

Skills Network

Hands-on Lab: Analyzing DB2 Data With Cognos Analytics

Objective for Exercise:

- To create a dashboard with Billing data on DB2 using Cognos Analytics and analyze the regionwise spend.

Prerequisites

Prior to starting this lab please ensure you have completed the previous labs to:

- [Create an IBM Cloud Account](#)
- [Provision an instance of DB2 on Cloud](#)
- [Provision an instance of Cognos Analytics](#)

Task 1 - Load the data in DB2

If you have service credentials created, skip steps 1 and 2.

1. Click on **Service Credentials** and create new credentials.

Resource list /

Db2-4y Active Add tags

Details Actions...

Manage

Getting started

Service credentials

You can generate a new set of credentials for cases where you want to manually connect an app or external consumer to an IBM Cloud service.

[Learn more](#)

Connections

Search credentials...

New credential

2. Give the credential a name and **Manager** privilege and add it.

Create credential

Name:

Role: (i)

[Advanced options](#) ▼

Cancel Add

3. Click on the down arrow next to the credential. You will see the credential details. Make a note of the username, password and jdbc connection url. These will be used in later part of the lab to connect from Cognos.

Service credentials	
You can generate a new set of credentials for cases where you want to manually connect an app or external consumer to an IBM Cloud service. Learn more	
<input type="text"/> Search credentials...	⟳ New credential
▼ <input type="checkbox"/> Key name	Date created
▼ <input checked="" type="checkbox"/> Service credentials-1	2021-09-20 12:30 PM ⟳ ⓘ

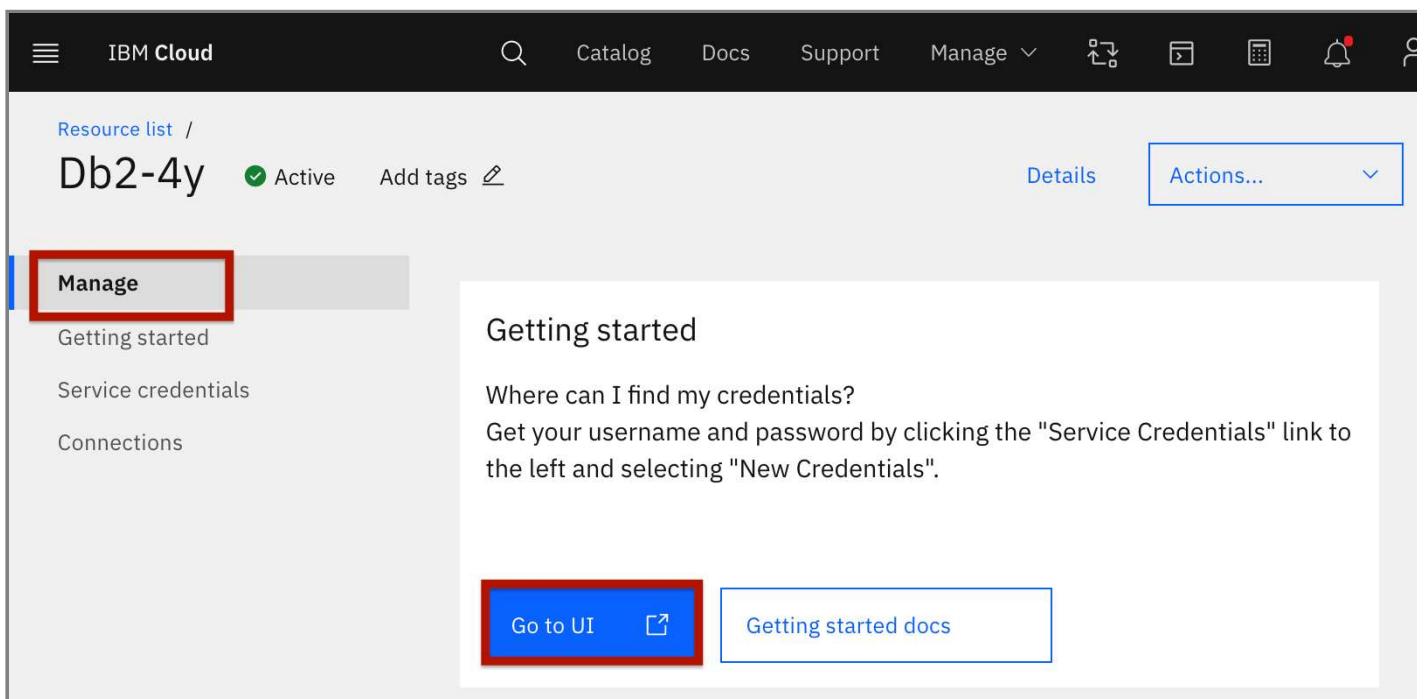
```

"db2": {
  "authentication": {
    "method": "direct",
    "password": "*****",
    "username": "*****"
  },
  "certificate": {
    "certificate_base64": "LS0tLS1CRUdJTiBDRVJUSUZJQ0FURS0tLS0tCK1JSURFakNDQWzxZ0F3SUJBZ01KQVA1S0R3ZTNCTkxiTUEwR0NTcUdTSWIzRFFFQh3VUFN0iR4SFRBYUJnT1YK0kFNTUJwbFN0U0JFYkc5MVnD0kV7WFJ0WW1Ge1nYTxTaGNOTWnRd01nSTVNRF5TVRBeVd0Y05NekF3TwJMcg0NRF5TVRBeVd0OWVNUndR32dFZRUUJRF0k5KUwz1EyehZkV1FnUkdGMF1XSmhjM1Z6T1J0K1qQ05CZ2txCmhraUc5dzBCQVFFRkFBT0NBUTHBTU1J0K1nS0NB0UUV8dXUvbitpWn9xdkdGnu8xS6pEa1psK21YJF4Ukr4ZGwKT2RUL3PoUGMxMTREY1FUK0p1RXdhdG13aG1jTGxaQnF2QWFm1hrbmhQSVF0MG01L0x5Yz2dBY291VXNmSGR0QwpDVGrc1UsxbjBrdDM1THM3d1dTakxqyE93M3M1ZUSU5yYmx3cnRIRU1vM1JWTKV65KNHYW5LSxdZMwZVsUtrC1dNM1R0SD15cnFsSGN0Z2pIU1FmRKVTRmlYahJi0DhS0md0amIva0xtVGpCaTFBeEvadwNobWZ2QVRmN0OY3EKY21QcHNqd0BTh10YnhJMVrUWxKeenNi1MSFbrrWW91SuPrdnVzMuZvaTeYsMrNM1n1K31abF2PMU2mZkU3bwpkMjhudGj0Z3JG0G1tU0NNSkJvTTFSZ3FPZG90Vm5C9E0WzhamNNN01Wd2V4a01s0TNKR1FJREFRQUJvMu13C1VU0WRCZ05WSFE0RUZnUVV103JZanF30z1VUpxVmZEMDh1ZWdqeDZiUmN3ShdZRFZSMGpC0md3Rm9BVWV0Dc1kKaJQzC1VUpxVmZEMDh1ZWdqeDZiUmN3RhdZRFZSMF8UgYQkfVd0F3RU1vekfF0QmdircWhiaUc5dzBCQVFrZgpbQ0U9DQVFFQQuyRTBU0U03M1N3RjJ2MX8qaHV4M01kWV2SGFyKRMb0tPd0hSRnFS0HgxxZ2dRcGvEcFBnMk5SCKx3R08yek85SWZUMmhLaWd1d2orWnJ5SGxxcH1x00pLOHJEU28xZUVPeK1yWmE2S1Yz0TVscEttMwdj3V3VHyzMKK1UzVTFzT1Ujd3ZffuVj0OTVU4aERV919sVHMRVb2Mn3V1NPS1FDK013eJgrTFJMdjVHSW5BN1JySWNhKwozM0WxNnB4ZEttd1pLYThWcnBnMXJ3QzRnY3d1YUHMUNEW42K031bzG5YWKh6UG91cldYS1BaoGdXZ2J5CKNDcUdIK0NnQ1eFg3b05NS3VNSUNqRvZndnNLWnRqeTQ5VW51NVZzbH00b1J3dTf1bGdzRDNjek1tbJLREQKNHB1REFvTzYmktzzxVxkuuN3F3VG1Tb01TU0SRPT0KLS0tLS1FTkQg00vSVEIGSUNBVEutLS0tLQo=",
    "name": "1cbbb1b6-3a1a-4d49-9262-3102a8f7a7c8"
  },
  "composed": [
    "db2://1fn96733:d10xxWY1FWkzIe0Y@fb88901-ebdb-4a4f-a32e-9822b9fb237b.c1ogj3sd0tgtu01qde00.databases.appdomain.cloud:32731/b0db?authSource=admin&replicaSet=repset"
  ],
  "database": "bludb",
  "host_ress": [
    "fb88901-ebdb-4a4f-a32e-9822b9fb237b.c1ogj3sd0tgtu01qde00.databases.appdomain.cloud:32670"
  ],
  "hosts": [
    {
      "hostname": "fb88901-ebdb-4a4f-a32e-9822b9fb237b.c1ogj3sd0tgtu01qde00.databases.appdomain.cloud",
      "port": 32731
    }
  ],
  "jdbc_url": [
    "jdbc:db2://fb88901-ebdb-4a4f-a32e-9822b9fb237b.c1ogj3sd0tgtu01qde00.databases.appdomain.cloud:32731/bludb;user=<userid>;password=<your_password>;sslConnection=true;"
  ]
}

```

*Note: You have to replace the placeholder for username and password in the jdbc url string with actual username and password. Remove the angle brackets.

4. Go to the [data link](#). Right-click and choose **Save AS....** Save the file in your local system as *cloud-billing-dataset.csv*.
5. Once the instance is created from the db2 instance page, choose **Manage** from the left menu and click on **Go to UI**.



IBM Cloud

Resource list /

Db2-4y Active Add tags

Details Actions...

Manage

Getting started

Where can I find my credentials?
Get your username and password by clicking the "Service Credentials" link to the left and selecting "New Credentials".

Go to UI Getting started docs

6. Click on the **Data** icon on the left menu, choose **Load Data** and browse and select the file, **cloud-billing-dataset.csv** which you saved in your local system.

