later
- PostgreSQL 9.3.1 or later
- Presto 0.167 or later
- Snowflake
- Teradata 14.0 or later

### Athena

Athena is the AWS tool to run queries on tables. You can choose any table from Athena or run a custom query on those tables and use the output of those queries in Quicksight. There are couple of steps to choose data source.

When you choose Athena, below screen appears. You can input any data source name which you want to give to your data source in Quicksight. Click on "**Validate Connection**". Once the connection is validated, click on the "**Create new source**" button.

VuickSight		N. Virginia
Data Sets	New Athena data source ×	SPICE capacity for this region: 3.1GB of
<b>1</b> S3	Enter a name for the data source       Validate connection       SSL is enabled   Create data source	
Redshift Auto-discovered	Redshift Manual connect MySQL	

Now choose the table name from the dropdown. The dropdown will show the databases present in Athena which will further show tables in that database. Else you can click on **"Use custom SQL**" to run query on Athena tables.



ZuickSight		<b>Q</b> N. Virginia N
Data Sets	Choose your table × Athena sample	SPICE capacity for this region: <b>3.1GB</b> of
<b>S</b> 3	Database: contain sets of tables.	
Redshift Auto-discovered	default sampledb	
PostgreSQL		
A MariaDB	Edit/Preview data Use custom SQL Select	

Once done, you can click on "Edit/Preview data" or "Visualize" to either edit your data or directly visualize the data as per your requirement.

VuickSight			<b>Q</b> N. Virginia
Data Sets S3	Finish data set creation Table: accaccounts Data source: Athena sample Schema: sampledb Import to SPICE for quicker analytics	× √ 17.9GB available svice	SPICE capacity for this region: 3.1GB o
Redshift Auto-discovered	Directly query your data     Edit/Preview data	Visualize	

### **Deleting a data source**

When you delete a data source which is in use in any of the Quicksight dashboards, it can make associated data set unusable. It usually happens when you query a SQL based data source.

When you create a dataset based on **S3**, **Sales force or SPICE**, it does not affect your ability to use any dataset as data is stored in SPICE; however refresh option is not available in this case.

To delete a data source, select the data source. Navigate to From Existing Data Source tab on creating a dataset page.



ZuickSight		
Data Sets	thena sample	×
FROM EXISTING DATA SOURCES	DATABASE NAME ATHENA	
Athena sample	Delete data source	
Updated 17 hours ago	Edit data source Create da	ta set

Before deletion, you can also confirm estimated table size and other details of data source.

Data source details						
Table: Estimated table size: Data source:	Group 1 4.8GB <mark>SPICE</mark> History					
Import to SPICE		✓ 17.9GB available SPICE				
Delete						
Edit/Preview data		Visualize				



When you use different data sources in Quicksight tool, there are certain limits that apply based on data sources.

### File

You can use up to 25GB of total size specified in manifest file. This limit is dependent on the file size after it is imported to SPICE.

The number of files supported in manifest file is 1000 and you also have some limit on number of columns in each file.

# Table and Query

When you are querying a large table, it is recommended that you use **Where or Having** condition to reduce the number of data imported to SPICE. Query result imported into SPICE should not exceed 25 GB.

You can deselect some of the columns while importing the data into SPICE.

In case your data source contains data type which are not supported in Quicksight, AWS Quicksight skips those values.

Person ID	Sales Date	Amount
001	10/14/2017	12.43
002	5/3/2017	25.00
003	Unknown	18.17
004	3/8/2019	86.02

From the above values, Quicksight will drop the no date value row while importing this data in dataset. Following data types are supported in Quicksight:



Database Source	Number Data Types	String Data Types	Date time Data Types	Boolean Data Types
Amazon Athena, Presto	<ul> <li>bigint</li> <li>decimal</li> <li>double</li> <li>integer</li> <li>real</li> <li>smallint</li> <li>tinyint</li> </ul>	• char • varchar	<ul><li>date</li><li>timestamp</li></ul>	• Boolean
Amazon Aurora, MariaDB, and MySQL	<ul> <li>bigint</li> <li>decimal</li> <li>double</li> <li>int</li> <li>integer</li> <li>mediumint</li> <li>numeric</li> <li>smallint</li> <li>tinyint</li> </ul>	<ul> <li>char</li> <li>enum</li> <li>set</li> <li>text</li> <li>varchar</li> </ul>	<ul> <li>date</li> <li>datetime</li> <li>timestamp</li> <li>year</li> </ul>	
PostgreSQL	<ul> <li>bigint</li> <li>decimal</li> <li>double</li> <li>integer</li> <li>numeric</li> <li>precision</li> <li>real</li> <li>smallint</li> </ul>	<ul> <li>char</li> <li>character</li> <li>text</li> <li>varchar</li> <li>varying character</li> </ul>	<ul><li> date</li><li> timestamp</li></ul>	• Boolean
Apache Spark	<ul> <li>bigint</li> <li>decimal</li> <li>double</li> <li>integer</li> <li>real</li> <li>smallint</li> <li>tinyint</li> </ul>	• varchar	<ul><li> date</li><li> timestamp</li></ul>	• Boolean
Snowflake	<ul> <li>bigint</li> <li>byteint</li> <li>decimal</li> <li>double</li> <li>doubleprecision</li> <li>float</li> <li>float4</li> <li>float8</li> <li>int</li> <li>integer</li> <li>number</li> <li>numeric</li> <li>real</li> <li>smallint</li> <li>tinyint</li> </ul>	<ul> <li>char</li> <li>character</li> <li>string</li> <li>text</li> <li>varchar</li> </ul>	<ul> <li>date</li> <li>datetime</li> <li>time</li> <li>timestamp</li> <li>timestamp_*</li> </ul>	• Boolean



Microsoft SQL Server	<ul> <li>bigint</li> <li>bit</li> <li>decimal</li> <li>int</li> <li>money</li> <li>numeric</li> <li>real</li> <li>smallint</li> <li>smallmoney</li> <li>tinyint</li> </ul>	<ul> <li>char</li> <li>nchar</li> <li>nvarchar</li> <li>text</li> <li>varchar</li> </ul>	<ul> <li>date</li> <li>datetime</li> <li>datetime2</li> <li>datetimeoffset</li> <li>smalldatetime</li> </ul>	• bit
-------------------------	--	--	--	-------



# 5. AWS Quicksight — Editing Datasets

When you create a new dataset to be used in Quicksight, the following message would appear. You can preview or edit the data as per your requirement. You can change the types of certain fields, rename the headers or add some calculated fields based on input fields.