The screenshot shows the Data Load interface. The left sidebar has icons for Home, Load Data (selected and highlighted with a red box), Load History, Tables, Views, Indexes, Aliases, MQTs, and Sequence. The main area has tabs for Load History, Tables, Views, Indexes, Aliases, MQTs, and Sequence. The 'Load Data' tab is selected. Below it, there are radio buttons for Source (selected), Target, Define, and Finalize. A message says 'You are loading the file'. On the left, there are options for My Computer (selected), Amazon S3, and Cloud Object Storage. On the right, a 'File selection' section has a dashed box with a 'Drag a file here or [browse files](#)' button, which is also highlighted with a red box. A 'Next' button is at the bottom right of this section.

7. Choose the **Schema**, click on **New Table +** and create a new table with the name **BillingData** and click on **Create**.

Source Target Define Finalize

You are loading the file **cloud-billing-dataset.csv**

Select a load target

[Refresh](#)

Schema

 Find schemas**XQR63068**

Table

[New table +](#) Find tables in XQR63068

No entries found.

Create a new table

BillingData[Create](#)[Back](#)[Next](#)

8. You will see the table is added to the schema. Click on **Next** to load the data from the file.

Source Target Define FinalizeYou are loading the file **cloud-billing-dataset.csv** into **XQR63068.BILLINGDATA**

Select a load target

[Refresh](#)

Schema

 Find schemas

XQR63068



Table

[New table](#) Find tables in XQR63068

BILLINGDATA

[Back](#)[Next](#)

9. The table is loaded. You will see that each column has data type and column width auto generated based on the content. Edit column attributes by clicking on the pencil icon next to the respective attributes to change the width of **country** column to varchar of 30 and **month** column to varchar of 7.

 Source Target Define FinalizeYou are loading the file **cloud-billing-dataset.csv** into **XQR63068.BILLINGDATA**Code page (character encoding): 1208 (UTF-8) Separator: Header in first row: Time & date format:

	CUSTOMERID SMALLINT	CATEGORY VARCHAR(10)	COUNTRY VARCHAR(22)	INDUSTRY VARCHAR(24)	MONTH VARCHAR(6)	BILLEDAMOUNT SMALLINT
1	1	Individual	Indonesia	Engineering	2009-1	5060
2	614	Individual	United States	Product Management	2009-1	9638
3	615	Individual	China	Services	2009-1	11573
4	616	Individual	Russia	Accounting	2009-1	18697
5	617	Individual	Chile	Business Development	2009-1	944
6	618	Individual	Nicaragua	Human Resources	2009-1	3539
7	41	Company	Brazil	Marketing	2009-1	6591
8	619	Individual	Russia	Business Development	2009-1	16061
9	620	Individual	China	Business Development	2009-1	1250
10	956	Individual	Peru	Research and Development	2009-1	15105

[Back](#)[Next](#)

X

month	VARCHAR(6)
2009-1	
2009-1	
2009-1	
2009-1	
2009-1	

Edit column data type

Data type

VARCHAR ▾

Maximum number of characters
(1 - 32592)

7|

Close

OK

country	VARCHAR(22)
Indonesia	
United States	
China	
Russia	
Chile	

Edit column data type

Data type

VARCHAR

Maximum number of characters
(1 - 32592)

30

Close
OK

10. Once the column attributes are changed, check to see if it reflects and then click on **Next**

Source
 Target
 Define
 Finalize

You are loading the file **cloud-billing-dataset.csv** into **XQR63068.BILLING DATA**

Code page (character encoding): 1208 (UTF-8)			Separator: <input style="width: 100px; border: 1px solid #ccc; border-radius: 5px;" type="text" value=","/>	Header in first row: <input checked="" type="checkbox"/>	Time & date format:
CUSTOMERID	CATEGORY	COUNTRY	INDUSTRY	MONTH	BILLEDAMOUNT
SMALLINT	VARCHAR(10)	VARCHAR(30)	VARCHAR(24)	VARCHAR(7)	SMALLINT
1	Individual	Indonesia	Engineering	2009-1	5060
2	Individual	United States	Product Management	2009-1	9638
3	Individual	China	Services	2009-1	11573
4	Individual	Russia	Accounting	2009-1	18697
5	Individual	Chile	Business Development	2009-1	944
6	Individual	Nicaragua	Human Resources	2009-1	3539
7	Company	Brazil	Marketing	2009-1	6591
8	Individual	Russia	Business Development	2009-1	16061
9	Individual	China	Business Development	2009-1	1250
10	Individual	Peru	Research and Development	2009-1	15105

Back
Next

11. Review the settings and click on **Begin Load** to load the data.

Source Target Define Finalize
 You are loading the file **cloud-billing-dataset.csv** into **XQR63068.BILLINGDATA**

Review settings

Summary

Code page: 1208 (Default)

Separator: , (Default)

Time format: HH:MM:SS (Default)

Date format: YYYY-MM-DD (Default)

Timestamp format: YYYY-MM-DD HH:MM:SS (Default)

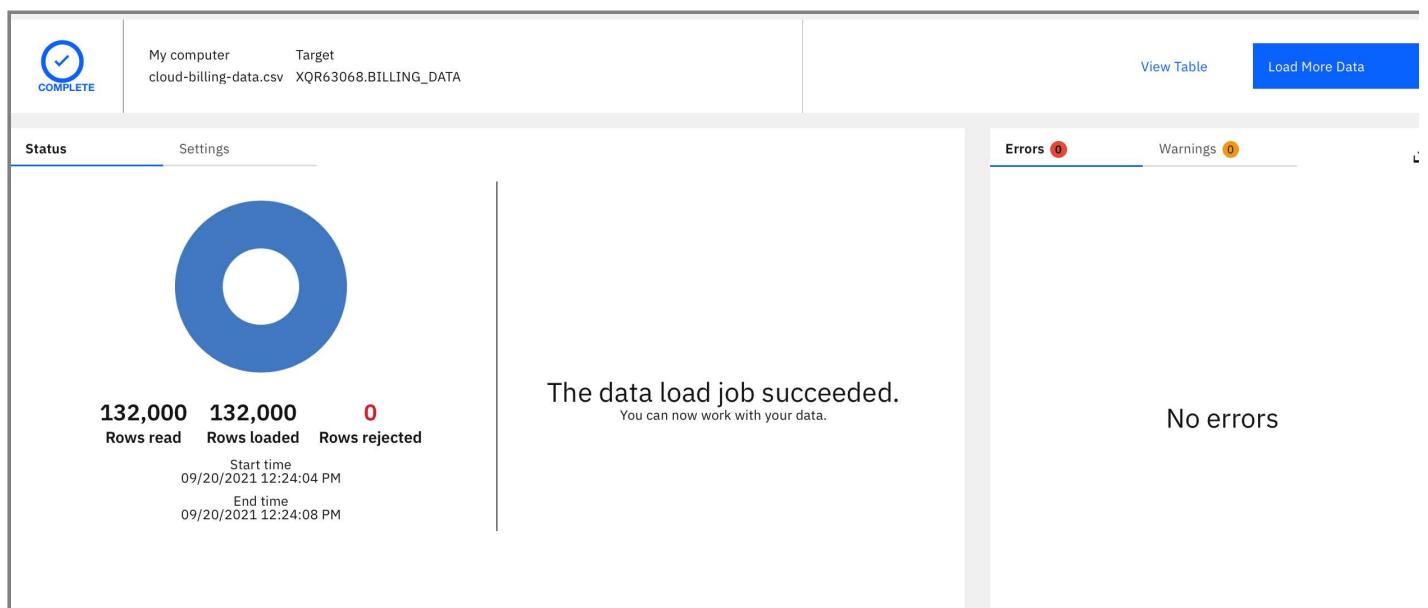
String delimiter: (Default)

Option

Maximum number of warnings
1000

Back **Begin Load**

12. If the data is successfully loaded, you get a message on the screen indicating the number of rows that have been loaded.



Task 2 - Connect Cognos to DB2

1. Navigate to myibm.ibm.com. Login with your IBM Cloud credentails and launch **Cognos Analytics**.



[My IBM](#) [Profile](#) [Billing](#)

Products

Trials

2 Offerings



IBM Cloud

Active

[Launch](#)

[Manage](#)



IBM Cognos Analytics on Cloud - Trial

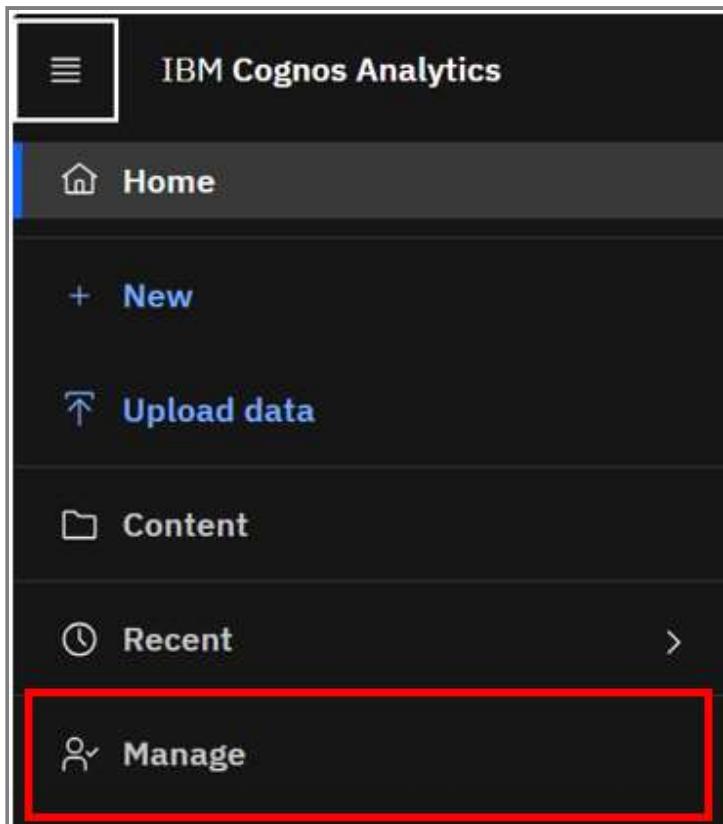
Active

Expires on 16 Oct 2021

[Launch](#)

[Manage](#)

2. Click the hamburger menu on the upper left and select **Manage**.



3. Select **Data Server Connections**.

IBM Cognos Analytics

Maintenance: The upgrade is now complete.

- People**
Create and manage accounts and contacts
- Data server connections**
Create and manage connections
- Customization**
Manage themes and extensions
- Collaboration**
Manage collaboration settings
- Storage**
Connect to a cloud object storage environment
- Secure Gateways**
Create and manage Secure Gateways

4. Click on **Add data Server** to add a new server.

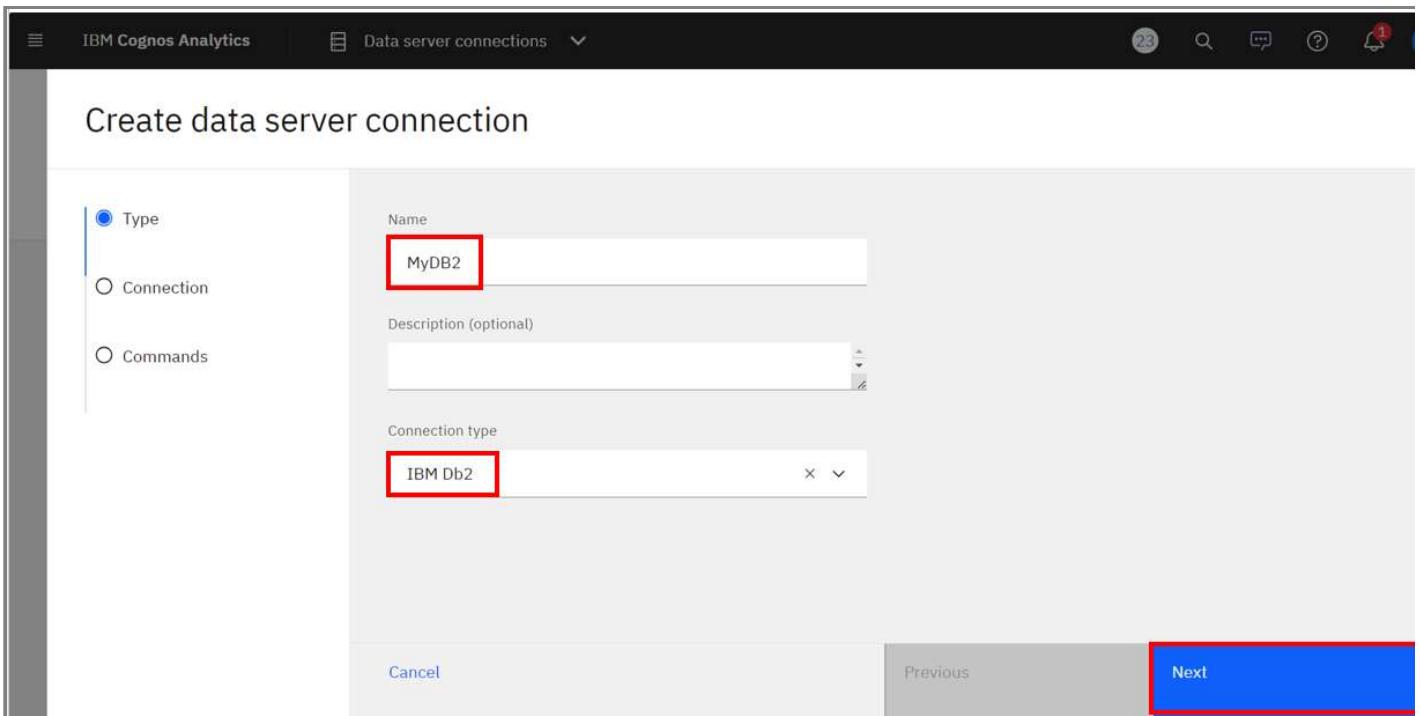
IBM Cognos Analytics | Data server connections

Data server connections

Manage existing connections to data sources or create new connections that can be used across the platform.

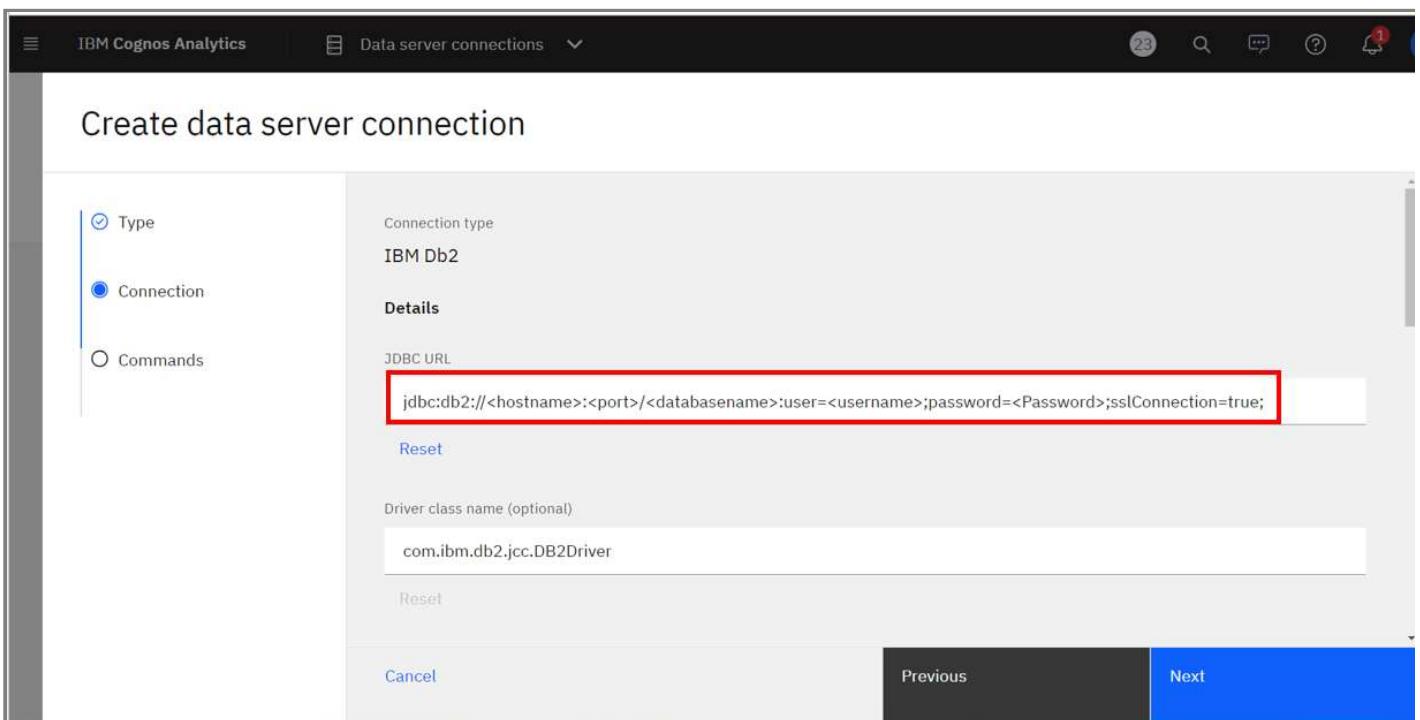
Data servers /		<input type="button" value="Add data server"/>
<input type="button" value="Search"/>		<input type="button" value=""/>
<input type="checkbox"/>	Name	Modified Time
<input type="checkbox"/>	Weather Company	3/31/2022, 8:44 PM

5. Provide a name **MyDB2** to the connection. Select **IBM DB2** from the list in the Connection type. Click on **Next**.

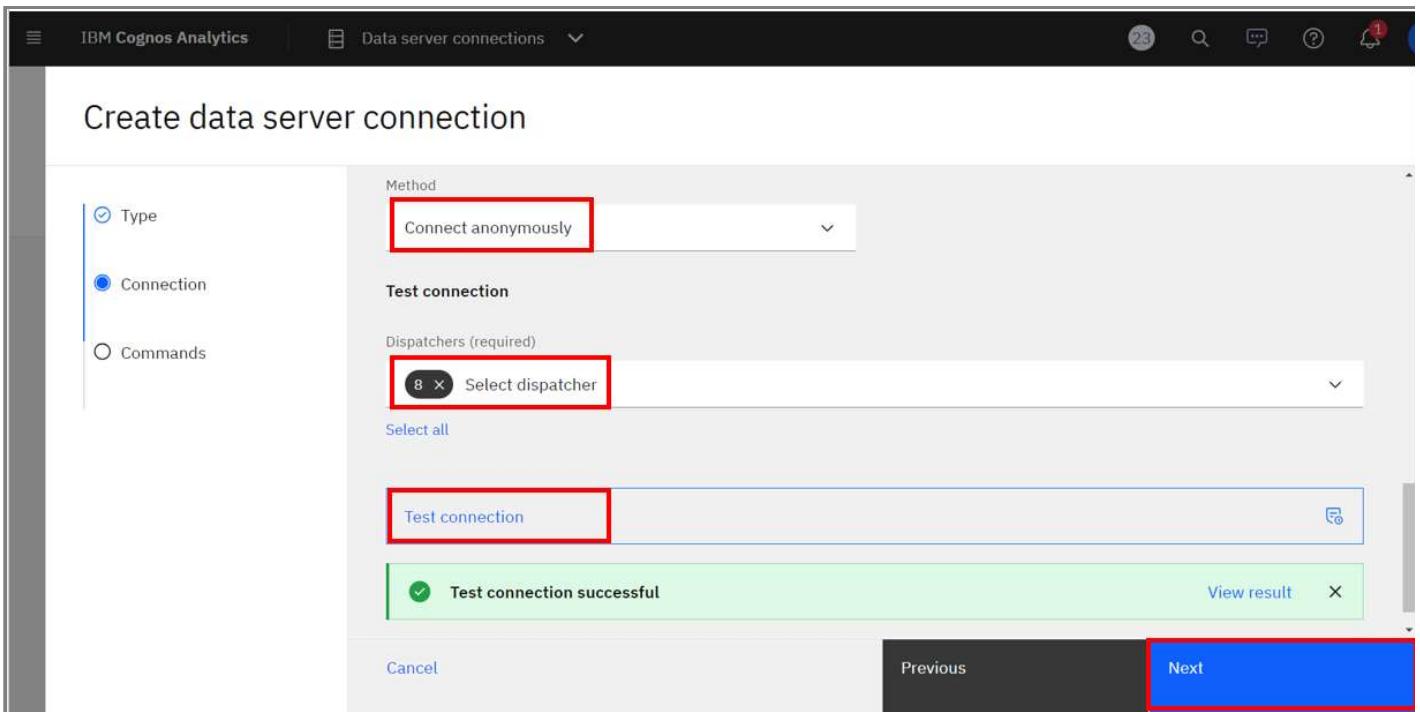


6. Provide hostname, port, and database for JDBC URL. (While adding the database, make sure to add the username, password, and the SSL connection to true as shown below:

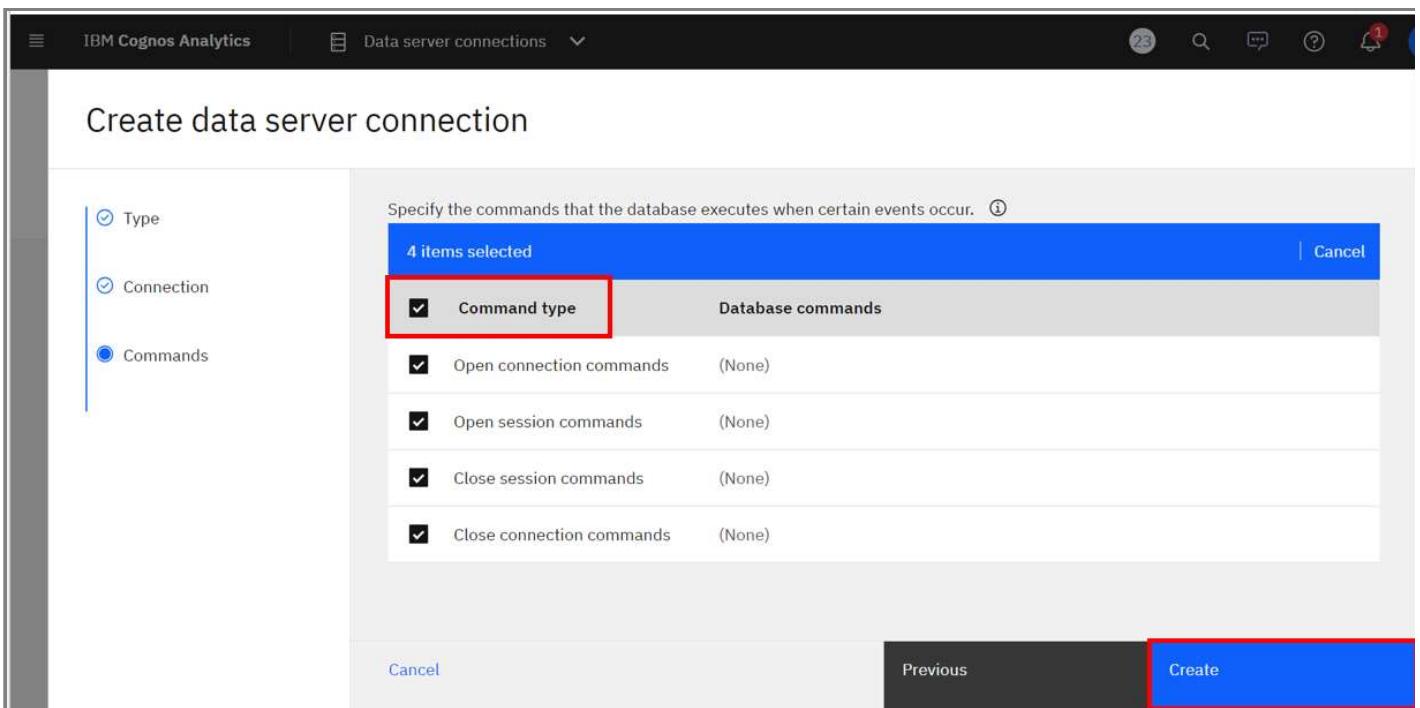
1 `jdbc:db2://<Hostname>:<Port>/<Database>:user=<username>;password=<Password>;sslConne`



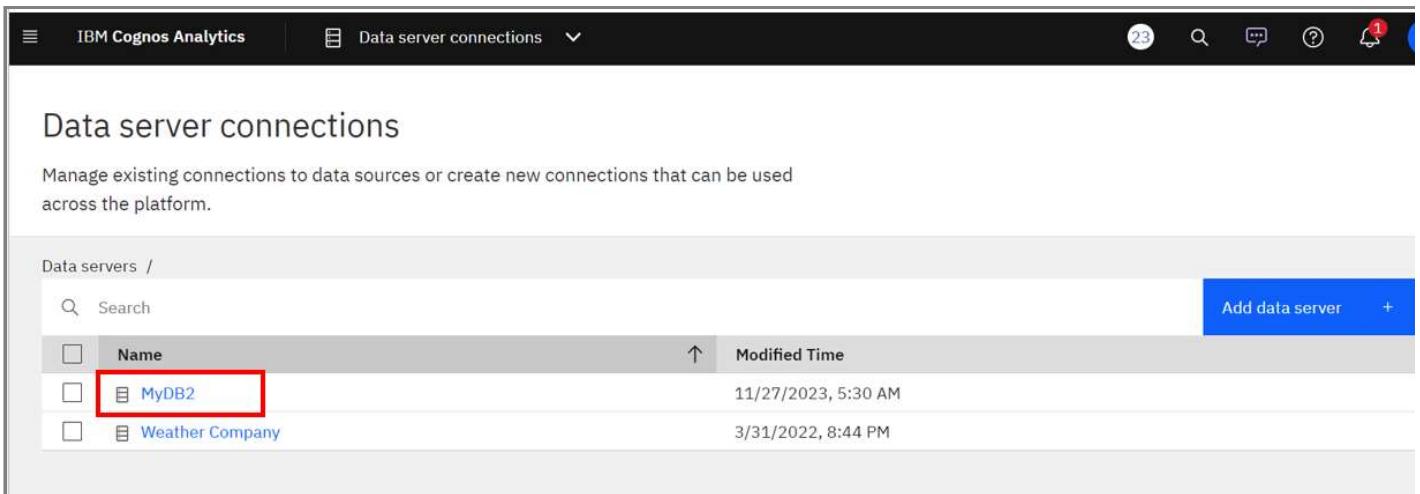
7. Then **Scroll down**. Select **Connect Anonymously** from the **Method** drop-down list. Select **Select all** in **Dispatcher**. Then Click on **Test Connection** to test the connection. If the test succeeded you will see **Test connection successfull**. Click on **Next**.



8. Select all check boxes for Command type and Click on **Create**.



9. Click on the Data Server **MyDB2** created previously.



IBM Cognos Analytics Data server connections

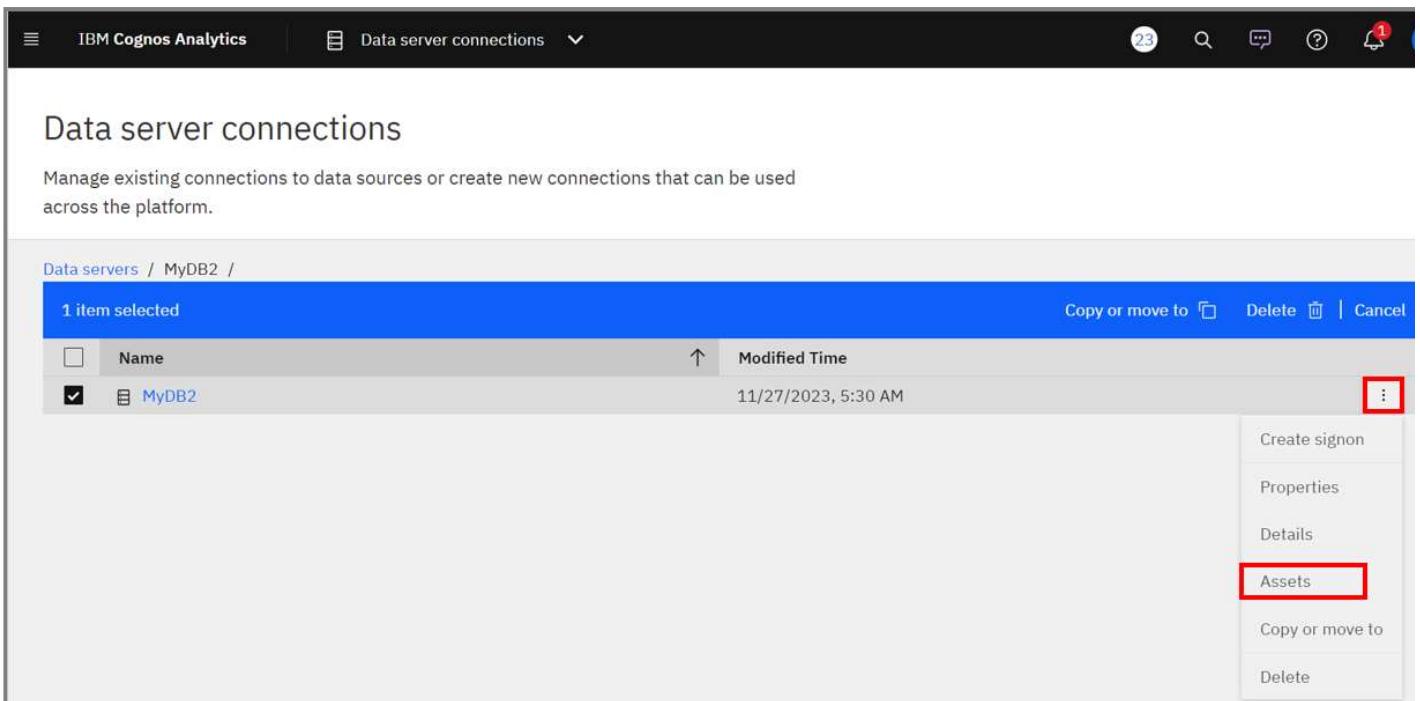
Manage existing connections to data sources or create new connections that can be used across the platform.