QuickSight			
Data Sets	Data source details	x	SPICE capacity for this reg
History	Table:     Group 1       Estimated table size:     7.4KB       Data source:     accaccounts		
Updated a month ago	Import to SPICE	✓ 17.9GB available serce	
accaccounts Updated a month ago	Edit/Preview data	Visualize	
Business Review Updated 2 months ago	Sales Pipeline Updated 2 months ago	Web and Social Medi Updated 2 months ago	a An

Once you click Edit/Preview data, you will be able to see the header and the fields on your input dataset. Here is a sample dataset:

		accaccounts				Save & visualize	Save	Cancel			♥ N. Virginia Nel
Data source Refre	esh now										
17.9GB of remaining		🖍 Node.s	🧪 Twili	🧪 Deve	/ Deve	🧪 Deve	🧪 Deve	🧪 Deve	🧪 Deve	🧪 Edge	🧪 Cog
Fields All fields selected	*	<ul> <li>String</li> </ul>	<ul> <li>String</li> </ul>	String	<ul> <li>String</li> </ul>	# Int	# Int	# Int	# Int	# Int	<ul> <li>String</li> </ul>
Add and a detailed field		A A 2015-06	dev6_8744	dev6_8744@	http://nodejs	3110	3119	7110	7119	0	arn:aws:iam
Add calculated field		A A 2015-06	dev1_6917	dev1_6917@	http://nodejs	3120	3129	7120	7129	0	arn:aws:iam
Search fields	۹	A A 2015-06	iyezdani_2047							0	
Calculated fields		A A 2015-06	tester_7853							0	
No calculated fields.		A A 2015-06	dev7_1385	dev7_1385@	http://nodejs	3130	3139	7130	7139	0	arn:aws:iam
Select All None		A A 2015-06	dev11_4252	dev11_4252	http://nodejs	3090	3099	7090	7099	0	arn:aws:iam
ZimbraEmail.s											
# Edges.s											
# DeveloperProfile.m.Debuggir	•										
<ul> <li>CognitoProfile.m.IdentityPoo</li> </ul>	ď										
# DeveloperProfile.m.Applicatic											
AccountPassword.s		•									

There is an option of adding calculated fields as well. You can use inbuilt functions on input fields to create a new field. There are number of options like concatenating multiple fields,



unstring a single field into multiple fields, time difference between to dates and so on. The complete list is shown below:



Once you are done with adding or modifying fields, just click "Save and Visualize" or just "Save" at the top. The "Save" button will keep you on existing screen while "Save and Visualize" will take you to the visual creation screen.

accaccounts						Save	ancel			• A N. Virginia NehaGup
Data source Refresh now SPICE										
Fields All fields selected	node.s	🧪 Twili	🧪 Deve	🧪 Deve	🧪 Deve	🧪 Deve	🧪 Deve	🧪 Deve	🖍 Edge	🧪 Cogn
	▲ String	<ul> <li>String</li> </ul>	<ul> <li>String</li> </ul>	<ul> <li>String</li> </ul>	# Int	<ul> <li>String</li> </ul>				
Add calculated field	A A 2015-06	dev6_8744	dev6_8744@	http://nodejs	3110	3119	7110	7119	0	arn:aws:iam::
Search fields Q	A A 2015-06	dev1_6917	dev1_6917@	http://nodejs	3120	3129	7120	7129	0	arn:aws:iam::

To cancel your changes, click on Cancel button at the top.



# 6. AWS Quicksight — Creating New Analysis

An analysis is a combination of one or more visuals. A visual is the representation of data in graphical, chart or tabular format. There are number of formats available to create any visual. This includes the pie charts, horizontal bar chart, vertical bar chart and pivot table.

Once the input data set has been modified as per business requirement, double click on the dataset and click on visualize to start creating new analysis. It will show you the below screen or the workspace.

	+ ら C <sup>1</sup> Add Undo Redo	People Overview analysis	Autosave ON ∨	් Capture Share N
000 Visualize	Data set  SPICE People Overview  100%		~	Import complete:
↓ Filter	Fields list Q Business Function			100% success 1956 rows were imported to SPICE 0 rows were skipped
No. Insights	💾 Date	AutoGraph Choose 1 or more fields and let QuickSight choose the most appropriate of	chart	
Story	Education     Employee ID			
<b>사</b> Parameters	Employee Name     Event Type     Visual targes		4	
	±^ aí aí © ?			

Once you select a field, Quicksight automatically chooses the type of visual depending upon the field. If you want to change the visual type, you can select one of the visual types.

For example, we start by selecting the Horizontal bar under visual types. First, drag any one field inside the visual in the centre. At the top, you will see "Fields wells" containing fields used in visual and the corresponding axis. You can click on the down arrow at the last just under user name.

	+ Add	り Undo	C <sup>1</sup> Redo			People Overvie	w analysis		Autosave ON $\vee$	o Captu	① re Share	♥ • N. Virginia I	A NehaGup.
ol0 k	Data	set		/	Field wells	Y axis Gender	Value	Group/Color Gob Family					$\otimes$

This will give you an expanded view. I have selected Gender on Y axis and Job family under Group/colour. You can modify the fields from dropdown. Under value, you can add any numeric field and use aggregate function on that field. By default, the visual will show count of rows.



	+ ら C Add Undo Redo	People Overview ana	alysis Saving 🗞	ි Capture	[ <sup>1</sup> ] ♀ Share N. Virginia
000 Visualize	Data set	Field wells Y axis	Value G	roup/Color	
↓ Filter	Fields list Q	Gender	Add a measure here	lob Family 🗸 🗸	
уу Insights	<ul> <li>Date</li> <li>Date of Birth</li> </ul>	5 Insights Count of Records by Job Family	Remove		
Story	<ul><li>Education</li><li>Employee ID</li></ul>	Male 7	Business Function Date		
<b>V</b> Parameters	Employee Name     Event Type	39	Date of Birth     Education     Employee ID		
		Female 99	Employee ID     Employee Name     A34		
		0 100	Condar 500	-	
	+ り C <sup>1</sup> Add Undo Redo	People Overview ana	ałysis Autosave ON ∨	[රා Capture	Ĉ ♥ Share N. Virginia
000 Visualize	Data set	Field wells			

Value Add a measure here

The visual will appear as follows:

Q

 $\nabla$ 

Filter

Fields list

	+ り C Add Undo Redo	People Overview analysis Autosave ON $\checkmark$	Capture	[ <sup>1</sup> ] Share	♥ N. Virginia N
000 Visualize	Data set SPICE People Overview	Field wells Value Group/Color			
<b>∑</b> Filter	Fields list	Gender V Add a measure here Job Family	~		
N Insights	Employee ID     Employee Name	Count of Records by Gender and Job Family			
Story	<ul><li>Event Type</li><li>Gender</li></ul>	Male			
<b>사</b> Parameters	<ul><li>isUnique</li><li>Job Family</li></ul>				
	Visual types	Female			
	=    // -/	0 100 200 300 400 500			

There are options to change the heading/title of the visual and number of other formatting options. Click the dropdown on the right most. The options will expand. Choose "format visual". You will be able to see various options in left tab under "Format visual".



	+ ら C <sup>1</sup> Add Undo Redo		People Overview analysis	Autosave ON $\vee$	ි Capture	[∱] Share	<b>♀</b> N. Virginia
00	Format visual	×	Field wells				
Visualize	√ Show title		Y axis Gender V	Value Add a measure here	Color amily V		
riiter	Y-Axis	~					
No.	X-Axis	~	Count of Records by Job Family and Co	dar.			
Insigno	Group/Color	~	Count of Records by Job Panniy and Ger	Maximize			
Stony	Legend	~		Format visu	ual		
arameters	Data labels	*	Male	Hide legen Export to C Hide "othe	id CSV r" categories		
			Female 0 100 200	300 400 500	S		

**X- Axis/Y-Axis:** This gives the option if you want to see the label or field name on the respective axis. It also allows you to rename these labels.

**Group/Color:** This provides the option to change the default colors in the visual.

**Legend:** This provides the options to change title and position of title in the visual. You can also rename the title by just clicking over it.

**Data labels:** This provides the option to show exact values of each bar and the position where the values needs to be displayed.

The below screen shows the visual with everything turned on:





# 7. AWS Quicksight — Adding Visuals

To add a new visual, click on the "**Add**" sign at the top. Another rectangular space would be added to the analysis. You can select different visual types and fields to create another visual.

	+ り C Add Undo Redo		People Overview analysis	Autosave ON 🗸	Capture	[ <sup>↑</sup> ] Share	<b>♀</b> N. Virgini	A a NehaGup.
000 <	Data set	1	Field wells					*
Visualize	SPICE People Overview	100%	X axis Value	Group/Color				
$\nabla$	Fields list	Q	Job Level 🗸 Tenure (Average)	V Job Family	$\checkmark$			
Filter	<ul> <li>isUnique</li> </ul>	^						
~	Job Family		5 Insights	2 Insights ::				
Insights	Job Level		Count of Records by Gender and Job Family	Average of Tenure by Job Level ar	nd Job Family			~
•	# Monthly Compensa	1		30				
Story	Notes		Male					
ţţţ	Region			20				
Parameters	++ Tenure	Ŧ			1.1			
	Visual types	$\otimes$	Female	10			L.	
	بة <u>ا</u> ا	d -						
	=    🖉 🖬		0 100 200 300 400	500 VP & above Senior	Manager	En	try	4
	▓≍∎♥							

When you click on Add button, you have the option to add following to your existing analysis:

- Add Visual
- Add Insight
- Add Title
- Add Description
- Add Calculation Field
- Add Parameter



#### AWS Quicksight

	+ ら C Add Undo Redo		History1 analysis			
000	Add visual	1	Field wells 🛛 🗙 axis 🛄 CreationTime.s (MONT			
Visualize	Add insight	✓ 100%	4 Inciphte			
	Add title		4 Insights			
$\nabla$	Add description	Q	Distinct App Requests per month			
Filter	Add calculated field	^	SHOWING TOP 22 IN CREATIONTIMES AND TOP 50 IN			
	Add parameter		600K			
~~	ASID.5					
Insights	AsRole.s		400K			
	AtID.s					
Storv	AtObiect.s		2006			

To format a visual, you can also use drop down arrow button available at top right corner of the chart. Following options are available:

- Maximize
- Format visual
- Hide legend
- Export to CSV
- Hide "other" categories
- URL actions
- Delete





Quicksight allows you to add filters to the visual being created. You have the option to apply filter to only a single visual under any analysis or all the visuals. To add filter, click on "Filter" icon on the left tab. It will show existing filter if there is any or filter can be created as per the requirement. In the below example, we don't have any existing filters, so it gave an option to "Create one"

	+ ら C Add Undo Redo	People Overview analysis	Autosave ON 🗸	ි Capture	 Share	<b>♀</b> N. Virgini	A a NehaGup.
000	Applied filters +	Field wells X axis G Job Level Value # Tenure (Average)	Group/Color Gob Family				≫
Visualize Visualize Filter Ar Insights Story Varameters	Applied filters +	Field wells X axis O Job Level Value # Tenure (Average)	Group/Color Job Family           2 Insights           Average of Tenure by Job Level and J           20           20           0           0           VP & above           Senior	:: ob Family	En	try	*

On clicking create one, you can create filter. This allows you to choose if you want to add filter to just one or all the visuals. It also allows you to choose the field on which you want to apply filter.