Data servers /

Q Search Add data server +

<input type="checkbox"/>	Name	Modified Time
<input type="checkbox"/>	MyDB2	11/27/2023, 5:30 AM
<input type="checkbox"/>	Weather Company	3/31/2022, 8:44 PM

10. On the right side, click on the three dots and select **Assets** from the menu that appears.



IBM Cognos Analytics Data server connections

Manage existing connections to data sources or create new connections that can be used across the platform.

Data servers / MyDB2 /

1 item selected

Copy or move to Delete | Cancel

<input type="checkbox"/>	Name	Modified Time
<input checked="" type="checkbox"/>	MyDB2	11/27/2023, 5:30 AM

⋮

Create signon

Properties

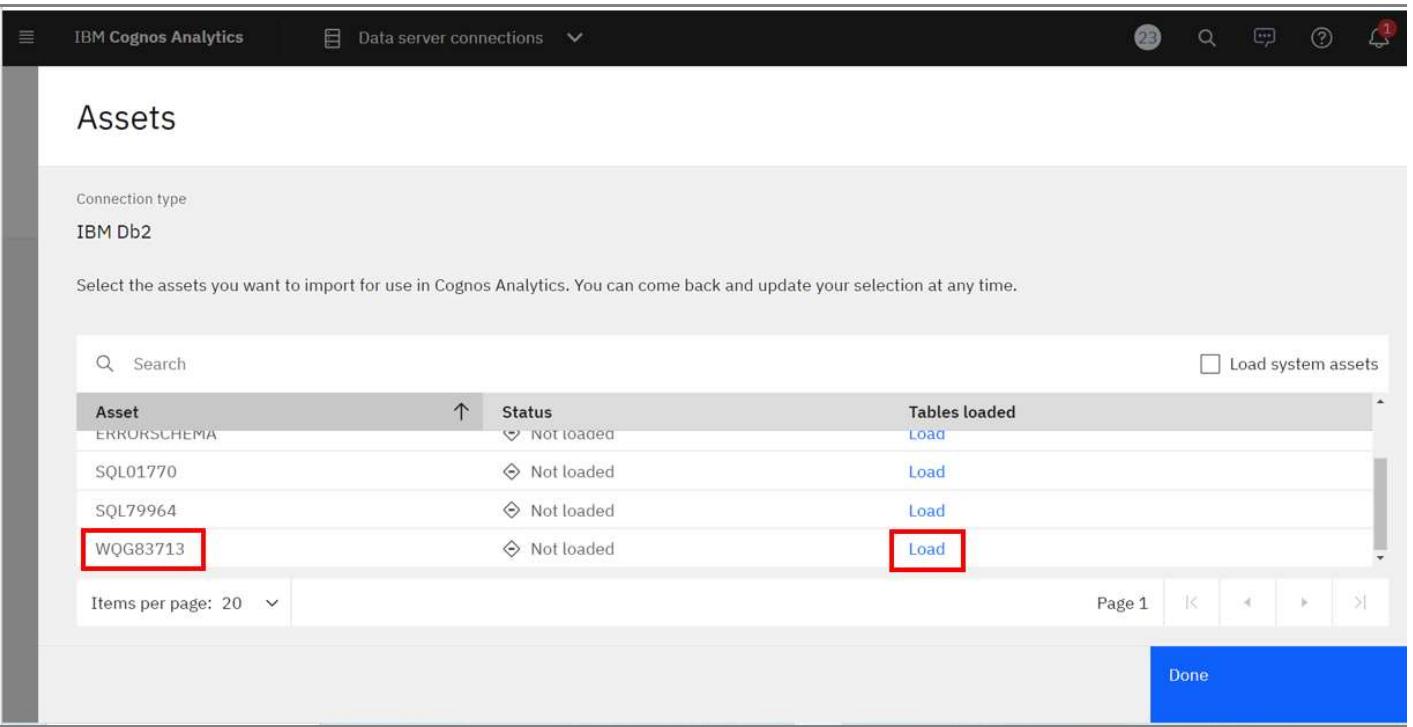
Details

Assets

Copy or move to

Delete

11. Select the **schema** in which you have loaded the tables in DB2 and click on **Load**.



Connection type
IBM Db2

Select the assets you want to import for use in Cognos Analytics. You can come back and update your selection at any time.

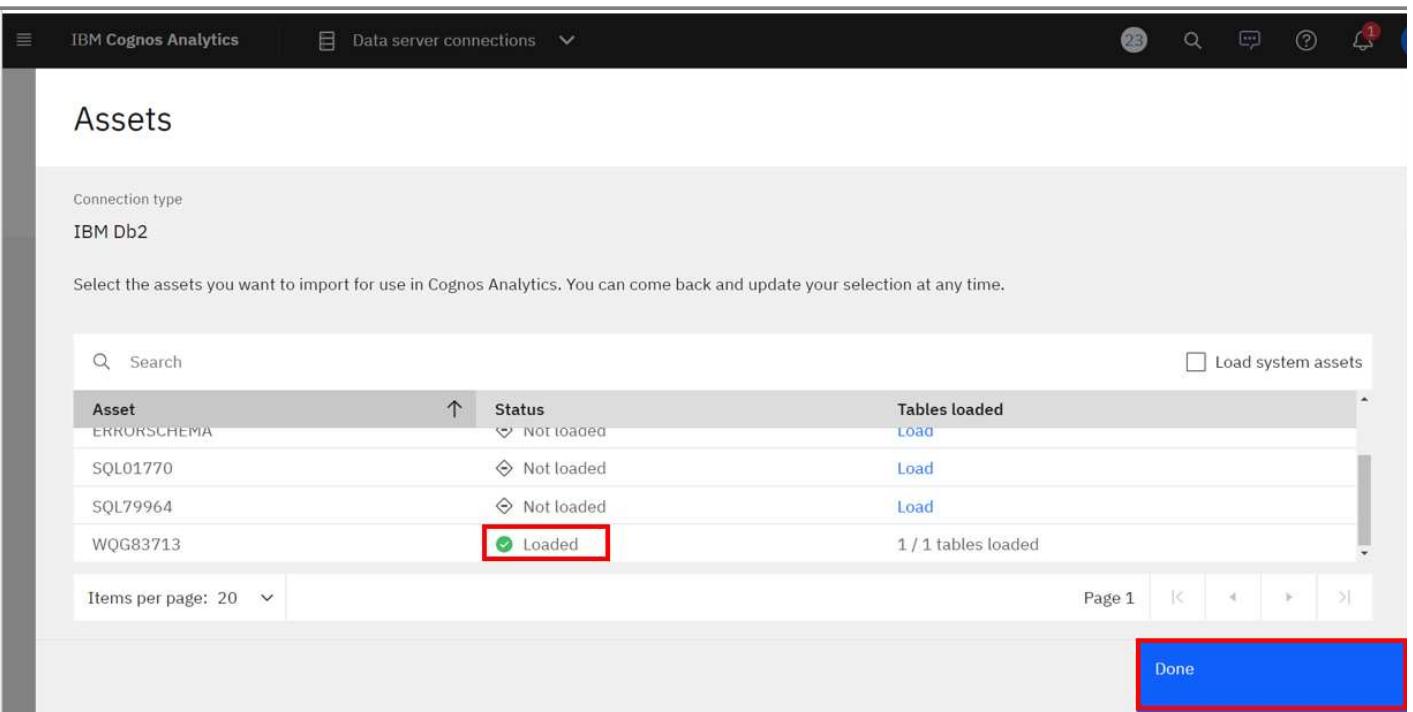
Asset	Status	Tables loaded
ERRORSCHEMA	Not loaded	Load
SQL01770	Not loaded	Load
SQL79964	Not loaded	Load
WQG83713	Not loaded	Load

Items per page: 20 Page 1 |<|<|>|>|

Done

The screenshot shows the 'Assets' page in IBM Cognos Analytics. The connection type is set to 'IBM Db2'. A table lists four assets: 'ERRORSCHEMA', 'SQL01770', 'SQL79964', and 'WQG83713'. The status for all assets is 'Not loaded', and the 'Tables loaded' column shows a 'Load' button for each. The 'WQG83713' row is highlighted with a red box around its asset name. The 'Load' button for this row is also highlighted with a red box. The bottom right corner of the page has a large blue 'Done' button.

12. Once the data is loaded, you can see that how many tables available in the schema for analysis.



Connection type
IBM Db2

Select the assets you want to import for use in Cognos Analytics. You can come back and update your selection at any time.

Asset	Status	Tables loaded
ERRORSCHEMA	NOT loaded	Load
SQL01770	Not loaded	Load
SQL79964	Not loaded	Load
WQG83713	Loaded	1 / 1 tables loaded

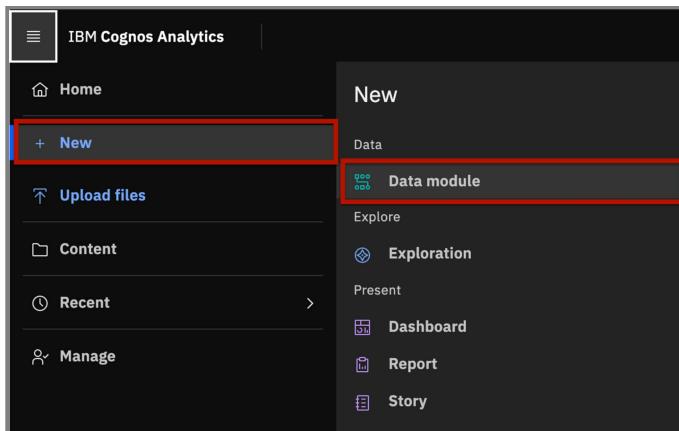
Items per page: 20 Page 1 |<|<|>|>|

Done

The screenshot shows the 'Assets' page in IBM Cognos Analytics. The connection type is set to 'IBM Db2'. A table lists the same four assets as the previous screenshot. The status for 'ERRORSCHEMA' is now 'NOT loaded', and the 'Tables loaded' column shows a 'Load' button. The status for 'SQL01770', 'SQL79964', and 'WQG83713' is now 'Loaded', and the 'Tables loaded' column shows '1 / 1 tables loaded' for 'WQG83713'. The 'WQG83713' row is highlighted with a red box around its asset name. The 'Loaded' status for this row is also highlighted with a red box. The bottom right corner of the page has a large blue 'Done' button.