In the above example, we have added a filter on "Date of Birth" field on input dataset and specified a Date. Now, the visual contains the average tenure of employees under different job level and job family but only including employees whose Date of Birth is after 1980-01-01.



Amazon uses its machine learning capabilities to analyze your data and provide insights. The insights show you the trends in the data, help in forecasting business metrics and identify key drivers. It saves lot of your time to analyze and create them manually. With the help of insights, you can easily understand various points which help you to determine and make best decisions, and achieve your goals.

Once you click on the Insights, the left panel displays the automatically calculated and created insights by Quicksight under "Suggested Insights"



If you hover on the right of each insight heading, you will see a "+" sign and 3 dotes. The "+" sign is used to add the insight to your analysis while the 3 dotes gives you option to add in filters to existing insights. To add an insight, click on the "Add" sign at the top and click on "Add insights".

You can further choose the computation type you want to perform and add that insight to your analysis. "Forecast" and Anomaly detection are powered by machine learning and are available in "Enterprise edition" of Quicksight.







Story is an option wherein you capture a series of screens and play them one by one. For example, if you want to see a visual with different filter options, you can use story. To create a Story, click on Story on the leftmost panel. By default, there is a story with name Storyboard 1. Now capture the screen using the capture icon at the right most panel on the top. Each capture of the screen is also referred to as Scene. You can capture multiple scenes and those will get added under "Storyboard 1". The data in the story gets automatically refreshed once your main data source is refreshed.





# **11.** AWS Quicksight — Using Parameters

Parameters are variables that are created to pass control of the user to modify the dashboards. Parameters can be created using the fields of the input data set or on the filters created for analysis. For example, you create a parameter using a filter, the dashboard users can directly apply filter without creating any filter.

	+ 9 C Add Undo Redo	ſ	Dansle Gunnimu analizie	② ① ♀ Capture Share N. Virginia N
000 Visualize	Parameters +	Field w	Create new parameter X	
Filter	O	C	Name Parameter name	e by Job Level and Job Family
Insights	No parameters for this analysis Create one		Data type (Not alterable after creation) String	
Story		Fe	Values (a) Single value (i) (b) Multiple values (i) Static default value	e Senior Manager Entry
			Enter volue Set a dynamic default Cancel Create	

### **Creating a Parameter**

In this section, we will see how to create a parameter:

- **Step 1:** Enter the name of parameter. Let us take Gender as parameter.
- **Step 2:** Choose data type. By default, it is string.
- Step 3: Choose the possible options as below.



	+ り C <sup>4</sup> Add Undo Redo	Deeple	oniou analusis		A			ි Capture	[Î] Share	<b>♀</b> N. Virginia
000	Parameters +	Field Create new	/ parameter		×	·				
Visualize		Use parameter	to dynamically contro	l values in your fields, filte	ers and sheet					
$\nabla$		( Name								$\sim$
Filter		Gender							Job	Family
~									Ac	ct Mgmt
Insights	No parameters for this analysis	Data turno (No	altorable after creati	ion)					Ac	dvertising
_	Create one	Data type (N	alterable alter creat						Do	oc & Train
		String			~	1			En	gineering
Story									Ex	ecutive Te
116		Values		A Malifala and an	$\bigcirc$				Hu	uman Res
्रुधे <		<ul> <li>Single value</li> </ul>	$\bigcirc$	Inviuitiple values	s ()				Le	gal
'arameters						h 🗌			Pr	oduct Ma
		Female							<b>Q</b> u	uality
									R8	хD
									Su	ipport
							434			
							400	500		
		Cancel			Create					
	6 📋 🖸 🔍 🗸							ő <b>.</b> B	18 10	II 00

The parameter would be added. You can choose to add control to the dashboard.



# **12.** AWS Quicksight — Sharing Analysis

Once the analysis is ready, this can be shared with users by email or other Quicksight users. On the top right side menu, there is a "**Share**" icon.

	+ り C <sup>A</sup> Add Undo Redo	People Overview analysis	Autosave ON 🗸	Capture Share N. Virg	) ginia
	Data set	Field wells Y axis Gender Value Grou	p/Color Job Family	Publish dashboard Share analysis	
Visualize Visualize Filter Solution	STICE People Overview Fields list Business Function Date Date Date of Birth	Count of Records by Job Family and Gende	r V Average of Tenu 30 20	are by Job Level and Job Family	
	+ り C Add Undo Redo Data set	Share analysis		② ① ♀ Capture Share N. Virgin ×	inia N
OUU Visualize	SPICE People Overview	<ul> <li>10</li> <li>This analysis can be shared with Authors and Adm</li> </ul>	nins in this QuickSight account.		
Filter	Fields list	Q test@gmail.com			
e la contraction de la contracticion de la contractica de la contr	<ul> <li>Business Function</li> <li>Date</li> </ul>	Name Email	Permission Role	Job Fami	liy Igmt
a a Insights	Date of Birth			Adverti	ising Train
Story	Education     Employee ID			Enginee	ering
ş	Employee Name			Human	n Res.
arameters	Event Type	*		Product	t Ma
		Manage analysis access	Sha	ne Quality	rt

By default, the analysis can be accessed by the author or admin only. You would require providing access to the user to be able to view the analysis. On clicking "Manage analysis access", it will show all the registered users. You can choose the users you want to extend the access and click on "Invite users". The users will get an email notification and once they accept the notification, they will be able to get analysis by email.