Task 3 - Create Data Module in Cognos

1. From the menu, choose **New** and then from the submenu choose **Data Module**.



2. Click the **Data servers** icon and choose the **MyDB2** connection that we created in the previous task.

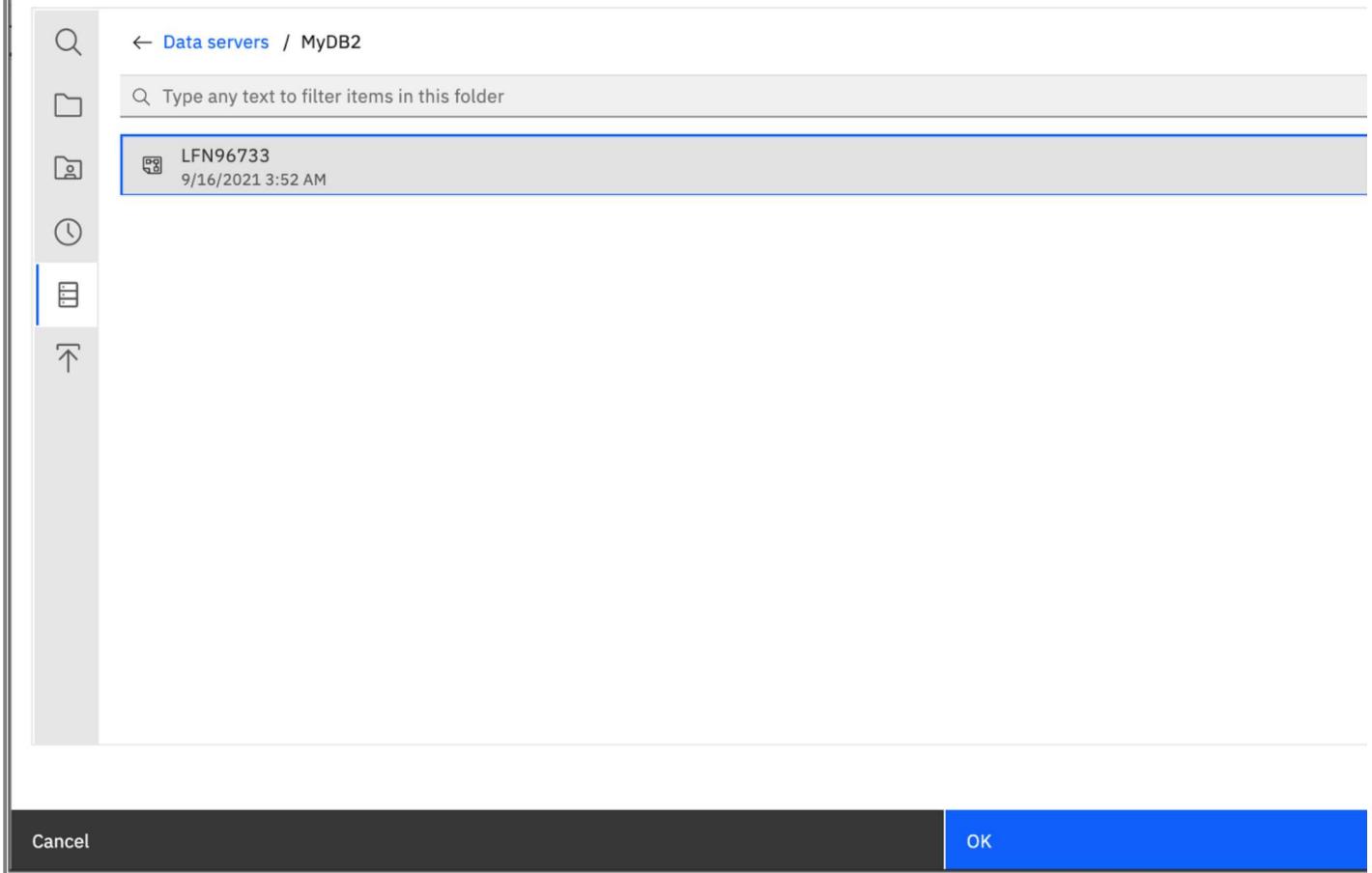
Select sources

The interface shows a sidebar with icons for search, folder, user, and database. The main area is titled 'Data servers' with a search bar that says 'Type any text to filter items in this folder'. Below the search bar, there are two entries: 'MyDB2' (selected) and 'Weather Company'. Each entry has a small icon and a timestamp. The 'MyDB2' entry is highlighted with a red box.

Connection	Last Accessed
MyDB2	9/16/2021 3:20 AM
Weather Company	5/25/2021 8:57 PM

3. Choose the schema from where you want to load data.

Select sources



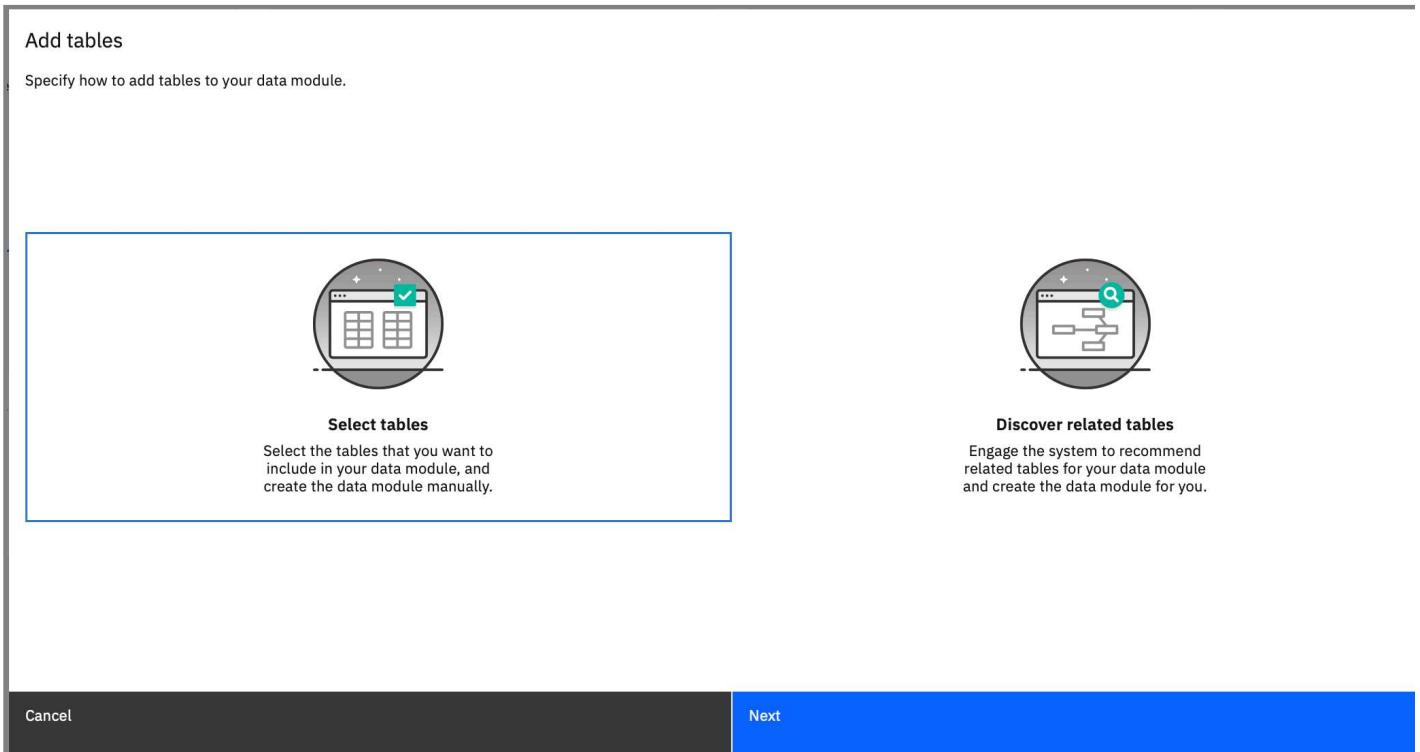
← Data servers / MyDB2

Q Type any text to filter items in this folder

LFN96733
9/16/2021 3:52 AM

Cancel OK

4. Choose the **Select Tables** option and click **OK**.



Add tables

Specify how to add tables to your data module.

Select tables

Select the tables that you want to include in your data module, and create the data module manually.

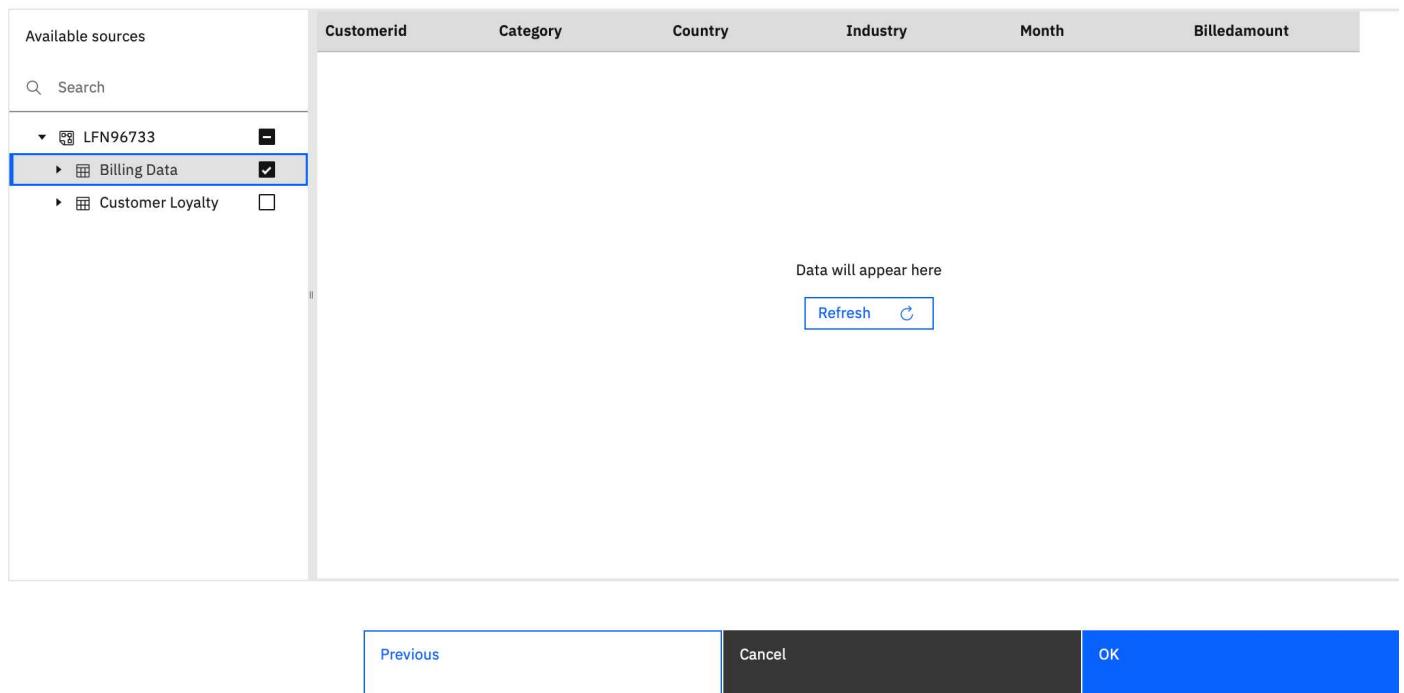
Discover related tables

Engage the system to recommend related tables for your data module and create the data module for you.

Cancel Next

5. It will list the tables available in the schema. For this lab, we will use the **Billing data** table. Choose the table and click on **OK**. If you want to view the data you may click on **Refresh**.

Select tables



Available sources

Search

LFN96733

Billing Data

Customer Loyalty

Data will appear here

Refresh

Previous Cancel OK

6. The **Data module** loaded with the data appears. Click on **Save**, once you see that the data is correctly loaded.



Data module

Search

New data module

Navigation paths

Billing Data

Customerid

Category

Country

Industry

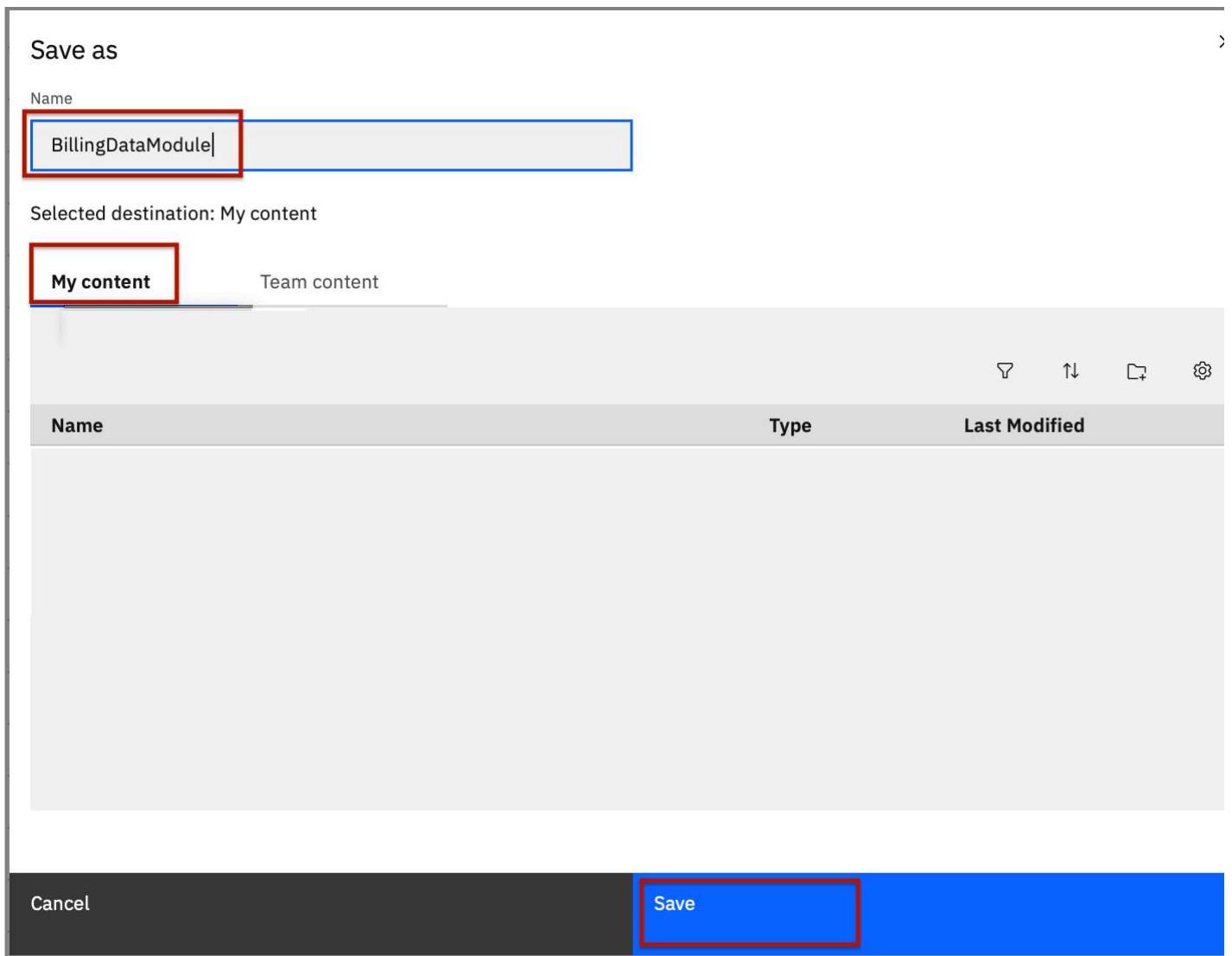
Month

Billedamount

Grid

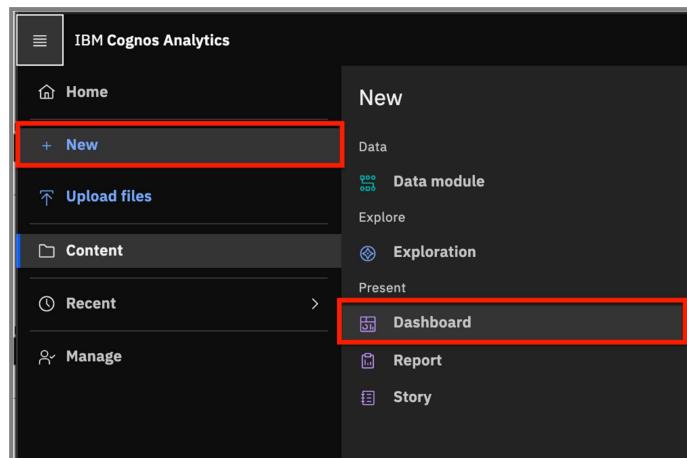
Customerid	Category	Country	Industry	Month	Billedamount
1	Individual	Indonesia	Engineering	2009-1	5060
614	Individual	United States	Product Management	2009-1	9638
615	Individual	China	Services	2009-1	11573
616	Individual	Russia	Accounting	2009-1	18697
617	Individual	Chile	Business Development	2009-1	944
618	Individual	Nicaragua	Human Resources	2009-1	3539
41	Company	Brazil	Marketing	2009-1	6591
619	Individual	Russia	Business Development	2009-1	16061
620	Individual	China	Business Development	2009-1	1250
956	Individual	Peru	Research and Development	2009-1	15105
621	Individual	Angola	Services	2009-1	6644

7. You can now save it with an appropriate name under **My Content**.



Task 4 - Create Dashboard

1. From the IBM Cognos menu, choose, **New** and click on **Dashboard**.



2. Choose the **Tabbed** as shown in the following image.

Create a dashboard

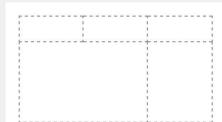
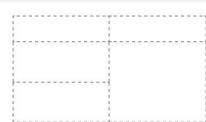
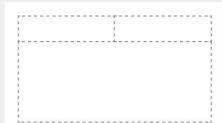
Select a template for your dashboard