QuickSight				♥ N. Virgin				
	Manage analysis access							
	You can manage the settings and permissions for users that access this analysis.							
	Search by email address			Q				
	Name	Email	Permission					
	A NehaGupta	nehasap0348@gmail.com	OWNER					
	Back			Invite users				



# **13.** AWS Quicksight — Dashboards

A dashboard shows the screenshot of the analysis. Unlike Analysis, dashboards are read as only screenshots. One can just use the parameters and filters created in visuals to create new visuals but with same charts.

	+ Add	り Undo	<b>C</b> Redo			People Overview analysis	Autosave ON 🗸	ට් Capture	( <u>↑</u> Share	♥ N. Virginia
n la	Data se	t		1	Field wells Y	axis Gender Value Group/Color Job Far	nily	Publish dash	nboard	
Visualize	SPICE	People	Overview	✓ 100%	5 Insights	1		Share analys	sis	
						-				

To generate a dashboard of the analysis you have created, just click on publish dashboard under share icon. Provide any name to the dashboard and click on "Publish Dashboard" icon.

	+ り C	ć	Doonlo Ovaniew analyzia	Automas ON V	ÔÛ Ŷ
	Add Undo Redo Data set	🖍 Field w	Publish a dashboard	×	Capture Share N. Virginia
Visualize Visualize Filter	Fields list	Q C(	Publish new dashboard as     People Overview sample		Job Family
Normal Sector Se	Date Date Date of Birth Education		Replace an existing dashboard	~	Acct Mgmt     Advertising     Doc & Train     Engineering
Story	Employee ID     Employee Name     Event Type	· ·	<ul> <li>✓ Advanced filtering ①</li> <li>✓ Allow CSV download of data</li> </ul>		Executive Te.     Human Res     Legal     Product Ma
	Visual types		Cancel 99	Publish dashboard	al Quality al R&D al Support

You can opt to share the dashboard with all users in this account or only particular users.

	5	C		\$		People over	view capapila		Ō	ol0	Û	<b>9</b>
<b>V</b> Filter		Count o	of Rec	ords by Job Far	Share dashboard w	vith users		×	Data	save as	share	N. Virginia
					Search by email address							Job Family
					Share with all users in t	nis account						Acct Mgr     Advertisi
				7	Name	Email	Permission	Role				Doc & Tr
			Male	· /								Engineer
				15								Executive
				10								Human R
				39								Legal
				_								Product
		Ider										Quality
		Gen										R&D
				1	Manage dashboard acc	ess		Share				Support



Now the dashboard is visible under "All dashboards" tab on home screen.

QuickSight	Search for analyse	es, data sets and dashboa	rds		۵	♥ A N. Virginia NehaGup
New analysis						Manage data
		All analyses	All dashboards	Tutorial videos	]	

Here is the sample dashboard with a filter attached to it. You can see that there is no option to edit the dashboard except applying filters added while creating visuals.





# 14. AWS Quicksight — Managing Quicksight

Manage Quicksight is to manage your current account. You can add users with respective roles, manage your subscription, and check SPICE capacity or whitelist domains for embedding. You would require admin access to perform any activity on this page.

VuickSight	Search for analyses, data sets and dashboards	۹	N. Virginia NehaGup
New analysis			Manage QuickSight
	All analyses All dashboards Tutorial videos		Community
		Last	Send feedback
All analyses		Last	What's new
			● English >
			Help
-			Sign out
<b></b>			

Under the user profile, you will find the option to manage Quicksight.

On clicking Manage subscription, below screen will appear. It will show the users in this account and their respective roles.

QuickSight					
Account name:					
Manage users	Manage users				
Your subscriptions	Invite users			Search for a user	Q
SPICE capacity					
Account settings	Username	Email	Role	Status	Action

You also have a search option; in case you want to particularly search for an existing user in Quicksight.

You can invite users with valid email address or you can add users with a valid IAM account. The users with IAM role can then login to their Quicksight account and view the dashboard to which they have access.

QuickSight					N. Virginia N
Account name: platform400	Invite users to this	account		×	
	Enter email addresses se	parated by commas (,)		+	
Manage users	Username	Email	Role IAM	user (j)	
Your subscriptions	Test	Enter email address	READER V No	v 🗑	Q Show all roles
SPICE capacity					
Account settings					ction
Manage VPC connections					
Domains and Embedding	Close			Invite	eset password
	ivenat	nenaguptas+o@gmail.co	DIII KEADEK	ACTIVE	Reset password



Your Subscriptions will show the edition of Quicksight you are subscribed to.

Manage users	Annual subscriptions					Purchase subscription
Your subscriptions						
SPICE capacity	0		1		2	3
Account settings			Free users	Monthly billed users		
Manage VPC connections						
Domains and Embedding	Start Date	Time Remaining	Auto-Re	enewal # of	Subscriptions	
	May 1, 2017	Expired	Off	4 (fr	ee trial)	Edit

SPICE capacity shows the capacity of their calculation engine being opted for and the amount used so far. There is an option of purchasing more capacity if required.

QuickSight					♥ A N. Virginia NehaGı
Account name: platform400 Edition: Enterprise					
Manage users	Total SPICE Capa	city (21GB)		Purch	ase more capacity
Your subscriptions					
SPICE capacity	0 bytes	5,25GB	10.5GB	15.75GB	21GB
Account settings	,		1GB Free Tier Free Bundled Capacity		
Manage VPC connections	SPICE Usage (3.0	9GB)			
Domains and Embedding					
	0 bytes	5.25GB	10.5GB Used Capacity Unused capacity	15.75GB	21GB

Account settings shows details of Quicksight account: notification email address, AWS resource permissions to Quicksight, or you also have an option to close the account.