Cancel

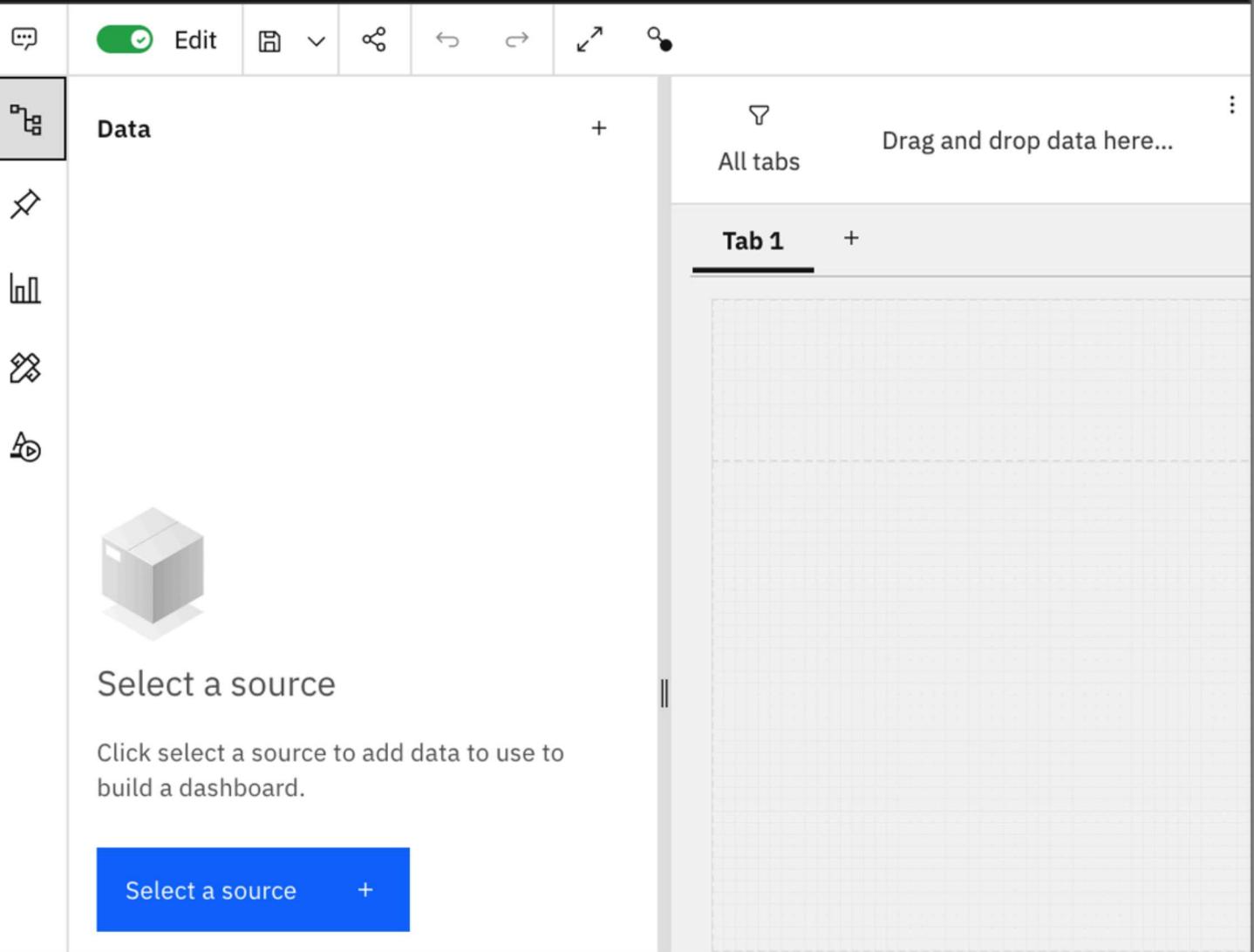
Create

Tabbed

Infographic



3. Click on **Select Source** to choose the source for the template.



The screenshot shows the IBM Cognos Analytics dashboard editor interface. At the top, there is a toolbar with various icons: a list icon, a 'Data' button (which is highlighted in grey), a 'Edit' button with a checkmark, a refresh icon, a dropdown arrow, a double arrow icon, a magnifying glass icon, and a search icon. Below the toolbar, on the left, is a sidebar with five icons: a gear, a chart, a bar chart, a line chart, and a funnel. The 'Data' icon is also highlighted in grey. The main workspace is divided into two sections. On the left, under the 'Data' section, there is a large cube icon and the text 'Select a source'. Below this, a blue button says 'Select a source' with a '+' sign. On the right, there is a tabbed interface. The first tab is labeled 'Tab 1' with a black underline, and the second tab is labeled 'All tabs'. A placeholder text 'Drag and drop data here...' is visible above the tabs. The main area of the tab is a grid with a light grey background.

4. From the list, choose the data module we just created and click on **Add**.

Select a source

X

My content

Team content

▽ ↑ ⚙

Name

Type

Last Modified

 BillingDataModule

Data module

20/09/2021 4:18 AM

Cancel

Add

Task 5 - Visualization

You will now see the table listed on the left panel with all the attributes.

1. Drag and drop the **Billed Amount** on the template.

The screenshot shows the IBM Cognos Analytics dashboard editor. On the left, the 'Selected sources /' pane is open, showing a 'BillingDataModule' with a 'Billedamount' field selected. The main workspace contains a single tab labeled 'Tab 1', which has a placeholder text 'Billedamount' with a small icon and a maximize button. The interface includes standard dashboard tools like 'Edit', 'Fields', and 'Properties' at the top.

2. The total billed amount will now appear on the Dashboard. The size and position can be adjusted as per requirement and the text display can be edited and formatted by double-clicking on it.

The screenshot shows the same dashboard editor after the 'Billedamount' text has been placed on the dashboard. The text is now a large, bold, black font displaying '1.32B'. The text box has a bounding box with handles. A red arrow points to the text 'Billedamount' at the top left of the box, and a callout box with the text 'Double click on this to edit or format the text' is positioned above the main text. The bottom of the text box also has the label 'Billedamount'.

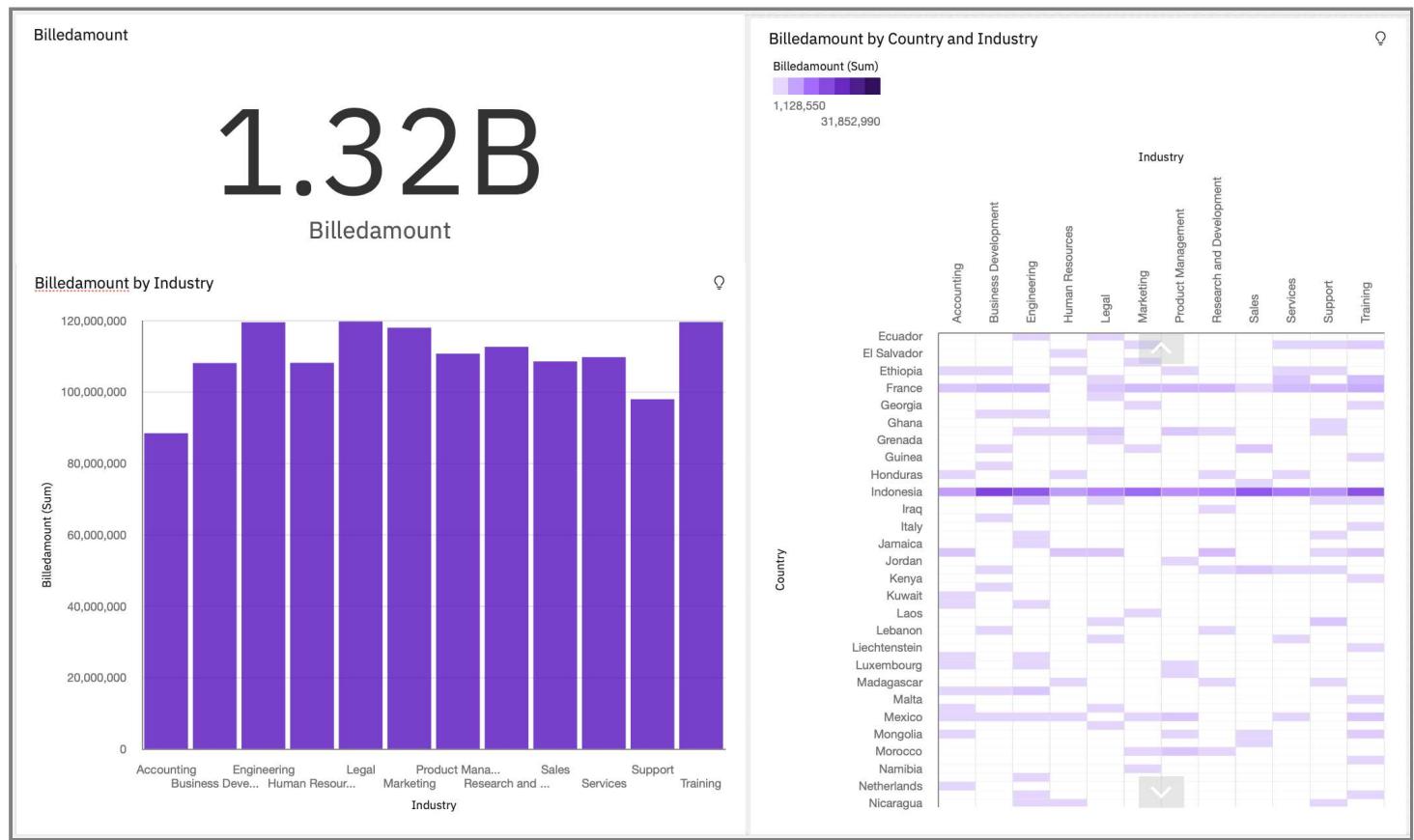
3. Drag and drop **Billed Amount** and **Industry** onto the dashboard as shown in the following image. With this, we can visualize the build amount per industry.

The screenshot shows the IBM Cognos Analytics dashboard editor. On the left, the 'Selected sources / BillingDataModule' pane is open, showing a navigation path: 'Navigation paths' > 'Billing Data' > 'Customerid' > 'Industry' > 'Month' > 'Billedamount'. The 'Billedamount' field is selected. On the right, a large '1.32B' placeholder is displayed, with a 'Billedamount' field icon and a 'Drop here to maximize' placeholder below it. The top navigation bar includes links for 'My IBM', 'Home', 'Top NLP Courses', 'Service Details - IB...', 'IBM Db2 on Cloud', 'My IBM', 'New dashboard', 'Home', and a search bar for 'Search Cognos Analytics'.

4. Drag and drop **Billed Amount**, **Country** and **Industry** onto the dashboard as shown in the following image. This will generate a heat map of spending by country and by industry.

The screenshot shows the IBM Cognos Analytics dashboard editor. The 'Selected sources / BillingDataModule' pane is open, showing the same navigation path as the previous screenshot, with 'Billedamount' selected. On the right, a bar chart titled 'Billedamount by Industry' is displayed. The y-axis is labeled 'Billedamount (Sum)' and ranges from 0 to 120,000,000. The x-axis is labeled 'Industry' and lists: Accounting, Business Dev..., Engineering, Human Resource..., Legal, Marketing, Product, Mana..., Research and..., Sales, Services, Support, Training. The bars are purple, representing the sum of Billedamount for each industry. The top navigation bar includes links for 'My IBM', 'Home', 'Top NLP Courses', 'Service Details - IB...', 'IBM Db2 on Cloud', 'My IBM', 'New dashboard', 'Home', and a search bar for 'Search Cognos Analytics'.

5. The finished dashboard will appear as in the following image.



6. Optionally, try to change the properties and settings to see how the dashboard changes. You can also observe the billed amount changing as you click on a region on the heat map or the bar graph.

Credits

Author(s)

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Changelog

Date	Version	Changed by	Change Description
2020-09-20	1.0	Lavanya	Created the lab
2021-10-07	1.1	Steve Hord	Copy Edit lab
2023-05-07	1.2	Vladislav Boyko	Indented images and added pages