Manage users	
Your subscriptions	Account settings
SPICE capacity	Notification email address
Account settings	This will be where access requests and service notifications will be sent.
Manage VPC connections	
Domains and Embedding	Connected products & services
	By connecting to AWS Services, QuickSight can access both data and user management policies. You can further contr Add or remove
	Close this QuickSight account
	By unsubscribing you will be deleting all content related to this account including:
	<ul> <li>Data sources</li> <li>Data sets</li> <li>Analyses</li> <li>Published dashboards</li> </ul>
	Unsubscribe

When you close Quicksight account, it deletes all the data related to below objects:



- Data Sources
- Data Sets
- Analyses
- Published Dashboards

Manage VPC connection allows you to manage and add VPC connection to Quicksight. To add a new VPC connection, you need to provide the following details:

Your subscriptions	Manage VPC connections Review all VPC connections for QuickSight	. Add a new VPC connection and remove the	old one to update a VPC connection.
SPICE capacity	VPC connection name	Subnet ID	Security group I
Account settings		No VPC connecti	ions
Domains and Embedding	Add VPC connection		
<ul><li>VPC ID</li><li>Subnet ID</li></ul>	AWS VPC console	sole	
below. Use the links below	to locate them in the AWS console	. Learn more	
<ul> <li>Subnet ID</li> </ul>	AWS VPC subnet cons	sole	
Security group	🛛 AWS security group of	onsole	
Security group VPC connection name	AWS security group of	onsole	
Security group VPC connection name Enter a name	AWS security group of	onsole	
Security group VPC connection name Enter a name	AWS security group of	onsole	
Security group VPC connection name Enter a name VPC ID	AWS security group of	onsole	
Security group VPC connection name Enter a name VPC ID Choose a VPC	AWS security group of	onsole	
Security group VPC connection name Enter a name VPC ID Choose a VPC	AWS security group of	onsole	
Security group VPC connection name Enter a name VPC ID Choose a VPC Security group ID	AWS security group of	onsole	

Domains and embedding allows you to whitelist the domain on which you want to embed Quicksight dashboards for the users. It only supports https:// domain to whitelist in Quicksight:

https://example.com



You can also include any subdomains if you want to use by selecting the checkbox shown below. When you click on Add button, it adds the domain to the list of domain names allowed in Quicksight for embedding.

Manage users Your subscriptions	Manage domains for embedded dash	iboards		
SPICE capacity	Domain	te irom domains you explicitly allow.		
Account settings Enter a domain name (https://example.com or https://example.com or https://example.com/8779)  Ranage VPC connections Include subdomains ①				
Domains and Embedding	Add			
	Domain	Include subdomains		
	https://amazonaws.com	Yes	/ 1	

To edit an allowed domain, you need to click on Edit button located beside the domain name. You can make changes and click on Update.

Edit allowed domain	×	
Domain		
https://amazonaws.com		
☑ Include subdomains ①		
Cancel	Update	779)



# 15. AWS Quicksight — Edition Type

AWS Quicksight supports different editions which vary as per user management, permissions and features supported — **Standard** and **Enterprise**. Both of these editions support all the Quicksight features for creating and sharing data visualizations.

Enterprise edition offers support for Active Directory integration to AWS directory. There are various other features which are supported in Enterprise edition as given below:

Features Supported	Standard Edition	Enterprise Edition
# of Free Authors	1	1
# of Free Trial Authors (60 Days)	4	4
Included SPICE Capacity	10 GB/User	10 GB/User
Readers	N/A	\$0.30/session
Additional SPICE Capacity	\$0.25/GB/mo.	\$0.38/GB/mo.
Connect to spreadsheets, databases, data lakes, and business apps	$\checkmark$	$\checkmark$
Easily analyze data with AutoGraph	$\checkmark$	$\checkmark$
Fast, scalable visualizations	$\checkmark$	$\checkmark$
Publish dashboards for interactive data access	$\checkmark$	$\checkmark$
Single-Sign-On with SAML or OpenID Connect	$\checkmark$	$\checkmark$
Web and mobile access	$\checkmark$	$\checkmark$
Drill-down to detail and customize filters	$\checkmark$	$\checkmark$
Enable audit logs with AWS CloudTrail	$\checkmark$	$\checkmark$
Reader Role		$\checkmark$
Securely Access data in Private VPCs and On-Prem		$\checkmark$
Row Level Security		$\checkmark$
Hourly refresh of SPICE data		$\checkmark$
Secure data encryption at rest		$\checkmark$
Connect to Active Directory		$\checkmark$
Use Active Directory groups		$\checkmark$

You can check the subscription type of AWS Quicksight with **Manage Quicksight** option.



QuickSight		
Account name:		
Manage users	Annual subscriptions	
Your subscriptions		
SPICE capacity	0	1
Account settings		Free users Month

In Enterprise edition, AWS Quicksight allows you to manage users using any of the below ways:

- Using Microsoft Active Directory: In Enterprise edition, you can add/remove Microsoft Active Directory groups to create and deactivate user accounts. You can access the directory groups directly or by using the AD Connector.
- Federated logins
- Inviting users by email

To manage your AD users/groups in Quicksight, you have to navigate to **Manage Quicksight -> Manage users/Manage groups.** 

You can also change the role of an existing user by clicking on drop down list:

- Admin
- Author
- Reader

An AWS Quicksight administrator can also reset the password of an existing user using Manage User option as shown below:

Manage users	Manage users						
Your subscriptions	Invite users			Search	for a user	Q	Show all
SPICE capacity							
Account settings	Username	Email	Role		Status	Action	
Manage VPC connections	and the second second	Com	ADMIN		ACTIVE		
Domains and Embedding		.com	ADMIN	~	ACTIVE	Reset pas	sword

You can update from AQS Quicksight Standard edition to Enterprise edition using Manage account option. To perform an upgrade, the user should have AWS Quicksight administrator privilege.

Click on your profile icon at top right corner -> Upgrade now.



QuickSight	
Account name: Edition: Standard Upgrade now	
Manage users	
Your subscriptions	
SPICE capacity	
Account settings	

Once you click on Upgrade, following screen appears. To complete the upgrade, click on the Upgrade button.

Additional fe	atures available in Amazon QuickSight Enterprise Edition include	
Readers	with Pay-per-Session pricing: Provide read-only access to everyone	3
V Row-lev	el security: Control exactly what data each user can see	
V Private	/PC access: Connect to your databases in private VPCs	
✓ Hourly r	efresh: Refresh your datasets more frequently	
Existing use \$ /user/mo	rs will be charged at \$ /user/month (w/annual commitment) or onth (month-to-month). SPICE capacity will be charged at \$ /GB/m	onth.

**Note:** Once you change your subscription from Standard edition to Enterprise edition, you cannot roll it back.



To manage IAM policies for Quicksight account, you can use root user or IAM credentials. It is recommended to use IAM credentials to manage resource access and policies instead of root user.

Following policies are required to signup and use Amazon Quicksight:

### **Standard Edition**

- ds:AuthorizeApplication
- ds:CheckAlias
- ds:CreateAlias
- ds:CreateIdentityPoolDirectory
- ds:DeleteDirectory
- ds:DescribeDirectories
- ds:DescribeTrusts
- ds:UnauthorizeApplication
- iam:CreatePolicy
- iam:CreateRole
- iam:ListAccountAliases
- quicksight:CreateUser
- quicksight:CreateAdmin
- quicksight:Subscribe

### **Enterprise Edition**

Apart from the above mentioned policies, below permissions are required in enterprise edition:

- quicksight:GetGroupMapping
- quicksight:SearchDirectoryGroups
- quicksight:SetGroupMapping

You can also allow a **user to manage permissions for AWS resources in Quicksight**. Following IAM policies should be assigned in both editions:

- iam:AttachRolePolicy
- iam:CreatePolicy
- iam:CreatePolicyVersion
- iam:CreateRole
- iam:DeletePolicyVersion



- iam:DeleteRole
- iam:DetachRolePolicy
- iam:GetPolicy
- iam:GetPolicyVersion
- iam:GetRole
- iam:ListAttachedRolePolicies
- iam:ListEntitiesForPolicy
- iam:ListPolicyVersions
- iam:ListRoles
- s3:ListAllMyBuckets

To prevent an AWS administrator to unsubscribe from Quicksight, you can deny all users "quicksight:Unsubscribe"

# IAM policy for dashboard embedding

To embed an AWS Quciksight dashboard URL in web page, you need the following IAM policies to be assigned to the user:

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Action": "quicksight:RegisterUser",
            "Resource": "*",
            "Effect": "Allow"
        },
        {
            "Action": "quicksight:GetDashboardEmbedUrl",
            "Resource": "arn:aws:quicksight:us-east-1: 868211930999:dashboard/
f2cb6cf2-477c-45f9-a1b3-639239eb95d8 ",
            "Effect": "Allow"
        }
    ]
}
```

You can manage and test these roles and policies using IAM policy simulator in Quicksight. Below is the link to access IAM Policy simulator:

https://policysim.aws.amazon.com/home/index.jsp?#



#### AWS Quicksight

IAM Policy Simulator		М	ode : Existing Policies -				
Users, Groups, and Roles	Policy Simulator						
Roles Filter	Global Settings ()	ct actions • Select	All Deselect All				
AllCDevinti	Action Settings and Results [0 actions selected. 0 actions not simulated. 0 action						
AllConferencingWebRole	Service	Action	Resource type of				
AurobindoM							
AuroraDefault AWS-CodePipeline-Service							
aws-quicksight-service-role-v0							



You can also embed your Quicksight dashboards into external applications/web pages or can control user access using AWS Cognito service. To perform user control, you can create user pool and identity pool in Cognito and assign Embed dashboard policies to identity pool.

AWS Cognito is an IAM service which allows administrators to create and manage temporary users to provide access to applications. With the use of identity pool, you can manage permissions on these user pools.

Let us see how we can generate secure dashboard URL and perform user control:

#### Step 1: Creating user pools and users

Create user pool in AWS Cognito and create users. Go to **Amazon Cognito** -> **Manage User Pools** -> **Create a User Pool**.

aws	Services 🗸	Resource Groups 🗸 🔭	¢	NehaGupta @ platform400 👻
		Amazon Cogni	ito	
		Amazon Cognito offers user pools and identity p directories that provide sign-up and sign-in option pools provide AWS credentials to grant your us services. Manage User Pools Manage Iden	pools. User s for your a sers access ntity Pools	pools are user pp users. Identity to other AWS

#### Step 2: Creating an identity pool

When user pool is created, next step is to create an identity pool. Go to <u>https://console.aws.amazon.com/cognito/home?region=us-east-1</u>

Click on "Create New Identity Pool".



aws Services 🗸 Resource Groups 🗸 🛠	
Federated Identities User Pools	
<b>Note:</b> If you are new to Cognito Sync, use AWS AppSync instead. App user's own data, such as game state or app preferences. AppSync exists space or chatroom. Start building with AWS AppSync now.	pSync is a new service for synchronizing application d tends these capabilities by allowing multiple users to s
Create new identity pool CognitoUserService Desktop App	TemporaryPoolIdentity
Identities 34   Change 0.0%	Identities 0   Change 0.

Enter the appropriate name of an identity pool. Go to the Authentication Providers section and select "Cognito" option.

ognito	Amazon Fac	cebook Google+	Twitter / Digits	OpenID	SAML	Custom			
Configure yo	our Cognito Identity F	Pool to accept users fede	rated with your Cogni	to User Pool by	/ supplying	he User Pool II	O and the App C	lient ID.	
	User Pool II	Optional							
		ex: us-east-1_Ab129f	aBb						
	App client id	Optional							
		ex: 7lhlkkfbfb4q5kpp9	Ourffao						

#### **Step 3: Creating Cognito roles**

Enter the User Pool ID (your User pool ID) and App Client ID (go to App Clients in user pool and copy id).

Next is to click on 'Create Pool' and click on 'Allow' to create roles of the identity pool in IAM. It will create 2 Cognito roles.

#### **Step 4: Assigning Custom Policy**

Next step is to assign custom policy to identity roles created in the above step:



```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Action": "quicksight:RegisterUser",
            "Resource": "*",
            "Effect": "Allow"
        },
        {
            "Action": "quicksight:GetDashboardEmbedUrl",
            "Resource": "*",
            "Effect": "Allow"
        },
        {
            "Action": "sts:AssumeRole",
            "Resource": "*",
            "Effect": "Allow"
        }
    ]
}
```

Policies Back	Pol	licy Sim	ulato	or						
Editing policy:	Sele	ect service	•	Select a	actions 🔹		Select All	Deselec		
{ "Version": "2012-10-17", "Statement": [		Global Settings     Gaction Settings and Results [0 actions selected. 0 actions not sime								
{     "Action": "auicksiaht Reaister! Jser"		Service			Action			Resource 1		
<pre>"Resource": "*", "Effect": "Allow" }, { "Action": "quicksight:GetDashboardEmbedUrl", "Resource": "*", "Effect": "Allow" }, { "Action": "sts:AssumeRole", "Resource": "*", "Effect": "Allow" } ] }</pre>										



You can pass dashboard Amazon Resource Name (ARN) under *quicksight:GetDashboardEmbedUrl*<sup>"</sup> instead of "\*" to restrict user to access only one dashboard.

### Step 5: Logging into Cognito application

Next step is to login to Cognito application with user credentials in user pool. When user logins into application, Cognito generates 3 tokens:

- IDToken
- AccessToken
- Refresh Token

To create a temporary IAM user, credentials are as shown below:

```
AWS.config.region = 'us-east-1';
AWS.config.credentials = new AWS.CognitoIdentityCredentials({
    IdentityPoolId:"Identity pool ID",
    Logins: {
        'cognito-idp.us-east-1.amazonaws.com/UserPoolID': AccessToken
    }
});
```

For generating temporary IAM credentials, you need to call sts.assume role method with the below parameters:

```
var params = {
    RoleArn: "Cognito Identity role arn",
    RoleSessionName: "Session name"
    };
sts.assumeRole(params, function (err, data) {
        if (err) console.log( err, err.stack); // an error occurred
        else {
            console.log(data);
})
```

#### Step 6: Registering the user in Quicksight

Next step is to register the user in Quicksight using "quicksight.registerUser" for credentials generated in step 3 with the below parameters:

```
var params = {
    AwsAccountId: "account id",
    Email: 'email',
    IdentityType: 'IAM' ,
```



```
Namespace: 'default',
UserRole: ADMIN | AUTHOR | READER | RESTRICTED_AUTHOR |
RESTRICTED_READER,
IamArn: 'Cognito Identity role arn',
SessionName: 'session name given in the assume role
creation',
};
quicksight.registerUser(params, function (err, data1) {
if (err) console.log("err register user"); // an error
occurred
else {
// console.log("Register User1");
}
})
```

### Step 7: Updating AWS Configuration file

Next is to update AWS configuration for user generated in step 5.

```
AWS.config.update({
    accessKeyId: AccessToken,
    secretAccessKey: SecretAccessKey,
    sessionToken: SessionToken,
    "region": Region
});
```

#### Step 8: Generating embed URL for Quicksight dashboard

With credentials created in step 5, call the quicksight.getDashboardEmbedUrl with the below parameters to generate URL.

```
var params = {
   AwsAccountId: "Enter AWS account ID",
   DashboardId: "Enter dashboard Id",
   IdentityType: "IAM",
   ResetDisabled: true,
   SessionLifetimeInMinutes: between 15 to 600 minutes,
   UndoRedoDisabled: True | False
}
quicksight.getDashboardEmbedUrl(params,
```



```
function (err, data) {
  if (!err) {
    console.log(data);
  } else {
    console.log(err);
  }
});
```

You have to call "QuickSightEmbedding.embedDashboard" from your application using the above generated URL.

Like Amazon Quicksight, embedded dashboard also supports the following features:

- Drill-down option
- Custom actions (link to a new tab)
- On-screen filters
- Download to CSV
- Sorting on visuals
- Email report opt-in
- Reset dashboard to defaults option
- Undo/redo actions on the dashboard



# 18. AWS Quicksight — AWS SDKs

You can use AWS Quicksight SDK's to manage the following:

- User and group management
- Embedding dashboards

Following shows a sample HTML code to be used to display an embedded dashboard:

```
<!DOCTYPE html>
<html>
<head>
   <title> Sample Embed</title>
   <script type="text/javascript" src="https://unpkg.com/amazon-quicksight-</pre>
embedding-sdk@1.0.1/dist/quicksight-embedding-js-sdk.min.js"></script>
   <script type="text/javascript">
       function embedDashboard() {
           var containerDiv = document.getElementById("dashboardContainer");
           var params = {
              url: "https://us-east-
container: containerDiv,
              parameters: {
                  country: 'United States'
              },
              height: "600px",
              width: "800px"
           };
           var dashboard = QuickSightEmbedding.embedDashboard(params);
           dashboard.on('error', function() {});
           dashboard.on('load', function() {});
           dashboard.setParameters({country: 'Canada'});
       }
   </script>
</head>
```

To use AWS SDK's, you should be familiar with the following:

• JSON



- Web services
- HTTP requests
- One or more programming languages, such as JavaScript, Java, Python, or C#.



Following job responsibilities are performed by an AWS Quicksight developer:

- Person should have relevant work experience in analytics, reporting and business intelligence tools.
- Understanding customer requirements and design solution in AWS to setup ETL and Business Intelligence environment.
- Understanding different AWS services, their use and configuration.
- Proficient in using SQL, ETL, Data Warehouse solutions and databases in a business environment with large-scale, disparate datasets.
- Complex quantitative and data analysis skills
- Understanding AWS IAM policies, roles and administrator of AWS services

